

Pharm Phlash!

Pharmacology Flash Cards

Valerie I. Leek



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آزمون های آنلاین



جلسات آنلاین رفع اشکال



Dedication

To my husband, David, whose love, faith, and wonderful dinners made hard work so bearable.

To my son Zachary, whose vision and hope are larger than life.

To my son Jeffrey, whose love and gentle patience calm me.

To my granddaughter Cadence, who I hope will be proud of her Noni.

To my parents Pauline and Harry Fallows, whose love and support are limitless.

To my colleagues, Joy Wood, Priscilla Meyers, and Deirdre Conroy, who supported me in the development and application of this project.

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I'd also like to thank all the wonderful people I've worked with at F.A. Davis Company, including Tom, Nora, and Julie. You've made this journey a pleasant one.

Valerie I. Leek

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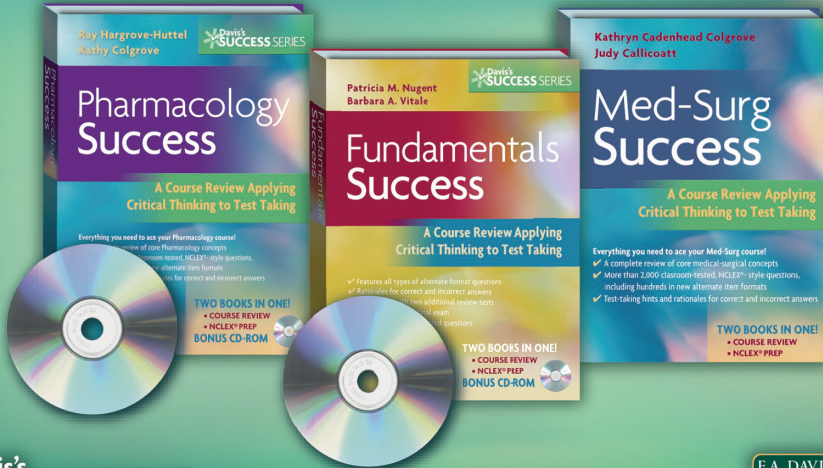
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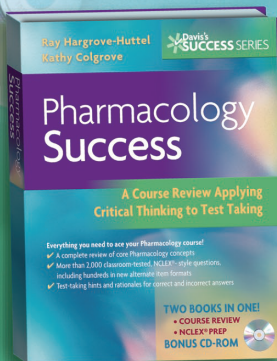


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List of Icons



Gastrointestinal System Drugs



Central Nervous System Drugs



Endocrine System Drugs



Cardiovascular System Drugs



Urologic System Drugs



Respiratory System Drugs



Immune System Drugs



Sensory System Affecting the Eye



Musculoskeletal System Drugs

Abbreviations Used on Cards

ABGs	arterial blood gases	CHF	congestive heart failure	DMARD	disease modulating anti-rheumatic drug
ac	before meals	CNS	central nervous system	DNA	deoxyribonucleic acid
ACE	angiotensin-converting enzyme	CO	cardiac output	DVT	deep vein thrombosis
ADH	antidiuretic hormone	COPD	chronic obstructive pulmonary disease	ECG	electrocardiogram
ADHD	attention-deficit/hyperactivity disorder	CPK	creatine phosphokinase	EEG	electroencephalogram
AFB	acid-fast bacillus	CR	controlled release	EENT	eye, ear, nose, and throat
ALT	alanine aminotransferase	CSF	colony-stimulating factor; cerebrospinal fluid	EMS	Emergency Medical Services
ANA	antinuclear antibodies	CT	computerized tomography	Endo	endocrine
APAP	acetaminophen	CV	cardiovascular	EPS	extrapyramidal symptoms
aPTT	activated partial thromboplastin time	CVA	cerebrovascular accident	ER	extended-release
ASA	acetylsalicylic acid	CVC	central venous catheter	ESRD	end-stage renal disease
AST	aspartate aminotransferase	CVP	central venous pressure	F and E	fluid and electrolyte
bid	two times a day	CXR	chest x-ray	G, g, gm	gram
BMS	bone marrow suppression	D5/0.9%NaCl	5% dextrose and normal saline solution (0.9% NaCl)	GABA	gamma-aminobutyric acid
BNP	brain natriuretic peptide	D5/½ NS	5% dextrose and half normal saline solution (0.45% NaCl)	GERD	gastroesophageal reflux disease
BP	blood pressure	D5W	5% dextrose in water	GFR	glomerular filtration rate
bpm	beats per minute	Derm	dermatology	GI	gastrointestinal
BUN	blood urea nitrogen	DKA	diabetic ketoacidosis	GTT	glucose tolerance test
Ca+	serum calcium	dL	deciliter	GU	genitourinary
cap	capsule			HCP	health-care professional
CBC	complete blood count				

HDL	high-density lipoproteins	mcg	microgram(s)	OCD	obsessive-compulsive disorder
Hemat	hematologic	MDI	metered dose inhaler	Oint	ointment
Hgb A_{1c}	hemoglobin A _{1c} glycosylated hemoglobin	mEq	milliequivalent	Ophthalm	ophthalmic
hr	hour(s)	Metab	metabolic	OTC	over-the-counter
HRT	hormone replacement therapy	mg	milligram	oz	ounce(s)
HTN	hypertension	Mg+	serum magnesium	pc	after meals
IM	intramuscular	MI	myocardial infarction	PCA	patient-controlled analgesia
Inhaln	inhalation	min	minute(s)	PCWP	pulmonary capillary wedge pressure
INR	international normalized ratio	Misc	miscellaneous	PE	pulmonary embolus
I&O	intake and output	mL	milliliter	PO	by mouth, orally
IT	intrathecal	mo	month(s)	Prn	as needed
IV	intravenous	MRI	magnetic resonance imaging	PT	prothrombin time
K⁺	potassium	MS	musculoskeletal	PVC	premature ventricular contractions
KCl	potassium chloride	Na	sodium	q	every
kg	kilogram	NaCl	sodium chloride	qid	four times a day
L	liter	0.9% NaCl	0.9% NaCl solution/ normal saline	RA	rheumatoid arthritis
LA	long-acting	Neuro	neurologic	RBC	red blood cell
LDH	lactic dehydrogenase	NG	nasogastric	RDA	recommended daily allowance
LDL	low-density lipoproteins	NMDA	<i>N</i> -methyl-D-aspartate	Rect	rectum
LFT	liver function tests	NPO	nothing by mouth	REM	rapid-eye movement
LR	lactated Ringer's solution	NRTI	nucleoside reverse transcriptase inhibitor	Resp	respiratory
MAO	monoamine oxidase	NS(S)	normal saline (solution)	RFT	renal function tests
MAOI	monoamine oxidase inhibitor	NSAIDs	non-steroidal anti-inflammatory drugs		

RNA	ribonucleic acid	supp	suppository	VT	ventricular tachycardia
R_x	prescription	tab	tablet	WBC	white blood cell
SA	sinoatrial	TB	tuberculosis	wk	week(s)
SAMe	S-adenosyl-L-methionine	tbs	tablespoon(s)	yr	year(s)
subcut (sc)	subcutaneously	tid	three times a day	↑	increased or high
sec(s)	second(s)	TNF	tumor necrosis factor	↓	decreased or low
SL	sublingual	Top	topically or topical		
SOB	shortness of breath	tsp	teaspoon		
SR	sustained release	VFib	ventricular fibrillation		
SSRIs	selective serotonin reuptake inhibitor(s)	VLDL	very low-density lipoproteins		
stat	immediately	VS	vital sounds		

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Introduction

Teaching and learning pharmacology is a large undertaking. Memorization of drugs as single entities is almost impossible, even for those of us with wonderful recall. After years of trial and error, I decided that grouping the drugs in classes would be the best method of instruction to promote student recall. *Pharm Phlash!* is the happy result of this type of instruction.

Pharm Phlash! is a tried and true method of pharmacology instruction. Students learn to take clues from both the generic and trade names. When I ask students “What kind of drug ends with ‘olol,’ ‘ilol,’ or ‘alol,’ they can tell me quickly that these are beta-adrenergic blockers. As a pharmacology instructor, this is music to my ears. I hope you will experience the same results.

I recommend that students practice their knowledge by reinforcing quizzes and tests. I have

written 8 quizzes and 2 tests that can be accessed on the DavisPlus website.

Medications are grouped in systems, and then into pharmacologic groups with similar action. There is a table of contents for general access and a full index alphabetized that will direct you by generic, brand name, and Canadian brand names (♦). The cards are designed with the drug names on the front with their body system and basic use.

On the back of the cards you will find

1. Therapeutic/Pharmacologic class (these are always listed in this order)
2. Indications for use of the drug
3. Action of the drug
4. Adverse Reactions/Side Effects detailing all reactions but important information will appear in bold, red type

5. Keep in Mind section that includes client teaching
6. Make the Connection area where information crucial to safe medication information is listed. Again extremely important information is in bold, red type. Laboratory and vital sign parameters are listed here, along with nursing implications and evaluative data.
7. Possible nursing diagnoses are listed to help with care planning activities.
8. Other applications for the drugs are listed as a cross-referencing tool.

This learning system is not meant to replace a complete drug reference book or pharmacology text. It is meant as a tool to mentally group and learn common drugs. Students who employ this system will “make the connection” and learn their medications, laboratory values that are important for safe administration, and vital sign parameters. Best of luck to all.

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GASTROINTESTINAL



Calcium Carbonate

(kal-see-um kar-bo-nate)

Os-Cal, Tums, Tums E-X,
Nephro-Calci
🍁 Apo-Cal

Calcium Gluconate

(kal-see-um gloo-koh-nate)

Kalcinate

Therapeutic/Pharmacologic Class

Mineral and electrolyte replacement/supplement; acid buffer/Electrolyte

Indications

Antacid treatment of gastritis. Treatment of electrolyte imbalance.

Action

Acts as an activator in the transmission of nerve impulses and contraction of cardiac, skeletal, and smooth muscle. Essential for bone formation and blood coagulation. Buffers acidity.

Adverse Reactions/Side Effects

CNS: syncope (IV only), tingling. **CV:** cardiac arrest (IV only), arrhythmias, bradycardia. **GI:** constipation, nausea, vomiting, rebound acidity. **GU:** calculi, hypercalciuria. **Local:** phlebitis (IV only).

Keep in Mind

Teach client:

- May cause constipation and rebound stomach acidity.

Nursing Dx: Risk for injury (cardiovascular, neurological); Risk for imbalanced nutrition (less or more than body requirements).

- Vitamin D must be taken in adequate amounts.
- Watch for signs of deficiency (paresthesias, Chvostek's sign, tremors).
- Excessive use (PO form) may result in arrhythmias.
- Avoid high-oxalate foods.
- Report any kidney discomfort or passage of sediment or stones.

**Make the Connection**

- Serum levels must be assessed prior to and after administration (9–10.5 mg/dL).
- Assess effectiveness if used for gastritis.
- Concurrent administration may render other medications useless. Give separately.
- **Monitor blood pressure, pulse, and ECG frequently throughout parenteral therapy. May cause vasodilation with resulting hypotension, bradycardia, arrhythmias, and cardiac arrest.**

Also Used for: Central nervous system applications (used as a reversal agent for magnesium sulfate toxicity).



Potassium Chloride

(po-tas-e-um clor-ide)

K-Dur, K-Lor, Klor-Con, Micro-K
ExtenCaps, Slow-K
* Apo-K, K-Long

Therapeutic/Pharmacologic Class

Mineral and electrolyte replacement and/or supplement

Indications

PO, IV: Treatment/prevention of depletion of minerals and electrolytes. **IV:** Treatment of arrhythmias due to digoxin toxicity.

Action

Maintains acid-base balance; essential for nerve conduction; essential for contraction of cardiac, skeletal, and smooth muscle.

Adverse Reactions/Side Effects

CNS: confusion, restlessness, weakness.

CV: **arrhythmias**, ECG changes. **GI:** abdominal pain, nausea, vomiting, flatulence, diarrhea, GI ulceration. **Neuro:** paralysis/paresthesia.

Local: (IV only) irritation at injection site.

Nursing Dx: Risk for injury (cardiovascular).

Keep in Mind

Teach client:

- Report unusual fatigue, weakness, or palpitations.
- Avoid foods with a high content of this mineral, such as melons, bananas, orange juice, potatoes, meats, and salt substitutes.



Make the Connection

- Serum level must be assessed prior to administration (3.5–5 mEq/L).
- Monitor for tented T-waves.
- As serum electrolyte levels decrease, the likelihood of digoxin toxicity increases.
- Intravenous solutions must not exceed 10 mEq/hour in adults.
- Sodium polystyrene sulfonate can be given to decrease toxic levels.
- Never give undiluted.

Sodium Bicarbonate

(soe-dee-um bye-kar-boe-nate)

Baking Soda, Bell-Ans, Citrocarbonate,
Neut, Soda Mint

Sodium Citrate and Citric Acid

(soe-dee-um sye-trate and sit-rik as-id)

Bicitra, Oracit

🍁 PMS-Dicitrate



Therapeutic/Pharmacologic Class

Antiulcer agent, antiurolithic, mineral replacement/
Alkalinizing agent

Indications

PO, IV: Management of metabolic acidosis. **PO, IV:** Alkalinization of urine and promotion of excretion of certain drugs in overdosage situations (phenobarbital, aspirin). **PO:** Antacid. Prevention of aspiration pneumonia during surgical procedures. Management of chronic metabolic acidosis associated with chronic renal insufficiency or renal tubular acidosis.

Action

Acts as an alkalinizing agent by releasing bicarbonate ions. Following oral administration, releases bicarbonate, which is capable of neutralizing gastric acid.

Therapeutic Effects: Alkalinization of body fluids. Neutralization of gastric acid. Increase of blood pH.

Adverse Reactions/Side Effects

CV: edema. **GI:** (PO) flatulence, gastric distention, diarrhea. **F and E:** **metabolic alkalosis**, hypernatremia, hypocalcemia, hypokalemia, sodium and water retention, fluid overload. **Local:** irritation at IV site. **Neuro:** tetany.

Nursing Dx: Fluid volume excess.

Keep in Mind

Teach client:

- Take medication as directed.
- Clients on chronic therapy should watch for symptoms of electrolyte imbalance and notify a health care professional if these symptoms occur.
- Taking milk products concurrently with this medication can result in renal calculi or hypercalcemia (milk-alkali syndrome).
- Dyspepsia that persists >2 wk should be evaluated by a health care professional.
- Clients on sodium-restricted diet should avoid use of baking soda as a home remedy for indigestion and high-sodium foods (canned, processed, pickled).



Make the Connection

- Monitor serum electrolyte level. This electrolyte must be in the 135–145-mEq/L range.
- Daily weights are the most reliable measure of fluid overload. Other assessments include intake and output, lung sounds, and presence of pitting edema.

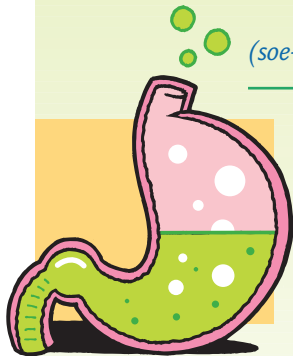
Also Used for: Urological system applications (to prevent certain types of renal calculi)

0.9% NaCl Solution (Isotonic); 5% Dextrose in Water (Isotonic)

(dex-tros)

0.45% NaCl Solution
(Hypotonic)

*(soe-dee-um **klor**-ide soe-**loo**-shun)*



Lactated Ringer's Solution (Isotonic)
*(lak-tate-ed **ring**-ers soe-**loo**-shun)*

Dextrose 5% and 0.9% NaCl (Hypertonic)

Dextrose 5% and 0.45% NaCl (Hypertonic)

Therapeutic/Pharmacologic Class

Intravenous solution

Indications

Increasing of blood pressure, hydration of interstitium and cells, pulling of fluid from the tissues and cells to the blood stream.

Action

Isotonic solution: increases circulating blood volume. Hypertonic solution: pulls fluid from interstitium and cells to the vascular space. Hypotonic solution: hydrates the interstitium and cells.

Adverse Reactions/Side Effects

CV: increase in blood pressure, bounding pulse.
Resp: hemoptysis. **GI:** abdominal distention, discomfort. **F and E:** fluid overload, decrease in serum electrolyte levels. **Local:** injection site infiltration, phlebitis.

Keep in Mind

Teach client:

- Report any pain or coolness at the injection site.
- Watch for signs of fluid overload.

Nursing Dx: Fluid volume deficit; Fluid volume excess; Risk for infection.

- Remind staff if site has not been changed in 96 hr.
- Compare circumference of the arms. If arm with the IV site is larger, inform staff.

**Make the Connection**

- Hypertonic solutions pull fluid into the vascular space.
- Hypotonic solutions hydrate the interstitial space and cells.
- Isotonic solutions increase the circulating blood volume.
- Solution types are chosen for specific reasons; check the orders to confirm that the correct solution is hanging and it is at the ordered rate of infusion.
- Assess the infusion site every 2 hr.
- These solutions are not for long-term nourishment.
- Monitor serum electrolyte levels and complete blood count daily.
- Daily weights might be taken. Lung sounds and intake and output must be assessed every shift.



Sodium Polystyrene Sulfonate

*(soe-dee-um po-lee-**stye**-reen **sul**-fon-ate)*

Kayexalate

🍁 K-Exit

Therapeutic/Pharmacologic Class

Hypokalemic, electrolyte modifier/Cationic exchange resin

Indications

Treatment of mild to moderate hyperkalemia. If severe, glucose/insulin infusion may be used.

Action

Exchanges sodium ions for potassium ions in the intestine (each 1 g is exchanged for 1 mEq potassium). **Therapeutic Effects:** Reduction of serum potassium levels.

Adverse Reactions/Side Effects

GI: constipation, fecal impaction, anorexia, gastric irritation, nausea, and vomiting. **F and E:** hypocalcemia, hypokalemia, sodium retention, hypomagnesemia.

Keep in Mind

Teach client:

- Report signs of hypokalemia, such as muscle weakness and fatigue.

Nursing Dx: Risk for injury (cardiovascular); Constipation.

- A low-sodium diet will be ordered.
- Foods with high-potassium level should be avoided (melons, bananas, orange juice, potatoes).
- Report constipation.

**Make the Connection**

- Assess ECG changes for hyperkalemia and hypokalemia.
- Monitor intake and output and daily weight. Assess for symptoms of fluid overload (dyspnea, rales/crackles, jugular venous distention, peripheral edema).
- Remember to keep potassium levels in the range of 3.5–5 mEq/L. As potassium levels fall, digoxin toxicity can occur.
- Assess abdomen, bowel sounds, and frequency of stools.
- Monitor all electrolyte levels.

Famotidine

(fa-moe-ti-deen)

Pepcid

Cimetidine

(sye-me-ti-deen)

Tagamet

✿ Apo-Cimetidine

Ranitidine

(ra-ni-ti-deen)

Zantac

✿ Zantac-C

Nizatidine

(ni-za-ti-deen)

Axid



Therapeutic/Pharmacologic Class

Antiulcer agent/Histamine H₂ receptor antagonist

Indications

Treatment of active duodenal ulcers and gastroesophageal reflux disease (GERD). Management of gastric hypersecretory states (Zollinger-Ellison syndrome).

IV: Prevention and treatment of upper GI bleed.

Action

Inhibit the action of histamine at the H₂-receptor site located primarily in gastric parietal cells, resulting in inhibition of gastric acid secretion.

Adverse Reactions/Side Effects

CNS: confusion, dizziness, drowsiness, hallucinations, headache. **CV:** **arrhythmias**. **GI:** constipation, diarrhea, drug-induced hepatitis, nausea. **GU:** decreased sperm count, impotence.

Endo: gynecomastia. **Hemat:** **agranulocytosis, aplastic anemia**. **Misc:** hypersensitivity reactions.

Nursing Dx: Risk for infection; Risk for constipation.

Keep in Mind

Teach client:

- Take medication as directed for the full course of therapy.
- Notify a health care professional if difficulty swallowing occurs or abdominal pain persists.
- Smoking interferes with the action of histamine receptor antagonists.
- Avoid alcohol, products containing aspirin or NSAIDs, excessive amounts of caffeine, and foods that may cause an increase in GI irritation.
- Report immediately signs of bone marrow suppression, such as bleeding, purpura, and sore throat.
- Report confusion or hallucinations immediately.



Make the Connection

- Monitor the CBC and differential counts daily.
- Other medications may be less effective because of increased stomach pH.
- Direct IV doses are given over specific time frames. Look it up.

Also Used for: Integumentary system applications (urticaria)



Esomeprazole

(es-o-mep-ra-zole)

Nexium

Omeprazole

(o-mep-ra-zole)

Prilosec; Prilosec OTC
🍁 Losec

Pantoprazole

(pan-toe-pra-zole)

Protonix; Protonix I.V.

Lanzoprazole

(lan-soe-pra-zole)

Prevacid

Therapeutic/Pharmacologic Class

Antiulcer agent/Proton (gastric) pump inhibitor

Indications

Treatment of GERD with or without esophageal erosion, duodenal ulcers (*Helicobacter pylori*), upper GI bleeds, and hypersecretory conditions.

Action

Decrease gastric acid by binding to an enzyme on gastric parietal cells. Prevents proton pump from releasing acid into the gastric lumen, raising gastric pH.

Adverse Reactions/Side Effects

CNS: headache. **Endo:** changes in blood glucose levels. **GI:** abdominal pain, flatulence, diarrhea.

Derm: rash.

Keep in Mind

Teach client:

- Avoid alcohol, ASA, NSAIDS, smoking, caffeine, and foods that cause gastric distress.

- Take drugs for duration ordered by health care provider.
- Report abdominal pain; diarrhea; or black, tarry stools to health care provider immediately.



Make the Connection

- Monitor liver enzymes.
- Best if given on an empty stomach 1 hr prior to other drugs or food.
- Monitor for improvement in symptoms.
- Lansoprazole IV must be given through a special filter. Pantoprazole IV is given direct IV, undiluted, over 2 min.
- Some capsules can be opened and sprinkled on applesauce, followed by water.
- Remember, clients can get too much of a good thing. We need stomach acid. Watch for digestive problems with foods *and* medications.

Nursing Dx: Readiness for enhanced comfort level.



Misoprostol

*(mye-soe-**prost**-ole)*

Cytotec

Therapeutic/Pharmacologic Class

Antiulcer agent, cytoprotective agent/Prostaglandin

Indications

Prevention of gastric mucosal injury from NSAIDs, including aspirin, in high-risk clients (elderly clients, debilitated clients, or those with a history of ulcers). With mifepristone for termination of pregnancy.

Unlabelled uses: Treatment of duodenal ulcers.

Action

Acts as a prostaglandin analog, decreasing gastric acid secretion and increases the production of protective mucus. Causes uterine contractions.

Adverse Reactions/Side Effects

CNS: headache. **GI:** abdominal pain, diarrhea, constipation, dyspepsia, flatulence, nausea, and vomiting. **GU:** **miscarriage**, menstrual disorders.

Keep in Mind

Teach client:

- Take medication as directed for the full course of therapy when first starting NSAID therapy.

Nursing Dx: Diarrhea; Readiness for enhanced comfort level; Risk for injury (reproductive).

- Misoprostol will cause spontaneous abortion. Contraception must be used throughout therapy.
- Report diarrhea persisting for more than 1 wk; the onset of black, tarry stools; or severe abdominal pain.
- Avoid alcohol, tobacco, and foods that may cause an increase in GI irritation.



Make the Connection

- Assess client routinely for epigastric or abdominal pain and for frank or occult blood in the stool, emesis, or gastric aspirate.
- Assess women of childbearing age for pregnancy. Misoprostol is usually begun on 2nd or 3rd day of menstrual period following a negative pregnancy test result.

Also Used for: Reproductive system applications (induction of labor/abortion)



Sucralfate

(soo-kral-fate)

Carafate

✿ Sulcrate

Therapeutic/Pharmacologic Class

Antiulcer agent/GI protectant

Indications

Management of peptic ulcers. Suspension used for mucositis/stomatitis/oral ulcers.

Action

Activated by stomach acid to form a thick, protective paste.

Adverse Reactions/Side Effects

CNS: dizziness and drowsiness. **GI:** constipation, diarrhea, indigestion, nausea. **Derm:** rash, pruritus.

Keep in Mind

Teach client:

- Report changes in bowel habit.
- Exercise, fiber, and fluids can stave off constipation.

Nursing Dx: Altered bowel elimination; Risk for injury (Pharmacologic).

- Take medication for entire course.
- Take 1 hr prior to meals on an empty stomach.
- May decrease effectiveness (absorption) of some medications. Check with health care provider.



Make the Connection

- Assess for effectiveness of medication.
- Monitor drug levels, such as phenytoin, to assess bioavailability.
- Tablets may begin to dissolve in the esophagus if client cannot swallow effectively, causing a choking risk. Tablet will go easily into suspension. Administer in this way with extra fluid.

Lansoprazole/Amoxicillin/ Clarithromycin

(lan-soe-pra-zole/a-mox-i-sil-in/kla-rith-roe-mye-sin)

(Prevacid/Amoxil/Biaxin)
PREVPAC

Bismuth Subsalicylate/ Metronidazole/Tetracycline

(biz-muth sub-sa-lis-i-late/me-troe-ni-da-zole/te-tra-sye-kleen)

Pepto-Bismol/Flagyl/Achromycin
HELIDAC



Therapeutic/Pharmacologic Class

Antiulcer agent/Anti-infective/Gastric pump inhibitor

Indications

Treatment of peptic ulcers related to *H. pylori* infection.

Action

Decrease gastric acidity. Eliminate *H. pylori* infection to cure gastric ulcers.

Adverse Reactions/Side Effects

GI: diarrhea, hepatic impairment. **Hemat:** Bone marrow suppression (anti-infective). **Reyes syndrome in age-susceptible children with associated viral infection (bismuth).** **GU:** Renal impairment, moniliasis.

Keep in Mind

Teach client:

- Take full course of therapy.
- Bismuth pack is taken with an H₂ histamine receptor blocker.
- Report any signs of bone marrow suppression or hypersensitivity reaction immediately.



Make the Connection

- Monitor effectiveness.
- Monitor CBC with differential count during therapy.
- Assess for rash.
- Monitor drug levels because these medications may cause elevations in commonly used drugs like digoxin.
- Salicylates can cause Reye's syndrome in susceptible persons.

Nursing Dx: Readiness for enhanced comfort level; Risk for infection.



Bismuth Subsalicylate

(biz-muth sub-sa-lis-i-late)

Pepto-Bismol

✿ PMS-Bismuth Subsalicylate

Attapulgate

(at-a-pull-gite)

Kaopectate

✿ Kaopectate

Therapeutic/Pharmacologic Class

Antidiarrheal/Adsorbent

Indications

To decrease water content of stool.

Action

Promote intestinal absorption of fluid and electrolytes. Absorbent.

Adverse Reactions/Side Effects

GI: hepatic impairment, constipation, change in stool color. **Immune:** risk for **Reyes syndrome (bismuth)**.

Keep in Mind

Teach client:

- Use pediatric preparations to prevent complications.

- Rest the gut; slowly introduce clear liquids (not apple juice).
- Use OTC electrolyte solutions for pediatric clients to prevent dehydration.
- If symptoms are not controlled within 24 hours, or if symptoms of dehydration (decreased urination, change in level of consciousness, weakness) occur, report immediately to health care provider.



Make the Connection

- Salicylates cause Reyes syndrome in pediatric clients.
- Monitor frequency and character of stools.

Nursing Dx: Diarrhea; Altered bowel elimination.

Also Used for: Gastrointestinal system applications (ulcers, Crohn's disease, ulcerative colitis)



Atropine

(at-ro-peen)

Atro-Pen

Hyoscyamine

(hi-oh-si-a-meen)

Anaspaz, Levsin

Therapeutic/Pharmacologic Class

Antispasmodic/Anticholinergic

Indications

Treatment of spastic bladder and bowel; including diverticulitis, infant colic, and biliary and renal colic; peptic ulcer disease; irritable bowel syndrome; and neurogenic bowel disturbances.

Action

Inhibit the muscarinic effect of acetylcholine in smooth muscle, secretory glands, and the CNS.

Adverse Reactions/Side Effects

CNS: confusion/excitement (especially in geriatric clients), dizziness, flushing, headache, insomnia, lightheadedness (IM, IV, SC), nervousness. **EENT:** blurred vision, cycloplegia, increased intraocular pressure, mydriasis, photophobia. **CV:** palpitations, tachycardia. **GI:** dry mouth, altered taste perception, bloated feeling, constipation, nausea, paralytic ileus, vomiting. **GU:** impotence, urinary hesitancy/retention.

Nursing Dx: Risk for impaired urinary elimination;
Readiness for enhanced bowel elimination pattern.

Derm: decreased sweating, urticaria. **Misc:** allergic reactions including **anaphylaxis**, fever (especially in children), suppression of lactation.

Keep in Mind

Teach client:

- Take exactly as directed.
- May cause drowsiness; avoid activities requiring alertness.
- Oral rinses, sugarless gum or candy, and frequent oral hygiene may help relieve dry mouth.
- Report change in urinary stream in males with BPH.

**Make the Connection**

• Anticholinergic medications cause symptoms that are categorized with the saying “hot as a hare, dry as a bone, red as a beet, mad as a hatter, and blind as a bat.”

Also Used for: Cardiovascular system applications (bradycardia), sensory system applications (glaucoma), neurological system applications (Parkinsonian tremor)

Diphenoxylate/ Atropine

(dye-fen-ox-i-late/a-troe-peen)

Lomotil

Loperamide

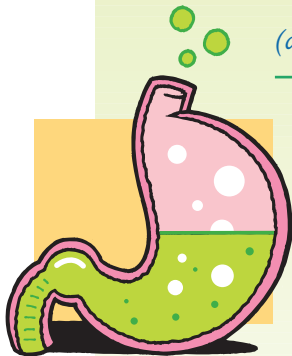
(loe-per-a-mide)

Imodium

Codeine

(koe-deen)

Codeine



Therapeutic/Pharmacologic Class

Antidiarrheal

Indications

Adjunctive therapy of acute diarrhea. Treatment of chronic diarrhea associated with inflammatory bowel disease. Decreases the volume of ileostomy drainage.

Action

Inhibit excess GI motility. Inhibit peristalsis and prolong transit time by a direct effect on nerves in the intestinal muscle wall. Reduce fecal volume, increase fecal viscosity and bulk while diminishing loss of fluid and electrolytes.

Adverse Reactions/Side Effects

CNS: drowsiness, dizziness, nervousness.

GI: constipation, abdominal pain/distention/discomfort, dry mouth, nausea, vomiting, ileus.

Misc: allergic reactions.

Keep in Mind

Teach client:

- When atropine is added, expect anticholinergic effects.

Nursing Dx: Constipation; Fluid volume deficit.

- Take with plenty of fluids.
- May cause drowsiness and dizziness.
- Use hard candy or sugarless gum to moisten mouth.
- Report any increased abdominal discomfort or urinary difficulties.

**Make the Connection**

- These drugs contain mild opioid agonists but have no analgesic effects. Combining mild opioids with atropine or other drugs decreases the likelihood of abuse.
- Drugs cause anticholinergic effects.
- Monitor intake and output, and character and number of stools.
- Check bowel sounds. An area of increased bowel sounds may indicate ileus, especially if additional clinical signs such as nausea and abdominal distention are present.
- Monitor liver function studies and serum amylase levels if on long-term therapy.



Alosetron

(a-low-se-tron)

Lotronex

Therapeutic/Pharmacologic Class

Anti-irritable bowel syndrome agent/5-HT₃ receptor inhibitor

Indications

Treatment of irritable bowel syndrome (IBS) characterized by diarrhea.

Action

5-HT₃ receptor site antagonism results in slowing of colonic transit time in IBS characterized by diarrhea.

Adverse Reactions/Side Effects

CNS: headache. **GI:** acute ischemic colitis, constipation, abdominal discomfort, abdominal distention, flatulence, nausea, GI viral infections, hemorrhoids, regurgitation or reflux.

Keep in Mind

Teach client:

- Take exactly as directed.
- Be aware of the risks and benefits of pharmacotherapy and the impact of IBS symptoms on

Nursing Dx: Readiness for enhanced bowel elimination pattern; Risk for injury (colonic).

one's life. This is especially important for those with IBS characterized by diarrhea because of the risk of acute ischemic colitis.

- Be aware of and watch for signs of acute ischemic colitis.
- Report worsening abdominal pain or rectal bleeding.



Make the Connection

- IBS can be characterized by either diarrhea or constipation.
- Monitor therapy and watch for signs of abdominal distress.
- Monitor bowel sounds.
- Note character, amount, and ease of stooling.



Psyllium

(sill-i-yum)

Metamucil,
🍁 Karacil

Methylcellulose

(meth-il-sell-you-lose)

Citrucel

Therapeutic/Pharmacologic Class

Laxative/Bulk-forming agent

Indications

Management of simple or chronic constipation, particularly if associated with a low-fiber diet. Useful in situations in which straining should be avoided (after myocardial infarction, rectal surgery, prolonged bed rest). Used in the management of chronic watery diarrhea.

Action

Combine with water in the intestines to form an emollient gel or viscous solution that promotes peristalsis and reduces transit time.

Adverse Reactions/Side Effects

Resp: bronchospasm. **GI:** cramps, intestinal or esophageal obstruction, nausea, and vomiting.

Keep in Mind

Teach client:

- Do not let the mixture gel prior to drinking as this may cause a choking risk.

Nursing Dx: Readiness for enhanced bowel elimination pattern; Knowledge deficit.

- Follow mixture with another 8 oz of fluid.
- Become aware of natural bowel patterns, and do not force a bowel movement.
- Do not take laxatives when abdominal pain, cramping, or fever is present.



Make the Connection

- Bulk-forming agents are used for both constipation and diarrhea.
- It is better to allow the natural processes of the body time to work to produce a bowel movement. Dietary choices, increasing fluid intake, and adding moderate exercise can promote regularity.
- Never allow the client, especially the elderly or those with risk of choking, to drink a gelled mixture.

Polyethylene Glycol/Electrolyte

(po-lee-eth-e-leen glye-kole/e-lek-troe-lite)

GoLYTELY, NuLytely, MIRALAX
🍁 Klean-Prep



Sodium Chloride/Sodium Bicarbonate/Potassium Chloride with Bisacodyl Slow Release Tablets

Halflytely

Therapeutic/Pharmacologic Class

Laxative/Osmotic, intestinal stimulant

Indications

Bowel cleansing in preparation for GI examination.

Unlabelled uses: Treatment of acute iron overdose in children.

Action

Polyethylene glycol (PEG) in solution acts as an osmotic agent, drawing water into the lumen of the GI tract.

Adverse Reactions/Side Effects

GI: abdominal fullness, diarrhea, bloating, cramps, nausea, vomiting. **Misc:** allergic reactions (rare).

Keep in Mind

Teach client:

- If using for bowel prep, fast for 3–4 hr prior to administration and never have solid food within 2 hr of administration.
- Clear liquids only are allowed after administration.
- If using the liquid prep, the client will drink 240 mL every 10 min until 4 L have been consumed or fecal discharge is clear and free of solid matter. Rapidly

Nursing Dx: Imbalanced nutrition, less than body requirements; Fluid volume deficit; Knowledge deficit.

drinking each 240-mL portion is preferred over drinking small amounts continuously.

**Make the Connection**

- May be administered on the morning of the examination as long as time is allotted to drink solution (3 hr) and evacuate bowel (1 additional hr). For barium enema, administer solution early in the evening (6 PM) prior to exam to allow proper mucosal coating by barium.
- **PO:** Solution may be reconstituted with tap water. Shake vigorously until powder is dissolved. May be administered via NG tube at a rate of 20–30 mL/min.
- When used as a laxative, may be mixed in 8 oz water and taken once daily up to 2 wk, then every 2–4 days as needed.
- It is better to stool naturally. Clients should be counseled on dietary choices, activity, and fiber intake.
- Monitor electrolytes, stool character, and subjective data from client.



Simethicone

(si-meth-i-kone)

Gas-X, Mylicon, Phazyme
🍁 Ovol

Therapeutic/Pharmacologic Class

Antiflatulent/Surfactant

Indications

Relief of painful symptoms of excess gas in the GI tract that may occur postoperatively or as a consequence of air swallowing, dyspepsia, peptic ulcer, or diverticulitis.

Action

Causes the coalescence of gas bubbles. Does not prevent the formation of gas.

Adverse Reactions/Side Effects

■ None

Keep in Mind

Teach client:

- Diet and exercise are important in the prevention of gas. This medication does not prevent the formation of gas.
- Notify health care professional if symptoms are persistent.
- Lie in fetal position with legs drawn to chest to relieve gas discomfort, especially after laparoscopic procedures.

Nursing Dx: Readiness for enhanced bowel elimination pattern; Pain.

- Eat, chew, and swallow slowly to prevent excess gas formation.
- Avoid carbonated beverages.



Make the Connection

- Assess client for abdominal pain, distention, and bowel sounds prior to and periodically throughout course of therapy. Frequency of belching and passage of flatus should also be assessed.
- Administer after meals and at bedtime for best results. Shake liquid preparations well prior to administration.
- Chewable tablets should be chewed thoroughly before swallowing, for faster and more complete results. Give the chewable tablets after other medications.
- Drops can be mixed with 30 mL of cool water, infant formula, or other liquid as directed. Shake well before administering.



Sennoside

(sen-oh-side)

Ex-Lax, Fletcher's
Castoria, Senokot

Bisacodyl

(bis-a-koe-dill)

Dulcolax
✿ Bisaco-Lax

Casanthranol & Docusate Sodium

(ka-san-thran-ole & dok-you-sate so-dee-um)

Peri-Colace

Therapeutic/Pharmacologic Class

Laxative/Stimulant laxative

Indications

Treatment of constipation, particularly when associated with slow transit time, constipating drugs, and irritable or spastic bowel syndrome.

Action

Active components alter water and electrolyte transport in the large intestine, resulting in accumulation of water and increased peristalsis.

Adverse Reactions/Side Effects

Neuro: dizziness, asthenia. **CV:** edema. **Resp:** shortness of breath. **GI:** cramping, diarrhea, nausea. **GU:** discoloration of urine. **F and E:** electrolyte abnormalities. **Misc:** laxative dependence.

Keep in Mind

Teach client:

- Take for short-term therapy only.
- This medication can cause urine to appear pink, red, violet, yellow, or brown.

Nursing Dx: Constipation; Diarrhea; Readiness for enhanced bowel elimination pattern.

- Clients with cardiac disease should avoid straining during bowel movements (Valsalva maneuver).
- Do not use laxatives when abdominal pain, nausea, vomiting, or fever is present.



Make the Connection

- Assess client for abdominal distention, presence of bowel sounds, and usual pattern of bowel function.
- Assess color, consistency, and amount of stool produced.
- Abnormal bowel habits can cause dependence on laxatives (impaired peristalsis), diverticula development, and hemorrhoids. Natural is better.
- These laxatives can be added to OTC “diet” aids.
- May be used as the initial part of bowel prep.



Lactulose

(lak-tyoo-lose)

Cephulac, Kristalose, Chronulac
✿ Lactulax

Therapeutic/Pharmacologic Class

Laxative/Osmotic

Indications

Treatment of chronic constipation in adults and geriatric clients. Used in diabetic clients with gastroparesis. Adjunct in the management of portal-systemic (hepatic) encephalopathy (PSE).

Action

Increases water content and softens the stool. Lowers the pH of the colon, which inhibits the diffusion of ammonia from the colon into the blood, thereby reducing blood ammonia levels.

Adverse Reactions/Side Effects

GI: belching, cramps, distention, flatulence, diarrhea. **Endo:** hyperglycemia (diabetic clients).

Keep in Mind

Teach client:

- Increasing bulk in the diet, fluid intake, and mobility are other effective forms of bowel regulation. Becoming aware of natural elimination patterns is important.

Nursing Dx: Constipation; Altered bowel elimination.

- Medication may cause belching, flatulence, or abdominal cramping. Notify health care professional if this becomes bothersome or if diarrhea occurs.



Make the Connection

- Assess client for presence of bowel sounds.
- PSE:** Assess mental status before and periodically throughout course of therapy.
- Monitor serum ammonia levels (\downarrow 25%–50%) and serum glucose levels if diabetic.
- Monitor serum electrolytes periodically. May cause diarrhea with resulting hypokalemia and hypernatremia. Metabolic acidosis can occur. Loss of GI fluid from above the waist (vomiting or NGT suction)=metabolic alkalosis, from below the waist (diarrhea) causes loss of base=metabolic acidosis.
- To administer enema, use rectal balloon catheter. Mix 300 mL of lactulose with 700 mL of water or 0.9% NaCl. Retain 30–60 min.



Docusate Calcium

(dok-yoo-sate kal-see-um)

Surfak; DC Softgels

Docusate Sodium

(dok-yoo-sate soe-dee-um)

Colace

🍁 Regulex

Therapeutic/Pharmacologic Class

Laxative, stool softener/Adsorbent

Indications

Prevention of constipation and straining at stool (cardiac clients, recent rectal surgery). Can be used rectally to soften fecal impaction.

Action

Adsorbent: pull water into stool. Increase electrolyte and water secretion into colon.

Adverse Reactions/Side Effects

GI: mild cramps. **EENT:** throat irritation.
Derm: rashes.

Keep in Mind

Teach client:

- Should be used for short-term use only and may take time to work.
- Follow instructions for natural promotion of bowel movement.

Nursing Dx: Constipation; Readiness for enhanced bowel elimination pattern.

- Choose foods to enhance elimination.
- Cardiac and surgical clients (rectal/ocular) should not strain.
- Never use when abdominal pain, nausea, vomiting, or fever exists.



Make the Connection

- This is not a stimulant laxative.
- Give with increased amounts of clear fluid.
- Do not give within 2 hr of other laxatives, especially mineral oil.
- Oral liquid is more palatable if diluted or mixed with juice.

Magnesium Oxide

(mag-*nee*-zhum *ox*-ide)

Mag-Ox 400

Magnesium Sulfate (IV)

(mag-*nee*-zhum *sul*-fate)

Magnesium Sulfate Inj

Magnesium Hydroxide

(mag-*nee*-zhum *hye*-drox-ide)

Dulcolax Magnesia Tablets,
Phillips Magnesia Tablets,
Phillips Milk of Magnesia, MOM



Therapeutic/Pharmacologic Class

Mineral and electrolyte replacement, supplement, laxative/Saline

Indications

Treatment/prevention of hypomagnesemia. As a laxative/bowel evacuant. PO liquid is also used as an antacid.

Action

Essential for the activity of many enzymes. Play an important role in neurotransmission and muscular excitability. Are osmotically active in GI tract, drawing water into the lumen and causing peristalsis.

Adverse Reactions/Side Effects

GI: diarrhea, bloating, cramping. **Derm:** flushing, sweating. **F and E:** electrolyte imbalance.

Keep in Mind

Teach client:

- Do not take this medication within 2 hr of taking other medications, especially fluoroquinolones, nitrofurantoin, and tetracyclines.

Nursing Dx: Constipation; Risk for fluid volume deficit.

- As an antacid: Report signs of GI bleeding (black, tarry stools; coffee-ground emesis).
- Laxatives should be used only for short-term therapy; long-term therapy may cause electrolyte imbalance and dependence.
- Notify health care professional if unrelieved constipation, rectal bleeding, or symptoms of electrolyte imbalance (muscle cramps or pain, weakness, dizziness) occur.



Make the Connection

- Monitor electrolytes carefully.
- If IV form of magnesium is used, deep tendon reflexes must be reactive.
- Watch blood pressure.

Also Used for: Reproductive system (IV) applications (preterm labor, preeclampsia), respiratory system (IV) applications (bronchodilation in asthma), cardiovascular system (IV) applications (Torsade de pointes).



Scopolamine

*(scoe-**pol**-a-meen)*

Isopto Hyoscine, Transderm-Scop,
* Transderm-V

Therapeutic/Pharmacologic Class

Antiemetic/Anticholinergic

Indications

Transdermal: Prevention of motion sickness. Management of nausea and vomiting associated with opioid analgesia or general anesthesia/recovery from anesthesia. Reduction of secretions in the dying client in hospice care. **IM, IV, Subcut:** Preoperatively for the production of amnesia and the reduction of salivation and excessive respiratory secretions.

Action

Inhibits the muscarinic activity of acetylcholine. Corrects the imbalance of acetylcholine and norepinephrine in the CNS, which may be responsible for motion sickness.

Adverse Reactions/Side Effects

CNS: drowsiness, confusion. **EENT:** blurred vision, mydriasis, photophobia. **CV:** tachycardia, palpitations. **GI:** dry mouth, constipation.

GU: urinary hesitancy, urinary retention.

Derm: decreased sweating.

Nursing Dx: Hyperthermia; Disturbed sensory perception.

Keep in Mind

Teach client:

- Medication may cause drowsiness or blurred vision. Avoid driving or other activities requiring alertness until response to medication is known.
- Use caution when exercising and in hot weather; overheating may result in heatstroke.
- Avoid concurrent use of alcohol and other CNS depressants with this medication. Frequent mouth rinses, good oral hygiene, and sugarless gum or candy may minimize dry mouth.
- Transdermal: Apply at least 4 hr (US product) before exposure to travel to prevent motion sickness. Apply to hairless site. May bathe with patch in place. Remove if eye pain or excessive side effects occur.



Make the Connection

- When using an anticholinergic, remember the saying “hot as a hare, dry as a bone, red as a beet, mad as a hatter, and blind as a bat” to help identify side effects.
- Assess client for nausea and vomiting periodically during therapy.
- Assess level of consciousness after surgical procedure.



Meclizine

(mek-li-zeen)

Antivert, Bonine, Dramamine II
✿ Bonamine

Therapeutic/Pharmacologic Class

Antiemetic/Antihistamine

Indications

Management/prevention of motion sickness and vertigo.

Action

Has central anticholinergic, CNS depressant, and antihistaminic properties. Decreases excitability of the middle ear labyrinth and depresses conduction in middle ear vestibular-cerebellar pathways.

Adverse Reactions/Side Effects

CNS: drowsiness, fatigue. **EENT:** blurred vision.

GI: dry mouth.

Keep in Mind

Teach client:

- Take medication exactly as directed. If a dose is missed, take as soon as possible unless almost time for next dose. Do not double doses.
- May cause drowsiness. Avoid driving or other activities requiring alertness until response to the medication is known.

Nursing Dx: Risk for injury; Altered oral mucous membrane; Nausea.

- Frequent mouth rinses, good oral hygiene, and sugarless gum or candy may decrease dryness of mouth.
- Avoid concurrent use of alcohol and other CNS depressants with this medication.
- When using as prophylaxis for motion sickness, take medication at least 1 hr before exposure to conditions that may cause motion sickness.

**Make the Connection**

- Assess client for level of sedation after administration.
- Assess client for nausea and vomiting before and 60 min after administration.
- Assess degree of vertigo periodically in clients receiving this medication for labyrinthitis.
- May cause false-negative results in skin tests using allergen extracts. Discontinue this medication 72 hr before testing.
- Administer oral doses with food, water, or milk to minimize GI irritation. Chewable tablet may be chewed or swallowed whole.

Also Used for: Sensory system applications (labyrinthitis)



Prochlorperazine

*(proe-klor-**pair**-a-zeen)*

Compazine
❖ Stemetil

Therapeutic/Pharmacologic Class

Antiemetic, antipsychotic/phenothiazine

Indications

Management of nausea and vomiting.

Action

Alters the effects of dopamine in the CNS. Possesses significant anticholinergic and alpha-adrenergic blocking activity. Depresses the chemoreceptor trigger zone (CTZ) in the CNS.

Adverse Reactions/Side Effects

CNS: neuroleptic malignant syndrome, extrapyramidal reactions, sedation. **EENT:** blurred vision, dry eyes, lens opacities. **CV:** ECG changes, hypotension, tachycardia. **GI:** constipation, dry mouth, anorexia, drug-induced hepatitis, ileus.

GU: pink or reddish-brown discoloration of urine, urinary retention. **Derm:** photosensitivity, pigment changes, rashes. **Endo:** galactorrhea.

Hemat: agranulocytosis, leukopenia.

Metab: hyperthermia. **Misc:** allergic reactions,

Reyes syndrome in children under 16 years of age.

Nursing Dx: Risk for injury; Nausea; Impaired physical mobility.

Keep in Mind

Teach client:

- Report uncontrolled tremor or muscle contraction immediately.
- Change positions slowly to minimize orthostatic hypotension.
- May cause drowsiness.
- Avoid taking alcohol or other CNS depressants concurrently with this medication.
- Use sunscreen and protective clothing to prevent photosensitivity reactions.
- Use good oral hygiene and sugarless gum or candy for dry mouth.
- Urine may turn pink to reddish-brown.

**Make the Connection**

- Side effects are serious. Never give to clients under age 16.
- Assess for extrapyramidal symptoms.
- Assess for relief of nausea and vomiting.
- Monitor chemistry panel and CBC with differential.

Also Used for: CNS mental health applications (antianxiety and antipsychotic agent)



Metoclopramide

(met-oh-kloe-pra-mide)

Reglan

🍁 Apo-Metoclop

Therapeutic/Pharmacologic Class

Antiemetic/gastric stimulant

Indications

Prevention of emesis related to chemotherapy and surgery. Reduction of GERD. Prevention of microaspiration in clients with enteral feedings.

Unlabeled use: treatment of hiccups.

Action

Blocks dopamine receptors in the chemoreceptor trigger zone (CTZ) of the CNS. Stimulates motility of the upper GI tract and accelerates gastric emptying.

Adverse Reactions/Side Effects

CNS: drowsiness, extrapyramidal reactions, **neuroleptic malignant syndrome**, anxiety, depression. **CV:** arrhythmias, hypertension, hypotension. **GI:** constipation, diarrhea, dry mouth, nausea. **Endo:** gynecomastia.

Hemat: methemoglobinemia, bone marrow suppression.

Nursing Dx: Nausea; Constipation; Risk for injury (neurological).

Keep in Mind

Teach client:

- May cause drowsiness.
- Report any tremor or uncontrollable muscle contraction immediately.
- Maintain hydration and protect from extremes of temperature.
- Avoid CNS depressants.

**Make the Connection**

- Assess for nausea, abdominal distention, and bowel sounds before giving.
- Assess for extrapyramidal effects.
- Observe for depression.
- Monitor hepatic panel and serum prolactin and aldosterone (increases).
- Have client rate nausea severity on a 0–10 scale.

Also Used for: Cardiovascular system applications (adjunctive management of migraines)



Ondansetron

(on-dan-se-tron)

Zofran

Granisetron

(gra-nees-e-tron)

Kytril

Therapeutic/Pharmacologic Class

Antiemetic/5-HT₃ receptor antagonist

Indications

Prevention of nausea and vomiting associated with chemotherapy and radiation therapy. **IM, IV:** Prevention and treatment of postoperative nausea and vomiting.

Action

Block the effects of serotonin at receptor sites (selective antagonist) located in vagal nerve terminals and in the chemoreceptor trigger zone in the CNS.

Adverse Reactions/Side Effects

CNS: headache, dizziness, drowsiness, fatigue, weakness. **GI:** constipation, diarrhea, abdominal pain, dry mouth, increased liver enzymes.

Neuro: extrapyramidal reactions.

Keep in Mind

Teach client:

- Take as directed.
- Notify health care professional immediately if involuntary movement of eyes, face, or limbs occurs.

**Make the Connection**

- Assess for extrapyramidal symptoms.
- Assess effectiveness of antiemetic on a 0–10 scale of nausea severity.
- Monitor for nausea, bowel sounds, and gastric distention.
- May cause transient ↑ in serum bilirubin, AST, and ALT levels.
- If giving direct IV, look up time frame for infusion.

Nursing Dx: Nausea; Risk for injury (neurological).



Dronabinol

(droe-nab-i-nol)

THC, Marinol

Nabilone

(na-bi-lone)

Cesamet

Therapeutic/Pharmacologic Class

Antiemetic, Appetite stimulant/Cannabinoid

Indications

Treatment of nausea and vomiting due to chemotherapy that has not responded to other conventional antiemetics. Stimulation of appetite in the cachexic client.

Action

Active ingredient in marijuana, with a wide variety of CNS effects, including inhibition of the vomiting control mechanism in the medulla oblongata.

Adverse Reactions/Side Effects

CNS: anxiety, concentration difficulty, confusion, dizziness, drowsiness, mood change, abnormal thinking, depression, disorientation, hallucinations, headache, impaired judgment, memory lapse, paranoia. **EENT:** dry mouth. **CV:** palpitations, syncope, tachycardia. **GI:** abdominal pain, nausea, vomiting. **Derm:** facial flushing. **Neuro:** ataxia, paresthesia. **Misc:** physical dependence, psychological dependence (high doses or prolonged therapy).

Nursing Dx: Nausea; Risk for unbalanced nutrition: less than body requirements; Risk for injury.

Keep in Mind

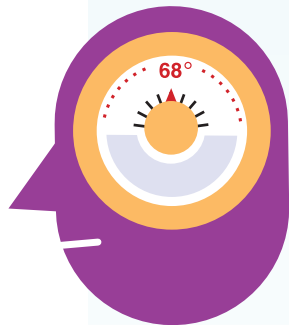
Teach client:

- Take exactly as directed.
- Signs of overdose (mood changes, confusion, hallucinations, depression, nervousness, fast or pounding heartbeat) may occur with increased doses.
- May cause dizziness, orthostatic hypotension, drowsiness, and impaired judgment and coordination.
- Avoid taking alcohol or other CNS depressants concurrently.

**Make the Connection**

- Monitor client closely for altered mental status.
- Monitor vital signs periodically during therapy.
- May cause anemia; monitor CBC.
- Appetite stimulation: Institute intake and output, daily weights, as well as calorie counts.

ENDOCRINE



Insulin Aspart, rDNA Origin

(*in-su-lin*)

Novolog

Insulin Lispro, rDNA Origin

(*in-su-lin*)

Humalog

Insulin Glulisine (rDNA Origin) Injection

(*in-su-lin*)

Apidra

Therapeutic/Pharmacologic Class

Antidiabetic agent, hormone/Pancreatic agent

Indications

Treatment of diabetes mellitus. These antidiabetic agents are described as very rapid-acting (onset 5–15 min, with peak 30–60 min).

Action

Lower blood glucose by stimulating glucose uptake in skeletal muscle and fat, inhibiting hepatic glucose production. Other actions are inhibition of lipolysis and proteolysis.

Adverse Reactions/Side Effects

Derm: urticaria. **Endo:** **hypoglycemia**, rebound hyperglycemia (Somogyi effect). **Local:** lipodystrophy (lipoatrophy, lipohypertrophy), itching, redness, swelling. **Misc:** allergic reactions, including **anaphylaxis**.

Nursing Dx: Readiness for enhanced nutrition metabolic pattern.

Keep in Mind

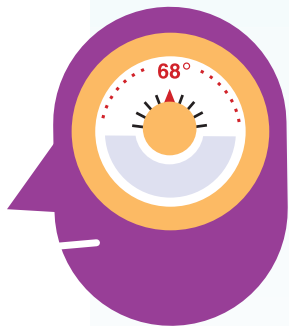
Teach client:

- Use U-100 syringes with solutions containing 100 units/mL.
- Sick days require more monitoring.
- Carry a source of glucose.
- Wear a Medic-Alert bracelet.
- **Watch for signs and symptoms of hypoglycemia and hyperglycemia, and know what to do if they occur.**



Make the Connection

- **Because of the high error rate, 2 nurses must check the insulin type and dose.**
- Very rapid-acting agents are called “dose and eat” for a reason. Onset 5–15 min!
- Memorize the peak time of these medications! Look for hypoglycemia (normal 70–120 mg/dL).
- Hypoglycemia looks like an anxiety attack with cold, clammy skin.



Regular Insulin

(in-su-lin)

Humulin R, Novulin R, Velosulin
🍁 Insulin-Toronto

Therapeutic/Pharmacologic Class

Antidiabetic agent, hormone/Pancreatic agent

Indications

Treatment of diabetes mellitus; can be used to treat diabetic ketoacidosis (DKA).

Action

Lowers blood glucose by stimulating glucose uptake in skeletal muscle and fat, inhibiting hepatic glucose production. Also inhibits lipolysis and proteolysis, enhancing protein synthesis.

Adverse Reactions/Side Effects

Derm: urticaria. **Endo:** **hyperglycemia**, rebound hyperglycemia (Somogyi effect). **Local:** lipodystrophy (lipatrophy, lipohypertrophy), itching, redness, swelling. **Misc:** allergic reactions, including **anaphylaxis**.

Keep in Mind

Teach client:

- Follow instructions for proper administration.
- Administer the insulin at the correct time. Its onset is 30 min.

Nursing Dx: Powerlessness; Readiness for enhanced individual coping.

- **Recognize signs and symptoms of hyperglycemia and hypoglycemia, and be aware of self-treatment measures if these occur.**
- Hypoglycemia occurs during the peak time of this drug (2–4 hr after injection).
- Consult with health care professional if feeling ill.



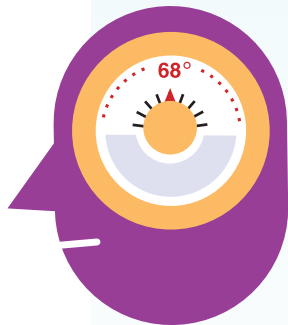
Make the Connection

- **Two nurses should check the insulin type, dosage, and expiration date.**
- Rotate injection sites. May be injected SC into abdominal wall, thigh, or upper arm.
- This is the only insulin type that can be given IV as a direct dose or continuous infusion.
- Monitor for hypoglycemia. This looks like a person having an anxiety attack with clammy skin.
- Remember the classic 3 “Ps” of diabetes (polyuria, polyphagia, and polydipsia).
- Long-term effects of poor glycemic control include neuropathy, nephropathy, and retinopathy.

Insulin Zinc Suspension, Extended (Ultralente Insulin)

Humulin U Ultralente

🍁 Novolin de Ultralente



Neutral Protamine Hagedorn (NPH) Insulin (Isophane Insulin Suspension) Intermediate Type

Humulin N

🍁 Novolin ge NPH

Therapeutic/Pharmacologic Class

Antidiabetic agent, hormone/Pancreatic agent

Indications

Treatment of diabetes mellitus. Because of the delayed and prolonged duration, cannot be used in the acute treatment of diabetic ketoacidosis. Intermediate suspensions have onset of 1–2 hr and peak of 4–12 hr. Extended suspensions (Ultra Lente) have onset of 4–6 hr, with peak at 18–24 hr.

Action

Lowering of blood glucose levels by stimulating glucose uptake in skeletal muscle and fat, inhibiting hepatic glucose production. Other actions include inhibition of lipolysis and proteolysis.

Adverse Reactions/Side Effects

Derm: urticaria. **Endo:** hypoglycemia, rebound hyperglycemia (Somogyi effect). **Local:** lipodystrophy (lipoatrophy, lipohypertrophy), itching, redness, swelling. **Misc:** allergic reactions, including **anaphylaxis**.

Nursing Dx: Readiness for enhanced nutritional metabolic pattern.

Keep in Mind

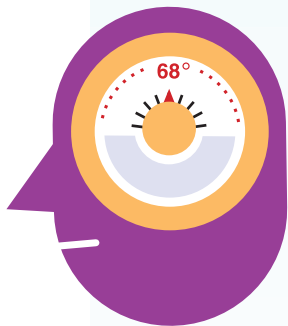
Teach client:

- Proper use of syringes and vials is important, as is the proper storage of the insulin.
- Testing of serum glucose and ketones is important, especially for sick day care.
- Carry a glucose source and wear a Medic-Alert bracelet!
- Carbohydrate counting is a useful method for diet planning to control blood glucose.
- **Know signs of hypoglycemia and hyperglycemia and actions to take.**
- Notify health care professional if pregnancy is planned or suspected.



Make the Connection

- **Due to high error rate, 2 licensed nurses must confirm solution and dose.**
- Memorize peak times. Hypoglycemia will happen during these times.
- Hypoglycemia looks like an anxiety attack with cold, clammy skin.



Insulin Detemir

(in-su-lin)

Levemir

Insulin Glargine

(in-su-lin)

Lantus

Therapeutic/Pharmacologic Class

Antidiabetic agent, hormone/Pancreatic agent

Indications

Treatment of diabetes mellitus. Because of its delayed onset (1-2 hr) and prolonged duration, medication cannot be used in the acute treatment of diabetic ketoacidosis (DKA).

Action

Lower blood glucose by stimulating glucose uptake in skeletal muscle and fat; inhibit hepatic glucose production. Other actions include inhibition of lipolysis and proteolysis, and enhanced protein synthesis.

Adverse Reactions/Side Effects

Derm: urticaria. **Endo:** **hypoglycemia**, rebound hyperglycemia (Somogyi effect). **Local:** lipodystrophy (lipatrophy, lipohypertrophy), itching, redness, swelling. **Misc:** allergic reactions, including **anaphylaxis**.

Nursing Dx: Powerlessness; Readiness for enhanced individual coping.

Keep in Mind

Teach client:

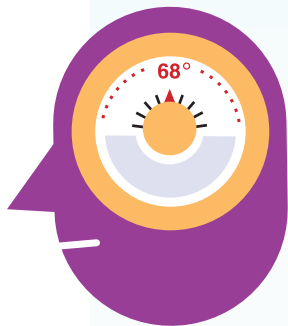
- Follow instructions for proper administration techniques.
- Make sure that U-100 syringes are used with 100-unit/mL insulin.
- The onset is from 1–2 hr.
- **Recognize signs and symptoms of hyperglycemia and hypoglycemia, and be aware of self-treatment measures if these occur.**
- Carry a simple sugar or glucose tablets in case of hypoglycemia.
- Consult with health care professional if feeling ill.
- Follow instructions for testing blood glucose.



Make the Connection

• **Two nurses should check the insulin type, dosage, and expiration date. Insulin-related medication errors have resulted in client harm and death.**

- Rotate injection sites.
- Monitor for hypoglycemia. This looks like a person having an anxiety attack with cool, clammy skin.
- Basal insulins cannot be mixed.



Pramlintide

(pram-lin-tide)

Symlin

Therapeutic/Pharmacologic Class

Antidiabetic agent/Synthetic analogue of human amylin.

Indications

Treatment of type 1 and type 2 diabetes in conjunction with other antidiabetic agents.

Action

Slows the rate of gastric emptying, reducing the amount of glucose absorbed postprandially.
Decreases the level of glucagon and reduces appetite.

Adverse Reactions/Side Effects

CNS: anxiety, blurred vision, **seizures, coma,** headache, nightmares, dizziness, depression, confusion. **Derm:** cool, pale skin. **Resp:** cough, pharyngitis, shortness of breath, wheezing.

GI: difficulty swallowing, vomiting, weight loss, increased hunger. **MS:** muscle pain or stiffness, pain in joints. **CV:** fast heartbeat, tightness in chest. **Misc:** hives; itching; puffiness or swelling of the eyelids or around the eyes, face, lips, or tongue; skin rash; and other allergic reactions, including **anaphylaxis.**

Nursing Dx: Readiness for enhanced metabolic patterns; Risk for injury (pharmacologic).

Keep in Mind

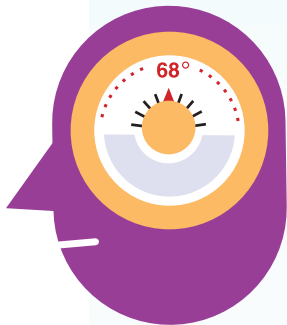
Teach client:

- Take the drug exactly as prescribed, at mealtimes.
- Do not mix this drug in the same syringe with insulin.
- Refrain from activities requiring alertness until the effect on blood glucose is determined.
- **Do not drink alcohol, as this may result in severe hypoglycemia.**
- **Watch for signs and symptoms of hypoglycemia, and know what to do in case they occur.**



Make the Connection

- Review baseline Hgb A_{1c} level and recent blood glucose tests to plan care based on patterns of glycemic control. Postprandial levels are the best indicator of control.
- A U-100 syringe is used to give this drug.
- Rotate injection sites.
- Watch for hypoglycemia within the first 3 hr following injection.
- Monitor for severe nausea and vomiting.



Exenatide

(ex-en-a-tide)

Byetta

Therapeutic/Pharmacologic Class

Antidiabetic agent/Incretin mimetic agent

Indications

Treatment of type 2 diabetes uncontrolled by metformin and/or a sulfonylurea. Control of postprandial glucose levels.

Action

Mimics the action of incretin, which promotes insulin secretion from pancreas, decreases absorption of glucose from the gut, decreases the action of glucagon, and decreases appetite.

Adverse Reactions/Side Effects

CV: dizziness, headache, jitteriness, weakness.

GI: diarrhea, nausea, vomiting, dyspepsia, gastrointestinal reflux. **Derm:** hyperhidrosis.

Metab: ↓ appetite, weight loss.

Keep in Mind

Teach client:

- Administer 60 min before a meal. Do not take after a meal.

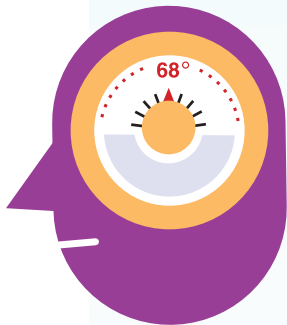
Nursing Dx: Readiness for enhanced nutritional metabolic pattern; Knowledge deficit.

- Follow instructions for SC administration with prefilled pens.
- Follow prescribed diet, medication, and exercise regimen to remain euglycemic.
- Watch for signs of hypoglycemia and hyperglycemia.
- Stomach emptying is delayed with this medication, which may interfere with other medications. Take medications 1 hr prior to this drug.
- Wear a Medic-Alert bracelet.



Make the Connection

- Monitor serum glucose, liver function tests, and weight.
- Remember, this drug is given by an invasive route.
- An incretin mimetic acts like GLP-1, a hormone that helps to decrease appetite and regulate glucose levels, especially postprandial levels (after meals).



Metformin

(met-for-min)

Fortamet, Glucophage,
Glucophage XR
🍁 Novo-Metformin

Therapeutic/Pharmacologic Class

Antidiabetic agent/Biguanide

Indications

Management of type 2 diabetes mellitus; may be used with diet, insulin, or sulfonylurea oral hypoglycemics.

Action

Decreases hepatic glucose production. Decreases intestinal glucose absorption. Increases sensitivity of the cell receptors to insulin.

Adverse Reactions/Side Effects

GI: abdominal bloating, diarrhea, nausea, vomiting, unpleasant metallic taste. **Endo:** hypoglycemia.

F and E: lactic acidosis. **Misc:** decreased vitamin B₁₂ levels.

Keep in Mind

Teach client:

- Follow prescribed diet, medication, and exercise regimen to remain euglycemic.
- **Symptoms of lactic acidosis should be reported to the health care professional immediately.**

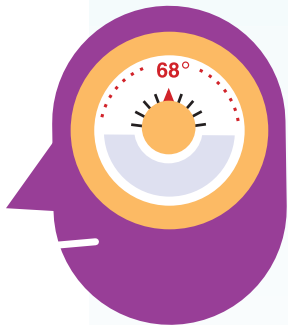
Nursing Dx: Risk for injury; Knowledge deficit.

- Inform health care professional of medication regimen before diagnostics or surgery.



Make the Connection

- Remember, this drug works differently from an insulin secretagogue, so it is used in combination with other antidiabetic agents.
- Lactic acidosis occurs more frequently in persons with renal insufficiency.
- Assess renal function before initiating and at least annually during therapy.
- Monitor liver function tests, creatinine level, serum folic acid, and vitamin B₁₂.
- This drug, when combined with iodinated contrast dye, can cause kidney damage. The drug should be held on the day of the imaging procedure and for 48 hr after.
- **XR tablets must be swallowed whole; do not crush or chew.**



Sitagliptin

(sit-a-glip-tin)

Januvia

Therapeutic/Pharmacologic Class

Antidiabetic agent/Enzyme inhibitor

Indications

Adjunct to diet and exercise to improve glycemic control in clients with type 2 diabetes mellitus; may be used as monotherapy or combination therapy with metformin or a thiazolidinedione.

Action

Inhibits the enzyme dipeptidyl peptidase-4 (DPP-4), which slows the inactivation of incretin hormones. These hormones are released by the intestine throughout the day and are involved in appetite control, increase in insulin release, and decrease in glucagon levels.

Adverse Reactions/Side Effects

■ **CNS:** headache.

Nursing Dx: Readiness for enhanced nutritional metabolic pattern; Knowledge deficit.

Keep in Mind

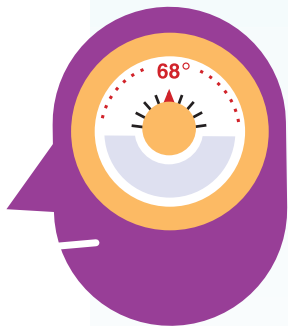
Teach client:

- Watch for signs and symptoms of hypoglycemic reactions, especially if combined with other antidiabetic agents.
- Monitor glucose as directed.
- May be administered without regard to food.
- Follow prescribed diet, medication, and exercise regimen to remain euglycemic.
- Do not use during pregnancy or if lactating.
- Wear a Medic-Alert bracelet.



Make the Connection

- This antidiabetic works differently than a secretagogue.
- Often combined with another antidiabetic.



Repaglinide

(re-pag-gli-nide)

Gluconorm, Prandin

Nateglinide

(na-teg-li-nide)

Starlix

Therapeutic/Pharmacologic Class

Antidiabetic agent/Meglitinide

Indications

Treatment of type 2 diabetes mellitus, with diet and exercise; may be used with metformin, rosiglitazone, or pioglitazone.

Action

Stimulate the release of insulin from pancreatic beta cells by closing potassium channels, which results in the opening of calcium channels in beta cells. This is followed by release of insulin. This is a secretagogue.

Adverse Reactions/Side Effects

CV: angina, chest pain. **Endo:** hypoglycemia, hyperglycemia.

Keep in Mind

Teach client:

- Take 30 min before each meal, exactly as directed.
- Follow prescribed diet, medication, and exercise regimen to remain euglycemic.

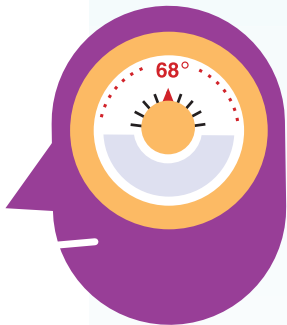
Nursing Dx: Risk for injury; Readiness for enhanced nutritional metabolic pattern.

- Watch for signs of hypoglycemia and hyperglycemia, and take appropriate action.
- Test blood glucose levels before meals and before bed.
- Wear Medic-Alert bracelet.
- Not recommended during pregnancy; insulin is safer.
- Concurrent use of chromium and coenzyme Q₁₀ can cause an increase in hypoglycemia.
- Blood glucose levels may rise with emotional or physiological stress.



Make the Connection

- Know the normal serum glucose level and Hgb A_{1c}. The nurse must act appropriately if these levels are abnormal.
- Do not give this medication if the blood glucose level is low or if the client is NPO.
- Notice the clue in the brand name indicating that these drugs reduce postprandial glucose levels.



Acarbose

(aye-kar-bose)

Precose

Miglitol

(mi-gli-tole)

Glyset

Therapeutic/Pharmacologic Class

Antidiabetic agent/alpha-glucosidase inhibitors

Indications

Management of diabetes in conjunction with dietary therapy; may be used with insulin or other hypoglycemic agents.

Action

Lowers blood glucose by inhibiting the enzyme alpha-glucosidase in the GI tract. Sucrose is not digested and passes through the GI tract unchanged.

Adverse Reactions/Side Effects

GI: abdominal pain, diarrhea, flatulence, ↑ in transaminases.

Keep in Mind

Teach client:

- Watch for signs of hypoglycemia and hyperglycemia, and take appropriate actions.
- Follow prescribed diet, medication, and exercise regimen to remain euglycemic.

Nursing Dx: Altered bowel elimination; Readiness for enhanced nutritional metabolic pattern.

- **Carry an oral form of glucose for hypoglycemia. Remember that sucrose is not digested.**
- Wear a Medic-Alert bracelet.
- Monitor blood glucose levels. Do not take the medication if glucose level is low.
- High sucrose intake causes increased GI side effects.



Make the Connection

- It is very important to remember that this drug stops sucrose from being digested and used to increase the blood glucose level; so the old remedy of candy, table sugar, or cake icing will not work.
- Memorize serum glucose (65–110 mg/dL range) and Hgb A_{1c} (below 7) levels.
- Monitor transaminases after baseline obtained.
- This medication alone does not cause hypoglycemia, but it is often used with other antidiabetics and potentiates their effect.
- Administer with first bite of each meal 3 times/day.

Glipizide

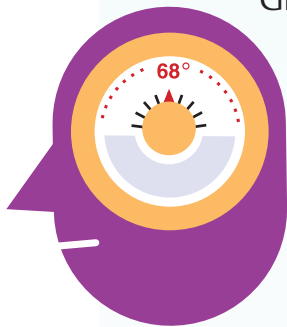
(glip-i-zide)

Glucotrol, Glucotrol XL

Glimepiride

(glye-me-pi-ride)

Amaryl



Glyburide

(glye-byoo-ride)

DiaBeta, Micronase, Glynase PresTab
🍁 Apo-Glyburide

Therapeutic/Pharmacologic Class

Antidiabetic agent/Sulfonylurea

Indications

PO: Treatment of type 2 diabetes mellitus, as an adjunct to diet therapy or in cases of insulin resistance.

Action

Lower blood sugar by stimulating the release of insulin from the pancreas (secretagogue) and increasing the sensitivity to insulin at receptor sites. May also decrease hepatic glucose production.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, headache, weakness.

GI: constipation, cramps, diarrhea, drug-induced hepatitis, dyspepsia, increased appetite, nausea, vomiting. **Derm:** photosensitivity, rashes.

Endo: hypoglycemia. **F and E:** hyponatremia.

Hemat: **aplastic anemia**, agranulocytosis, leukopenia, pancytopenia, thrombocytopenia.

Keep in Mind

Teach client:

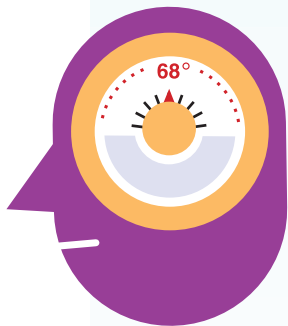
- Watch for signs of hypoglycemia and take appropriate actions.
- Follow prescribed diet.
- Monitor glucose levels before meals and at bedtime.
- May occasionally cause dizziness or drowsiness. Avoid activities requiring alertness.
- Do not use alcohol (disulfiram effect).
- Use sunscreen to prevent rash and burns.
- Wear a Medic-Alert bracelet.
- Report sore throat, unusual bruising, shortness of breath, rash, or hives immediately.



Make the Connection

- Monitor glucose and Hgb A_{1c} levels, postprandial glucose levels, complete blood count (CBC) with differential count, liver and renal studies.
- Assess client for allergy to sulfonamides. Remember that cross-sensitivity can occur.

Nursing Dx: Risk for injury; Readiness for enhanced nutritional metabolic pattern.



Rosiglitazone

*(roe-zi-**glit**-a-zone)*

Avandia

Pioglitazone

*(pi-o-**glit**-a-zone)*

Actos

Therapeutic/Pharmacologic Class

Antidiabetic agent/Thiazolidinedione

Indications

Treatment of type 2 diabetes mellitus, as an adjunct to diet and exercise. May be used alone or with other diabetic agents.

Action

In insulin resistance, improves receptor affinity of cells for glucose.

Adverse Reactions/Side Effects

CV: CHF, edema. **Derm:** urticaria. **Hemat:** anemia. **Metab:** Increased cholesterol, LDL, and HDL; weight gain. **Misc:** angioedema (rare).

Keep in Mind

Teach client:

- Does not cause hypoglycemia and can be taken without regard to food.

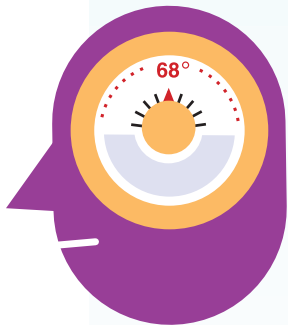
- If taken with other antidiabetic agents, monitor for signs and symptoms of hypoglycemia and take appropriate action.
- Laboratory studies will be necessary to assess glycemic control, liver function, lipid profile, and renal function.
- Report edema, sudden weight gain, or shortness of breath immediately.



Make the Connection

- Not for use in pregnant or lactating women.
- Weigh the client and assess lungs for crackles (CHF).
- Monitor lab chemistries, CBC, and brain natriuretic peptide (BNP) (especially in those clients with a history of CHF).

Nursing Dx: Risk for injury; Readiness for enhanced nutritional metabolic pattern.



Glucagon

(gloo-ka-gon)

GlucaGen

Therapeutic/Pharmacologic Class

Hormone/Pancreatic agent

Indications

Acute management of severe hypoglycemia.

Action

Stimulates hepatic production of glucose from glycogen stores. Relaxes the musculature of the GI tract, temporarily inhibiting movement. Has a positive inotropic and chronotropic effect on the heart.

Adverse Reactions/Side Effects

CV: transient increase in heart rate and blood pressure. **GI:** nausea, vomiting. **Misc:** hypersensitivity reactions, including **anaphylaxis**.

Keep in Mind

Teach client:

- Used for hypoglycemia. It looks like an anxiety attack with cold, clammy skin.

Nursing Dx: Risk for injury; Nausea.

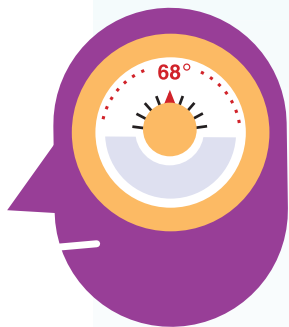
- Follow instructions for administering the injection. Teach family members how to give the injection in case of emergency.
- Oral glucose and a protein should be consumed after the severe hypoglycemic episode is corrected.
- If hypoglycemia causes unconsciousness, position the family member on their side.
- Wear a Medic-Alert bracelet.



Make the Connection

- Know the signs of hypoglycemia.
- Hypoglycemia will occur at antidiabetic agents' peak times.
- Monitor glucose levels for 3–4 hr after administration.
- May be given IV.

Also Used for: Gastrointestinal applications (relaxation of smooth muscle of the gut during radiographs when barium is used)



Levothyroxine

(lee-voe-thye-rox-een)

Levothroid, Levoxyl,
Synthroid
🍁 PMS-Levothyroxine
Sodium

Liotrix

(lye-oh-trix)

Thyrolar

Liothyronine

(lye-oh-thye-roe-neen)

Cytomel, Triostat

Thyroid

(thye-royd)

Armour Thyroid

Therapeutic/Pharmacologic Class

Hormone/Thyroid preparation

Indications

Replacement therapy in clients without thyroid hormone, or pharmacologic doses to enhance diminished thyroid function. Replacement or pharmacologic doses in neonates to correct inborn errors of metabolism (prevents developmental delay).

Action

Metabolism of all nutrients is increased, promoting cell growth and increased protein synthesis.

Adverse Reactions/Side Effects

CNS: insomnia, irritability, nervousness, headache. **CV:** **cardiovascular collapse**, arrhythmias, tachycardia, angina pectoris, blood pressure changes, increased cardiac output.

GI: cramps, diarrhea, vomiting. **Derm:** hair loss in children, diaphoresis. **Endo:** hyperthyroidism, menstrual irregularities. **Metab:** weight loss, heat intolerance. **MS:** accelerated bone maturation in children.

Nursing Dx: Fatigue; Ineffective tissue perfusion; Activity intolerance.

Keep in Mind

Teach client:

- Take medication in the morning.
- Report chest pain, palpitations, or dizziness immediately.
- Full effects may not be felt for several weeks.
- Report excessive weight loss.



Make the Connection

- The previously sluggish heart will beat faster, increasing myocardial O₂ needs. This may lead to angina or even MI.
- Monitor T₃, T₄, and thyroid-stimulating hormone (TSH) levels (TSH is high when thyroid function is low).
- Monitor glucose, weight, and increasing physical and mental energy.

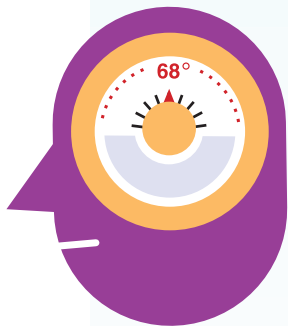
Calcitonin (Salmon)

(kal-si-toe-nin)

Calcimar, Miacalcin,
Osteocalcin, Salmonine

Calcitonin (rDNA)

Fortical



Therapeutic/Pharmacologic Class

Hypocalcemic agent/Hormone

Indications

Treatment of Paget's disease of bone. Adjunctive therapy for hypercalcemia. Management of postmenopausal osteoporosis. Treatment of hypercalcemia related to bone cancer.

Action

Decrease serum calcium by a direct effect on bone, kidney, and GI tract. Promote renal excretion of calcium. Routes include intranasally, IM, and SC.

Adverse Reactions/Side Effects

CNS: headaches. **EENT:** intranasal only—epistaxis, nasal irritation, rhinitis. **GI:** nausea, vomiting, altered taste, diarrhea. **GU:** urinary frequency.

Derm: rashes. **Local:** injection site reactions.

MS: arthralgia, back pain. **Misc:** allergic reactions, including **anaphylaxis**, facial flushing; swelling, tingling, and tenderness in the hands.

Nursing Dx: Readiness for enhanced activity-exercise pattern; Risk for injury.

Keep in Mind

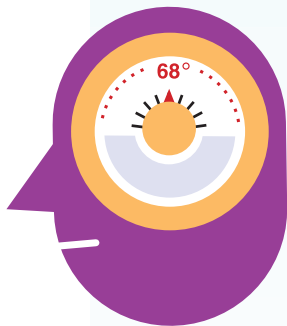
Teach client:

- Take medication exactly as directed.
- Report allergy to salmon or other seafood.
- Flushing and warmth may occur (1 hr).
- Diet should be high in calcium and vitamin D.
- Alternate nares daily when using nasal spray, to avoid nose bleeds.
- Weight-bearing exercise is beneficial for treatment of osteoporosis.



Make the Connection

- **Observe client for signs of hypersensitivity.**
- Assess for tetany, monitor the ECG, and check for Chvostek's and Trousseau's signs.
- Monitor serum calcium levels (8–11 mg/dL). The drug name rhymes with “cali-bone-in.”
- Ask the client to report nasal irritation.



Methimazole

(meth-im-a-zole)

Tapazole

Propylthiouracil

(proe-pill-thye-oh-yoor-a-sill)

PTU

🍁 Propyl-Thyracil

Therapeutic/Pharmacologic Class

Antithyroid agent

Indications

Palliative treatment of hyperthyroidism. An adjunct to control hyperthyroidism in preparation for thyroidectomy or radioactive iodine therapy.

Action

Inhibit the synthesis of thyroid hormones.

Adverse Reactions/Side Effects

CNS: drowsiness, headache, vertigo. **GI:** diarrhea, drug-induced hepatitis, loss of taste, nausea, parotitis, vomiting. **Derm:** rash, skin discoloration, urticaria. **Hemat:** **agranulocytosis**, anemia, leukopenia, thrombocytopenia. **MS:** arthralgia.

Misc: fever, lymphadenopathy.

Keep in Mind

Teach client:

- Monitor weight 2–3 times/wk. Notify health care professional of significant changes.
- May cause drowsiness.

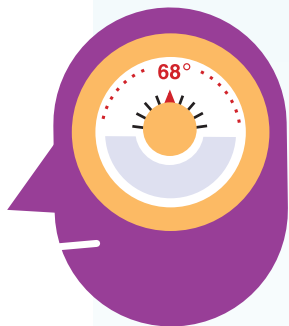
Nursing Dx: Risk for injury; Risk for imbalanced body temperature; Risk for infection.

- Report sore throat, unusual bleeding, bruising, pallor, shortness of breath, or extreme fatigue immediately.
- Wear a Medic-Alert bracelet.
- Lab tests will be done frequently to assess effectiveness of the drug.



Make the Connection

- Watch for thyroid storm (thyrotoxicosis), characterized by tachycardia, palpitations, nervousness, insomnia, fever, diaphoresis, heat intolerance, tremors, and weight loss.
- Conversely watch for signs of hypothyroidism.
- Assess client for skin rash or swelling of cervical lymph nodes. Treatment may be discontinued if this occurs.
- Monitor thyroid function studies at baseline and when treatment is initiated.
- **Monitor for bone marrow suppression.**
- Monitor liver function tests.



Cortisone
(kor-ti-sone)

 Cortone

Hydrocortisone
(hye-droe-kor-ti-sone)

Cortef, Cortifoam,
Solu-Cortef

Methylprednisolone
(meth-ill-pred-niss-oh-lone)

Medrol, Solu-Medrol
(IV), PredPak

Prednisone
(pred-ni-sone)

Deltasone, Liquid
Pred, Meticorten

Therapeutic/Pharmacologic Class

Anti-inflammatory (steroidal) agent, immunosuppressant/Glucocorticosteroid

Indications

Systemic and local treatment of a wide variety of inflammatory diseases and conditions. Replacement therapy in adrenal insufficiency.

Action

Suppresses inflammation and the normal immune response.

Adverse Reactions/Side Effects

CNS: depression, euphoria, headache, increased intracranial pressure (children only), personality changes, psychoses, restlessness. **EENT:** cataracts, increased intraocular pressure. **CV:** hypertension.

GI: peptic ulceration. **Derm:** acne, decreased wound healing, ecchymoses, fragility, hirsutism, petechiae.

Endo: adrenal suppression, hyperglycemia. **F and E:** fluid retention, hypokalemia. **Hemat:** thromboembolism, thrombophlebitis. **Metab:** weight gain, hyperglycemia. **MS:** muscle wasting, osteoporosis,

Nursing Dx: Risk for infection; Hyperglycemia.

aseptic necrosis of joints, muscle pain. **Misc:** cushingoid appearance, increased susceptibility to infection.

Keep in Mind

Teach client:

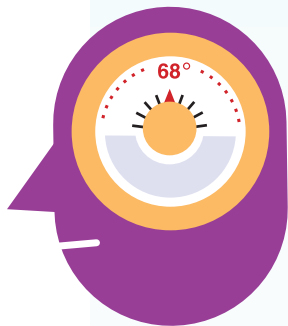
- Do not stop the medication suddenly.
- Avoid grapefruit juice and limit caffeine when taking oral forms.



Make the Connection

- Monitor intake and output, daily weights, edema, lung sounds, serum electrolytes, CBC, and glucose level.
- Give with food in the AM to decrease gastric upset and mimic natural cortisol.

Also Used for: Neurologic applications (acute spinal cord injury); respiratory applications (PO and inhalant forms to decrease airway inflammation); integumentary applications (PO and topical for dermatitis); immune system applications (PO/IV to reduce auto-immune reactions); renal applications (PO to reduce inflammation in the nephron); cancer treatment applications (palliative to reduce inflammation at tumor sites); GI applications (PO/IV to reduce inflammation of Crohn's disease and ulcerative colitis).



Fludrocortisone

(floo-droe-kor-ti-sone)

Florinef

Therapeutic/Pharmacologic Class

Hormone/Corticosteroid (mineralocorticoid)

Indications

Treatment of sodium loss and hypotension associated with adrenocortical insufficiency (given with hydrocortisone or cortisone). Management of sodium loss due to congenital adrenogenital syndrome (congenital adrenal hyperplasia). **Unlabelled uses:** Treatment of idiopathic orthostatic hypotension (with increased sodium intake).

Action

Causes sodium reabsorption, hydrogen and potassium excretion, and water retention by its effects on the distal renal tubule.

Adverse Reactions/Side Effects

CNS: dizziness, headache. **CV:** CHF, arrhythmias, edema, hypertension. **GI:** anorexia, nausea.

Endo: adrenal suppression, weight gain.

F and E: hypokalemia, hypokalemic alkalosis.

MS: arthralgia, muscular weakness, tendon contractures. **Neuro:** ascending paralysis.

Misc: hypersensitivity reactions.

Nursing Dx: Risk for fluid volume excess; Knowledge deficit.

Keep in Mind

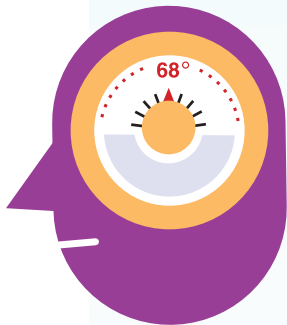
Teach client:

- Take medication as directed. Abrupt discontinuation may lead to Addisonian crisis.
- Follow dietary modification prescribed by health care professional.
- Wear a Medic-Alert bracelet.
- Watch for signs and symptoms of Addisonian crisis.



Make the Connection

- Monitor blood pressure periodically during therapy.
- Monitor for fluid retention (weigh daily, assess for edema, and auscultate lungs for rales/crackles).
- Monitor clients with Addison's disease closely and stop treatment if a significant increase in weight or blood pressure, edema, or cardiac enlargement occurs. Clients with Addison's disease are more sensitive to the action of this drug and may have an exaggerated response.
- Monitor serum electrolytes periodically during therapy. This drug causes ↓ in serum potassium levels.



Oxytocin

(ox-i-toe-sin)

Pitocin, Syntocinon

Therapeutic/Pharmacologic Class

Hormone/Oxytocic agent

Indications

IV: Induction or augmentation of labor at term.

Can be used as an abortive agent. Postpartum control of bleeding after expulsion of the placenta.

Intranasal: Promotion of milk let-down in lactating women. **Unlabelled uses:** Evaluation of fetal competence (fetal stress test).

Action

Stimulates uterine smooth muscle, producing uterine contractions similar to those in spontaneous labor. Contracts the uterus to squeeze closed the attachment sites of the placenta, so it stops excess postpartum bleeding. Stimulates mammary gland smooth muscle, facilitating lactation. Has vasopressor and antidiuretic effects.

Adverse Reactions/Side Effects

CNS: *maternal*—coma, seizures; *fetal*—**intracranial hemorrhage**. **Resp:** *fetal*—**asphyxia**, hypoxia.

CV: *maternal*—hypotension; *fetal*—arrhythmias.

Nursing Dx: Acute pain; Powerlessness; Readiness for enhanced home maintenance management (breast-feeding).

F and E: *maternal*—hypochloremia, hyponatremia, water intoxication. **Misc:** *maternal*—increased uterine motility, painful contractions, abruptio placentae, decreased uterine blood flow, hypersensitivity.

Keep in Mind

Teach client:

- Expect contractions to become more severe and last longer.
- Nasal spray: Administer nasal spray 2–3 min prior to planned breast-feeding to initiate let-down reflex. Cramps are to be expected.



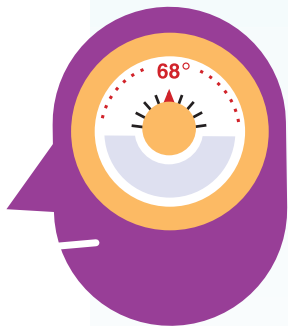
Make the Connection

- Assess character, frequency, and duration of uterine contractions; resting uterine tone; and fetal heart rate frequently throughout administration.
- This drug occasionally causes water intoxication.
- Make sure there is a physician in-house at all times when the client is on a continuous drip.

Desmopressin

*(des-moe-**press-in**)*

DDAVP, DDAVP Rhinal Tube,
DDAVP Rhinyle Drops,
Octostim, Stimate



Vasopressin

*(vay-soe-**press-in**)*

Pitressin



Pressyn

Therapeutic/Pharmacologic Class

Hormone/Antidiuretic hormone

Indications

Management of primary nocturnal enuresis unresponsive to other treatment modalities. Treatment of diabetes insipidus caused by a deficiency.

Action

Analogues or derivatives of naturally occurring antidiuretic hormone. The primary action is enhanced reabsorption of water in the kidneys.

Adverse Reactions/Side Effects

CNS: drowsiness, headache, listlessness.

EENT: *intranasal*—nasal congestion, rhinitis.

Resp: dyspnea. **CV:** hypertension, hypotension, tachycardia. **GI:** mild abdominal cramps, nausea. **GU:** vulval pain. **Derm:** flushing.

F and E: water intoxication/hyponatremia.

Nursing Dx: Risk for imbalanced fluid volume; Knowledge deficit.

Keep in Mind

Teach client:

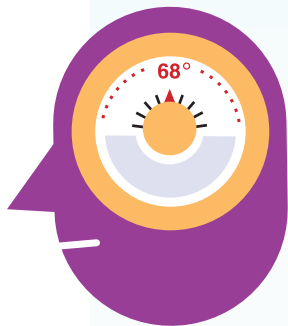
- Notify health care professional if bleeding is not controlled or if headache, dyspnea, heartburn, nausea, abdominal cramps, vulval pain, or severe nasal congestion or irritation occurs.
- Avoid use of alcohol with this medication.
- If increased urine output occurs, contact health care professional for dosage adjustment.
- Wear a Medic-Alert bracelet.



Make the Connection

- Assess client for symptoms of dehydration.
- Weigh client daily and assess for edema.
- Assess for signs of bleeding. Monitor clotting factors.
- Monitor blood pressure and serum sodium level.
- Monitor for signs and symptoms of water intoxication.

Also Used for: Hematology applications (desmopressin controls bleeding in certain types of hemophilia and in von Willebrand's disease); gastrointestinal applications (desmopressin shortens bleeding time in clients with liver disease)



Somatropin

(soe-ma-troe-pin)

Humatrope, Serostim

Therapeutic/Pharmacologic Class

Hormone/Growth hormone

Indications

Treatment of short stature in children with open epiphyses.

Action

Produces skeletal and cellular growth.

Adverse Reactions/Side Effects

CV: edema of the hands and feet. **Endo:** hyperglycemia, hypothyroidism, insulin resistance.

Local: pain at injection site. **MS:** arthralgia, carpal tunnel syndrome.

Nursing Dx: Risk for altered growth; Readiness for enhanced self-concept.

Keep in Mind

Teach client:

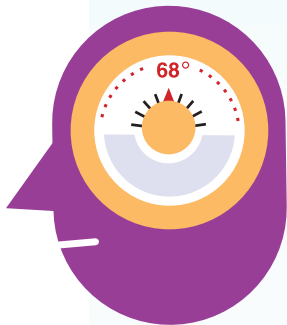
- Follow instructions for IM or SC injections and proper disposal of syringes.
- Follow up with endocrinologist as recommended.
- Report any joint pain (fingers, legs, hips), as this could be an epiphyseal abnormality.



Make the Connection

- Epiphyses must be open in order for medication to have an effect.
- Observe for epiphyseal abnormalities, such as limping, pain, or joint disfigurement.
- Measure growth and reassure child that the medication is working.
- Watch the glucose levels and monitor thyroid function.

Also Used for: Musculoskeletal application (growth hormone deficiency in adults) and gastrointestinal applications (AIDS wasting or cachexia, and short-bowel syndrome.)



Octreotide

(ok-tree-oh-tide)

Sandostatin, Sandostatin LAR

Therapeutic/Pharmacologic Class

Antidiarrheal/Hormone

Indications

Treatment of severe diarrhea and flushing episodes in clients with GI endocrine tumors, including metastatic carcinoid tumors and vasoactive intestinal peptide (VIP) tumors (VIPomas). Relief of symptoms and suppressed tumor growth in clients with pituitary tumors associated with acromegaly. Management of diarrhea in AIDS clients or clients with fistulas.

Action

Suppresses secretion of serotonin and gastroenterohepatic peptides. Increases absorption of fluid and electrolytes from the GI tract and increases transit time. Suppresses secretion of growth hormone, insulin, and glucagon.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, fatigue, headache, weakness. **EENT:** visual disturbances. **CV:** edema, orthostatic hypotension, palpitations. **GI:** abdominal pain, cholelithiasis, diarrhea, fat malabsorption,

nausea, vomiting. **Derm:** flushing. **Endo:** hyperglycemia, hypoglycemia. **Local:** injection-site pain.

Keep in Mind

Teach client:

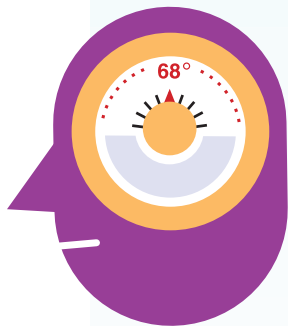
- May cause dizziness, drowsiness, or visual disturbances.
- Change positions slowly to minimize orthostatic hypotension.
- Keep record of number and characteristics of bowel movements.



Make the Connection

- Assess frequency and consistency of stools and bowel sounds throughout therapy.
- Monitor pulse and blood pressure.
- Assess client's fluid and electrolyte balance.
- Monitor diabetic clients for signs of hypoglycemia.
- Assess for gallbladder disease.

Nursing Dx: Readiness for enhanced bowel elimination pattern; Risk for altered growth.



Megestrol

(me-jess-trole)

Megace

Therapeutic/Pharmacologic Class

Antineoplastic, hormone/Progestin

Indications

Palliative treatment of endometrial and breast carcinoma, either alone or with surgery or radiation (tablets only).

Action

Antineoplastic effect may result from inhibition of pituitary function.

Adverse Reactions/Side Effects

CV: thromboembolism, edema. **GI:** GI irritation. **Derm:** alopecia. **Endo:** asymptomatic adrenal suppression (chronic therapy). **Hemat:** thrombophlebitis. **MS:** carpal tunnel syndrome.

Keep in Mind

Teach client:

- Take medication exactly as directed; do not skip or double up on missed doses.

Nursing Dx: Risk for injury (cardiovascular); Impaired body image.

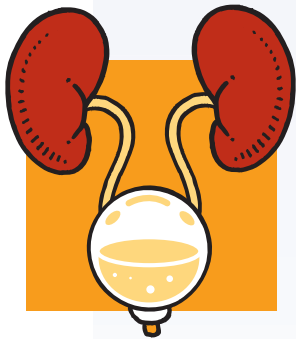
- Report to health care professional any unusual vaginal bleeding **or signs of deep vein thrombophlebitis.**
- This medication may have teratogenic effects. Contraception should be used during therapy and for at least 4 months after therapy is completed.
- There is a possibility of hair loss.



Make the Connection

- **Assess client for swelling (usually unilaterally), pain, or tenderness in legs or armpit. Measure circumference and report these signs of deep vein thrombophlebitis.**
- May be administered with meals if GI irritation becomes a problem.
- Any ovarian hormone may pose a risk for thrombophlebitis and embolus formation.
- Smoking increases the risk for thrombotic embolus formation.

Also Used for: Gastrointestinal applications (appetite stimulant in cachexic clients)



Tolterodine

(tol-ter-oh-deen)

Detrol, Detrol LA

Solifenacin

(so-li-fen-a-sin)

VESIcare

Oxybutynin (Oral)

(ox-i-byoo-ti-nin)

Ditropan, Ditropan XL

Oxybutynin (Transdermal)

Oxytrol

Therapeutic/Pharmacologic Class

Urinary tract antispasmodic/Anticholinergic

Indications

Treatment of overactive bladder resulting in symptoms of urinary frequency, urgency, or urge incontinence.

Action

Act as a muscarinic (cholinergic) receptor antagonist; antagonize bladder smooth muscle contraction.

Adverse Reactions/Side Effects

EENT: blurred vision. **GI:** constipation, dry mouth, dyspepsia, nausea.

Keep in Mind

Teach client:

- Be aware of anticholinergic side effects (constipation, urinary retention, blurred vision, heat prostration in a hot environment).

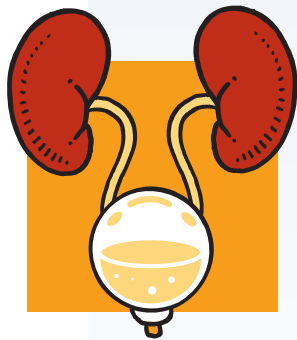
Nursing Dx: Readiness for enhanced urinary elimination pattern; Impaired urinary elimination.

- May cause dizziness and blurred vision. Avoid driving and other activities that require alertness until response to medication is known.



Make the Connection

- Monitor voiding pattern and assess symptoms of overactive bladder.
- Tablets must be swallowed whole; do not break, crush, or chew.
- Remember, anticholinergic works against the feed/breed/pee/poo branch of the autonomic nervous system.
- Side effects of anticholinergics are always “hot as a hare, dry as a bone, red as a beet, mad as a hatter, and blind as a bat.”



Bethanechol

(be-than-e-kole)

Urecholine

Therapeutic/Pharmacologic Class

Urinary tract stimulant/Cholinergic

Indications

Treatment of postpartum and postoperative nonobstructive urinary retention or urinary retention caused by neurogenic bladder.

Action

Stimulates cholinergic receptors. Effects include contraction of the urinary bladder, decreased bladder capacity, increased frequency of ureteral peristaltic waves, increased tone and peristalsis in the GI tract, increased pressure in the lower esophageal sphincter, and increased gastric secretions.

Adverse Reactions/Side Effects

CNS: headache, malaise. **EENT:** lacrimation, miosis. **Resp:** bronchospasm. **CV:** heart block, syncope/cardiac arrest, bradycardia, hypotension. **GI:** abdominal discomfort, diarrhea, nausea, salivation, vomiting. **GU:** urgency. **Misc:** flushing, sweating, hypothermia.

Nursing Dx: Readiness for enhanced urinary elimination pattern; Pain (digestive).

Keep in Mind

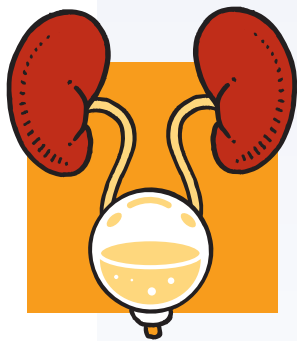
Teach client:

- Change positions slowly to minimize orthostatic hypotension.
- Report abdominal discomfort, salivation, sweating, or flushing to health care professional.



Make the Connection

- Monitor blood pressure, pulse, and respirations before administering.
- Monitor intake and output.
- Palpate abdomen for bladder distention.
- Catheterization may be ordered to assess post-void residual.
- Monitor liver and pancreatic enzymes.
- Notice the “chol” in both the generic and brand. That is a clue to its actions!
- Remember the acronym SLUDGE: salivation, lacrimation, urination, defecation, GI distress, and emesis.



Spiro nolactone

(speer-oh-no-lak-tone)

Aldactone
* Novospiroton

Triamterene

(trye-am-ter-een)

Dyrenium

Amiloride

(a-mill-oh-ride)

Midamor

Therapeutic/Pharmacologic Class

Diuretic, potassium-sparing diuretic/Na reabsorption inhibitor.

Indications

Management of primary hyperaldosteronism.
Management of edema associated with congestive heart failure, cirrhosis, and nephrotic syndrome.
Management of essential hypertension. Treatment of hypokalemia (counteracts potassium loss caused by other diuretics).

Action

Cause loss of sodium bicarbonate and calcium while saving potassium and hydrogen ions by antagonizing aldosterone. Blocks reabsorption of sodium in the distal convoluted tubules and collecting ducts of the nephrons, while conserving potassium.

Adverse Reactions/Side Effects

CNS: dizziness, clumsiness, headache. **CV:** arrhythmias. **GI:** GI irritation. **GU:** impotence, dysuria. **Endo:** gynecomastia (in men), breast tenderness, deepening of voice, increased hair

Nursing Dx: Fluid volume excess (or deficit); Knowledge deficit.

growth (in women). **F and E:** hyperkalemia, hyponatremia, hyperchloremic metabolic acidosis. **Hemat:** agranulocytosis. **MS:** muscle cramps. **Misc:** allergic reactions.

Keep in Mind

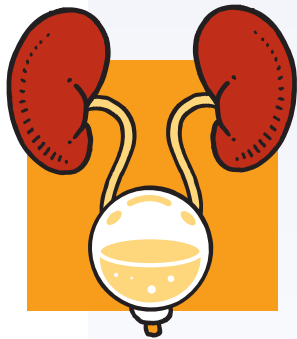
Teach client:

- Avoid salt substitutes and high-potassium foods.
- May cause dizziness.
- Blood pressure and lab work will be monitored.
- Wear a Medic-Alert bracelet.
- Notify health-care professional if muscle weakness or cramps; fatigue; or severe nausea, vomiting, palpitations, or diarrhea occur.



Make the Connection

- Monitor intake and output and daily weight (the best indicator) during therapy.
- Always assess potassium level (3.5–5 mEq/L) and BP before administering.
- Monitor ECG for signs of hyperkalemia (tented T waves).



Furosemide

(fur-oh-se-mide)

Lasix

🍁 Apo-Furosemide

Bumetanide

(byoo-met-a-nide)

Bumex

Therapeutic/Pharmacologic Class

Diuretic/Loop diuretic

Indications

Treatment of edema due to CHF, hepatic or renal disease, and hypertension.

Action

Inhibit reabsorption of sodium and chloride from the loop of Henle and distal renal tubule. Increase water, sodium, chloride, magnesium, hydrogen, calcium, and potassium. May have peripheral vasodilatory effects.

Adverse Reactions/Side Effects

CNS: dizziness, encephalopathy, headache, insomnia, nervousness. **EENT:** hearing loss, tinnitus. **CV:** hypotension. **GI:** constipation, diarrhea, dry mouth, dyspepsia, nausea, vomiting. **GU:** excessive urination. **Derm:** photosensitivity, rashes. **Endo:** hyperglycemia. **F and E:** dehydration, hypochloremia, hypokalemia, hypomagnesemia, hyponatremia, hypovolemia, metabolic alkalosis due to loss of hydrogen ion. **Hemat:** blood dyscrasias. **Metab:** hyperglycemia, hyperuricemia.

Nursing Dx: Fluid volume excess (or deficit); Risk for injury.

MS: arthralgia, muscle cramps, myalgia.
Misc: increased BUN.

Keep in Mind

Teach client:

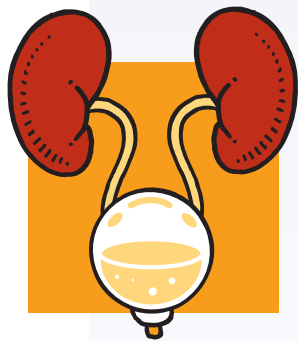
- Change position slowly to minimize effects of orthostatic hypotension.
- Consume high-potassium foods or prescribed potassium supplements (as directed).
- Use sunscreen.
- Report any unusual bleeding, bruising, sore throat, or shortness of breath.
- Report, prior to starting therapy, any allergic reaction to sulfonamides.



Make the Connection

- Always check potassium level (3.5–5 mEq/L) and BP prior to giving.
- Watch the ECG for arrhythmias.
- Bone marrow suppression can occur.
- Photosensitivity may be severe.
- Low potassium causes digoxin toxicity.

Also Used for: Immune system applications (hypercalcemia of malignancy)



Chlorothiazide

*(klor-oh-**thye**-a-zide)*

Diuril

Hydrochlorothiazide

*(hye-droe-klor-oh-**thye**-a-zide)*

Esidrex, HCTZ

🍁 Apo-Hydro

Therapeutic/Pharmacologic Class

Antihypertensive, diuretic/Thiazide diuretic

Indications

Management of mild-to-moderate hypertension. Treatment of edema associated with congestive heart failure (CHF), renal dysfunction, cirrhosis, corticosteroid therapy, and estrogen therapy.

Action

Increase excretion of sodium and water by inhibiting sodium reabsorption in the distal tubule. Promote excretion of chloride, potassium, magnesium, and bicarbonate. May produce arteriolar dilation.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, lethargy, weakness.

CV: hypotension. **GI:** anorexia, cramping, hepatitis, nausea, vomiting. **Derm:** photosensitivity, rashes.

Endo: hyperglycemia. **F and E:** hypokalemia, dehydration, hypercalcemia, hypochloremic alkalosis, hypomagnesemia, hyponatremia, hypophosphatemia, hypovolemia. **Hemat:** blood dyscrasias. **Metab:** hyperuricemia, elevated lipids.

MS: muscle cramps. **Misc:** pancreatitis.

Nursing Dx: Fluid volume excess (or deficit); Risk for injury.

Keep in Mind

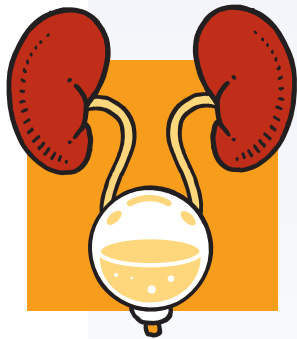
Teach client:

- Change position slowly to minimize effects of orthostatic hypotension.
- Consume high-potassium foods.
- Use sunscreen.
- Report any unusual bleeding, bruising, sore throat, or shortness of breath.
- Report, prior to starting therapy, any allergic reaction to sulfonamides.
- Report severe abdominal pain or yellow coloration of skin or whites of eyes.



Make the Connection

- Always check potassium level (3.5–5 mEq/L) and BP prior to giving.
- Watch the ECG for arrhythmias.
- Bone marrow suppression can occur so monitor the CBC.
- Photosensitivity may be severe.
- Low potassium causes digoxin toxicity.
- Monitor liver function tests, amylase and lipase levels.



Sildenafil

(sil-den-a-fil)

Revatio, Viagra

Tadalafil

(ta-da-la-fil)

Cialis

Vardenafil

(var-den-a-fil)

Levitra

Therapeutic/Pharmacologic Class

Anti-impotence agent/Phosphodiesterase type 5 inhibitor

Indications

Treatment of erectile dysfunction.

Action

Enhance effects of nitric oxide released during sexual stimulation. Nitric oxide activates guanylate cyclase, which produces increased levels of cyclic guanosine monophosphate (cGMP). cGMP produces smooth muscle relaxation of the corpus cavernosum, which promotes increased blood flow and subsequent erection.

Adverse Reactions/Side Effects

CNS: headache, dizziness, insomnia.

EENT: abnormal vision (color tinge to vision, increased sensitivity to light, blurred vision), epistaxis, nasal congestion. **CV: MI, sudden death, cardiovascular collapse.** **GI:** dyspepsia, diarrhea.

GU: priapism, urinary tract infection. **Derm:** flushing, rash. **MS:** myalgia. **Neuro:** paresthesias.

Nursing Dx: Readiness for enhanced sexuality patterns;
Risk for injury.

Keep in Mind

Teach client:

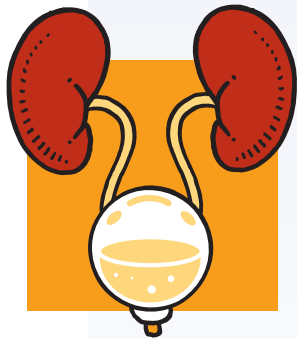
- Take as prescribed before sexual activity.
- Do not take with other drugs, unless directed to do so by health care provider.
- Erections lasting longer than 4 hr (priapism) or sudden, decreased vision loss in one or both eyes must be reported immediately.



Make the Connection

- This medication causes vasodilation in the penis and in other areas of the body, so it should not be given with any other vasodilating agent.
- Assess effectiveness through interview.

Also Used for: Respiratory system applications (pulmonary hypertension)



Doxazosin

(dox-ay-zoe-sin)

Cardura

Tamsulosin

(tam-soo-loe-sin)

Flomax

Therapeutic/Pharmacologic Class

Antihypertensive, prostatic urethra relaxant/
Peripherally acting antiadrenergic

Indications

Treatment of symptomatic benign prostatic hyperplasia (BPH). Management of outflow obstruction in male patients with BPH.

Action

Decrease contractions in smooth muscle of the prostatic capsule by preferentially binding to alpha₁-adrenergic receptors.

Adverse Reactions/Side Effects

CNS: dizziness, headache, depression, drowsiness, fatigue, nervousness, weakness.

EENT: abnormal vision, blurred vision, conjunctivitis, epistaxis. **Resp:** dyspnea. **CV:** first-dose orthostatic hypotension, arrhythmias, chest pain, edema, palpitations. **GI:** abdominal discomfort, constipation, diarrhea, dry mouth, flatulence, nausea, vomiting. **GU:** decreased libido, sexual dysfunction, retrograde/diminished

Nursing Dx: Risk for falls; Readiness for enhanced urinary elimination pattern.

ejaculation. **Derm:** flushing, rash, urticaria.
MS: arthralgia, arthritis, gout, myalgia.

Keep in Mind

Teach client:

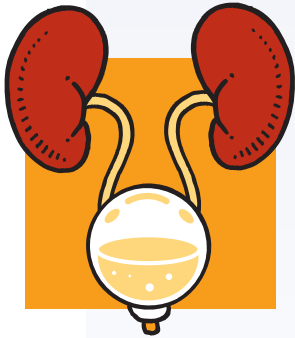
- Take this medication exactly as prescribed.
- Avoid driving or other activities requiring alertness until response to medication is known.
- Change positions slowly to decrease orthostatic hypotension.
- Maintaining appointments for follow-up visits is important to determine effectiveness of therapy.
- Avoid drinking alcohol, as this may cause worsening orthostatic hypotension.



Make the Connection

- Monitor blood pressure and pulse 2–6 hr after first dose, with each increase in dose, and periodically during therapy. Report significant changes.
- Monitor intake and output, weight, and edema.
- Assess client for symptoms of prostatic hyperplasia prior to and periodically during therapy.

Also Used for: Cardiovascular system applications (hypertension)



Finasteride

(fi-nas-teer-ide)

Propecia, Proscar

Dutasteride

(doo-tas-te-ride)

Avodart

Therapeutic/Pharmacologic Class

Benign prostatic hyperplasia (BPH) agent/Androgen inhibitor

Indications

Management of the symptoms of BPH in men with an enlarged prostate gland.

Action

Inhibit the enzyme 5-alpha-reductase, which is responsible for converting testosterone to its potent metabolite 5-alpha-dihydrotestosterone in prostate, liver, and skin. 5-alpha-dihydrotestosterone is partially responsible for prostatic hyperplasia and hair loss.

Adverse Reactions/Side Effects

GU: decreased libido, decreased volume of ejaculate, impotence.

Keep in Mind

Teach client:

- Volume of ejaculate may be decreased during therapy, but this will not interfere with normal sexual function. Sexual dysfunction side effects will diminish over time.

Nursing Dx: Readiness for enhanced urinary elimination patterns.

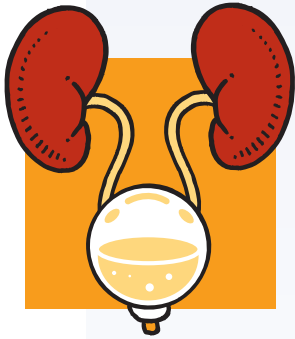
- **Women who are pregnant or may become pregnant should avoid exposure to semen of a partner taking this medication and should not handle crushed finasteride because of the potential for absorption. Absorption may cause birth defects if the woman is pregnant.**
- Follow-up examinations and laboratory work should be expected.



Make the Connection

- Assess prostate-specific antigen (PSA) levels at baseline and during treatment.
- Assess urinary stream.
- Assess nocturia, hesitation, and urgency.
- Remember, this is a testosterone inhibitor. Significant birth defects could occur in the case of women who come into contact with the medication (through sperm or the tablet itself) who are pregnant and carrying a male fetus (testosterone inhibition).

Also Used for: Integumentary system applications (male pattern baldness in men only)



Sevelamer

(se-vel-a-mer)

Renagel

Calcium Acetate

(kal-see-um ass-e-tate)

Calphron, PhosLo

Therapeutic/Pharmacologic Class

Electrolyte modifier/Phosphate binder

Indications

Reduction of serum phosphate levels in clients with hyperphosphatemia associated with end-stage renal disease.

Action

Polymers that bind phosphate in the GI tract, preventing its absorption or exchange of phosphate for calcium in excretory system.

Adverse Reactions/Side Effects

GI: diarrhea, dyspepsia, vomiting, constipation, flatulence, nausea. **CNS:** tingling. **CV:** arrhythmias, bradycardia, vomiting. **GU:** calculi, hypercalciuria.

Keep in Mind

Teach client:

- Do not break, crush, or chew tablets.
- Space concurrent medications at least 1 hr before or 3 hr after these medications.

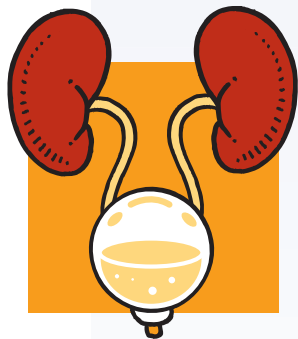
Nursing Dx: Knowledge deficit; Risk for injury (pathologic fracture).

- If GI effects are severe or prolonged, notify health care professional.
- Report palpitations or tingling if the calcium form is used.



Make the Connection

- Assess client for GI side effects periodically during therapy.
- Monitor serum phosphorus, calcium, bicarbonate, and chloride levels periodically during therapy.
- Doses of concurrent medications, especially antiarrhythmics, should be spaced at least 1 hr before or 3 hr after these medications.
- Administer with meals. Tablets should not be broken, chewed, or crushed.



Vitamin B with Vitamin C

(vye-ta-min B with C)

Renal Caps, Nephrocaps

Therapeutic/Pharmacologic Class

Vitamin/Water-soluble vitamin

Indications

Treatment and prevention of vitamin deficiencies in dialyzed clients.

Action

Contains most or all of the B-complex vitamins (B₁, B₂, B₃, B₅, B₆, B₁₂) and vitamin C, a diverse group of compounds necessary for normal growth and development that act as coenzymes or catalysts in numerous metabolic processes.

Adverse Reactions/Side Effects

GU: bright-yellow urine. **Misc:** **anaphylaxis** (vitamin B₁-thiamine), allergic reactions to preservatives.

Keep in Mind

Teach client:

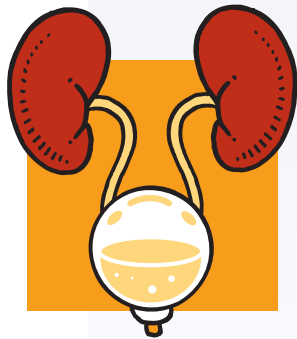
- Comply with diet recommendations of health-care professional.
- Consume a well-balanced diet.
- Watch for signs and symptoms of vitamin B and C deficiency.



Make the Connection

- Remember, dialysis flushes water-soluble vitamins out of the body.
- Monitor client for anaphylaxis (wheezing, urticaria, edema); contains thiamine.
- Monitor laboratory values for hematology and B vitamins.
- Monitor ability to heal and occurrence of gingivitis.
- B vitamins are vital to “b”lood and “b”rain health.

Nursing Dx: Risk for imbalanced nutrition: less than body requirements.



Calcitriol

(kal-si-trye-ole)

Rocaltrol

Therapeutic/Pharmacologic Class

Vitamin/Fat-soluble vitamin

Indications

Management of hypocalcemia in clients undergoing chronic renal dialysis (IV and PO). Treatment of hypocalcemia in clients with hypoparathyroidism or pseudohypoparathyroidism (PO only). Management of secondary hyperparathyroidism (PO only).

Action

Promotes the absorption of calcium and decreases parathyroid hormone concentrations.

Adverse Reactions/Side Effects

CNS: headache, somnolence, weakness.

EENT: conjunctivitis, photophobia, rhinorrhea.

CV: arrhythmias, hypertension. **GI:** abdominal pain, anorexia, constipation, dry mouth, liver function test elevation, metallic taste, nausea, **pancreatitis**, polydipsia, vomiting, weight loss.

GU: albuminuria, azotemia, decreased libido, nocturia, polyuria. **Derm:** pruritus. **F and**

Nursing Dx: Risk for injury (pathologic fracture); Risk for imbalanced nutrition: less than body requirements.

E: hypercalcemia. **Local:** pain at injection site. **Metab:** hyperthermia. **MS:** bone pain, metastatic calcification, muscle pain. **Misc:** allergic reactions (pruritus, rash, urticaria).

Keep in Mind

Teach client:

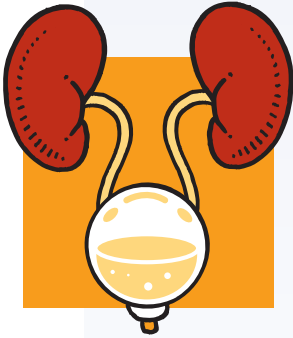
- Consume foods high in calcium and vitamin D.
- Avoid concurrent use of antacids containing magnesium.



Make the Connection

- Observe client carefully for hypocalcemia.
- Serum calcium, phosphorus, magnesium, alkaline phosphatase, and intact parathyroid hormone concentrations will be monitored at least monthly.

Also Used for: Musculoskeletal system applications (promotion of calcium absorption in osteoporosis); integumentary system applications (psoriasis)



Epoetin

(e-poe-e-tin)

Epogen, Procrit
🍁 Eprex

Therapeutic/Pharmacologic Class

Antianemic/Hormone

Indications

Treatment of anemia associated with chronic renal failure.

Action

Stimulates erythropoiesis (red blood cell production).

Adverse Reactions/Side Effects

CNS: seizures, headache. **CV:** hypertension, thrombotic events. **Derm:** transient rashes.

Endo: restored fertility, resumption of menses.

Keep in Mind

Teach client:

- Menses and fertility may return in women of childbearing age.
- Learn how to sense and protect oneself from seizures (teach family members, also)
- Consume foods high in iron, like meat and eggs, or take an iron supplement.

Nursing Dx: Activity intolerance; Ineffective tissue perfusion;
Risk for injury (seizures).



Make the Connection

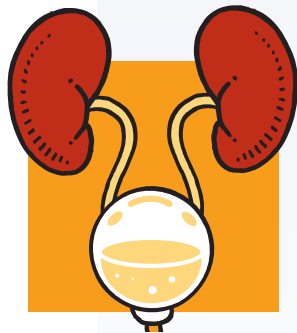
- Institute seizure precautions in clients who experience greater than a 4-point increase in hematocrit in a 2-wk period or exhibit change in mental status.
- Do not shake the vial. It will turn into unusable suds, and the medication is expensive.
- Monitor CBC.
- May need more heparin during hemodialysis.
- Monitor blood pressure for increases that may need treatment.
- Monitor thrill and bruit in arteriovascular grafts.
- Monitor serum ferritin, transferrin, and iron levels.

Also Used for: Immune system applications (anemia associated with chemotherapy [nonmyeloid cancers]); cardiovascular system applications (reduction of need for transfusion after surgery)

Iron Dextran

(eye-ern dex-tran)

DexFerrum, InFeD



Iron Polysaccharide

(eye-ern poll-ee-sak-a-ride)

Niferex

Iron Sucrose

(eye-ern su-krose)

Venofer

Therapeutic/Pharmacologic Class

Antianemic/Supplement

Indications

Prevention/treatment of anemia in clients undergoing hemodialysis who are concurrently receiving epoetin.

Action

An essential mineral found in hemoglobin, myoglobin, and many enzymes, essential for red blood cell formation.

Adverse Reactions/Side Effects

CNS: *IM, IV*—**seizures**, dizziness, headache, syncope. **CV:** *IM, IV*—hypotension, tachycardia, hemochromatosis, heart failure. **GI:** nausea, constipation, dark stools, diarrhea, epigastric pain, GI bleeding, taste disorder. **Derm:** *IM, IV*—flushing, urticaria. **Local:** pain at injection site, skin staining. **MS:** arthralgia, myalgia. **Misc:** staining of teeth, allergic reactions.

Keep in Mind

Teach client:

- Stools may become very dark. They should have a dark-green halo when water is mixed, not red.

Nursing Dx: Activity intolerance; Ineffective tissue perfusion.

- A balanced diet is important.
- Watch for symptoms of CHF (rare), like activity intolerance, edema, lethargy, and palpitations.



Make the Connection

- Monitor serum levels.
- Monitor CBC, especially reticulocyte, hemoglobin, and hematocrit levels.
- Monitor for allergic reactions.
- If giving PO, use a straw to avoid staining teeth.
- If giving IM, give by Z-track to avoid staining the skin.
- Monitor for stomach pain, which is one of the first signs of toxicity.
- Assess weight, activity tolerance, and lung sounds to rule out CHF.
- Avoid giving coffee, tea, dairy, eggs, and whole grain breads for 1 hr after PO dose.
- Orange juice (PO form) aids in absorption.

Also Used for: Cardiovascular system applications (iron-deficiency anemia)

IMMUNE



Allopurinol

(al-oh-pure-i-nole)

Zyloprim, Alloprim
❁ Apo-Allopurinol

Therapeutic/Pharmacologic Class

Antigout and antihyperuricemic agent/xanthine oxidase inhibitor

Indications

Prevention of attacks of gouty arthritis and nephropathy. Treatment of secondary hyperuricemia, which may occur during treatment of tumors or leukemias.

Action

Inhibits the production of uric acid by inhibiting the action of xanthine oxidase.

Adverse Reactions/Side Effects

CNS: drowsiness. **GI:** diarrhea, hepatitis, nausea, vomiting. **GU:** renal failure. **Derm:** rash, urticaria. **Hemat:** bone marrow suppression. **Misc:** hypersensitivity reactions.

Keep in Mind

Teach client:

- Dietary changes must be made (alkaline ash diet). Alcohol must be avoided to avoid gouty attacks.

Nursing Dx: Risk for infection; Acute pain; Knowledge deficit.

- Report skin rash or influenza symptoms to the HCP immediately; this may indicate hypersensitivity.
- Take with food to minimize gastric distress.
- Increase daily fluid intake as directed.



Make the Connection

- Minimum fluid intake for persons being treated for gout is 2500–3000 mL/day.
- Monitor for clinical signs of toxicity or hypersensitivity (vomiting, diarrhea, or rash).
- Monitor the CBC with differential, RFTs, LFTs, and blood glucose.
- Recent studies have shown that this medication combined with colchicine may be more effective at preventing gouty flare-ups.

Also Used for: Musculoskeletal system applications (gouty arthritis)



Cyclosporine

(sye-kloe-spor-eeen)

Sandimmune, Restasis

Therapeutic/Pharmacologic Class

Immunosuppressant, disease-modulating antirheumatic drug (DMARD)/Polypeptide (cyclic)

Indications

Prevention and treatment of organ rejection. Prevention and treatment of graft vs. host disease in bone marrow transplant clients. Treatment of autoimmune diseases. Treatment of inflammatory dry eye.

Action

Inhibits normal immune responses by inhibiting interleukin-2, a factor necessary for initiation of T-cell activity.

Adverse Reactions/Side Effects

CNS: seizures, tremor, confusion, flushing, headache, psychiatric problems. **CV:** hypertension. **GI:** diarrhea, hepatotoxicity, nausea, vomiting, abdominal discomfort, anorexia, pancreatitis. **GU:** nephrotoxicity. **Derm:** hirsutism, acne. **F and E:** hyperkalemia, hypomagnesemia.

Nursing Dx: Risk for infection; Risk for injury; Excess fluid volume.

Hemat: bone marrow suppression. **Metab:** hyperlipidemia, hyperuricemia. **Neuro:** hyperesthesia, paresthesia. **Misc:** gingival hyperplasia, hypersensitivity reactions, infections.

Keep in Mind

Teach client:

- For most indications, this drug will be needed for life.
- Report sore throat or feelings of ill health.
- Cosmetic changes (hirsutism, acne) may occur.



Make the Connection

- Monitor CBC with differential, RFTs, chemistries, serum drug levels, and LFTs.
- Monitor I&O, daily weight, and BP.
- Assess for symptoms of organ rejection.
- When administering IV, monitor client for signs and symptoms of hypersensitivity.

Also Used for: Sensory system applications (dry eye); musculoskeletal system applications (RA); integumentary system applications (psoriasis)



Colchicine

(kol-chi-seen)

Colchicine

Therapeutic/Pharmacologic Class

Antigout agent/Anti-inflammatory agent

Indications

Treatment and prevention of acute attacks of gouty arthritis.

Action

Interferes with the functions of WBCs in initiating and perpetuating the inflammatory response to monosodium urate crystals.

Adverse Reactions/Side Effects

GI: diarrhea, nausea, vomiting, abdominal pain. **GU:** anuria, hematuria, renal damage.

Derm: alopecia. **Hemat:** bone marrow suppression. **Local:** phlebitis at IV site. **Neuro:** peripheral neuritis.

Keep in Mind

Teach client:

- Take the medication as directed.
- Do not consume alcohol and maintain dietary restrictions.

Nursing Dx: Acute pain; Knowledge deficit; Risk for infection.

- Report nausea, vomiting, abdominal pain, diarrhea, unusual bleeding, bruising, sore throat, fatigue, malaise, or rash promptly.
- Increase daily fluid intake as directed.



Make the Connection

- **Assess client for toxicity.**
- **An overdose can be fatal. Cumulative dose by any route should not exceed 4 mg.**
- During initiation of therapy, monitor for drug response (pain relief in affected area) every 1–2 hr.
- Monitor intake and output.
- Monitor LFT, RFT, chemistries, and CBC with differential.
- Administer oral doses with food to minimize gastric irritation.
- **Monitor IV site carefully to avoid extravasation.**

Also Used for: Musculoskeletal system applications (gouty arthritis); gastrointestinal system applications (cirrhotic hepatitis)



Celecoxib

(sel-e-kox-ib)

Celebrex

Therapeutic/Pharmacologic Class

Antirheumatic, nonsteroidal anti-inflammatory drug (NSAID)/Cyclo-oxygenase-2 (COX-2) inhibitor

Indications

Relief of signs and symptoms of osteoarthritis, rheumatoid arthritis (RA), and ankylosing spondylitis. Reduction of the number of adenomatous colorectal polyps in familial adenomatous polyposis (FAP), as an adjunct to usual care (endoscopic surveillance, surgery). Management of acute pain, including primary dysmenorrhea.

Action

Inhibits the enzyme COX-2. This enzyme is required for the synthesis of prostaglandins. Has analgesic, anti-inflammatory, and antipyretic properties.

Adverse Reactions/Side Effects

CNS: dizziness, headache, insomnia.

CV: myocardial infarction (MI), cerebrovascular accident (CVA), edema. **GI:** GI bleeding, abdominal pain, diarrhea, dyspepsia, flatulence, nausea.

Derm: exfoliative dermatitis, Stevens-Johnson syndrome, toxic epidermal necrolysis, rash.

Nursing Dx: Acute pain; Risk for injury; Excess fluid volume.

Keep in Mind

Teach client:

- Do not take this drug if a history of high blood pressure or heart failure exists.
- Do not take this drug if a history of stomach ulcers and GI bleeding exists.
- Report a rash immediately.
- Report nausea, fatigue, lethargy, itching, jaundice, upper right quadrant tenderness, flu-like symptoms, or edema.
- Watch for signs of GI bleeding (stomach pain, black-red tarry odorous stools).
- If an allergy to sulfonamides, aspirin, or other NSAIDs exists, do not take this drug.



Make the Connection

- Monitor blood pressure and for signs of heart failure. This drug has been implicated in the development of MI and CVA.
- Respond to development of a rash immediately.
- Assess for effectiveness. Monitor liver and renal function labs.

Also Used for: Central nervous system applications (analgesics)



Mesalamine

(me-sal-a-meen)

Asacol, Canasa, Rowasa
🍁 Salofalk

Olsalazine

(ole-sal-a-zeen)

Dipentum

Therapeutic/Pharmacologic Class

Gastrointestinal anti-inflammatory/Cyclo-oxygenase 1 and 2 inhibitor

Indications

Treatment of inflammatory bowel diseases, including ulcerative colitis.

Action

Locally acting anti-inflammatory action in the colon, where activity is probably due to inhibition of prostaglandin synthesis.

Adverse Reactions/Side Effects

CNS: headache, dizziness, malaise, weakness.

EENT: pharyngitis, rhinitis. **CV:** pericarditis.

GI: diarrhea, eructation, flatulence, nausea, vomiting. **GU:** interstitial nephritis, pancreatitis, renal failure. **Derm:** hair loss, rash. **Local:** anal irritation (enema, suppository). **MS:** back pain.

Misc: **anaphylaxis**, acute intolerance syndrome, fever.

Nursing Dx: Diarrhea; Readiness for enhanced bowel elimination pattern.

Keep in Mind

Teach client:

- May cause dizziness.
- Notify health-care professional if skin rash, sore throat, fever, mouth sores, unusual bleeding or bruising, wheezing, fever, or hives occur.
- May take 1–2 months for full effect.
- If cramping, acute abdominal pain, bloody diarrhea, fever, headache, or rash occur, discontinue therapy and notify health-care professional immediately.
- Increase oral intake of fluids to prevent renal lith.



Make the Connection

- **Assess client for allergy to sulfonamides and salicylates.**
- Fluid intake should be 1500–2000 mL/day. Monitor daily weight and intake/output.
- Monitor blood chemistries for liver and renal function and CBC with differential.
- Monitor amylase and lipase levels (pancreatitis).



Montelukast

*(mon-te-**loo**-kast)*

Singulair

Zafirlukast

*(za-**feer**-loo-kast)*

Accolate

Therapeutic/Pharmacologic Class

Allergy, cold, and cough remedy, bronchodilator/
Leukotriene antagonist

Indications

Prevention and chronic treatment of asthma.
Management of seasonal allergic rhinitis.

Action

Antagonize the effects of leukotrienes. Leukotrienes are mediators of the inflammatory response. Decrease airway edema and smooth muscle constriction. Asthma and allergy are caused by chronic inflammation.

Adverse Reactions/Side Effects

CNS: headache, dizziness, weakness.

GI: abdominal pain, diarrhea, drug-induced hepatitis (women), dyspepsia, nausea, vomiting.

MS: arthralgia, back pain, myalgia. **Misc:** Churg-Strauss syndrome (angiitis; vasculitis), fever, infection (geriatric clients), pain.

Nursing Dx: Ineffective airway clearance; Risk for altered respiratory function.

Keep in Mind

Teach client:

- These drugs are not for rescue. In the case of bronchospasm, use the prescribed inhaler.
- Take as recommended for prophylaxis.



Make the Connection

- Remember the part played by leukotrienes in the inflammatory process (inflammation is the root of many problems, so it should be given your complete attention). Look for clues in the generic name that would connect them with leukotrienes (lūk)!
 - Assess for effectiveness.
 - Long-term therapy indicates a need to assess liver and renal function periodically.
 - Remember: Only beta₂-agonists should be used for bronchospasm.



Pimecrolimus

(pye-mi-krol-i-mus)

Elidel 1% Cream

Therapeutic/Pharmacologic Class

Anti-inflammatory/Immunomodulator

Indications

Treatment of atopic dermatitis. Second-line therapy for autoimmune skin eruptions.

Action

Prevents activation of cytokines, agents of the inflammatory process.

Adverse Reactions/Side Effects

- CNS:** headache. **Resp:** cough, nasopharyngitis.
- Derm:** redness or burning at application site.

Keep in Mind

Teach client:

- Avoid eyes.
- Do not apply occlusive dressing over the application site.
- Do not use on children younger than 2 years of age.



Make the Connection

- Do not use on viral or malignant skin conditions because, remember, this will decrease immunity (suppresses cytokines).
- Discontinue if any unusual lymphatic swelling occurs.

Nursing Dx: Impaired skin integrity.



Indomethacin

(in-doe-meth-a-sin)

Indocin

❁ Apo-Indomethacin

Naproxen

(na-prox-en)

Aleve, Anaprox,
Naprosyn

❁ Apo-Napro-Na

Ibuprofen, Oral

(eye-byoo-proe-fen)

Motrin, Advil

❁ Apo-Ibuprofen

Ketorolac

(kee-toe-role-ak)

Toradol

Therapeutic/Pharmacologic Class

Antirheumatic, analgesic/Nonsteroidal anti-inflammatory agent. COX-1 inhibitor

Indications

Treatment of mild-to-moderate pain or dysmenorrhea. Treatment of inflammatory disorders.

Treatment of fever and pain in adults and children.

Action

Inhibit prostaglandin synthesis.

Adverse Reactions/Side Effects

CNS: headache, dizziness, drowsiness, psychic disturbances. **EENT:** amblyopia, blurred vision, tinnitus. **CV:** arrhythmias, edema, MI, CVA. **GI:** GI bleeding, hepatitis, constipation, dyspepsia, nausea, vomiting, abdominal discomfort. **GU:** cystitis, hematuria, renal failure. **Derm:** exfoliative dermatitis, Stevens-Johnson syndrome, toxic epidermal necrolysis, rashes. **Hemat:** blood dyscrasias, prolonged bleeding time. **Misc:** allergic reactions, including anaphylaxis.

Nursing Dx: Pain; Readiness for enhanced activity-exercise pattern.

Keep in Mind

Teach client:

- Take with food or milk and remain upright for 30 min to decrease irritation of the lower esophagus. Alcohol increases the potential for stomach irritation.
- May cause drowsiness or dizziness.
- Report abdominal/stomach pain or black-red odorous stools.
- Wear sunscreen and protective clothing.
- Report rash or sore throat immediately.



Make the Connection

- **Assess for rhinitis, asthma, and urticaria (hypersensitivity).**
- Monitor vital signs and pain level.
- Monitor BUN, serum creatinine, CBC with differential, electrolytes, bleeding time, and liver function tests periodically.

Also Used for: Cardiovascular system applications (IV for ductus arteriosus patency); sensory system applications (eye inflammation); respiratory system applications (lung disease in cystic fibrosis); musculoskeletal system applications (analgesia/arthritis)



Aspirin

(as-pir-in)

Bayer Aspirin, Ecotrin
🍁 Apo-ASA

Therapeutic/Pharmacologic Class

Antipyretic, nonopioid analgesic/Salicylate

Indications

Treatment of inflammatory disorders

Action

Inhibits the production of prostaglandins. Also decreases platelet aggregation.

Adverse Reactions/Side Effects

EENT: hearing loss, tinnitus. **GI:** GI bleeding, dyspepsia, epigastric distress, heartburn, nausea, abdominal pain, anorexia, hepatotoxicity, vomiting. **Hemat:** anemia, hemolysis, increased bleeding time. **Misc:** allergic reactions (**anaphylaxis, laryngeal edema**), noncardiogenic pulmonary edema.

Keep in Mind

Teach client:

- Take with food or milk.
- Report tinnitus (toxicity level reached).
- Avoid taking with other NSAIDs.

Nursing Dx: Pain; Disturbed sensory perception (auditory); Risk for injury.

- If the tablets smell like vinegar, they are no longer effective.
- Contraindicated for children <16 y/o (Reye's syndrome).
- A 325 mg dose of ASA should be taken if unrelied chest pain occurs.



Make the Connection

- Monitor liver and renal function, electrolytes, bleeding time, CBC, and serum drug levels if on long-term therapy.
- Tinnitus is a sign of toxicity.
- Monitor for drug effectiveness.
- Part of “MONA” for myocardial infarction—morphine sulfate, oxygen, nitroglycerin, aspirin.
- 81 mg daily dosage helps to prevent clot formation and may reduce cholesterol accumulation.

Also Used for: Cardiovascular system applications (decrease in platelet aggregation); musculoskeletal system applications (analgesia/arthritis)



Methotrexate

(meth-o-trex-ate)

Folex, Folex PFS,
Rheumatrex, Trexall

Therapeutic/Pharmacologic Class

Antineoplastic, disease-modulating antirheumatic drug (DMARD), immunosuppressant/Antimetabolite

Indications

Alone or with other treatment modalities in the treatment of carcinoma/leukemia/mycosis fungoides. Treatment of severe psoriasis and rheumatoid arthritis unresponsive to conventional therapy.

Action

Interferes with folic acid metabolism. Result is inhibition of DNA synthesis and cell reproduction. Also has immunosuppressive activity.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, headaches, malaise.
EENT: blurred vision, dysarthria, transient blindness. **Resp:** **pulmonary fibrosis**, intestinal pneumonitis. **GI:** anorexia, hepatotoxicity, nausea, stomatitis, vomiting. **GU:** infertility. **Derm:** alopecia, painful plaque erosions, photosensitivity, pruritus, rashes, skin ulceration, urticaria. **Hemat:** **bone**

Nursing Dx: Risk for injury; Impaired gas exchange; Potential for infection.

marrow suppression. **Metab:** hyperuricemia. **MS:** osteonecrosis, stress fracture. **Misc:** nephropathy, chills, fever, soft tissue necrosis.

Keep in Mind

Teach client:

- Report shortness of breath, bruising, or sore throat.
- Avoid alcohol to prevent GI irritation.
- Avoid vaccinations without advice of HCP.



Make the Connection

- Auscultate lungs and monitor character of respirations and presence of cough (pulmonary fibrosis).
- Monitor CBC with differential, liver and renal function, and uric acid levels prior to and frequently during therapy.

Also Used for: Musculoskeletal system applications (rheumatoid arthritis); hematologic system applications (chemotherapeutic agent)



Infliximab

(in-flix-i-mab)

Remicade

Etanercept

(e-tan-er-sept)

Enbrel

Therapeutic/Pharmacologic Class

Disease-modulating antirheumatic drug (DMARD), gastrointestinal anti-inflammatory/Anti-tumor necrosis factor (TNF) agent.

Indications

To decrease progression, signs, and symptoms of rheumatoid arthritis, juvenile arthritis, ankylosing spondylitis, and psoriatic arthritis or plaque psoriasis when response has been inadequate to other disease-modifying agents. May be used with other agents.

Action

Bind to TNF, making it inactive. TNF is a mediator of inflammatory response.

Adverse Reactions/Side Effects

CNS: headache, dizziness, weakness. **EENT:** rhinitis, pharyngitis, sinusitis. **Resp:** upper respiratory tract infection, cough, respiratory disorder.

GI: abdominal pain, dyspepsia. **Derm:** rash.

Hemat: bone marrow suppression. **Local:** injection site reactions. **Misc:** infections, ↑ risk of malignancies.

Nursing Dx: Risk for infection; Readiness for enhanced activity-exercise pattern.

Keep in Mind

Teach client:

- Do not receive live vaccines during therapy and avoid exposure to ill people.
- **Notify HCP if upper respiratory or other infections occur.**



Make the Connection

- **Monitor clients who develop a new infection. Do not initiate therapy in clients with active infections.**
- Assess for latent tuberculosis with a tuberculin skin test prior to initiation of therapy.
- Monitor for allergic reaction (IV).
- Monitor CBC with differential and anti-nuclear antibody (ANA).
- Monitor for improvement in treated autoimmune disease.

Also Used for: Gastrointestinal system applications (ulcerative colitis); integumentary system applications (psoriasis); musculoskeletal system applications (ankylosing spondylitis)



Filgrastim

(fil-gra-stim)

Neupogen, G-CSF (Granulocyte
Colony-Stimulating Factor)

Sargramostim

(sar-gram-oh-stim)

Leukine, rHu GM-CSF (Recombinant Human
Granulocyte/Macrophage Colony-Stimulating Factor)

Therapeutic/Pharmacologic Class

Colony-stimulating factor/Biologic response modifier

Indications

Acceleration of bone marrow recovery after chemotherapy or ablative bone marrow transplant. Management of severe chronic leukopenia.

Action

Glycoproteins that bind to and stimulate immature WBCs to divide and differentiate. Also activate mature WBCs.

Adverse Reactions/Side Effects

CNS: headache, malaise, weakness. **Resp:** dyspnea.

CV: pericardial effusion, peripheral edema, transient supraventricular tachycardia. **GI:** diarrhea.

Derm: itching, rash. **MS:** arthralgia, bone pain, myalgia. **Misc:** chills, fever, first-dose reaction.

Keep in Mind

Teach client:

- Notify health care professional if dyspnea or palpitations occur.
- Follow instructions for home administration.

Nursing Dx: Risk for infection.



Make the Connection

- Monitor heart rate, ECG, blood pressure, and respiratory status before and periodically during therapy.
- Assess bone pain throughout therapy. Pain is usually mild-to-moderate and is an indication of renewed WBCs.
- Monitor CBC with differential, uric acid and alkaline phosphatase concentrations, serum albumin (circulating protein), RFTs, and LFTs.
- Refrigerate. Do not shake (causes foaming).
- Assess for peripheral edema daily throughout therapy. Capillary leak syndrome (swelling of feet or lower legs, sudden weight gain, dyspnea) and pleural or pericardial effusion may occur.
- May cause flushing with first dose.



Calcipotriene

(kal-si-poe-try-een)

Dovonex

Therapeutic/Pharmacologic Class

Antipsoriatic/Synthetic vitamin D₃ analog

Indications

Management of moderate plaque psoriasis.

Action

Modulates skin cell development and production by acting as a synthetic form of vitamin D.

Adverse Reactions/Side Effects

Derm: burning, itching, skin irritation, dry skin, erythema, peeling, rash, worsening/spreading of psoriatic lesions. **F and E:** hypercalcemia.

Keep in Mind

Teach client:

- This drug is for external use only; contact with face or eyes should be avoided. Wash hands after application.
- Apply a thin layer to affected skin twice daily and rub in completely; do not cover.
- Do not use for any disorder other than that for which it was prescribed.

Nursing Dx: Impaired skin integrity; Readiness for enhanced social interaction.

- Report any signs of local adverse reactions, persistent irritation, or facial rash to health-care professional. May cause irritation of lesions and surrounding skin. Discontinuation of the drug may be required.
- Regular lab tests will be done to monitor calcium concentrations.
- Expect improvement in 2–8 weeks.



Make the Connection

- Monitor serum calcium concentrations before and periodically during therapy. May cause transient, rapidly reversible hypercalcemia. If hypercalcemia occurs, discontinue and monitor calcium levels weekly until normal serum calcium levels are restored.
- Excessive use may cause hypercalcemia.
- If ultraviolet B treatment is concurrent, use the cream after the light therapy.
- Remember, sunlight is the natural enemy of psoriasis.
- Vitamin D increases the absorption of calcium, so even topical application can cause hypercalcemia.



Azithromycin

*(aye-**zith**-row-mye-sin)*

Zithromax, Zmax

Clarithromycin

*(kla-**rith**-roe-mye-sin)*

Biaxin, Biaxin XL

Erythromycin

*(eh-**rith**-roe-**mye**-sin)*

E-Mycin, E.E.S., EryPed, Ilosone, E/Gel

✿ Apo-Erythro-EC,

✿ Novo-Rythro,

✿ Sans-Acne

Therapeutic/Pharmacologic Class

Agent for atypical mycobacterium, anti-infective/
Macrolide

Indications

Treatment of the following infections due to susceptible organisms: upper respiratory tract infections, lower respiratory tract infections; acute otitis media; skin and skin structure infections; genitourinary infections. Prevention of disseminated *Mycobacterium avium* complex (MAC) infection in clients with advanced HIV infection.

Action

Inhibit protein synthesis at the level of the 50S bacterial ribosome. Effective against many gram-positive and gram-negative bacteria, as well as mycobacteria.

Adverse Reactions/Side Effects

CNS: dizziness, seizures, drowsiness, fatigue, headache. **CV:** chest pain, hypotension, palpitations, arrhythmias (rare). **GI:** **pseudomembranous colitis**, abdominal pain, diarrhea, nausea, cholestatic jaundice, elevated liver enzymes, dyspepsia,

Nursing Dx: Risk for Infection; Diarrhea.

melena, oral candidiasis. **GU:** nephritis, vaginitis. **Hemat:** anemia, leukopenia, thrombocytopenia. **Derm:** photosensitivity, Stevens-Johnson syndrome, rashes. **EENT:** ototoxicity. **F and E:** hyperkalemia. **Misc:** **angioedema.**

Keep in Mind

Teach client:

- Take the entire prescription as directed with food.
- **Report blood in stool.**



Make the Connection

- Culture and sensitivity tests should be performed prior to starting therapy.
- **Observe for signs and symptoms of anaphylaxis.**
- Monitor CBC with differential.

Also Used for: Ophthalmic applications (infection and prophylaxis against Chlamydia/gonorrheal infection in the eye); gastrointestinal system applications (Helicobacter pylori infections [peptic ulcers]); cardiovascular system applications (prevention of endocarditis); respiratory system applications (treatment of infections in cystic fibrotic lung disease)



Clindamycin

(klin-da-mye-sin)

Cleocin, Cleocin T
🍁 Dalacin C

Therapeutic/Pharmacologic Class

Anti-Infective

Indications

Treatment of skin and skin structure infections, respiratory tract infections, septicemia, intra-abdominal infections, gynecologic infections, and osteomyelitis.

Prevention of endocarditis. **Unlabelled uses:**

Treatment of opportunistic disease in HIV+ clients.

Action

Inhibits protein synthesis in susceptible bacteria at the level of the 50S bacterial ribosome. Effective against most gram-positive aerobic cocci. Also effective against anaerobic bacteria of reproductive tract.

Adverse Reactions/Side Effects

CNS: dizziness, headache, vertigo. **CV:** arrhythmias, hypotension. **GI:** **pseudomembranous colitis**, diarrhea, bitter taste (IV), nausea, vomiting.

Derm: rashes. **Local:** phlebitis at IV site.

Nursing Dx: Risk for infection; Diarrhea.

Keep in Mind

Teach client:

- Take the drug as directed until finished.
- **Notify health-care professional immediately if diarrhea, abdominal cramping, fever, or bloody stool occurs.**
- Be aware of risk of *Candida* (yeast) infection.
- Refrain from vaginal intercourse if intravaginal preparation is used.
- If a rash occurs, discontinue medication and notify health care professional immediately.



Make the Connection

- Culture and sensitivity tests should be performed before therapy is begun.
- Monitor CBC with differential (“good” cells can also be affected), and liver and renal labs.
- Monitor for improvement in condition clinically and by lab work.

Also Used for: Reproductive system applications (intravaginal application for bacterial vaginitis)



Gentamicin

(jen-ta-mye-sin)

Garamycin

🍁 Cidomycin

Kanamycin

(kan-a-mye-sin)

Kantrex

Amikacin

(am-i-kay-sin)

Amikin

Tobramycin

(toe-bra-mye-sin)

Nebcin, TOBI

Therapeutic/Pharmacologic Class

Anti-infective/Aminoglycoside

Indications

Treatment of serious gram-negative bacterial infections and infections caused by staphylococci when penicillins or other less toxic drugs are contraindicated. In combination with other agents in the management of serious enterococcal infections. Prevention of infective endocarditis. Prophylactic IV treatment in the neonate.

Action

Inhibit protein synthesis in bacteria at level of the 30S bacterial ribosome.

Adverse Reactions/Side Effects

CNS: ataxia, vertigo. **EENT:** **ototoxicity (vestibular and cochlear)**. **GU:** **nephrotoxicity**.
MS: muscle paralysis (high parenteral doses).
Misc: hypersensitivity reactions.

Nursing Dx: Risk for infection; Risk for injury.

Keep in Mind

Teach client:

- Report tinnitus, vertigo, hearing loss, rash, dizziness, or difficulty urinating.
- Drink plenty of liquids.
- Topical application if applicable. Assess skin and inform HCP if skin irritation develops or infection worsens.



Make the Connection

- Culture and sensitivity test should be performed before initiating therapy.
- Monitor for hearing loss or ataxia.
- Monitor intake and output and daily weight.
- Monitor CBC with differential, LFT and RFT.
- Monitor peak and trough serum blood levels.
- Neonates should be assessed by audiometric studies prior to discharge.
- Monitor for fungal infections.

Also Used for: Sensory system applications (ophthalmic/otic infections); respiratory system applications (first-line treatment with other drugs of tuberculosis)



Vancomycin

*(van-koe-**mye**-sin)*

Vancocin

Therapeutic/Pharmacologic Class

Anti-infective

Indications

IV: Treatment of potentially life-threatening infections when less toxic anti-infectives are contraindicated. Particularly useful in methicillin-resistant staphylococcal infections. **PO:** Treatment of staphylococcal enterocolitis or pseudomembranous colitis due to *Clostridium difficile*.

Action

Binds to bacterial cell wall, resulting in cell death (bacteriocidal). Effective against gram-positive pathogens.

Adverse Reactions/Side Effects

EENT: ototoxicity. **CV:** hypotension, massive histamine release called “red-man syndrome” with rapid IV infusion. **GI:** nausea, vomiting. **GU:** nephrotoxicity. **Derm:** rashes. **Hemat:** eosinophilia, leukopenia. **Local:** phlebitis. **MS:** back and neck pain. **Misc:** anaphylaxis, superinfection.

Nursing Dx: Risk for infection; Diarrhea.

Keep in Mind

Teach client:

- Oral forms are to be taken exactly as directed.
- Report tinnitus, rash, vertigo, or hearing loss.
- Report flushing of the skin, or dizziness.



Make the Connection

- Culture and sensitivity tests are performed prior to initiating therapy.
- Monitor IV site closely to avoid extravasation.
- Monitor blood pressure and presence of skin flushing throughout IV infusion.
- Monitor intake and output and daily weight. Cloudy or pink urine may be a sign of nephrotoxicity.
- Assess bowel status.
- Monitor CBC with differential, and liver and renal function. Monitor peak and trough drug levels. Report subtherapeutic or toxic levels immediately.
- IV: Administer over at least 60–90 min to prevent “red-man syndrome” (massive histamine release).
- Look for *Candida* infections.



Ciprofloxacin

*(sip-roe-**flox**-a-sin)*

Cipro, Cipro XR

Levofloxacin

*(le-voe-**flox**-a-sin)*

Levaquin

Therapeutic/Pharmacologic Class

Anti-infective/Fluoroquinolone

Indications

PO, IV: Treatment of the following bacterial infections:

Urinary tract and gynecologic infections; respiratory tract infections; skin and skin structure infections; bone and joint infections; infectious diarrhea; complicated intra-abdominal infections; and typhoid fever.

Postexposure prophylaxis of inhalational **anthrax**.

Treatment of cutaneous anthrax. **Unlabelled uses:**

Treatment of febrile neutropenia.

Action

Inhibit bacterial DNA synthesis by inhibiting DNA gyrase enzyme (bacteriocidal). Effective against gram-positive and gram-negative bacteria.

Adverse Reactions/Side Effects

CNS: **seizures**, dizziness, drowsiness, headache, insomnia/agitation, confusion. **GI:** **pseudomembranous colitis**, abdominal pain, diarrhea, abnormal liver enzymes, nausea. **GU:** vaginitis.

Derm: photosensitivity, rash. **Endo:** hyperglycemia,

hypoglycemia. **Hemat:** eosinophilia. **Local:** phlebitis at IV site. **MS:** tendonitis, tendon rupture. **Neuro:** peripheral neuropathy. **Misc:** **anaphylaxis**.

Keep in Mind

Teach client:

- Take medication as directed.
- Drink plenty of fluids daily to prevent crystalluria.
- Do not take with antacids.
- May cause dizziness and drowsiness.
- Use sunscreen and protective clothing.
- **Report rash, tendon pain, or blood in stool.**



Make the Connection

- Culture and sensitivity tests should be performed before initiating therapy.
- **Monitor for anaphylactic reaction.**
- Monitor CBC with differential, liver and renal studies, and blood glucose.
- Monitor for signs of *Candida* infection.
- Best if given on an empty stomach.

Nursing Dx: Risk for infection; Knowledge deficit.



Amoxicillin

(a-mox-i-sill-in)

Amoxil, Trimox

🍁 Apo-Amoxi

Amoxicillin/ Clavulanate

(a-mox-i-sill-in/klav-yoo-lan-ate)

Augmentin, Augmentin
ES, Augmentin XR

🍁 Clavulin

Ampicillin/ Sulbactam

(am-pi-sill-in/sul-bak-tam)

Unasyn

Piperacillin/ Tazobactam

(pi-per-a-sill-in/tay-zoe-bak-tam)

Zosyn

Therapeutic/Pharmacologic Class

Anti-infective/Aminopenicillin/beta lactamase inhibitor with clavulanate or sulbactam/extended spectrum with tazobactam.

Indications

Treatment of skin and skin structure infections, otitis media, sinusitis, respiratory infections, and genitourinary infections. Prevention of endocarditis. Postexposure inhalational anthrax prophylaxis. Treatment of infections with resistant organisms.

Unlabelled uses: Lyme disease in children <8 years.

Action

Bind to bacterial cell wall, causing cell death (bacteriocidal). Depending on agent, drugs have broad spectrum and can kill resistant organisms.

Adverse Reactions/Side Effects

CNS: seizures (high doses). **GI:** pseudomembranous colitis, diarrhea, nausea, vomiting, elevated liver enzymes. **Derm:** rashes, urticaria. **Hemat:** bone marrow suppression. **Misc:** anaphylaxis, serum sickness, superinfection.

Nursing Dx: Risk for infection; Knowledge deficit; Diarrhea.

Keep in Mind

Teach client:

- Take as directed.
- Women taking oral contraceptives should use a barrier method while on this medication.
- Be aware that yeast infections may occur.
- **Notify health care professional immediately if diarrhea, abdominal cramping, fever, or bloody stools occur.**
- Calculate and measure doses accurately if administering to pediatric client, using proper measuring device.



Make the Connection

- **Observe for signs and symptoms of anaphylaxis (rash, pruritus, laryngeal edema, wheezing).**
- Obtain specimens for culture and sensitivity testing prior to therapy.
- **Monitor bowel function.**
- Monitor CBC with differential and liver enzymes.

Also Used for: Gastrointestinal system applications (treatment of peptic ulcers due to *H. pylori* [PO only]).



Doxycycline

(dox-i-sye-kleen)

Doryx, Vibramycin

🍁 Apo-Doxy

Tetracycline

(te-tra-sye-kleen)

Achromycin

🍁 Apo-Tetra

Therapeutic/Pharmacologic Class

Anti-infective/Tetracycline

Indications

Treatment of various infections caused by unusual organisms, including *Mycoplasma*, *Chlamydia*, *Rickettsia*, and *Borrelia burgdorferi*. Treatment of inhalational anthrax (postexposure) and cutaneous anthrax. Treatment of gonorrhea and syphilis in penicillin-allergic clients. Prevention of exacerbations of chronic bronchitis. Treatment of acne.

Action

Inhibit bacterial protein synthesis at the level of the 30S bacterial ribosome (bacteriostatic). Low-dose products used in the management of periodontitis inhibit collagenase. Effective against some gram-positive and gram-negative bacteria, as well as *Mycoplasma* and *Rickettsia*.

Adverse Reactions/Side Effects

CNS: benign intracranial hypertension (higher in children). **GI:** diarrhea, nausea, vomiting, esophagitis, hepatotoxicity, pancreatitis.

Nursing Dx: Risk for infection; Risk for injury.

Derm: photosensitivity, rashes. **Hemat:** bone marrow suppression. **Local:** phlebitis at IV site. **Misc:** hypersensitivity reactions, superinfection.

Keep in Mind

Teach client:

- Take as directed. Report rash (allergic reaction).
- Avoid taking antacids and dairy products.
- Women should use a nonhormonal method of contraception (barrier method).
- Use sunscreen and protective clothing.
- Watch for signs of yeast infection.



Make the Connection

- Culture and sensitivity testing are done before initiating therapy.
- Monitor renal and liver functions, amylase and lipase levels, and CBC with differential.
- Pregnant women and children under 8 yr of age should not take these preparations, as they affect teeth (brown, speckled stain) and bones.



Ceftriaxone
(3rd Generation)
(sef-try-ax-one)

Rocephin

Cephalexin
(1st Generation)
(sef-a-lex-in)

Keflex
🍁 Apo-Cephalex

Ceftazidime
(3rd Generation)
(sef-taz-i-deem)

Fortaz, Tazicef

Cefepime
(4th Generation)
(sef-e-peem)

Maxipime

Therapeutic/Pharmacologic Class

Anti-infective/Cephalosporin

Indications

Treatment of skin and skin structure infections; bone and joint infections; complicated and uncomplicated urinary tract infections; uncomplicated gynecologic infections, including gonorrhea; lower respiratory tract infections; intra-abdominal infections; septicemia; meningitis; otitis media; and perioperative prophylaxis.

Action

Bind to the bacterial cell wall membrane, causing cell death (bacteriocidal). Spectrum varies depending on drug generation. Third generation is more effective against more organisms.

Adverse Reactions/Side Effects

CNS: Seizures (high doses). **GI:** **pseudomembranous colitis**, diarrhea, cholelithiasis, sludging in the gallbladder. **Derm:** rashes, urticaria. **Hemat:** bone marrow suppression. **Local:** pain at IM site, phlebitis at IV site. **Misc:** allergic reactions including **anaphylaxis**, superinfection.

Nursing Dx: Risk for infection; Knowledge deficit; Diarrhea.

Keep in Mind

Teach client:

- Take as directed.
- **Notify health-care professional if fever and diarrhea develop, especially if stool contains blood, pus, or mucus.**
- These medications are related to penicillins, so report pre-existing allergy.
- Women should use a barrier method of birth control.
- Report rash or signs of yeast infection.



Make the Connection

- Before initiating therapy, obtain a history to determine previous use of and reactions to penicillins or other beta-lactam medications.
- Obtain specimens for culture and sensitivity testing before initiating therapy.
- **Observe client for signs and symptoms of anaphylaxis.**
- Monitor CBC with differential.
- Discuss alternative forms of birth control with female clients.



Imipenem/Cilastatin

*(i-me-**pen**-em/sye-la-**stat**-in)*

Primaxin

Therapeutic/Pharmacologic Class

Anti-infective/Carbapenem

Indications

Treatment of lower respiratory tract infections, urinary tract infections, abdominal infections, gynecologic infections, skin and skin structure infections, bone and joint infections, bacteremia, endocarditis, polymicrobial infections, and infections with resistant organisms.

Action

Binds to the bacterial cell wall, resulting in cell death (bacteriocidal). Combination of drugs prevents renal inactivation. Many enzymes that degrade most other beta-lactam drugs do not affect this drug. Broad spectrum against gram-positive and gram-negative aerobes and anaerobes.

Adverse Reactions/Side Effects

CNS: seizures, dizziness, somnolence. **CV:** hypotension. **GI:** pseudomembranous colitis, diarrhea, nausea, vomiting. **Derm:** rash, pruritus, sweating, urticaria. **Hemat:** eosinophilia. **Local:** phlebitis at IV site. **Misc:** anaphylaxis, fever, superinfection.

Nursing Dx: Risk for infection; Risk for injury; Diarrhea.

Keep in Mind

Teach client:

- Watch for signs and symptoms of yeast infection.
- **Notify health-care professional if fever and diarrhea occur, especially if stool contains blood, pus, or mucus. Symptoms may occur up to several weeks after discontinuation of medication.**



Make the Connection

- Obtain a history before initiating therapy to determine previous use of and reactions to beta-lactam drugs.
- Obtain specimens for culture and sensitivity testing before initiating therapy.
- **Observe client for signs and symptoms of anaphylaxis.**
- Monitor CBC with differential to assess effectiveness.
- Monitor liver function and renal function tests. This drug has very high renal concentrations.
- Do not administer direct IV. Drug must be diluted.



Isoniazid

(eye-soe-nye-a-zid)

INH

🌸 PMS Isoniazid

Ethambutol

(e-tham-byoo-tole)

Myambutol

🌸 Etibi

Pyrazinamide

(peer-a-zin-a-mide)

🌸 PMS Pyrazinamide

Rifampin

(rif-am-pin)

Rifadin

🌸 Rofact

Therapeutic/Pharmacologic Class

Antitubercular/Bacteriostatic, bacteriocidal

Indications

First-line therapy of active tuberculosis, in combination with other agents. Multi-drug regimen prevents resistance. Preventive treatment (exposed to active TB) may be accomplished with monotherapy.

Action

Inhibit mycobacterial cell wall synthesis and interfere with metabolism; one first-line drug interferes with RNA transcription. Bactericidal/bacteriostatic action.

Adverse Reactions/Side Effects

CNS: psychosis, seizures, **optic neuritis.**

EENT: visual disturbances. **GI:** **drug-induced hepatitis,** nausea, vomiting. **Derm:** rashes.

Endo: gynecomastia. **Hemat:** bone marrow changes. **Neuro:** **peripheral neuropathy.**

Misc: fever, drug that begins with “r” causes urine to be discolored red (r = red!).

Nursing Dx: Noncompliance; Risk for infection; Pain.

Keep in Mind

Teach client:

- Take medication exactly as directed. Therapy may be continued for 6 mo–2 yr.
- **Report numbness of extremities or decrease in vision. Take pyridoxine (B₆) to ↓ neuropathy.**
- **Avoid the use of alcohol.**
- Avoid tyramine-containing foods.
- Maintain appointments for regular follow-up.
- Be aware that urine may change color (“r” drug = red).



Make the Connection

- Monitor CBC with differential, liver function tests, and uric acid levels.
- Teach the client carefully about the regimen, public health concerns, and possible side effects.
- Monitor vision and for nerve pain/paresthesias.
- Therapy will continue until 2 sputum samples for acid-fast bacillus (AFB) are negative.



Trimethoprim/ Sulfamethoxazole

(trye-meth-oh-prim/sul-fa-meth-ox-a-zole)

Bactrim, Bactrim DS, SMZ/TMP, Septra
✿ Apo-Sulfatrim DS

Therapeutic/Pharmacologic Class

Anti-infective, antiprotozoal/Folate antagonist, sulfonamide

Indications

Treatment of bronchitis, *Shigella* enteritis, otitis media, *Pneumocystis carinii* pneumonia (PCP), urinary tract infections, and traveler's diarrhea. Prevention of PCP in HIV-positive clients.

Action

Combination inhibits the metabolism of folic acid in bacteria at two different points (bacteriocidal). Effective against gram-negative and gram-positive bacteria.

Adverse Reactions/Side Effects

CNS: fatigue, hallucinations, headache, insomnia, mental depression. **GI:** **hepatic necrosis**, nausea, vomiting, diarrhea, stomatitis, hepatitis, cholestatic jaundice. **GU:** **crystalluria**. **Derm:** **severe exfoliative rashes**, photosensitivity. **Hemat:** **bone marrow suppression**. **Local:** phlebitis at IV site. **Misc:** allergic reactions, fever.

Nursing Dx: Risk for infection.

Keep in Mind

Teach client:

- Take medication as directed.
- Use sunscreen and protective clothing.
- Notify health-care professional if skin rash, sore throat, fever, mouth sores, or unusual bleeding or bruising occurs.
- Maintain appointments for regular follow-up.
- Increase fluid intake to decrease the risk of renal crystals.



Make the Connection

- Obtain specimens for culture and sensitivity testing before initiating therapy.
- Inspect IV site frequently. Phlebitis is common.
- **Assess client for allergy to sulfonamides.**
- Monitor intake and output. Promote adequate fluid intake.
- Monitor CBC with differential and liver and renal labs.

Also Used for: Sensory system applications (ophthalmic preparation for keratitis); integumentary system applications (bacterial infections of the skin)



Fluconazole

(floo-kon-a-zole)

Diflucan

Amphotericin B Deoxycholate

(am-foe-ter-i-sin)

Fungizone, Amphotec

Terbinafine

(ter-bi-na-feen)

Lamisil

Ketoconazole (Systemic)

(kee-toe-koe-na-zole)

Nizoral

Therapeutic/Pharmacologic Class

Antifungal (systemic)

Indications

PO, IV: Treatment of fungal infections caused by susceptible organisms.

Action

Inhibit synthesis of fungal sterols, a necessary component of the cell membrane (fungistatic). Destroys fungi at higher doses (fungicidal).

Adverse Reactions/Side Effects

CNS: headache, dizziness, tremor, seizures.

GI: **hepatotoxicity**, abdominal discomfort, diarrhea, nausea, vomiting. **Derm:** **exfoliative skin disorders**.

Endo: hypokalemia, hypocalcemia, hypomagnesemia, hypertriglyceridemia. **Misc:** allergic reactions, including **anaphylaxis**; acute infusion reactions.

Resp: dyspnea, hypoxia, wheezing with certain drugs. **CV:** hypotension, arrhythmias with amphotericin. **GU:** nephrotoxicity, hematuria with amphotericin. **MS:** arthralgia, myalgia with amphotericin.

Neuro: peripheral neuropathy with amphotericin.

Nursing Dx: Risk for infection; Risk for impaired skin integrity; Risk for injury; Pain.

Keep in Mind

Teach client:

- Take medication as directed.
- Notify health-care professional if skin rash, abdominal pain, fever, diarrhea, unusual fatigue, anorexia, nausea, vomiting, jaundice, unusual bruising, bleeding, palpitations, dark urine, or pale stools occur.
- Report development of a rash immediately.



Make the Connection

- Specimens for culture should be taken before instituting therapy.
- Monitor liver and renal function tests and CBC with differential.
- **Monitor vital signs every 15–30 min during test dose and every 30 min for 2–4 hr after administration of amphotericin. May need to premedicate with meperidine, dantrolene, and diphenhydramine.**
- Assess respiratory status daily after administration of amphotericin.

Also Used for: Integumentary system applications (topical preparations for tinea)



Acyclovir

(ay-sye-kloe-veer)

Zovirax

🍁 Avirax

Famciclovir

(fam-sye-kloe-veer)

Famvir

Valacyclovir

(val-ay-sye-kloe-veer)

Valtrex

Therapeutic/Pharmacologic Class

Antiviral

Indications

PO, IV: Treatment of recurrent genital herpes infections. Treatment of localized cutaneous herpes zoster infections (shingles) and chickenpox (varicella). Treatment of herpes simplex encephalitis in immunocompromised clients. **Topical:** Treatment of recurrent herpes labialis (cold sores).

Action

Interfere with viral DNA synthesis.

Adverse Reactions/Side Effects

CNS: **seizures**, dizziness, headache, hallucinations, trembling. **GI:** diarrhea, nausea, vomiting, elevated liver enzymes, hyperbilirubinemia, abdominal pain, anorexia. **GU:** **renal failure**, crystalluria, hematuria. **Derm:** acne, hives, skin rashes, unusual sweating, Stevens-Johnson syndrome.

Endo: changes in menstrual cycle. **Hemat:** **thrombotic thrombocytopenic purpura/hemolytic uremic syndrome** (high doses in immunosuppressed

clients). **Local:** pain, phlebitis, local irritation. **MS:** joint pain. **Misc:** polydipsia.

Keep in Mind

Teach client:

- Take medication as directed.
- Condoms should always be used during sexual contact.
- Women with genital herpes should have yearly Papanicolaou smears.
- Follow instructions for proper application of topical creams or ointments.
- Wash hands after touching affected areas to avoid spreading the viral infection to other areas of the body. Avoid drug contact in or around the eyes.



Make the Connection

• Monitor BUN, serum creatinine, and creatinine clearance rate (CCr) before and during therapy. ↑ BUN and serum creatinine levels or ↓ CCr may indicate renal failure.

Nursing Dx: Risk for infection; Readiness for enhanced comfort level.

Also Used for: Sensory system applications (ophthalmologic preparations for viral eye infections)



Zanamivir

(za-na-mi-veer)

Relenza

Oseltamivir

(owe-sell-tam-i-veer)

Tamiflu

Therapeutic/Pharmacologic Class

Antiviral/Neuraminidase inhibitor

Indications

Treatment of uncomplicated acute illness caused by influenza virus in adults and children >7 yr who have been symptomatic no more than 2 days.

Action

Inhibits the enzyme neuraminidase, which may alter virus particle aggregation and release.

Adverse Reactions/Side Effects

■ **Resp:** bronchospasm.

Keep in Mind

Teach client:

- Take exactly as directed and finish entire 5-day course, even if feeling better. Follow instructions for the use of the DISKHALER. Client education pamphlet accompanies the inhaler.

- This medication is not a substitute for a flu shot.
- Persons with a history of asthma should have a fast-acting inhaled bronchodilator available in case of bronchospasm. If using bronchodilator and the medication concurrently, administer bronchodilator first.



Make the Connection

- Assess client for signs and symptoms of influenza (fever, headache, myalgia, cough, sore throat) before administration. Determine duration of symptoms. Indicated for clients who have been symptomatic for up to 2 days.

Nursing Dx: Readiness for enhanced comfort level; Risk for infection; Impaired spontaneous ventilation.



Abacavir

(ah-back-ah-veer)

Ziagen

Lamivudine

(la-mi-vyoo-deen)

Epivir, Epivir HBV, 3TC

Didanosine

(dye-dan-oh-seen)

ddI, Dideoxyinosine,
Videx, Videx EC

Zidovudine

(zye-doe-vyoo-deen)

AZT, Retrovir
🍁 Apo-Zidovudine

Therapeutic/Pharmacologic Class

Antiretroviral/Nucleoside reverse transcriptase inhibitor (NRTI)

Indications

Management of HIV infection (AIDS) in combination with other antiretrovirals. Combining anti-retrovirals prevents the development of resistant strains. See special combination regimens in drug guide.

Action

Inhibit the activity of HIV-1 reverse transcriptase, interfering with the order of transcription, which in turn terminates viral DNA growth.

Adverse Reactions/Side Effects

CNS: headache, insomnia. **GI:** hepatotoxicity, diarrhea, nausea, vomiting, anorexia. **Derm:** rashes.

F and E: lactic acidosis. **Misc:** hypersensitivity reactions.

Keep in Mind

Teach client:

- Take medications as directed.
- These medications do not cure HIV/AIDS, but control disease progression.

Nursing Dx: Risk for infection.

- Always use a condom, and avoid sharing needles or donating blood.
- **Report any signs of allergic reaction.**
- Maintain appointments for regular follow-up exams and blood counts.
- CD4 and viral load counts and their significance.



Make the Connection

- Assess client for change in severity of HIV symptoms and for symptoms of opportunistic infections throughout therapy.
- **Assess for signs of hypersensitivity reactions.**
- Monitor liver function tests, serum glucose, lipid panel, and serum lactate levels.
- Monitor viral load and CD4 cell count regularly during therapy. Chart on a graph to show progress (encourages compliance).
- Monotherapy with zidovudine is used during pregnancy.
- Initial combination therapy usually includes two NRTIs and one protease inhibitor.



Ritonavir

(ri-**toe**-na-veer)

Norvir

Saquinavir

(sa-**kwin**-a-veer)

Invirase

Nelfinavir

(nell-**finn**-a-veer)

Viracept

Amprenavir

(am-**pren**-a-veer)

Agenerase

Therapeutic/Pharmacologic Class

Antiretroviral/Protease inhibitor

Indications

Treatment of HIV infection (with other antiretrovirals).

Action

Inhibit the action of HIV protease, which acts like scissors that cut DNA chain to appropriate length. Without the HIV protease, the chain is sensed as abnormal and terminated.

Adverse Reactions/Side Effects

CNS: **seizures**, abnormal thinking, weakness, dizziness, headache, malaise, somnolence, syncope. **EENT:** pharyngitis, throat irritation. **Resp:** **angioedema**, bronchospasm. **CV:** orthostatic hypotension, vasodilation. **GI:** abdominal pain, altered taste, anorexia, diarrhea, nausea, vomiting, constipation, dyspepsia, flatulence. **GU:** renal insufficiency. **Derm:** rash, skin eruptions, sweating, urticaria. **Endo:** hyperglycemia. **F and E:** dehydration. **Metab:** hyperlipidemia.

Nursing Dx: Risk for infection; Risk for loneliness; Risk for injury.

MS: increased creatine phosphokinase, myalgia. **Neuro:** circumoral paresthesia, peripheral paresthesia. **Misc:** hypersensitivity reactions, including **Stevens-Johnson syndrome and anaphylaxis**; fat redistribution; fever.

Keep in Mind

Teach client:

- Take exactly as directed.
- Use condoms, do not share needles or donate blood.
- Sex with another HIV+ person may result in spread of different strains of HIV.
- Smoking may interfere with the drug.
- Redistribution of body fat may occur.



Make the Connection

- Monitor viral load and CD4 counts.
- Monitor liver function tests, CPK, lipid panel, serum uric acid, and serum glucose levels.



Efavirenz

(e-fav-i-renz)

Sustiva

Delavirdine

(de-la-veer-deen)

Rescriptor

Nevirapine

(ne-veer-a-peen)

Viramune

Therapeutic/Pharmacologic Class

Antiretroviral/Nonnucleoside reverse transcriptase inhibitor (NNRTI)

Indications

Treatment of HIV infection (in combination with one or more other antiretroviral agents to prevent resistance to the medication).

Action

Inhibit HIV reverse transcriptase, which results in disruption of DNA synthesis. The chain is seen as corrupt and is terminated.

Adverse Reactions/Side Effects

CNS: abnormal dreams, depression, dizziness, drowsiness, fatigue, headache, impaired concentration, insomnia, nervousness, psychiatric symptomatology. **GI:** nausea, abdominal pain, anorexia, diarrhea, dyspepsia, flatulence. **GU:** hematuria, renal calculi. **Derm:** rash, increased sweating, pruritus. **Neuro:** hypoesthesia.

Nursing Dx: Risk for infection; Knowledge deficit.

Keep in Mind

Teach client:

- Take exactly as directed. Must always be used in combination with other antiretroviral drugs.
- May cause dizziness, impaired concentration, or drowsiness. Avoid activities requiring alertness.
- These medications do not cure HIV/AIDS.
- Use a condom, do not share needles, and do not donate blood.
- Notify health care professional immediately if rash occurs.
- Maintain appointments for regular follow-up.



Make the Connection

- Assess for rash, especially during first month of therapy.
- Assess client for CNS and psychiatric symptoms.
- Monitor liver function tests, lipid panel, viral load, and CD4 cell count regularly during therapy.
- May cause false-positive urine cannabinoid results.

Lopinavir/Ritonavir

(loe-**pin**-a-veer/ri-**toe**-na-veer)

Kaletra

Lamivudine/Zidovudine

(la-**mi**-vyoo-deen/zye-**doe**-vyoo-deen)

Combivir



Abacavir

(ah-**back**-ah-veer)

Lamivudine

(la-**mi**-vyoo-deen)

Zidovudine

(zye-**doe**-vyoo-deen)

Trizivir

Therapeutic/Pharmacologic Class

Antiretroviral/Nucleoside reverse transcriptase inhibitor (NRTI), protease inhibitor combination drug

Indications

Treatment of HIV infection.

Action

Inhibit reverse transcriptase and protease, resulting in a corrupt DNA chain, causing termination.

Adverse Reactions/Side Effects

CNS: **seizures**, abnormal thinking, weakness, dizziness, headache, malaise, somnolence, syncope. **EENT:** pharyngitis, throat irritation.

Resp: **angioedema**, bronchospasm. **CV:** orthostatic hypotension, vasodilation. **GI:** abdominal pain, altered taste, anorexia, diarrhea, nausea, vomiting, constipation, dyspepsia, flatulence.

GU: renal insufficiency. **Derm:** rash, skin eruptions, sweating, urticaria. **Endo:** hyperglycemia.

F and E: dehydration, **lactic acidosis**.

Metab: hyperlipidemia. **MS:** increased creatine phosphokinase, myalgia. **Neuro:** circumoral paresthesia, peripheral paresthesia.

Nursing Dx: Risk for infection; Social isolation.

Misc: hypersensitivity reactions, including **Stevens-Johnson syndrome and anaphylaxis**; fat redistribution; fever.

Keep in Mind

Teach client:

- Take exactly as directed. These drugs are combined essential antiretroviral agents.
- May cause dizziness, impaired concentration, or drowsiness. Avoid activities requiring alertness.
- These medications do not cure HIV/AIDS.
- Use a condom, do not share needles, and do not donate blood.
- Report a rash immediately.
- Maintain appointments for regular follow-up.



Make the Connection

- Monitor viral load and CD4 counts.
- Monitor liver function tests, CPK, lipid panel, serum uric acid, and serum glucose levels.
- **Assess for signs of hypersensitivity reactions.**
- Initial combination therapy usually includes two NRTIs and one protease inhibitor.

MUSCULOSKELETAL

Cyclobenzaprine

(*sye-kloe-ben-za-preen*)

Flexeril

Baclofen

(*bak-loe-fen*)

Kemstro, Lioresal

Metaxolone

(*met-ax-a-loan*)

Skelaxin



Therapeutic/Pharmacologic Class

Therapeutic: skeletal muscle relaxants (centrally acting)

Indications

Management of acute, painful musculoskeletal conditions associated with muscle spasm. **Unlabelled uses:** Management of fibromyalgia. One in this class may also be used for treatment of reversible spasticity due to multiple sclerosis or spinal cord lesions (intrathecally) and orally to treat pain in trigeminal neuralgia.

Action

Reduce tonic somatic muscle activity at the level of the brainstem. Structurally similar to tricyclic antidepressants. One in this class inhibits reflexes at the spinal level.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, confusion, fatigue, headache, nervousness. **EENT:** dry mouth, blurred vision. **CV:** arrhythmias. **GI:** constipation, dyspepsia, nausea, unpleasant taste. **GU:** urinary retention. **Neuro:** ataxia (intrathecal administration-seizures). **Metab:** hyperglycemia, weight gain. **Misc:** Hypersensitivity reactions, sweating.

Nursing Dx: Risk for activity intolerance; Readiness for self-care activities.

Keep in Mind

Teach client:

- Take medication exactly as directed.
- Medication may cause drowsiness, dizziness, and blurred vision. Avoid activities requiring alertness.
- Do not use alcohol or other CNS depressants with this medication.
- Take with food to decrease stomach irritation.
- Increase fluid intake and bulk in diet to decrease likelihood of constipation.
- Report symptoms of urinary retention.
- Use good oral hygiene and sugarless gum or candy for dry mouth.
- Do not discontinue therapy abruptly.



Make the Connection

- It is important to remember the CNS depression associated with these drugs.
- Assess client for improvement in pain or spasticity.
- Almost all drugs used for musculoskeletal illness are gastric irritants.



Dantrolene

(*dan-troe-leen*)

Dantrium

Therapeutic/Pharmacologic Class

Skeletal muscle relaxant (direct acting)/Hydantoin derivative

Indications

PO: Treatment of spasticity associated with spinal cord injury, stroke, cerebral palsy, and multiple sclerosis. Prophylaxis of malignant hyperthermia.

IV: Emergency treatment of malignant hyperthermia.

Action

Acts directly on skeletal muscle, causing relaxation by decreasing calcium release from sarcoplasmic reticulum in muscle cells. Prevents intense catabolic process associated with malignant hyperthermia.

Adverse Reactions/Side Effects

CNS: drowsiness, muscle weakness, confusion, dizziness, headache, insomnia, malaise, nervousness.

EENT: excessive lacrimation, visual disturbances.

Resp: pleural effusions. **CV:** changes in BP, tachycardia. **GI:** **hepatotoxicity**, diarrhea, anorexia, cramps, dysphagia, GI bleeding, vomiting.

Nursing Dx: Risk for injury.

GU: crystalluria, dysuria, frequency, impotence, incontinence, nocturia. **Derm:** pruritus, sweating, urticaria. **Hemat:** eosinophilia. **Local:** irritation at IV site, phlebitis. **MS:** myalgia. **Misc:** chills, drooling, fever.

Keep in Mind

Teach client:

- May cause dizziness, drowsiness, visual disturbances, and muscle weakness.
- Avoid taking alcohol or other CNS depressants concurrently with this medication.
- Wear sunscreen.



Make the Connection

- Assess bowel function for diarrhea.
- Assess neuromuscular status to establish a baseline before initiating therapy.
- On the day of administration, assess gag reflex and have client “dry swallow” to see the rise of the larynx prior to giving food.

Also Used for: CNS applications (Parkinsonian crisis and neuroleptic malignant syndrome [associated with anti-psychotic medications])



Edrophonium

*(e-droh-**fone**-ee-yum)*

Enlon, Tensilon

Neostigmine

*(nee-oh-**stig**-meen)*

Prostigmin

Pyridostigmine

*(peer-id-oh-**stig**-meen)*

Mestinon

🍁 Mestinon SR

Therapeutic/Pharmacologic Class

Antimyasthenic/Anticholinesterase, cholinergic

Indications

Diagnosis of myasthenia gravis. Assessment of adequacy of anticholinesterase therapy in myasthenia gravis. Differentiating myasthenic from cholinergic crisis. Reversal of muscle paralysis from nondepolarizing neuromuscular blocking agents. Other agents in this class increase muscle strength in symptomatic treatment of myasthenia gravis and prevent and treat postoperative bladder distention/urinary retention or ileus.

Action

Inhibit the breakdown of acetylcholine by acetylcholinesterase in the neural synapse, resulting in a prolonged effect. Cause muscular contraction.

Adverse Reactions/Side Effects

CNS: seizures, dizziness, dysphasia, dysphonia, weakness. **EENT:** diplopia, lacrimation, miosis.

Resp: bronchospasm, excess secretions. **CV:** bradycardia, hypotension. **GI:** abdominal cramps, diarrhea, dysphagia, excess salivation, vomiting,

Nursing Dx: Risk for activity intolerance; Fatigue.

nausea. **GU:** incontinence, urinary frequency. **Derm:** sweating, rashes. **MS:** fasciculation.

Keep in Mind

Teach client:

- Wear a Medic-Alert bracelet describing disease and medication regimen at all times.
- Take medication exactly as directed. Take the medication on time.
- Lifelong treatment with these medications will be required.
- Space activities to avoid fatigue.



Make the Connection

- To differentiate myasthenic from cholinergic crisis, assess for increased cholinergic symptoms (SLUDGE—Salivation, Lacrimation, Urination, Diarrhea, GI distress, Emesis) after administration of these medications (cholinergic crisis). If strength improves after administration of these medications, client is in myasthenic crisis.
- Give exactly when ordered.
- Atropine, an anticholinergic, may be used for treatment of cholinergic symptoms.



Alendronate

(a-**len**-dron-ate)

Fosamax

Etidronate

(eh-**tih**-dron-ate)

Didronel

Ibandronate

(i-**ban**-dro-nate)

Boniva

Risedronate

(riss-**ed**-roe-nate)

Actonel

Therapeutic/Pharmacologic Class

Bone resorption inhibitor/Bi- and diphosphonate

Indications

Treatment and prevention of postmenopausal osteoporosis and osteoporosis in men. Treatment of Paget's disease of the bone. Treatment of corticosteroid-induced osteoporosis in clients (men and women) who are receiving 7.5 mg of prednisone/day (or equivalent) with evidence of decreased bone mineral density.

Action

Inhibit resorption of bone by inhibiting osteoclast activity.

Adverse Reactions/Side Effects

CNS: headache. **EENT:** blurred vision, conjunctivitis, eye pain/inflammation. **GI:** abdominal distention, abdominal pain, **acid reflux and esophageal ulceration**, constipation, diarrhea, gastritis, dysphagia, flatulence, nausea, taste perversion, vomiting. **Derm:** erythema, photosensitivity, rash. **MS:** musculoskeletal pain.

Nursing Dx: Risk for injury; Pain; Readiness for enhanced home maintenance management.

Keep in Mind

Teach client:

- Take the medication first thing in the morning, 30 min before other medications, beverages, or food (decreases absorption), and remain upright so acid reflux is decreased.
- Eat a balanced diet and consult health care professional about the need for calcium and vitamin D supplements.
- Engage in weight-bearing exercise.
- Be aware that smoking and excessive alcohol consumption increase osteoporosis risk.
- Use sunscreen and protective clothing.



Make the Connection

- Assess bone density studies.
- Assess dietary regimen and lifestyle to teach effectively.
- Assess serum calcium and phosphate levels for baseline and during therapy.
- Make a notation on the medication administration record (MAR) of special administration instructions.



Raloxifene

(ra-lox-i-feen)

Evista

Tamoxifen

(ta-mox-i-fen)

Nolvadex

🍁 Alpha-Tamoxifen,

🍁 Novo-Tamoxifen

Therapeutic/Pharmacologic Class

Bone resorption inhibitor, antineoplastic/Selective estrogen receptor modulator (SERM)

Indications

Treatment and prevention of osteoporosis in postmenopausal women and adjuvant therapy of breast cancer after surgery and radiation (delays recurrence). Palliative or adjunctive treatment of advanced breast cancer. Prevention of breast cancer in high-risk clients.

Action

Bind to estrogen receptors, producing estrogen-like effects on bone, resulting in reduced resorption of bone and decreased bone turnover. Compete for estrogen-binding sites in the breast, reducing estrogen response.

Adverse Reactions/Side Effects

MS: leg cramps, bone pain. **CNS:** confusion, depression, headache, weakness. **EENT:** blurred vision. **CV:** **pulmonary embolism, stroke**, edema.

GI: nausea, vomiting. **GU:** **uterine malignancies**, vaginal bleeding. **F and E:** hypercalcemia.

Nursing Dx: Risk for injury; Impaired gas exchange; Pain.

Hemat: leukopenia, thrombocytopenia.
Metab: hot flashes. **Misc:** tumor flare.

Keep in Mind

Teach client:

- Take as directed; bone pain should be reported.
- Engage in regular weight-bearing exercise.
- Report leg pain (DVT).
- May cause hot flashes or induce ovulation.
- Monitor weight weekly. Report weight gain.

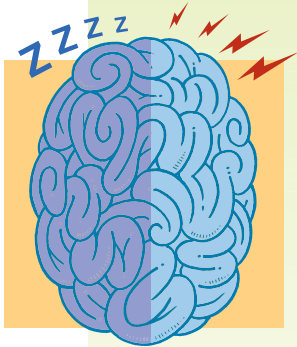


Make the Connection

- Assess client for bone mineral density.
- Monitor lipid panel; hormone panel; and serum calcium, phosphate, total protein, and albumin.
- Monitor CBC for a decrease in platelet count.
- Discuss the STAR clinical trial, which compares these SERMs for effectiveness in prevention and postsurgical treatment of breast cancer.

Also Used for: Reproductive applications (breast cancer prevention and recurrence)

CENTRAL NERVOUS SYSTEM



Acetaminophen

(a-seet-a-min-oh-fen)

Tylenol, Panadol, APAP
🍁 Apo-Acetaminophen

Therapeutic/Pharmacologic Class

Antipyretic/Nonopioid analgesic

Indications

Alleviation of mild pain. Reduction of fever.

Action

Inhibits the synthesis of prostaglandins that may serve as mediators of pain and fever, primarily in the CNS. Controversial as to its anti-inflammatory effects.

Adverse Reactions/Side Effects

GI: hepatic failure, hepatotoxicity (overdose or use with alcohol). **GU:** renal failure (high doses/chronic use). **Hemat:** neutropenia, pancytopenia, leukopenia. **Derm:** rash, urticaria.

Keep in Mind

Teach client:

- Take medication exactly as directed and do not take more than the recommended amount. Avoid alcohol.
- **Check concentrations of liquid preparations. Errors have resulted in serious liver damage. The drug is dosed by weight according to age, and the dose must be exact.**

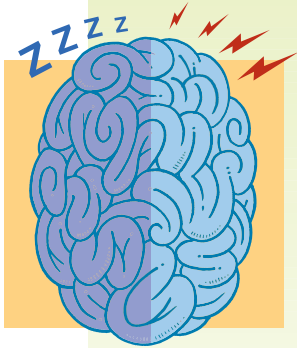
Nursing Dx: Pain; Risk for injury; Risk for activity intolerance.

- **Follow directions for use of pediatric liquid measuring device and accurate dosing.**
- Be aware that many over-the-counter (OTC) preparations contain this drug and taking an excessive amount may cause liver failure.
- Ask for dose or take the medication at home before pain is severe, to abort excessive pain.

**Make the Connection**

- Assess health status and alcohol usage before administering.
- Complete a thorough drug inventory with the client, especially use of OTC drugs, to prevent excessive dosing and reduce risk for liver failure.
- In the case of long-term therapy, periodically monitor CBC with differential, and liver and renal function tests, including prothrombin time, to assess for toxicity.
- Use a pain scale to objectively assess pain.
- Assess remittance of febrile symptoms.
- **Acetylcysteine (Acetadote) is the antidote.**

Also Used for: Musculoskeletal applications (arthritis)



Tramadol

(*tra-ma-dol*)

Ultram

Therapeutic/Pharmacologic Class

Analgesic/Centrally acting weak mu-receptor agonist

Indications

Treatment of moderate to moderately severe pain.

Action

Binds to mu-opioid receptors, but has low affinity. Inhibits reuptake of serotonin and norepinephrine in the CNS, which decreases stimulation of nociceptors.

Adverse Reactions/Side Effects

CNS: seizures, dizziness, headache, somnolence, anxiety, CNS stimulation, confusion, coordination disturbance, euphoria, malaise, nervousness, sleep disorder, weakness. **EENT:** visual disturbances. **CV:** vasodilation. **GI:** constipation, nausea, abdominal pain, anorexia, diarrhea, dry mouth, dyspepsia, flatulence, vomiting.

GU: menopausal symptoms, urinary retention/frequency. **Derm:** pruritus, sweating.

Neuro: hypertonia. **Misc:** physical dependence, psychological dependence, tolerance.

Nursing Dx: Pain; Readiness for enhanced activity-exercise pattern.

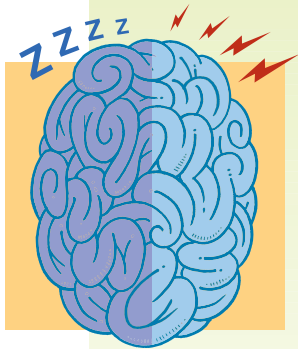
Keep in Mind

Teach client:

- Ask for pain medication before the pain becomes severe.
- This drug may cause dizziness and drowsiness.
- Change position slowly from lying to sitting or standing.
- Avoid concurrent use of alcohol or other CNS depressants with this medication.

**Make the Connection**

- Assess pain relief objectively.
- Assess blood pressure and respiratory rate before and periodically during administration.
- Assess bowel function routinely (constipation).
- **Monitor patient for seizures. Risk is increased with higher doses and in patients taking antidepressants, opioid analgesics, or other drugs that decrease the seizure threshold.**
- Monitor liver and renal function tests, CBC for hemoglobin level, and urinalysis for proteinuria.



Fentanyl (Transdermal)

(fen-ta-nil)

Duragesic

Therapeutic/Pharmacologic Class

Opioid analgesic, analgesic adjunct/Opioid receptor agonist

Indications

Treatment of moderate-to-severe chronic pain requiring continuous opioid analgesic therapy for an extended time. This transdermal analgesic is not recommended for the control of postoperative, mild, or intermittent pain, nor should it be used for short-term pain relief.

Action

Binds to opiate receptors in the CNS, altering the response to and perception of pain.

Adverse Reactions/Side Effects

CNS: confusion, sedation, weakness, dizziness, restlessness. **Resp:** **apnea**, bronchoconstriction, laryngospasm, respiratory depression. **CV:** bradycardia. **GI:** anorexia, constipation, dry mouth, nausea, vomiting. **Derm:** sweating, erythema.

Local: application site reactions. **MS:** skeletal and thoracic muscle rigidity. **Misc:** physical dependence, psychological dependence.

Nursing Dx: Acute pain; Readiness for enhanced comfort level.

Keep in Mind

Teach client:

- **Fatalities have occurred from children having access to improperly discarded patches.**
- May be worn while bathing, showering, or swimming.
- May cause drowsiness or dizziness.
- Change positions slowly to minimize dizziness.
- Avoid concurrent use of alcohol or other CNS depressants with this medication.
- Good oral hygiene and use of sugarless gum or candy may decrease dry mouth.



Make the Connection

- Objectively assess pain and record client response.
- Assess bowel function routinely for constipation.
- Monitor plasma amylase and lipase levels.
- **Naloxone (Narcan) is the antidote.**
- Discontinue gradually.
- Apply to nonhairy areas. Change after 72 hours.
- Full effectiveness takes several hours as system begins to release the medication.

Also Used for: Central nervous system anesthetic applications (balanced anesthesia, induction of anesthesia)

Oxycodone/ Acetaminophen

*(ox-i-koe-done/
a-seet-a-min-oh-fen)*

Percocet, Tylox
🍁 Endocet,
Oxycocet

Hydrocodone/ Acetaminophen

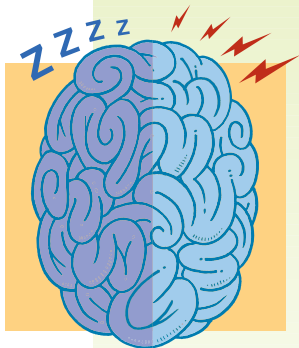
*(hye-droe-koe-done/
a-seet-a-min-oh-fen)*

Lorcet, Lortab,
Vicodin, Hydrocet

Hydrocodone/Ibuprofen

(hye-droe-koe-done/eye-byoo-proe-fin)

Vicoprofen



Therapeutic/Pharmacologic Class

Opioid analgesic (in combination with nonopioid analgesic)/Opioid receptor agonist

Indications

Management of moderate-to-severe pain.

Action

Bind to opiate receptors in the CNS. Alter the perception of and response to painful stimuli, while producing generalized CNS depression.

Adverse Reactions/Side Effects

CNS: confusion, sedation, dysphoria, euphoria, floating feeling, hallucinations, headache, unusual dreams. **EENT:** blurred vision, diplopia, miosis.

Resp: respiratory depression. **CV:** hypotension, bradycardia. **GI:** constipation, nausea, vomiting.

GU: urinary retention. **Derm:** sweating.

Misc: physical dependence, psychological dependence, tolerance.

Nursing Dx: Acute pain; Readiness for enhanced comfort level.

Keep in Mind

Teach client:

- Take as directed.
- Addition of acetaminophen increases the risk for liver and renal damage.
- Ask for analgesic before pain becomes severe, to abort excessive discomfort.
- The medication may cause drowsiness or dizziness.
- Change positions slowly to minimize dizziness.
- Avoid concurrent use of alcohol or other CNS depressants with this medication.
- Use good oral hygiene and sugarless gum or candy to decrease dry mouth.
- Report constipation.

**Make the Connection**

- Pain level should be assessed objectively.
- Monitor plasma amylase and lipase concentrations.
- **Naloxone (Narcan) is the antidote.**
- Discontinue gradually after long-term use.
- Administer with food or milk to minimize GI irritation.

Also Used for: Respiratory system applications (antitussive effect)



Meperidine

(me-per-i-deen)

Demerol

Therapeutic/Pharmacologic Class

Opioid analgesic/Opioid receptor agonist

Indications

Treatment of moderate or severe pain (alone or with nonopioid agents).

Action

Binds to opiate receptors in the CNS. Alters the perception of and response to painful stimuli, while producing generalized CNS depression.

Adverse Reactions/Side Effects

CNS: seizures, confusion, sedation, dysphoria, euphoria, floating feeling, hallucinations, headache, unusual dreams. **EENT:** blurred vision, diplopia, miosis. **Resp:** respiratory depression.

CV: hypotension, bradycardia. **GI:** constipation, nausea, vomiting. **GU:** urinary retention.

Derm: flushing, sweating. **Misc:** physical dependence, psychological dependence, tolerance.

Nursing Dx: Acute pain.

Keep in Mind

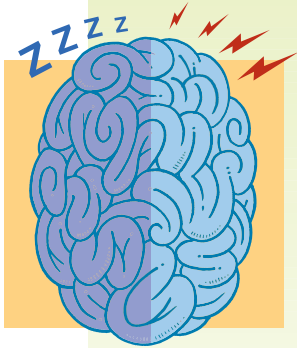
Teach client:

- Take as directed. Medication is more effective if taken before the pain is severe.
- May cause drowsiness or dizziness.
- Change positions slowly to minimize dizziness.
- Avoid concurrent use of alcohol or other CNS depressants to minimize risk for respiratory depression.
- Report constipation.

**Make the Connection**

- Use a pain scale to objectively assess pain.
- This drug is used instead of morphine in clients with biliary spasm (acute cholecystitis).
- Monitor plasma amylase and lipase concentrations.
- **Naloxone (Narcan) is the antidote.**
- Discontinue gradually after long-term use to prevent withdrawal symptoms.
- **For direct IV administration, always dilute and administer over 5 min after checking dose with second practitioner.**

Also Used for: Central nervous system anesthetic applications (preoperative sedation and induction of anesthesia)



Morphine

(mor-feen)

Morphine Sulfate, Roxanol,
MS Contin, Duramorph
❖ Morphine H.P., Epimorph

Therapeutic/Pharmacologic Class

Opioid analgesic/Opioid receptor agonist

Indications

Treatment of severe pain associated with many etiologies.

Action

Binds to opiate receptors in the CNS. Alters the perception of and response to painful stimuli, while producing generalized CNS depression.

Adverse Reactions/Side Effects

CNS: confusion, sedation, dizziness, dysphoria, euphoria, floating feeling, hallucinations, headache, unusual dreams. **EENT:** blurred vision, diplopia, miosis. **Resp:** **respiratory depression.** **CV:** hypotension, bradycardia. **GI:** constipation, nausea, vomiting. **GU:** urinary retention. **Derm:** flushing, itching, sweating. **Misc:** physical dependence, psychological dependence, tolerance.

Keep in Mind

Teach client:

- Pain control is better when the medication is taken before the pain is severe.

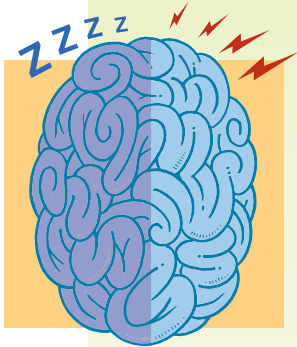
Nursing Dx: Acute pain; Risk for injury (respiratory).

- This medication may cause drowsiness or dizziness.
- Report constipation.
- Report inability to urinate.

**Make the Connection**

- Use a pain scale to assess pain.
 - **Assess respirations.**
- Assess bowel and bladder function.
- **Naloxone (Narcan) is the antidote.**
- **When administering direct IV, always dilute in 5–10 mL NaCl and give over 4–5 min after checked by second practitioner.**
- After epidural administration, nonopioid analgesia will be administered for breakthrough pain for 24 hr. If itching occurs, Benadryl or Nubain may be ordered for relief.

Also Used for: Respiratory system applications (air hunger in the dying patient, pulmonary edema), cardiovascular system applications (pain control and reduction of oxygen consumption by the heart during a myocardial infarction).



Propoxyphene Napsylate/ Acetaminophen

(*proe-pox-i-feen nap-si-late/
a-seet-a-min-oh-fen*)

Darvocet-N 50, Darvocet-N 100

Therapeutic/Pharmacologic Class

Opioid analgesic/Opioid agonist and nonopioid analgesic combinations

Indications

Treatment of mild-to-moderate pain with or without fever.

Action

Binds to opiate receptors in the CNS. Alters the perception of and response to painful stimuli, while producing generalized CNS depression.

Adverse Reactions/Side Effects

CNS: disorientation, dizziness, weakness, dysphoria, euphoria, headache, insomnia, paradoxical excitement, sedation. **EENT:** blurred vision. **CV:** hypotension. **GI:** nausea, abdominal pain, constipation, vomiting. **Derm:** rash. **Misc:** physical dependence, psychological dependence, tolerance.

Keep in Mind

Teach client:

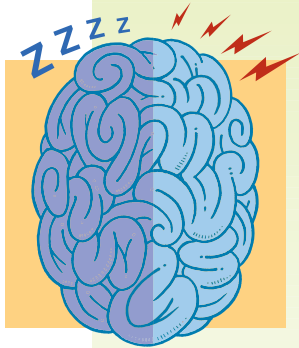
- Take medication as directed, and do not take more than the recommended amount.

Nursing Dx: Pain; Readiness for enhanced comfort level.

- This medication contains acetaminophen. Overdosage can cause liver and kidney damage.
- Pain control will be better if dose is taken before the pain is severe.
- This medication may cause drowsiness or dizziness.
- Change positions slowly to minimize dizziness.
- Avoid concurrent use of alcohol or other CNS depressants with this medication.
- Use good oral hygiene and sugarless gum or candy to decrease dry mouth.

**Make the Connection**

- Use a pain scale to assess pain.
- Initial drowsiness will diminish with continued use.
- Assess bowel function routinely for constipation.
- Monitor liver function tests and serum amylase and lipase levels.
- **Naloxone (Narcan) is the antidote for the opioid portion of the drug. Acetylcysteine is the antidote for acetaminophen.**
- Doses may be administered with food or milk to minimize GI irritation.



Naloxone

(nal-ox-one)

Narcan

Naltrexone

(nal-treks-one)

Vivitrol

Therapeutic/Pharmacologic Class

Antidote (for opioids)/Opioid receptor antagonists

Indications

Reversal of CNS depression and respiratory depression because of suspected opioid overdosage and alcohol abuse. **Unlabelled Uses:** Narcotic-induced pruritus (low-dose IV infusion).

Action

Competitively block the effects of opioids, including CNS and respiratory depression, without producing any agonist (opioid-like) effects.

Adverse Reactions/Side Effects

CV: hypertension, hypotension, ventricular fibrillation, ventricular tachycardia. **GI:** nausea, vomiting.

Keep in Mind

Teach client:

- As medication becomes effective, explain purpose and effects of naloxone to patient.
- Wear a Medic-Alert bracelet if receiving opioids for chronic pain.

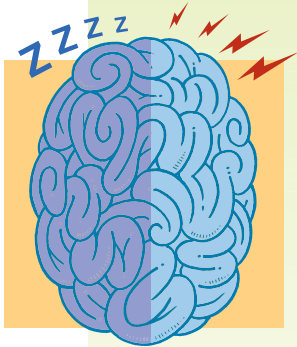
Nursing Dx: Risk for injury (pharmacologic).



Make the Connection

- Monitor respiratory rate, rhythm, and depth; pulse; ECG; blood pressure; and level of consciousness frequently for 3–4 hr after administration.
- If used to treat postoperative respiratory depression, assess effectiveness—but also remember that these medications reverse the effects of analgesia.
- Assess pain using a pain scale.
- Assess client for signs and symptoms of opioid or alcohol withdrawal. Symptoms may occur from within a few minutes to 2 hr.
- Excessive dose in postoperative patients may cause excitement, pain, hypotension, hypertension, pulmonary edema, ventricular tachycardia and fibrillation, and seizures.

Also Used for: Cardiovascular system applications (management of refractory circulatory shock), mental health (alcoholism)



Propofol

(proe-poe-fol)

Diprivan, Disopropofol

Therapeutic/Pharmacologic Class

General anesthetic/Nonopioid sedative-hypnotic

Indications

Induction of general anesthesia in children >3 yr and adults. Maintenance of balanced anesthesia when used with other agents in children >2 months and adults. Initiation and maintenance of monitored anesthesia care (MAC). Sedation of intubated, mechanically ventilated clients in intensive care units.

Action

Short- and rapid-acting (40 sec) sedative-hypnotic. Mechanism of action is unknown, but because it is highly lipophilic, it has affinity for CNS tissue. Produces amnesia, but has no analgesic properties.

Adverse Reactions/Side Effects

CNS: dizziness, headache. **Resp:** apnea, cough.
CV: bradycardia, hypotension, hypertension.
GI: abdominal cramping, hiccups, nausea, vomiting. **Derm:** flushing. **Local:** burning, pain, stinging, coldness, numbness, tingling at IV site.
MS: involuntary muscle movements, perioperative myoclonia. **GU:** discoloration of urine (green). **Misc:** fever.

Nursing Dx: Impaired gas exchange; Impaired memory.

Keep in Mind

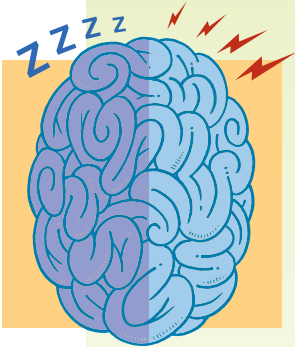
Teach client:

- This medication decreases or eliminates mental recall of the procedure.
- May cause drowsiness or dizziness. Ability to be alert may be affected for 24 hr following administration.
- Avoid alcohol or other CNS depressants for 24 hr following administration.
- The medication will sting and burn when administered.



Make the Connection

- **Assess respiratory status, pulse, and blood pressure continuously throughout therapy. Frequently causes apnea. Maintain patent airway, apply nasal cannula, and maintain adequate ventilation. Endotracheal intubation tray and resuscitation equipment should be readily available.**
- Be certain client has maintained NPO status prior to the procedure.
- May be administered as an intermittent or continuous infusion for clients on mechanical ventilation.



Ketamine

(ket-a-meen)

Ketalar

Therapeutic/Pharmacologic Class

General anesthetic, dissociative anesthetic/NMDA receptor and thalamus to cortex transmission blocker.

Indications

Along with other agents, anesthesia of clients undergoing short-term diagnostic and surgical procedures.

Action

Blocks afferent impulses of pain perception. Suppresses spinal cord activity. Affects CNS transmitter systems.

Adverse Reactions/Side Effects

CNS: emergence reactions, elevated intracranial pressure. **EENT:** diplopia, increased intraocular pressure, nystagmus. **Resp:** laryngospasm, respiratory depression, apnea (rapid IV administration of large doses). **CV:** hypertension, tachycardia, arrhythmias, bradycardia, hypotension. **GI:** excessive salivation, nausea, vomiting. **Derm:** erythema, rash. **Local:** pain at injection site. **MS:** increased skeletal muscle tone.

Nursing Dx: Anxiety; Acute confusion; Disturbed thought process.

Keep in Mind

Teach client:

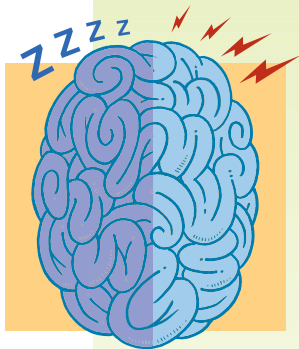
- Coordination impairment may last for 24 hr after anesthesia. Do not drive during this time.
- Avoid alcohol or other CNS depressants for 24 hr.
- Dreams may be vivid or disconcerting.



Make the Connection

- Assess level of consciousness frequently throughout therapy. This medication causes a dissociative state.
- Monitor blood pressure, ECG, and respiratory status frequently throughout therapy.
- May cause increased CSF pressure and increased intraocular pressure.
- Tonic-clonic movements during anesthesia do not indicate the need for more medication.

Also Used for: Central nervous system applications (antidepressant); respiratory system applications (bronchodilation in status asthmaticus); musculoskeletal system applications (restless legs syndrome)



Pentobarbital

*(pen-toe-**bar**-bi-tal)*

Nembutal

☀ Novopentobarb

Secobarbital

*(see-koe-**bar**-bi-tal)*

Seconal

☀ Novosecobarb

Phenobarbital

*(fee-noe-**bar**-bi-tal)*

Luminal, Solfoton

☀ Ancalixir

Therapeutic/Pharmacologic Class

Anticonvulsant, sedative-hypnotic/Barbiturate

Indications

Treatment of insomnia (short-term). Preoperative sedation and induction of coma in clients with cerebral ischemia and intracranial pressure (ICP). Treatment of seizures.

Action

Depress the CNS, probably by potentiating gamma-aminobutyric acid (GABA), an inhibitory neurotransmitter. Produce all levels of CNS depression, including the sensory cortex, and motor activity, as well as altered cerebellar function. Anticonvulsant effect due to decreased synaptic transmission and increased seizure threshold. May decrease cerebral blood flow, cerebral edema, and intracranial pressure (IV only).

Adverse Reactions/Side Effects

CNS: drowsiness, hangover, lethargy, delirium, excitation, mental depression, vertigo. **Resp:** respiratory depression; *IV* – **laryngospasm**, bronchospasm. **CV:** *IV* – hypotension. **GI:** constipation, diarrhea, nausea, vomiting. **Derm:** rashes,

Nursing Dx: Risk for disturbed sleep pattern; Ineffective breathing pattern.

urticaria. **Local:** phlebitis at IV site. **MS:** arthralgia, myalgia, neuralgia. **Misc:** hypersensitivity reactions including **angioedema** and **serum sickness**, physical dependence, psychological dependence.

Keep in Mind

Teach client:

- Take medication exactly as directed.
- Do not discontinue medication abruptly.
- This medication may cause daytime drowsiness.
- Avoid taking alcohol or other CNS depressants concurrently with this medication.



Make the Connection

- Monitor respiratory status, pulse, and blood pressure frequently.
- Monitor CBC with differential, and liver and renal function tests if on long-term therapy.
- May increase need for dosage adjustment of other meds (↑ liver enzymes).

Also Used for: Central nervous system applications (anticonvulsant)



Succinylcholine

(sux-sin-il-koe-leen)

Anectine, Quelicin

Pancuronium

(pan-cure-oh-nee-yum)

Pavulon

Therapeutic/Pharmacologic Class

Skeletal muscle paralyzer/Neuromuscular blocking agent (depolarizing and nondepolarizing)

Indications

In combination with other agents during surgical procedures for the production of balanced anesthesia with skeletal muscle paralysis and facilitation of intubation after induction of anesthesia. Facilitation of client compliance during mechanical ventilation.

Action

Prevent neuromuscular transmission by blocking the effect of acetylcholine at the myoneural junction. Cause the release of histamine. Have no analgesic or anxiolytic effects.

Adverse Reactions/Side Effects

Resp: apnea, bronchospasm. **CV:** arrhythmias, heart rate changes, hypotension. **F and E:** hyperkalemia. **MS:** rhabdomyolysis, muscle fasciculation. **Misc:** malignant hyperthermia, myoglobinemia (increased in children), myoglobinuria (increased in children), anaphylaxis. **Resp:** bronchospasm. **GI:** excessive salivation. **Derm:** rash.

Nursing Dx: Risk for injury; Ineffective breathing pattern.

Keep in Mind

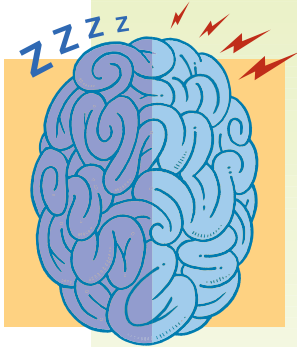
Teach client:

- Muscle soreness may be experienced after the procedure depending on which agent is used.
- Report any family history of malignant hyperthermia.



Make the Connection

- **Nurse anesthetist or anesthesiologist must be present when these drugs are in use. Keep endotracheal intubation and resuscitative equipment immediately available.**
- Monitor ECG, heart rate, and blood pressure continuously.
- **Assess client for history of malignant hyperthermia before administration.**
- Monitor arterial blood gas, blood chemistries, and ECG.
- In the event of overdose, maintain airway patency and ventilation, and administer fluids and vasopressors, to maintain oxygenation and circulatory function.
- If eyes remain open, protect corneas with artificial tears and tape closed.



Bupivacaine

(*byoo-pi-vi-kane*)

Marcaine, Sensorcaine

Procaine

(*pro-kane*)

Novocaine

Therapeutic/Pharmacologic Class

Anesthetic (topical/local)/Amino ester anesthetic

Indications

Local or regional anesthesia or analgesia of clients undergoing surgical, obstetric, dental, or diagnostic procedures.

Action

Local anesthetics inhibit initiation and conduction of sensory nerve impulses by altering the influx of sodium and efflux of potassium in neurons, slowing or stopping pain transmission. May also vasoconstrict blood vessels to prevent excessive bleeding in local uses.

Adverse Reactions/Side Effects

CNS: **seizures**, anxiety, dizziness, headache, irritability. **EENT:** blurred vision, tinnitus. **CV:** **cardiovascular collapse**, arrhythmias, bradycardia, hypotension. **GI:** nausea, vomiting. **GU:** urinary retention. **Derm:** pruritus. **F and E:** metabolic acidosis. **Neuro:** circumoral tingling/numbness, tremor. **Misc:** allergic reactions, fever.

Nursing Dx: Risk for injury; Risk for falls.

Keep in Mind

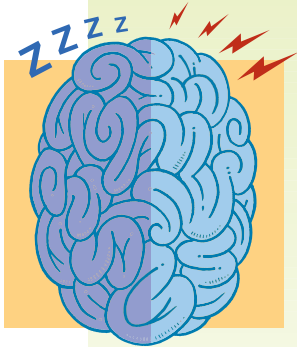
Teach client:

- Notify health-care professional if any signs of systemic toxicity occur (palpitations, faintness, blurred vision, tinnitus, metallic taste, tremors, circumoral tingling and numbness).
- Request assistance during ambulation until residual motor deficits are ruled out when spinal or epidural procedures have been performed.



Make the Connection

- Assess for systemic toxicity (circumoral tingling and numbness, ringing in ears, metallic taste, dizziness, blurred vision, tremors, slow speech, irritability, twitching, seizures, cardiac dysrhythmias). Report such symptoms to anesthesiologist immediately.
- Monitor BP, heart rate, and respiratory rate continuously while client is receiving this medication.
- Monitor for return of sensation after procedure.



Midazolam

(mid-ay-zoe-lam)

Versed

Therapeutic/Pharmacologic Class

Antianxiety agent, sedative/hypnotic/Benzodiazepine

Indications

Promotion of presurgical sedation and anxiolysis in pediatric clients (oral). Promotion of presurgical sedation/anxiolysis/amnesia in adult clients (IM or IV). Commonly used for conscious sedation. Aids in the induction of anesthesia and as part of balanced anesthesia. Provision of sedation of mechanically ventilated clients in a critical care setting (continuous infusion).

Action

Acts at many levels of the CNS to produce generalized CNS depression. Effects may be mediated by GABA, an inhibitory neurotransmitter.

Adverse Reactions/Side Effects

CNS: agitation, drowsiness, excess sedation, headache. **EENT:** blurred vision. **Resp:** **apnea, laryngospasm, respiratory depression**, bronchospasm, coughing. **CV:** **cardiac arrest**, arrhythmias. **GI:** hiccups, nausea, vomiting. **Derm:** rashes. **Local:** phlebitis at IV site, pain at IM site.

Nursing Dx: Risk for injury; Ineffective breathing patterns.

Keep in Mind

Teach client:

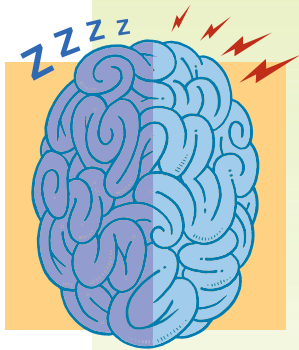
- This medication decreases mental recall of the procedure.
- Drowsiness or dizziness may be experienced for 24 hr after administration.
- Arrange for a person to provide transportation home from the procedure.
- Avoid alcohol or other CNS depressants for 24 hr following administration.



Make the Connection

- Assess level of sedation and level of consciousness throughout and for 2–6 hr following administration.
- **Monitor blood pressure, pulse, respiration, and arterial blood gas continuously during IV administration. Oxygen should be given by nasal cannula. Resuscitative equipment should be immediately available. Two practitioners should check dose.**
- **The antidote is flumazenil (Romazicon).**

Also Used for: Central nervous system applications (*status epilepticus*)



Zolpidem

(zole-pi-dem)

Ambien, Ambien CR

Pyrralopyrazine

(pie-role-oe-py-ra-seen)

Lunesta

Therapeutic/Pharmacologic Class

Sedative-hypnotic/GABA receptor modulator

Indications

Treatment of insomnia.

Action

Produce CNS depression by binding to GABA receptors. Possess no analgesic properties.

Adverse Reactions/Side Effects

CNS: amnesia, daytime drowsiness, dizziness, “drugged” feeling. **GI:** diarrhea, nausea, vomiting.

Misc: hypersensitivity reactions, physical dependence, psychological dependence, tolerance.

Keep in Mind

Teach client:

- Take as directed.
- Go to bed immediately after taking the medication, as it has a rapid onset.
- May cause daytime drowsiness or dizziness.
- Avoid concurrent use of alcohol or other CNS depressants.

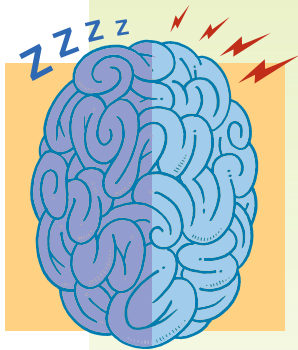
Nursing Dx: Sleep pattern disturbance; Readiness for enhanced sleep.

- A bitter taste sensation that may or may not be transient may be experienced.
- Report any episodes of sleepwalking while on this medication immediately to the health-care professional.



Make the Connection

- Prolonged use of >7–10 days may lead to physical and psychological dependence.
- Older clients require half the regular dose.
- Sleepwalking, sleep-eating, and sleep-driving have been reported under the influence of this medication.
- Discuss a therapeutic sleep regimen with client.
- Protect client from injury.
- Tablets should be swallowed whole.



Ramelteon

(ram-ell-tee-on)

Rozerem

Therapeutic/Pharmacologic Class

Hypnotic/Melatonin 1 and 2 agonist

Indications

Treatment of insomnia.

Action

Binds to melatonin 1 and 2 receptors in suprachiasmatic nucleus, promoting sleep.

Adverse Reactions/Side Effects

CNS: somnolence, fatigue. **Endo:** decreased testosterone and cortisol levels, increased prolactin levels. **Misc:** **anaphylaxis, angioedema.**

Keep in Mind

Teach client:

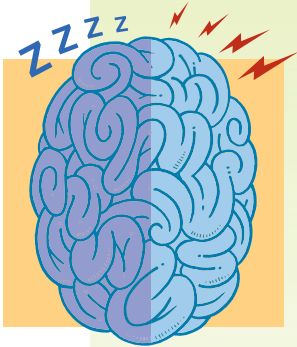
- Sleepwalking must be reported immediately.
- Fatigue or dizziness may be experienced; avoid activities that require alertness.
- Report unexplained amenorrhea, decreased libido, or fertility issues.

- Avoid becoming pregnant.
- Avoid breast-feeding.
- Follow a sleep hygiene regimen.

**Make the Connection**

- Monitor sleep patterns and occurrence of somnolence.
- Maintain a safe care environment. Place the client in a monitored room, make certain the side rails are up (top), keep call light in reach, and keep the room clear of obstructions.
- Monitor serum testosterone and prolactin levels.
- Administer medication at least 2 hr after the last evening meal.
- Discuss natural sleep patterns, exercise, diet, and sleep hygiene with the client.

Nursing Dx: Risk for injury; Sleep pattern disturbance.



Levetiracetam

(le-ve-teer-a-se-tam)

Keppra

Lamotrigine

(la-mo-tri-geen)

Lamictal

Therapeutic/Pharmacologic Class

Anticonvulsant/Miscellaneous

Indications

Treatment of partial-onset seizures (adjunct).

Action

Appear to inhibit burst firing without affecting normal neuronal excitability and may selectively prevent hypersynchronization of epileptiform burst firing and propagation of seizure activity. In many sources, the exact action of these medications is unknown.

Adverse Reactions/Side Effects

CNS: dizziness, fatigue/somnolence, weakness, behavioral abnormalities, depression. **Neuro:** coordination difficulties (adults only). **GI:** nausea.

Resp: rhinitis. **Derm:** photosensitivity.

Keep in Mind

Teach client:

- Take medication as directed.
- Follow instructions for proper use of a calibrated measuring device for accurate child dosing.

Nursing Dx: Risk for injury; Risk for falls.

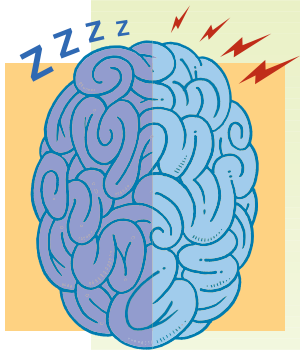
- Do not discontinue abruptly.
- May cause dizziness and somnolence.
- Avoid driving until physician gives clearance based on control of seizure disorder.
- Notify health-care professional if pregnancy is planned or suspected.
- Wear a Medic-Alert bracelet.



Make the Connection

- Assess and record location, duration, and characteristics of seizure activity.
- Assess client for CNS adverse effects throughout therapy.
- Monitor CBC with differential and liver function tests for abnormalities.
- Place on seizure precautions.
- Give information on the ketogenic diet, which seems to have a positive effect on seizure control.

Also Used for: Central nervous system applications (migraine prevention, mood disorder, neurogenic pain, trigeminal neuralgia)



Gabapentin

(ga-ba-pen-tin)

Gabarone,
Neurontin

Tiagabine

(tye-a-ga-been)

Gabitril

Topiramate

(tope-ear-a-mate)

Topamax

Pregabalin

(pre-gab-a-lin)

Lyrica

Therapeutic/Pharmacologic Class

Anticonvulsant/Miscellaneous

Indications

Adjunctive treatment of partial seizures.

Action

Involved in enhancing the activity of GABA, an inhibitory neurotransmitter. Most drugs in this class have unknown actions.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, nervousness, weakness, cognitive impairment, confusion, difficulty concentrating (especially in children), hallucinations, headache, mental depression, personality disorder. **EENT:** abnormal vision, tinnitus.

Resp: dyspnea, epistaxis. **CV:** chest pain, edema, hypertension, palpitations, syncope, tachycardia. **GI:** abdominal pain, gingivitis, nausea, stomatitis, weight changes. **Derm:** alopecia, dry skin, rash, sweating. **MS:** arthralgia, neck pain. **Neuro:** ataxia, tremors.

Misc: allergic reactions, chills, lymphadenopathy.

Nursing Dx: Risk for injury; Pain.

Keep in Mind

Teach client:

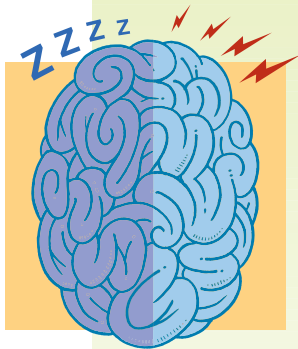
- Take medication as directed.
- Do not discontinue abruptly (\uparrow seizure activity).
- Notify health-care professional immediately if frequency of seizures increases.
- May cause dizziness. Do not resume driving until physician gives clearance based on control of seizure disorder.
- Wear a Medic-Alert bracelet.



Make the Connection

- Assess and record location, duration, and characteristics of seizure activity.
- Assess mental status.
- Therapeutic serum levels have not been determined.
- Administer with food if nausea occurs.
- Always discontinue anticonvulsants gradually, to avoid recurrence or worsening of seizure activity.
- Give information on ketogenic diet.

Also Used for: Central nervous system applications (neurogenic pain, mood disorders, and fibromyalgia)



Carbamazepine

(kar-ba-maz-e-peen)

Tegretol, Tegretol Extended Release (XR)

🍁 Apo-Carbamazepine

Oxcarbazepine

(ox-kar-baz-e-peen)

Trileptal

Therapeutic/Pharmacologic Class

Anticonvulsant/Iminostilbene

Indications

Monotherapy or adjunctive therapy of tonic-clonic, mixed, and complex partial seizures in adults with epilepsy. Adjunctive therapy of partial seizures in clients 4–16 yr of age with epilepsy.

Action

Block sodium channels in neural membranes, stabilizing hyperexcitable states, inhibiting repetitive neuronal firing, and decreasing propagation of synaptic impulses.

Adverse Reactions/Side Effects

CNS: dizziness/vertigo, drowsiness/fatigue, headache, cognitive symptoms. **EENT:** abnormal vision, diplopia, nystagmus. **GI:** abdominal pain, dyspepsia, nausea, vomiting, thirst. **CV:** **heart failure.** **Derm:** acne, rash, urticaria. **F and E:** hyponatremia. **Neuro:** ataxia, gait disturbances, tremor. **Misc:** allergic reactions; hypersensitivity reactions, including **Stevens-Johnson syndrome** and **multi-organ reactions**; lymphadenopathy.

Nursing Dx: Risk for injury.

Keep in Mind

Teach client:

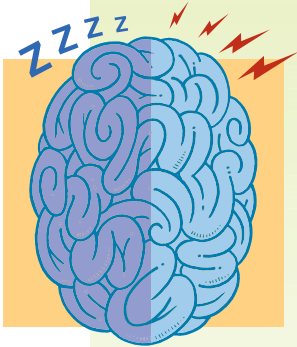
- Take as directed. Do not discontinue abruptly.
- May cause dizziness, drowsiness, or CNS changes. Do not resume driving until physician gives clearance based on control of seizure disorder.
- Do not take alcohol or other CNS depressants concurrently with this medication.
- Wear a Medic-Alert bracelet.
- Report dyspnea, bruising, edema in dependent areas, or frequent infections.



Make the Connection

- Assess and record frequency, location, duration, and characteristics of seizure activity.
- Monitor client for CNS changes.
- Monitor ECG and serum electrolytes before and periodically during therapy. May cause hyponatremia.
- Auscultate lungs for crackles and assess for dependent edema (CHF).
- Implement seizure precautions as indicated.
- Give client information about ketogenic diet.

Also Used for: CNS applications (trigeminal neuralgia, mood disorders)



Phenytoin

(fen-i-toyn)

Dilantin

Fosphenytoin

(fos-fen-i-toyn)

Cerebyx

Therapeutic/Pharmacologic Class

Anticonvulsant/Hydantoin

Indications

Treatment and prevention of tonic-clonic seizures and complex partial seizures.

Action

Limit seizure propagation by altering ion transport. May also decrease synaptic transmission.

Adverse Reactions/Side Effects

CNS: ataxia, agitation, cerebral edema, coma, dizziness, drowsiness, dysarthria, dyskinesia, extrapyramidal syndrome, headache, nervousness, weakness. **EENT:** diplopia, nystagmus, tinnitus. **CV:** hypotension, tachycardia, vasodilation. **GI:** gingival hyperplasia, nausea, altered taste, anorexia, constipation, drug-induced hepatitis, dry mouth, vomiting, weight loss. **GU:** pink, red, reddish-brown coloration of urine. **Derm:** hirsutism, exfoliative dermatitis, pruritus. **F and E:** hypocalcemia. **Hemat:** **bone marrow suppression.** **MS:** allergic reactions,

including **Stevens-Johnson syndrome;** fever; lymphadenopathy.

Keep in Mind

Teach client:

- Take as directed; may cause drowsiness.
- Do not drive until physician has given clearance based on seizure control; wear a Medic-Alert bracelet.
- Avoid alcohol or other CNS depressants.
- Side effects like urine discoloration and unwanted hair growth may occur.
- Flossing and brushing carefully are recommended.
- Maintain a well-balanced diet.

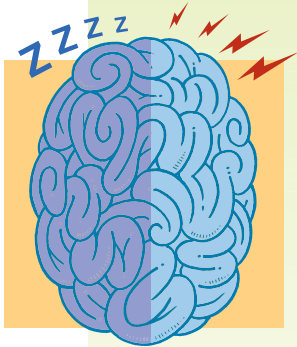


Make the Connection

- Monitor ECG; CBC with differential; serum drug level (10–20 mcg/mL); and LFT.
- **Assess for skin rash, which may progress to severe exfoliative dermatitis.**
- **Assess for hypersensitivity syndrome.**

Nursing Dx: Risk for injury.

Also Used for: Central nervous system applications (neurogenic pain, mood disorder), cardiovascular system applications (antiarrhythmic Class 1B)



Primidone

(pri-mi-done)

Mysoline

🍁 Apo-Primidone

Therapeutic/Pharmacologic Class

Anticonvulsant/Barbiturate

Indications

Management of tonic-clonic, complex partial, and focal seizures.

Action

Decreases neuronal excitability. Increases the threshold of electric stimulation of the motor cortex.

Adverse Reactions/Side Effects

CNS: ataxia, drowsiness, vertigo, excitement (increased in children). **EENT:** visual changes. **Resp:** dyspnea. **CV:** edema, orthostatic hypotension. **GI:** anorexia, drug-induced hepatitis, nausea, vomiting. **Derm:** alopecia, rash. **Hemat:** **blood dyscrasias, megaloblastic anemia.** **Misc:** folic acid deficiency.

Keep in Mind

Teach client:

- Take the medication at the same time each day exactly as directed. **Abrupt withdrawal may lead to status epilepticus.**

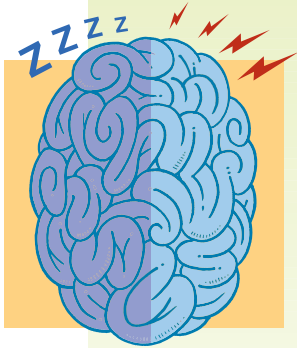
Nursing Dx: Risk for injury; Knowledge deficit.

- May cause drowsiness or dizziness. Do not resume driving until physician gives medical clearance based on control of seizure disorder.
- Avoid taking alcohol or other CNS depressants concurrently with this medication.
- Avoid sudden changes in position to decrease dizziness.
- Wear a Medic-Alert bracelet.
- Notify health-care professional if skin rash, unsteady gait, joint pain, fever, changes in vision, dyspnea, pregnancy, or paradoxical excitement occurs.
- Routine exams and lab tests will be required.
- Eat green, leafy vegetables to ensure the diet contains adequate folic acid.



Make the Connection

- Assess and record location, duration, frequency, and characteristics of seizure activity. Institute and document seizure precautions.
 - Assess client for signs of folic acid deficiency.
 - Monitor CBC with differential and blood chemistries.
 - May be administered with food to minimize GI effects.
 - For liquid administration, use a calibrated measuring device to ensure accurate dosage.
- Also Used for: Central nervous system applications (mood disorders)*



Ethosuximide

(eth-oh-sux-i-mide)

Zarontin

Therapeutic/Pharmacologic Class

Anticonvulsant/Succinimide

Indications

Treatment of absence seizures (petit mal).

Action

Elevates the seizure threshold. Suppresses abnormal wave and spike activity associated with absence (petit mal) seizures.

Adverse Reactions/Side Effects

CNS: increased frequency of tonic-clonic seizures, ataxia, dizziness, drowsiness, euphoria, fatigue, headache, hyperactivity, irritability, psychiatric disturbances. **EENT:** myopia.

GI: abdominal pain, anorexia, cramping, diarrhea, nausea, vomiting, weight loss, hiccups.

GU: pink/brown discoloration of urine, vaginal bleeding. **Derm:** Stevens-Johnson syndrome, hirsutism, rashes, urticaria. **Hemat:** bone marrow suppression. **Neuro:** ataxia. **Misc:** systemic lupus erythematosus.

Nursing Dx: Risk for injury; Knowledge deficit.

Keep in Mind

Teach client:

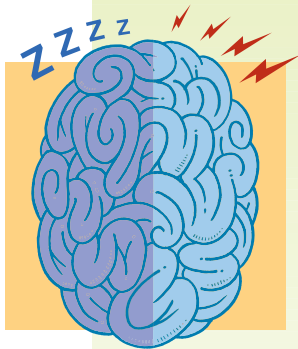
- Take the medication exactly as directed. **Sudden withdrawal may precipitate seizures.**
- Avoid activities requiring alertness.
- Notify health-care professional if skin rash, joint pain, sore throat, fever, unusual bleeding or bruising, swollen glands, pink/brown urine, or pregnancy occurs.
- Wear a Medic-Alert bracelet.
- Lab tests and follow-up exams will be required.



Make the Connection

- Assess and record location, duration, frequency, and characteristics of seizure activity.
- Monitor CBC with differential, hepatic function tests, and urinalysis routinely and drug levels throughout the course of prolonged therapy.
- Measure liquid preparations with calibrated measuring device to ensure accurate dosage.
- Administer with food or milk to minimize GI irritation.
- This drug is one of two drugs of choice for absence seizures.

Also Used for: Central nervous system applications (chemotherapy-induced neuropathy)



Divalproex

*(dye-val-**proe**-ex)*

Depakote, Depakote Extended Release (ER)

🍁 Epival

Valproic Acid

*(val-**proe**-ik **as**-id)*

Depakene

Therapeutic/Pharmacologic Class

Anticonvulsant/Miscellaneous

Indications

Treatment of simple and complex absence seizures and partial seizures with complex symptomatology.

Action

Increase levels of GABA, an inhibitory neurotransmitter for the CNS.

Adverse Reactions/Side Effects

CNS: confusion, dizziness, headache, sedation.

EENT: visual disturbances. **GI:** hepatotoxicity, indigestion, diarrhea, hypersalivation, increased appetite, pancreatitis. **Derm:** rashes. **Hemat:** bone marrow suppression. **Metab:** increase in serum ammonia levels. **Neuro:** ataxia, paresthesia.

Keep in Mind

Teach client:

- Take the medication at the same time each day exactly as directed. **Abrupt withdrawal may lead to status epilepticus.**

Nursing Dx: Risk for injury; Knowledge deficit.

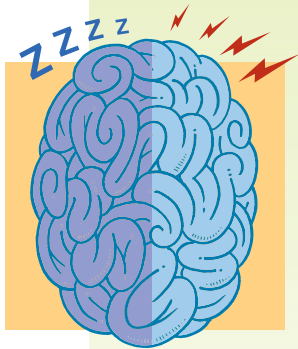
- May cause drowsiness or dizziness. Do not resume driving until physician gives medical clearance based on control of seizure disorder.
- Avoid taking alcohol or other CNS depressants concurrently with this medication.
- Wear a Medic-Alert bracelet.



Make the Connection

- Assess and record location, duration, frequency, and characteristics of seizure activity. Institute and document seizure precautions.
- Monitor CBC with differential, LFT, amylase and lipase levels and serum drug levels.
- May be administered with food to minimize GI effects.

Also Used for: Central nervous system applications (mood disorders, migraine prevention)



Selegiline

(se-le-ji-leen)

Eldepryl, Carbex,
ENSAM Transdermal
🍁 Apo-Selegiline

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent/Monoamine oxidase type B inhibitor

Indications

Management of Parkinson's disease (with levodopa or levodopa/carbidopa) in clients who fail to respond to levodopa/carbidopa alone.

Action

Following conversion by monoamine oxidase (MAO) to its active form, this drug inactivates MAO by irreversibly binding to it at type B (brain) sites. Inactivation of MAO leads to increased amounts of dopamine, serotonin, and norepinephrine available in the CNS.

Adverse Reactions/Side Effects

CNS: confusion, dizziness, fainting, hallucinations, insomnia, vivid dreams. **GI:** nausea, abdominal pain, dry mouth.

Nursing Dx: Risk for injury (pharmacologic); Readiness for enhanced self-care activities.

Keep in Mind

Teach client:

- Take medication as directed with food.
- There is less risk with tyramine-containing foods if the transdermal system is used.
- Notify health-care professional immediately if severe headache occurs.
- Change positions slowly to ↓ dizziness.
- Report increased body temperature, sweating, mental status change, muscle twitching or confusion.
- Increase fluids or use sugarless gum, candy, or ice to minimize dry mouth symptoms.

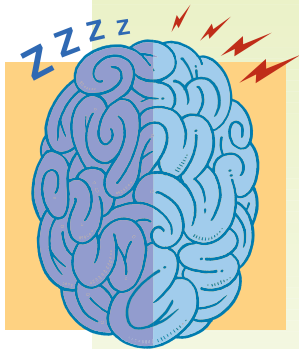


Make the Connection

• **Concurrent use with meperidine or other opioid analgesics may possibly result in a potentially fatal reaction. Serotonin syndrome may occur with concurrent use of selective serotonin reuptake inhibitor (SSRI) and tricyclic antidepressants.**

- Monitor sleep pattern changes and presence of nightmares. Keep room free of obstacles.
- Monitor liver function and renal function tests.

Also Used for: Central nervous system applications (major depression, borderline personality disorder)



Ropinirole

(rope-in-er-ole)

Requip

Pramipexole

(pram-i-pex-ole)

Mirapex

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent/Dopamine agonist

Indications

Management of mild Parkinson's disease as monotherapy and as adjunctive therapy with levodopa/carbidopa in more advanced cases.

Action

Act as dopamine agonists, directly stimulating post-synaptic dopaminergic receptors in the CNS. Some actions are unknown.

Adverse Reactions/Side Effects

CNS: **sleep attacks**, drowsiness, dyskinesia, hallucinations, confusion, insomnia. **EENT:** rhinitis.

Resp: dyspnea. **CV:** orthostatic hypotension, arrhythmias (atrial premature contractions, sinus tachycardia), hypertension, palpitations. **GI:** constipation, nausea, abdominal pain, diarrhea, dry mouth, dyspepsia. **Neuro:** compulsive behaviors.

Keep in Mind

Teach client:

- Take medication as directed.

Nursing Dx: Risk for injury; Readiness for enhanced self-care activities.

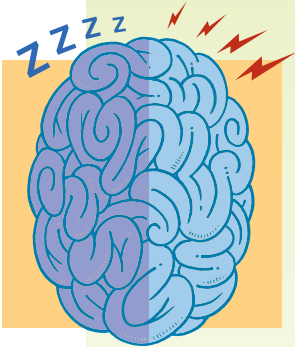
- **May cause drowsiness and unexpected episodes of falling asleep. Notify health-care professional if episodes of falling asleep occur.**
- Change positions slowly to ↓ dizziness.
- Use good oral hygiene, and sugarless gum or candy to minimize dry mouth.
- If uncontrollable urges occur, such as the urge to gamble, report this immediately to the health-care professional.



Make the Connection

- Assess for decrease in signs and symptoms of Parkinson's disease.
- Assess for confusion or hallucinations. Notify physician or other health-care professional if these occur.
- **Assess client for drowsiness and sleep attacks.**
- Monitor ECG and blood pressure frequently.
- Administer with meals to minimize nausea.
- Monitor liver function tests, renal function tests, and behavioral changes.

Also Used for: Musculoskeletal system applications (restless legs syndrome)



Amantadine

(a-man-ta-deen)

Symmetrel

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent, antiviral/Indirect dopamine releaser and dopamine receptor agonist

Indications

Symptomatic initial and adjunctive treatment of Parkinson's disease.

Action

Potentiates the action of dopamine in the CNS.

Adverse Reactions/Side Effects

CNS: ataxia, dizziness, insomnia, anxiety, confusion, depression, drowsiness, psychosis, seizures.

GI: nausea, vomiting, anorexia, constipation.

EENT: blurred vision, dry mouth. **Resp:** dyspnea.

CV: hypotension, CHF, edema. **GU:** urinary retention.

Derm: mottling, rashes. **Hemat:** leukopenia, neutropenia.

Keep in Mind

Teach client:

- Take medication around the clock as directed.
- May cause dizziness or blurred vision. Change position slowly to avoid dizziness.

Nursing Dx: Risk for injury (pharmacologic); Impaired physical mobility.

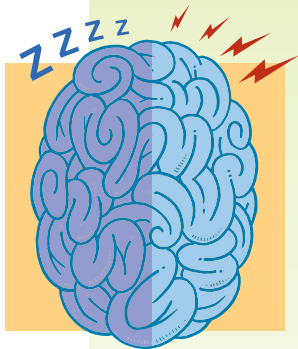
- Dry mouth can be relieved with good oral hygiene and use of sugarless gum or candy.
- Notify health-care professional if confusion, mood changes, difficulty with urination, edema, shortness of breath or worsening of Parkinson's symptoms occurs.
- Full effect for Parkinson's disease relief may take up to 2 wk of therapy.
- Wean from the drug gradually.



Make the Connection

- Monitor blood pressure periodically.
- Monitor vital signs and mental status periodically during first few days of treatment.
- Assess for CHF especially in clients on chronic therapy or with a history of CHF.
- Assess client for the appearance of a diffuse red mottling of the skin (livedo reticularis), especially in the lower extremities or on exposure to cold.
- Monitor intake and output closely in geriatric clients. May cause urinary retention.
- **Symptoms of toxicity include CNS stimulation. Physostigmine has been used to reverse CNS effects.**

Also Used for: Immune system applications (antiviral prophylaxis against influenza type A [Asian flu])



Bromocriptine

(broe-moe-krip-teen)

Parlodel

🍁 Apo-Bromocriptine

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent/Dopamine agonist

Indications

Adjunct to levodopa in the treatment of parkinsonism.

Action

Activates dopamine receptors in the CNS. Decreases prolactin secretion.

Adverse Reactions/Side Effects

- CNS:** dizziness, confusion, drowsiness, hallucinations, headache, insomnia, nightmares.
EENT: burning eyes, nasal stuffiness, visual disturbances. **Resp:** effusions, pulmonary infiltrates.
CV: MI, hypotension. **GI:** nausea, abdominal pain, anorexia, dry mouth, metallic taste, vomiting.
Derm: urticaria. **MS:** leg cramps. **Misc:** digital vasospasm (acromegaly only).

Keep in Mind

Teach client:

- Take medication as directed.
- May cause drowsiness and dizziness.

Nursing Dx: Impaired physical mobility; Risk for injury (pharmacologic).

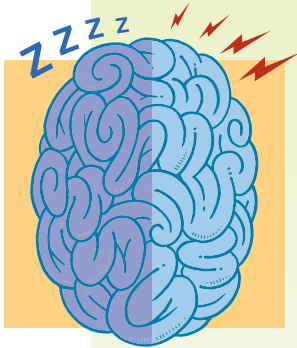
- Avoid concurrent use of alcohol.
- **Watch for signs of MI and notify health-care professional immediately if any occur.**
- Women should consult with health-care professional regarding a nonhormonal method of birth control.
- Maintain appointments for regular follow-up.



Make the Connection

- Assess client for allergy to ergot derivatives.
- Monitor blood pressure; severe hypotension may occur.
- Assess for symptom relief before and throughout therapy.
- Monitor liver function tests; renal function test; and CPK, alkaline phosphatase, and uric acid levels.
- Auscultate the lungs every shift for crackles.
- This medication is often given concurrently with levodopa or a levodopa-carbidopa combination in the treatment of Parkinson's disease.
- Administer with food or milk to minimize gastric distress.

Also Used for: Central nervous system applications (prolactinoma, pituitary tumors, acromegaly, neuroleptic malignant syndrome); reproductive system applications (infertility related to hyperprolactinemia)



Tolcapone

(toll-ca-pone)

Tasmar

Entacapone

(en-tah-ca-pone)

Comtan

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent/Catechol-O-methyltransferase (COMT) inhibitor

Indications

Treatment of Parkinson's disease as an adjunct to levodopa/carbidopa therapy to decrease fluctuation of dopamine (off-periods).

Action

Prolong and stabilize the effects of levodopa/carbidopa. Also prolong monoamine oxidase catalytic effects.

Adverse Reactions/Side Effects

CNS: hallucination, somnolence, vivid dreams, confusion, headache, syncope, agitation. **CV:** orthostatic hypotension, angina. **EENT:** tinnitus.

GI: **severe diarrhea**, nausea, **hepatotoxicity**.

GU: erectile dysfunction, urinary tract infection.

MS: Myalgia. **Derm:** Rash. **Misc:** **anaphylaxis**, hypertensive crisis with concurrent use of MAOI type A or B, SSRI, or tricyclic antidepressants.

Nursing Dx: Risk for injury (pharmacologic); Impaired mobility.

Keep in Mind

Teach client:

- Take as directed.
- Watch for signs of liver dysfunction.
- Report severe diarrhea.
- This drug may cause drowsiness.
- Report insomnia, hallucinations, or vivid dreams.
- Report severe headache or visual changes.
- Report suspected pregnancy to health care professional immediately.
- Change position slowly to ↓ dizziness.



Make the Connection

- **Assess liver function tests periodically.**

This drug can cause serious liver problems quickly.

- Do not give concurrently with MAOI A or B drugs, SSRIs, or tricyclic antidepressants.
- Give with levodopa/carbidopa.

Also Used for: Musculoskeletal system applications (restless legs syndrome)



Levodopa

(lee-voe-doe-pa)

Dopar, Larodopa, L-dopa

Carbidopa/Levodopa

(kar-bi-doe-pa/lee-voe-doe-pa)

Parcopa, Sinemet,
Sinemet Continuous Release (CR)

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent/Dopamine agonist

Indications

Treatment of Parkinson's disease. These drugs are not useful for drug-induced extrapyramidal reactions.

Action

Levodopa is converted to dopamine in the CNS, where it serves as a neurotransmitter. Carbidopa, a decarboxylase inhibitor, prevents peripheral destruction of levodopa. Consequently, more levodopa is delivered to the CNS using a smaller dose when used with carbidopa.

Adverse Reactions/Side Effects

CNS: involuntary movements, anxiety, dizziness, hallucinations, memory loss, psychiatric problems.

EENT: blurred vision, mydriasis. **GI:** nausea, vomiting, anorexia, dry mouth, hepatotoxicity.

Derm: melanoma. **Hemat:** hemolytic anemia, leukopenia. **Misc:** darkening of urine or sweat.

Nursing Dx: Risk for falls; Impaired mobility; Readiness for enhanced self-care activities.

Keep in Mind

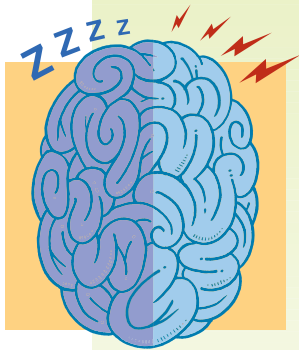
Teach client:

- Take this drug as directed.
- Gastric irritation may be decreased by eating food shortly after taking medications, but **high-protein meals may impair the drug's effects.**
- May cause drowsiness or dizziness.
- Change positions slowly to ↓ dizziness.
- Dry mouth can be relieved by good oral hygiene and sugarless gum or candy.
- Avoid multivitamins.
- Harmless darkening of urine or sweat may occur.
- Notify health-care professional if palpitations, urinary retention, involuntary movements, behavioral changes, severe nausea and vomiting, or new skin lesions occur.



Make the Connection

- Assess blood pressure and pulse frequently during period of dose adjustment.
- Monitor hepatic and renal function tests and CBC with differential.
- Assess for signs of toxicity (involuntary muscle twitching, facial grimacing, spasmodic eye winking, exaggerated protrusion of tongue, behavioral changes).



Benztropine

(*benz-troe-peen*)

Cogentin

🍁 Apo-Benztropine

Trihexyphenidyl

(*trye-hex-ee-fen-i-dill*)

Artane

🍁 Apo-Trihex

Therapeutic/Pharmacologic Class

Anti-Parkinson's agent/Anticholinergic

Indications

Adjunctive treatment of all forms of Parkinson's disease, including drug-induced extrapyramidal effects and acute dystonic reactions.

Action

Block cholinergic activity in the CNS, which is partially responsible for the symptoms of Parkinson's disease. Restore the natural balance of neurotransmitters in the CNS.

Adverse Reactions/Side Effects

CNS: confusion, depression, dizziness, hallucinations, headache, sedation, weakness. **EENT:** blurred vision, dry eyes, mydriasis. **CV:** arrhythmias, hypotension, palpitations, tachycardia. **GI:** constipation, dry mouth, ileus, nausea. **GU:** hesitancy, urinary retention. **Misc:** decreased sweating.

Keep in Mind

Teach client:

- Take as directed.

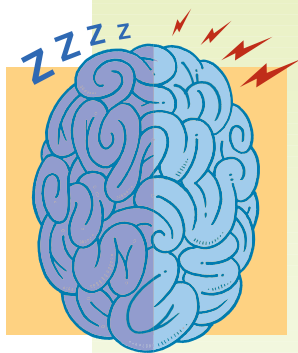
Nursing Dx: Impaired mobility; Readiness for enhanced self-care activities; Constipation; Urinary retention.

- May cause drowsiness or dizziness.
- Dry mouth may be relieved by use of sugarless gum or candy.
- Change positions slowly to ↓ dizziness.
- Avoid taking antacids or antidiarrheals within 1–2 hr of this medication.



Make the Connection

- Assess parkinsonian and extrapyramidal symptoms before and throughout therapy.
- Assess bowel function daily.
- Monitor intake and output.
- Remember, anticholinergics cause side effects of “hot as a hare, dry as a bone, red as a beet, mad as a hatter, blind as a bat.”
- If administering the drug IV (for acute dystonic reactions), monitor pulse, ECG, and blood pressure closely and maintain bedrest for 1 hr after administration.



Donepezil

(*doe-nep-i-zill*)

Aricept, Aricept
Oral Disintegrating
Tablets (ODT)

Rivastigmine

(*rye-va-stig-meen*)

Exelon

Galantamine

(*ga-lant-a-meen*)

Razadyne,
Razadyne ER,
Reminyl

Tacrine

(*tak-rin*)

Cognex

Therapeutic/Pharmacologic Class

Anti-Alzheimer's agent/Cholinergic (acetylcholinesterase inhibitor)

Indications

Treatment of mild-to-moderate dementia associated with Alzheimer's disease.

Action

Improve cholinergic function, which is lacking in clients with Alzheimer's disease, by inhibiting acetylcholinesterase, thus prolonging the effect of acetylcholine (the neurotransmitter of the cholinergic system).

Adverse Reactions/Side Effects

CNS: headache, abnormal dreams, depression, dizziness, drowsiness, fatigue, insomnia, syncope. **CV:** atrial fibrillation, hypertension, hypotension, vasodilation. **GI:** diarrhea, nausea, anorexia, vomiting, **peptic ulcers**. **GU:** frequent urination. **Derm:** ecchymoses. **Metab:** hot flashes, weight loss. **MS:** arthritis, muscle cramps.

Nursing Dx: Ineffective family coping; Risk for disturbed thought process; Risk for falls.

Keep in Mind

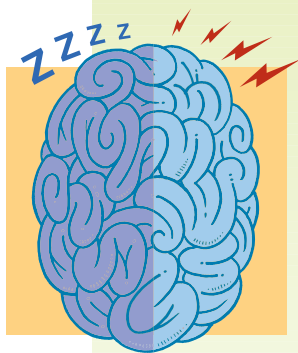
Teach client:

- Take the medication daily, as directed.
- May cause dizziness.
- Notify health-care professional if abdominal pain, coffee ground emesis, nausea, diarrhea, or changes in color of stool occur, or if new symptoms occur or previously noted symptoms increase in severity.
- Follow-up will be scheduled to monitor progress.
- These medications slow the progress of the disease but do not provide a cure.



Make the Connection

- Assess cognitive function (memory, attention, reasoning, language, ability to perform simple tasks) periodically during therapy.
- Remember SLUDGE—Salivation, Lacrimation, Urination, Diarrhea, GI distress, Emesis are cholinergic side effects. Administer in the evening just before going to bed.
- Give the family information on local Alzheimer's day care and respite care facilities.



Alprazolam

(al-pray-zoe-lam)

Xanax,
Xanax Extended
Release (XR)
* Apo-Alpraz,
* Novo-Alprazol

Diazepam

(dye-az-e-pam)

Valium
* Apo-Diazepam

Clonazepam

(kloe-na-ze-pam)

Klonopin
* Syn-Clonazepam

Lorazepam

(lor-az-e-pam)

Ativan
* Apo-Lorazepam

Therapeutic/Pharmacologic Class

Antianxiety agent, sedative-hypnotic agent/Benzodiazepine

Indications

Treatment of anxiety.

Action

Act at many levels in the CNS to produce anxiolytic effect. May produce CNS depression. Effects may be mediated by GABA, an inhibitory neurotransmitter.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, lethargy, confusion, hangover, headache, mental depression, paradoxical excitation. **EENT:** blurred vision.

GI: constipation, diarrhea, nausea, vomiting.

Derm: rashes. **Misc:** physical dependence, psychological dependence, tolerance.

Keep in Mind

Teach client:

- Take medication exactly as directed.

Nursing Dx: Anxiety; Risk for falls; Readiness for enhanced comfort level.

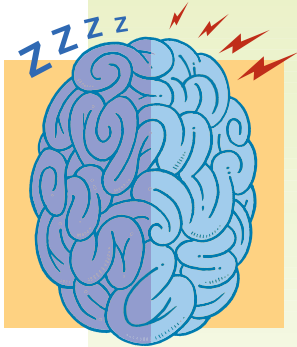
- May cause drowsiness or dizziness.
- Older clients may have an increased “hangover effect” in the morning and are at increased risk for falls.
- Avoid drinking grapefruit juice during therapy.
- Avoid the use of alcohol or other CNS depressants concurrently with these drugs.



Make the Connection

- Kava, valerian, and chamomile can ↑ CNS depression.
- Concurrent ingestion of grapefruit juice will ↑ blood levels.
- Assess degree and manifestations of anxiety during therapy.
- Monitor CBC with differential, and liver and renal function.
- Plan to give more of your time to the anxious client; remain nonjudgmental.

Also Used for: Reproductive system applications (premenstrual syndrome); musculoskeletal system applications (muscle relaxants); central nervous system applications (anticonvulsants)



Buspirone

(byoo-*spye*-rone)

BuSpar

Therapeutic/Pharmacologic Class

Antianxiety agent/Azaspirodecanedione

Indications

Management of generalized anxiety disorder.

Action

Binds to serotonin and dopamine receptors in the brain.

Increases norepinephrine metabolism in the brain.

Adverse Reactions/Side Effects

CNS: dizziness, drowsiness, excitement, fatigue, headache, insomnia, nervousness, weakness, personality changes. **EENT:** blurred vision, nasal congestion, sore throat, tinnitus, altered taste or smell, conjunctivitis. **Resp:** chest congestion, hyperventilation, shortness of breath. **CV:** chest pain, palpitations, tachycardia, hypertension, hypotension, syncope. **GI:** nausea, abdominal pain, constipation, diarrhea, dry mouth, vomiting. **GU:** changes in libido, dysuria, urinary frequency, urinary hesitancy. **Derm:** rashes, alopecia, blisters, dry skin, easy bruising, edema, flushing, pruritus. **Endo:** irregular menses. **MS:** myalgia. **Neuro:** incoordination, numbness, paresthesia, tremor. **Misc:** clamminess, sweating, fever.

Nursing Dx: Anxiety; Knowledge deficit.

Keep in Mind

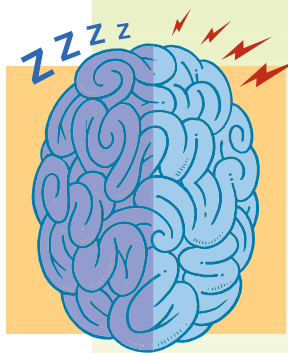
Teach client:

- Take exactly as directed.
- May cause dizziness or drowsiness.
- Avoid concurrent use of alcohol or other CNS depressants.
- Consult health-care professional before taking OTC medications or herbal products with this drug.
- Notify health-care professional if any chronic abnormal muscle movements occur or if pregnancy is suspected.
- Maintaining appointments for follow-up exams.
- **Report palpitations, chest discomfort, or faintness immediately.**



Make the Connection

- Concomitant use of kava, valerian, or chamomile can ↑ CNS depression.
- Grapefruit juice will ↑ serum levels.
- Assess degree and manifestations of anxiety before and periodically during therapy.
- Monitor liver and renal function tests.
- Monitor ECG and assess for chest discomfort.



Fluoxetine

(floo-ox-uh-teen)

Prozac,
Prozac Weekly,
Sarafem

Citalopram

(si-tal-oh-pram)

Celexa

Fluvoxamine

(floo-voks-a-meen)

Luvox

Paroxetine

(par-ox-e-teen)

Paxil

Therapeutic/Pharmacologic Class

Antidepressant/Selective serotonin reuptake inhibitor (SSRI)

Indications

Treatment of various forms of depression, OCD, social phobias, bulimia and anorexia nervosa, and panic disorder. **Sarafem:** Management of premenstrual dysphoric disorder (PMDD).

Action

Selectively inhibit the reuptake of serotonin from the neural synapse.

Adverse Reactions/Side Effects

CNS: **seizures**, anxiety, drowsiness, headache, insomnia, nervousness, abnormal dreams, dizziness, fatigue, hypomania, mania, weakness.

EENT: stuffy nose, visual disturbances. **Resp:** cough. **CV:** chest pain, palpitations. **GI:** diarrhea, abdominal pain, abnormal taste, anorexia, constipation, dry mouth, dyspepsia, nausea, vomiting, weight loss. **GU:** sexual dysfunction, urinary frequency. **Derm:** excessive sweating, pruritus,

Nursing Dx: Risk for disturbed thought processes; Chronic sorrow; Anxiety.

erythema nodosum, flushing, rashes. **Endo:** dysmenorrhea. **MS:** arthralgia, back pain, myalgia. **Neuro:** tremor. **Misc:** allergic reactions, fever, flu-like syndrome, hot flashes, sensitivity reaction.

Keep in Mind

Teach client:

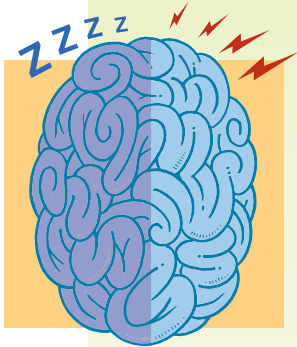
- Take the medication exactly as directed.
- May cause drowsiness, dizziness, impaired judgment, blurred vision and dry mouth.
- Avoid alcohol, CNS depressant drugs, and herbal products like SAME and St. John's wort.
- The medication may cause decreased libido.
- **Report chest discomfort, palpitations, or suicidal thoughts immediately.**



Make the Connection

- **Assess for suicidal tendencies, especially in the first 2–4 wks.**
- Monitor appetite and nutrition intake.
- Monitor CBC, LFT, and RFT.

Also Used for: Metabolic system applications (obesity); musculoskeletal system applications (fibromyalgia); cardiovascular system applications (Raynaud's phenomenon); CNS applications (attention deficit and hyperactivity disorder; diabetic neuropathy)



Lithium

(*lith-ee-um*)

Eskalith, Lithobid, Lithotabs
✿ Carbolith

Therapeutic/Pharmacologic Class

Antimanic agent/Neurotransmitter reuptake inhibitor

Indications

Treatment of bipolar affective disorders (treatment of acute manic episodes and prophylaxis against recurrence).

Action

Alters cation transport in nerve and muscle. Influences reuptake of neurotransmitters.

Adverse Reactions/Side Effects

CNS: **seizures**, fatigue, headache, impaired memory, ataxia, confusion, dizziness, drowsiness, psychomotor retardation, restlessness, stupor.

EENT: aphasia, blurred vision, dysarthria, tinnitus.

CV: **arrhythmias**, **ECG changes**, edema, hypotension. **GI:** abdominal pain, anorexia, bloating, diarrhea, nausea, dry mouth, metallic taste. **GU:** polyuria, glycosuria, nephrogenic diabetes insipidus, renal toxicity. **Derm:** acne, folliculitis, alopecia, diminished sensation, pruritus. **Endo:** hypothyroidism, goiter, hyperglycemia, hyperthyroidism. **F and E:**

Nursing Dx: Disturbed thought processes; Suicidal thoughts; Risk for situational low self-esteem.

hyponatremia. **Hemat:** leukocytosis. **Metab:** weight gain. **MS:** muscle weakness, hyperirritability, rigidity. **Neuro:** tremors.

Keep in Mind

Teach client:

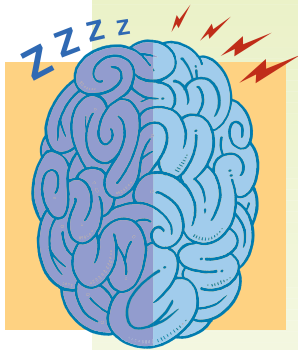
- Take the medication as directed.
- May cause dizziness or drowsiness.
- **Do not limit sodium intake.**
- Unwanted weight gain and acne may occur.
- Do not drink coffee, tea, or cola in large amounts.
- Notify HCP if fever, vomiting, or diarrhea occurs.



Make the Connection

- **Assess for suicidal ideation and react swiftly.**
- Monitor I&O; electrolytes; and CBC, LFT, RFT.
- **Monitor serum drug levels (0.5–1.5 mEq/L).**
The client with toxicity looks like a person who is inebriated, with ataxia, slurred speech, and drowsiness.

Also Used for: Central nervous system applications (migraine and cluster headache)



Trazodone

(traz-oh-done)

Desyrel, Trialodine, Trazon

Bupropion

(byoo-proe-pee-on)

Wellbutrin,
Wellbutrin Sustained Release (SR),
Wellbutrin Extra Long-Acting (XL),
Zyban

Therapeutic/Pharmacologic Class

Antidepressant/Nontricyclic, nonselective serotonin reuptake inhibitor (SSRI) (2nd-generation antidepressant)

Indications

Treatment of major depression, often in conjunction with psychotherapy.

Action

Alter the effects of serotonin in the CNS.

Adverse Reactions/Side Effects

CNS: lower seizure threshold (bupropion), drowsiness, confusion, dizziness, fatigue, hallucinations, headache, insomnia, nightmares, slurred speech, syncope, weakness. **EENT:** blurred vision, tinnitus. **CV:** hypotension, arrhythmias, chest pain, hypertension, palpitations, tachycardia. **GI:** dry mouth, altered taste, constipation, diarrhea, excess salivation, flatulence, nausea, vomiting. **GU:** hematuria, impotence, priapism, urinary frequency. **Derm:** rashes. **Hemat:** anemia, leukopenia. **MS:** myalgia. **Neuro:** tremor.

Nursing Dx: Disturbed thought processes.

Keep in Mind

Teach client:

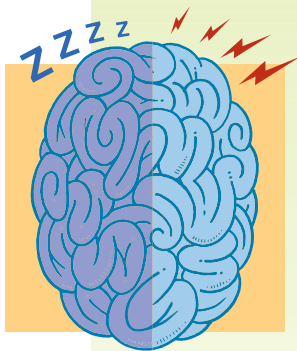
- Take medication exactly as directed.
- May cause drowsiness and blurred vision.
- Avoid concurrent use of alcohol or other CNS depressant drugs.
- Expect follow-up exams.
- **Report any suicidal ideation immediately to the health-care professional.**



Make the Connection

- Concomitant use of herbal products like kava, valerian, or chamomile can ↑ CNS depression.
- The risk for serotonin syndrome increases when medication is taken with St. John's wort or SAME.
- Monitor BP, pulse, and ECG as baseline, then periodically.
- Assess mental status and mood changes.
- There are fewer problems with sexual side effects than with SSRIs.
- Monitor CBC, LFT, and RFT.

Also Used for: Respiratory system applications (smoking cessation); central nervous system applications (diabetic neuropathy and insomnia)



Venlafaxine

(ven-la-fax-een)

Effexor,
Effexor XR

Nefazodone

(neff-a-zoe-done)

Serzone

Mirtazapine

(meer-taz-a-peen)

Remeron,
Remeron Soltabs

Duloxetine

(do-lox-e-teen)

Cymbalta

Therapeutic/Pharmacologic Class

Antidepressant, anti-anxiety agent/Serotonin and norepinephrine reuptake inhibitor (SSNRI) (3rd-generation antidepressant).

Indications

Treatment of major depressive illness or relapse, often in conjunction with psychotherapy. Treatment of generalized anxiety disorder and social anxiety disorder.

Action

Inhibit serotonin and norepinephrine reuptake in the CNS.

Adverse Reactions/Side Effects

CNS: seizures, abnormal dreams, anxiety, dizziness, headache, insomnia, nervousness, weakness, abnormal thinking, agitation, confusion, depersonalization, drowsiness, emotional lability, worsening depression. **EENT:** rhinitis, visual disturbances, tinnitus. **CV:** chest pain, hypertension, palpitations, tachycardia. **GI:** abdominal pain, altered taste, anorexia, constipation, diarrhea,

Nursing Dx: Disturbed thought processes; Anxiety; Suicidal thoughts.

dry mouth, dyspepsia, nausea, vomiting, weight loss. **GU:** sexual dysfunction, urinary frequency, urinary retention. **Derm:** ecchymoses, itching, photosensitivity, skin rash. **Neuro:** paresthesia, twitching. **Misc:** chills, yawning.

Keep in Mind

Teach client:

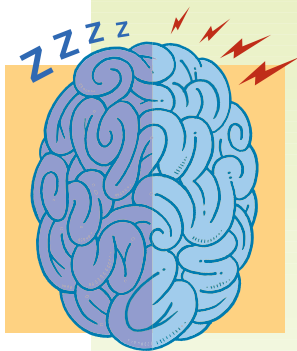
- Take the medication exactly as directed.
- The medication may cause drowsiness or dizziness.
- Avoid using alcohol or other CNS-depressants.
- **Report suicidal thoughts immediately.**



Make the Connection

- **The risk for serotonin syndrome increases with use of St. John's wort or SAME.**
- **Assess suicidal tendencies, especially in early therapy.**
- Monitor CBC, LFT, RFT, and electrolytes.

Also Used for: Reproductive system applications (premenstrual syndrome)



Amitriptyline

(a-mee-**trip**-ti-leen)

Elavil, Endep
🍁 Apo-Amitriptyline

Imipramine

(im-**ip**-pra-meen)

Tofranil

Nortriptyline

(nor-**trip**-ti-leen)

Aventyl, Pamelor

Clomipramine

(cloe-**mip**-pra-meen)

Anafranil

Therapeutic/Pharmacologic Class

Antidepressant/Tricyclic antidepressant

Indications

Treatment of depression, often in conjunction with psychotherapy.

Action

Potentiate the effect of serotonin and norepinephrine in the CNS. Produce significant anticholinergic side effects.

Adverse Reactions/Side Effects

CNS: lethargy, sedation. **EENT:** blurred vision, dry eyes, dry mouth. **CV:** **arrhythmias**, hypotension, ECG changes. **GI:** constipation, hepatitis, paralytic ileus. **GU:** urinary retention. **Derm:** photosensitivity. **Endo:** changes in blood glucose, gynecomastia. **Hemat:** blood dyscrasias.

Misc: increased appetite, weight gain.

Keep in Mind

Teach client:

- Take the medication exactly as directed. It is best taken at bedtime because of the sedating effects.

Nursing Dx: Disturbed thought processes; Suicidal thoughts; Risk for injury (falls).

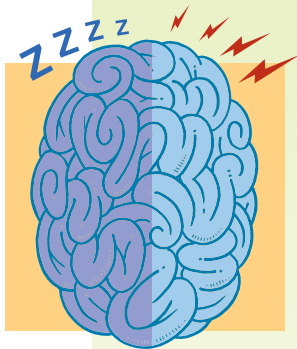
- This medication may cause drowsiness.
- Dizziness on standing, sedation, and confusion are common side effects.
- Avoid alcohol or other CNS depressant drugs.
- Use sunscreen and protective clothing.
- An increase in appetite may occur.
- **Notify HCP immediately if having any suicidal thoughts.**



Make the Connection

- Appears on Beers list as a drug that is inappropriate for older clients. Increases the risk for falls.
- **May ↑ risk of suicide attempt/ideation, especially during early treatment.**
- Serotonin syndrome may occur when medication is combined with SAME or St. John's wort.
- Anticholinergic effects are “hot as a hare, dry as a bone, red as a beet, mad as a hatter, and blind as a bat.”
- Monitor CBC, LFT, RFT, serum glucose, and serum alkaline phosphatase.

Also Used for: Central nervous system applications (neurogenic pain)



Phenelzine

(*fen-el-zeen*)

Nardil

Tranlycypromine

(*tran-ill-sip-roe-meen*)

Parnate

Isocarboxazid

(*eye-soe-car-box-a-zid*)

Marplan

Therapeutic/Pharmacologic Class

Antidepressant/Monoamine oxidase inhibitor (MAOI)

Indications

Treatment of neurotic or atypical depression (usually reserved for clients who do not tolerate or respond to other modes of therapy [e.g., tricyclic antidepressants, SSRIs, SSNRIs, electroconvulsive therapy]).

Action

Inhibit the enzyme monoamine oxidase, resulting in an accumulation of various neurotransmitters (dopamine, epinephrine, norepinephrine, serotonin) in the neural synapse.

Adverse Reactions/Side Effects

CNS: seizures, dizziness, drowsiness, fatigue, headache, hyperreflexia, insomnia, tremor, twitching, weakness, euphoria, paresthesia, restlessness. **EENT:** blurred vision, glaucoma, nystagmus. **CV:** hypertensive crisis, edema, orthostatic hypotension. **GI:** constipation, dry mouth, abdominal pain, liver function test elevation, nausea, vomiting. **GU:** sexual dysfunction,

Nursing Dx: Disturbed thought processes; Suicidal thoughts; Risk for injury (pharmacologic).

urinary retention. **Derm:** pruritus, rashes. **F and E:** hyponatremia. **Endo:** weight gain.

Keep in Mind

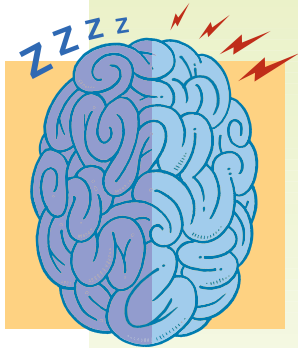
Teach client:

- Take the medication as directed.
- **Avoid alcohol, CNS depressants, OTC decongestant drugs, excessive caffeine intake, and foods or beverages containing tyramine (give client a list).**
- This medication may cause dizziness or drowsiness.
- Wear a Medic-Alert bracelet.
- Ophthalmologic testing will also be done periodically.



Make the Connection

- **Serious, potentially fatal adverse reactions may occur with concurrent use of other antidepressants. Avoid using within 2–5 wk of each other.**
- **This medication may cause severe HTN and seizures when combined with opioids, tryptophan, tyrosine, phenylamine, tyramine, or high caffeine intake.**
- **Assess for suicidal tendencies, especially during early therapy.**
- Monitor LFT.



Haloperidol

(ha-loe-per-i-dole)

Haldol,
Haldol Long Acting (LA)
🍁 Apo-Haloperidol

Therapeutic/Pharmacologic Class

Antipsychotic agent/Butyrophenone

Indications

Treatment of acute and chronic psychotic disorders, including schizophrenia, manic states, and drug-induced psychoses. Also useful in the management of aggressive or agitated clients. Treatment of Tourette's syndrome.

Action

Alters the effects of dopamine in the CNS. Also has anticholinergic and alpha-adrenergic blocking activity.

Adverse Reactions/Side Effects

CNS: seizures, extrapyramidal reactions, confusion, drowsiness, restlessness, tardive dyskinesia.

EENT: blurred vision, dry eyes. **Resp:** respiratory depression. **CV:** hypotension, tachycardia.

GI: constipation, dry mouth, anorexia, drug-induced hepatitis, ileus. **GU:** urinary retention.

Derm: diaphoresis, photosensitivity, rashes.

Endo: galactorrhea. **Hemat:** anemia, leukopenia.

Nursing Dx: Disturbed thought processes; Acute confusion; Disturbed sensory perception.

Metab: hyperpyrexia. **Misc:** neuroleptic malignant syndrome, hypersensitivity reactions.

Keep in Mind

Teach client:

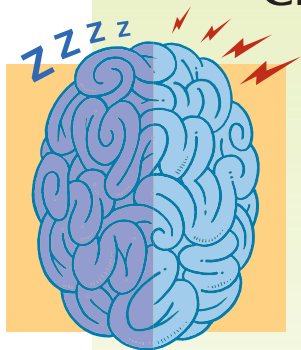
- Take the medication as directed. Do not discontinue abruptly.
- Report abnormal muscle movements or twitches.
- This medication may cause drowsiness.
- Avoid taking alcohol or other CNS depressants.
- Extremes of temperature should also be avoided.



Make the Connection

- Assess mental status.
- Monitor BP for orthostatic hypotension.
- May cause QT interval changes on ECG.
- Refer immediately to movement disorders specialist if EPS occurs.
- **Monitor for development of neuroleptic malignant syndrome.**
- Monitor CBC and LFT.

Also Used for: Gastrointestinal system applications (nausea)



Chlorpromazine

(klor-*proe*-ma-zeen)

Thorazine



Novo-
Chlorpromazine

Perphenazine

(per-*fen*-a-zeen)

Trilafon

Fluphenazine

(floo-*fen*-a-zeen)

Permitil, Prolixin

Trifluoperazine

(try-floo-oe-*pear*-a-zeen)

Stelazine

Therapeutic/Pharmacologic Class

Antipsychotic agent/Phenothiazine (older antipsychotic agent)

Indications

Treatment of acute and chronic psychoses, particularly when accompanied by increased psychomotor activity. Treatment of nausea and vomiting. Treatment of intractable hiccups.

Action

Alter the effects of dopamine in the CNS. Have significant anticholinergic/alpha-adrenergic blocking activity.

Adverse Reactions/Side Effects

CNS: neuroleptic malignant syndrome, sedation, extrapyramidal reactions, tardive dyskinesia.

EENT: blurred vision, dry eyes, lens opacities. **CV:** hypotension (increased with IM, IV), tachycardia.

GI: constipation, dry mouth, anorexia, hepatitis, ileus. **GU:** urinary retention. **Derm:** photosensitivity, pigment changes, rashes. **Endo:** galactorrhea.

Hemat: agranulocytosis, leukopenia. **Metab:** hyperthermia. **Misc:** allergic reactions.

Nursing Dx: Disturbed thought processes; Disturbed sensory perception.

Keep in Mind

Teach client:

- Take the medication exactly as directed.
- Report abnormal muscle movement or twitches immediately to health-care professional.
- This medication may cause drowsiness.
- Avoid using alcohol or other CNS depressants.
- Extremes of temperature should be avoided.



Make the Connection

- Assess client's mental status prior to and periodically throughout therapy.
- Refer to a movement disorder specialist if EPS occurs.
- Monitor for orthostatic hypotension.
- **Monitor for development of neuroleptic malignant syndrome.**
- Monitor CBC, LFT, and ocular acuity.

Also Used for: Cardiovascular system applications (vascular headache); gastrointestinal system applications (nausea); central nervous system applications (preoperative sedation)



Thiothixene

(thye-oh-thix-eeen)

Navane

Therapeutic/Pharmacologic Class

Antipsychotic agent/thioxanthene

Indications

Management of psychotic disorders.

Action

Alters the effect of dopamine in the CNS.

Adverse Reactions/Side Effects

CNS: neuroleptic malignant syndrome, extrapyramidal reactions, sedation, tardive dyskinesia, seizures. **EENT:** blurred vision, dry eyes, lens opacities. **CV:** hypotension, tachycardia, non-specific ECG changes. **GI:** constipation, dry mouth, anorexia, ileus, nausea. **GU:** urinary retention. **Derm:** photosensitivity, pigment changes, rashes. **Endo:** breast enlargement, galactorrhea. **Hemat:** leukocytosis, leukopenia. **Metab:** hyperpyrexia. **Misc:** allergic reactions.

Keep in Mind

Teach client:

- Take the medication exactly as directed.

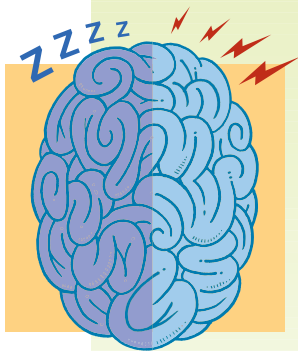
Nursing Dx: Disturbed thought processes; Disturbed sensory perception.

- Report symptoms such as abnormal muscle movement or twitches immediately.
- This medication may cause drowsiness.
- Avoid using alcohol or other CNS depressants.
- Extremes of temperature should be avoided.
- This medication may cause breast enlargement.
- Routine follow-up exams and continued participation in psychotherapy are needed.



Make the Connection

- Assess client's mental status prior to and periodically throughout therapy.
- Monitor for orthostatic hypotension.
- Refer to a movement disorder specialist if EPS occurs.
- **Monitor for development of neuroleptic malignant syndrome.**
- Monitor CBC, LFT, and ocular acuity.
- Avoid contact with all forms of solution because it may cause dermatitis.



Aripiprazole

(a-ri-**pip**-ra-zole)

Abilify

Olanzapine

(oe-**lanz**-a-peen)

Zyprexa,
Zyprexa Zydis

Risperidone

(ris-**pear**-i-doen)

Risperdal

Ziprasidone

(zye-**pras**-i-doen)

Geodon

Therapeutic/Pharmacologic Class

Antipsychotic agent/Dopamine and serotonin receptor blocker (atypical, newer antipsychotic agent)

Indications

Treatment of schizophrenia.

Action

Bind to dopamine and serotonin receptors in the CNS. Produce fewer extrapyramidal reactions and less tardive dyskinesia than standard antipsychotics.

Adverse Reactions/Side Effects

CNS: neuroleptic malignant syndrome, seizures, dizziness, sedation. **EENT:** visual disturbances, conjunctivitis, ear pain. **CV:** chest pain, hypotension, tachycardia, ECG changes, hypertension. **GI:** constipation, abdominal discomfort, dry mouth, increased salivation, nausea, vomiting. **Derm:** sweating. **Endo:** hyperglycemia. **Hemat:** bone marrow changes. **Neuro:** extrapyramidal reactions. **Resp:** Dyspnea. **Misc:** weight loss.

Nursing Dx: Disturbed thought processes; Disturbed sensory perception.

Keep in Mind

Teach client:

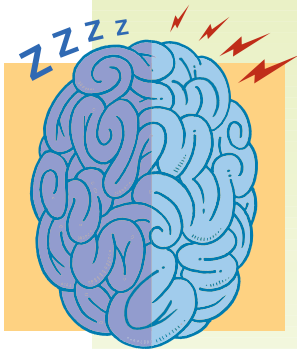
- Take the medication exactly as directed.
- Watch for abnormal muscle movements or twitches and report these symptoms immediately.
- This medication may cause seizures and drowsiness.
- Avoid concurrent use of alcohol and other CNS depressants.



Make the Connection

- Monitor client's mental status before and periodically during therapy.
- Monitor for orthostatic hypotension.
- **Monitor ECG for cardiac abnormalities.**
- Refer to a movement disorder specialist if EPS occurs.
- **Monitor for development of neuroleptic malignant syndrome.**
- Monitor CBC and LFT.

Also Used for: Central nervous system applications (bipolar disorder/mania)



Caffeine

*(kaff-**een**)*

Caicit

Ergotamine, Caffeine

*(err-**got**-a-mine, kaff-**een**)*

Cafergot

Butalbital, Acetaminophen, Caffeine

*(bute-**al**-bit-al, a-seet-a-**min**-oe-fen, kaff-**een**)*

Fioricet

Therapeutic/Pharmacologic Class

Analgesic, stimulant/Xanthine derivative alone or in combination with butalbital (barbiturate), ergotamine (intracranial vessel constrictor), and/or acetaminophen (nonsteroidal analgesic)

Indications

Treatment of migraine headache. Used as a respiratory stimulant in neonates (noncombination drug).

Action

Vasoconstriction of dilated blood vessels implicated in recurrent painful migraine headache. Produces bronchodilation.

Adverse Reactions/Side Effects

GI: constipation, dry mouth. **MS:** myalgia, tingling of fingers and toes. **CV:** Palpitations, fast heart rate, **angina pectoris**, **Neuro:** dizziness, nervousness, insomnia. **GU:** worsening of benign prostatic hyperplasia (BPH), painful urination. **Sensory:** Worsening of glaucoma.

Nursing Dx: Pain; Readiness for enhanced comfort level.

Keep in Mind

Teach client:

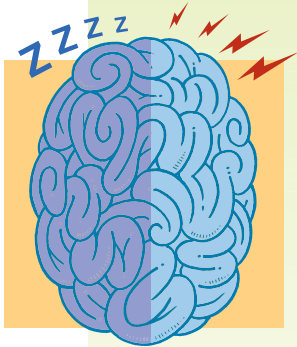
- Use pain scale as instructed to objectively rate severity of migraine symptoms.
- **Report palpitations or chest pain immediately.**
- **Do not take this medication if you have glaucoma or BPH.**
- Laboratory tests will be scheduled periodically.
- Suppositories may be available instead of PO form if nausea and vomiting accompany migraine symptoms.



Make the Connection

- Monitor pain scale and report relief of migraine headache.
- Monitor ECG and ask client to report palpitations.
- Monitor liver and renal function tests periodically.
- **Place on monitor; take vital signs and pulse oximeter reading immediately if client reports chest pain.**
- Medicate at the first sign of migraine pain to possibly abort the migraine headache.

Also Used for: Respiratory system applications (bronchodilation and prevention of apnea in the neonate [noncombined stimulant])



Sibutramine

(si-byoo-tra-meen)

Meridia

Therapeutic/Pharmacologic Class

Weight control agent/Appetite suppressant

Indications

Treatment of obesity in clients with body mass index ≥ 30 kg/m² (or ≥ 27 kg/m² in clients with diabetes, hypertension, or other risk factors) in conjunction with other interventions (dietary restriction, exercise); used to produce and maintain weight loss.

Action

Acts as an inhibitor of the reuptake of serotonin, norepinephrine, and dopamine; increases the satiety-producing effects of serotonin.

Adverse Reactions/Side Effects

CNS: seizures, headache, insomnia, CNS stimulation, dizziness, drowsiness, emotional lability, nervousness. **EENT:** laryngitis/pharyngitis, rhinitis, sinusitis. **CV:** hypertension, palpitations, tachycardia, vasodilation. **GI:** anorexia, constipation, dry mouth, altered taste, dyspepsia, increased appetite, nausea. **GU:** dysmenorrhea. **Derm:** increased sweating, rash.

Nursing Dx: Therapeutic regimen: individual, effective management; Risk for imbalanced nutrition: more than body requirements.

Keep in Mind

Teach client:

- Take medication as directed.
- Avoid using other CNS depressants or excessive amounts of alcohol with this medication.
- Take weight at the same time, using the same scale, with the same clothing weekly.



Make the Connection

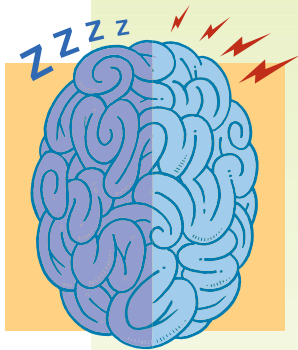
- **Concurrent use of other centrally acting appetite suppressants, MAOI, SSRIs, naratriptan, frovatriptan, rizatriptan, zolmitriptan, sumatriptan, dihydroergotamine, dextromethorphan, meperidine, pentazocine, fentanyl, lithium, or tryptophan may result in potentially fatal “serotonin syndrome.”**
- Monitor clients for weight loss and adjust concurrent medications as needed.
- **Monitor blood pressure and heart rate regularly during therapy. Increases in blood pressure or heart rate, especially during early therapy, may require decrease in dose or discontinuation of this drug.**

Also Used for: Central nervous system applications (antidepressant)

Methylphenidate

(meth-ill-fen-i-date)

Concerta, Metadate Continuous Dosage (CD),
Metadate Extended Release (ER), Methylin,
Methylin Sustained Release (SR), Ritalin,
Ritalin Long-Acting (LA), Ritalin-SR
🍁 PMS-Methylphenidate



Dexmethylphenidate

(dex-meth-ill-fen-i-date)

Focalin, Focalin Extended Release (XR)

Therapeutic/Pharmacologic Class

Attention span-enhancing agent/Central nervous system stimulant.

Indications

Treatment of attention deficit/hyperactivity disorder (ADHD). Symptomatic treatment of narcolepsy.

Unlabelled Uses: Management of some forms of refractory depression.

Action

Produce CNS and respiratory stimulation with weak sympathomimetic activity.

Adverse Reactions/Side Effects

CNS: hyperactivity, insomnia, restlessness, tremor, dizziness, headache, irritability.

EENT: blurred vision. **CV:** hypertension, palpitations, tachycardia, hypotension. **GI:** anorexia, constipation, cramps, diarrhea, dry mouth, metallic taste, nausea, vomiting. **Derm:** rashes.

Neuro: akathisia, dyskinesia. **Misc:** fever, hypersensitivity reactions, physical dependence,

psychological dependence, suppression of weight gain (children), tolerance.

Keep in Mind

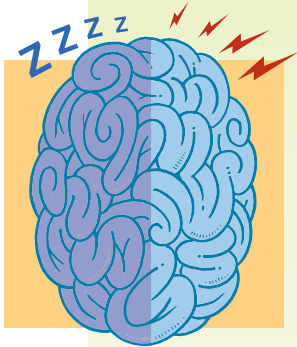
Teach client:

- Take medication as directed before 6 PM.
- Weight will be assessed 2–3 times weekly.
- Avoid using caffeine-containing beverages.
- **Report palpitations or insomnia.**
- Parents are to notify school nurse of medication regimen (ADHD).

**Make the Connection**

- **Using with MAOI or vasopressors may result in hypertensive crisis.**
- Monitor blood pressure, pulse, and respiration.
- **Medication has a high dependence and abuse potential.**
- Assess effectiveness when used for ADHD or narcolepsy.
- Monitor CBC.

Nursing Dx: Risk for imbalanced nutrition: less than body requirements; Readiness for enhanced self-perception.



Amphetamine

(am-fet-a-meen)

Amphetamine Salt, Adderall,
Adderall Extended Release (XR)

Therapeutic/Pharmacologic Class

Attention span-enhancing agent/Central nervous system stimulant

Indications

Treatment of narcolepsy. Adjunct in the management of attention-deficit/hyperactivity disorder (ADHD).

Action

Causes release of norepinephrine from nerve endings.

Adverse Reactions/Side Effects

CNS: hyperactivity, insomnia, irritability, restlessness, tremor, dizziness, headache, **cardiomyopathy (increased with prolonged use, high doses)**. **CV:** palpitations, tachycardia, hypertension, hypotension. **GI:** anorexia, constipation, cramps, diarrhea, dry mouth, metallic taste, nausea, vomiting. **GU:** erectile dysfunction, increased libido. **Derm:** urticaria. **Endo:** growth inhibition (with long-term use in children). **Misc:** psychological dependence.

Nursing Dx: Readiness for enhanced social interaction; Risk for imbalanced nutrition: less than body requirements.

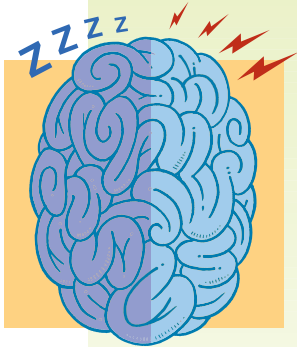
Keep in Mind

Teach client:

- Take the medication at least 6 hr before bedtime.
- **Report insomnia or palpitations.**
- Weight will be assessed frequently.

**Make the Connection**

- **Using with MAOI or meperidine can result in hypertensive crisis.**
- Monitor blood pressure, pulse, and respiration.
- Medication may produce a false sense of euphoria and well-being.
- **Medication has high dependence and abuse potential.**
- Monitor weight biweekly.
- Assess effectiveness in treatment of ADHD or narcolepsy.



Atomoxetine

(a-to-mox-e-teen)

Strattera

Therapeutic/Pharmacologic Class

Attention deficit disorder agent/Selective norepinephrine reuptake inhibitor

Indications

Treatment of attention-deficit/hyperactivity disorder (ADHD).

Action

Selectively inhibits the presynaptic transporter of norepinephrine.

Adverse Reactions/Side Effects

CNS: dizziness, fatigue, mood swings, insomnia (adults). **CV:** hypertension, orthostatic hypotension, tachycardia. **GI:** dyspepsia, **severe liver injury** (rare), nausea, vomiting; dry mouth, constipation. **Derm:** rash, urticaria. **GU:** dysmenorrhea, ejaculatory problems, ↓ libido, erectile dysfunction, urinary hesitation, urinary retention. **Metab:** decreased appetite, weight/growth loss. **Misc:** allergic reactions including **angioneurotic edema**.

Nursing Dx: Risk for imbalanced nutrition: less than body requirements; Suicidal thoughts.

Keep in Mind

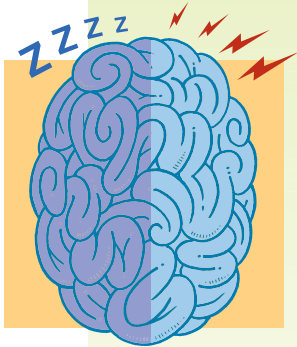
Teach client:

- Take medication as directed.
- Avoid pregnancy or breast-feeding.
- Notify school nurse of ADHD regimen.

**Make the Connection**

- **Contraindicated if used concurrently or within 2 wk of MAOI.**
- **Contraindicated in clients with narrow angle glaucoma with cardiovascular history.**
- **This medication may ↑ risk for suicide attempt/ideation.**
- **Concurrent albuterol or vasopressor use increases risk of adverse cardiovascular reactions.**
- Assess effectiveness for treatment of ADHD.
- Monitor BP, pulse, and LFT.

Also Used for: Central nervous system applications (adjunctive treatment for certain types of depression)



Modafinil

(mo-daf-i-nil)

Provigil

Therapeutic/Pharmacologic Class

Wakefulness enhancement agent/Central nervous system stimulant

Indications

Improvement of wakefulness in clients with excessive daytime drowsiness due to narcolepsy, obstructive sleep apnea, or shift work sleep disorder.

Action

Produces CNS stimulation through several pathways (weak dopaminergic activity, α_1 -adrenergic agonism, and decrease in GABA transmission).

Adverse Reactions/Side Effects

CNS: headache, amnesia, anxiety, cataplexy, confusion, depression, dizziness, insomnia, nervousness. **EENT:** rhinitis, abnormal vision, amblyopia, epistaxis, pharyngitis. **Resp:** dyspnea, lung disorder. **CV:** **arrhythmias, chest pain, hypertension**, hypotension, syncope, vasodilation.

GI: nausea, abnormal liver function, anorexia, diarrhea, gingivitis, mouth ulcers, thirst, vomiting.

GU: abnormal ejaculation, albuminuria, urinary retention. **Derm:** dry skin, herpes simplex.

Nursing Dx: Sleep pattern disturbance.

Endo: hyperglycemia. **Hemat:** eosinophilia. **MS:** joint disorder, neck pain. **Neuro:** ataxia, dyskinesia, hypertonia, paresthesia, tremor. **Misc:** infection.

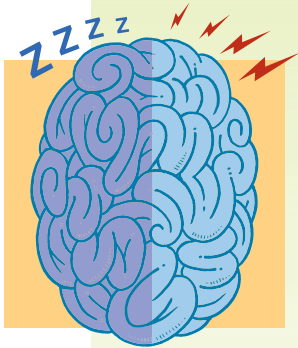
Keep in Mind

Teach client:

- Take the medication as directed.
- This medication may impair judgment.
- Avoid pregnancy or breast-feeding.
- **Notify health-care professional immediately if rash, hives, or other allergic reactions occur.**

**Make the Connection**

- Contraindicated in patients with cardiovascular problems.
- **May cause elevated liver enzymes, so monitor LFT periodically.**
- Administer as a single dose in the morning or 1 hr before the start of work shift for clients with shift work sleep disorder.



Almotriptan

*(al-moe-**trip**-tan)*

Axert

Sumatriptan

*(su-ma-**trip**-tan)*

Imitrex

Therapeutic/Pharmacologic Class

Vascular headache suppressant/5-HT₁ agonist

Indications

Treatment of acute migraine headache.

Action

Act as an agonist at specific 5-HT₁ receptor sites in intracranial blood vessels and sensory trigeminal nerves.

Adverse Reactions/Side Effects

CNS: drowsiness, headache. **CV:** coronary artery vasospasm, MI, myocardial ischemia, ventricular fibrillation, ventricular tachycardia.

GI: dry mouth, nausea. **Neuro:** paresthesia.

Keep in Mind

Teach client:

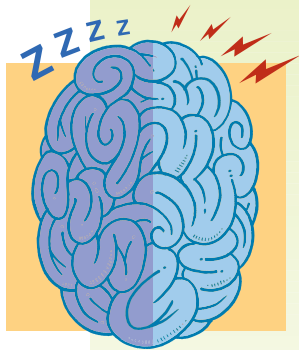
- Medication should be used only during a migraine attack.
- Medication should be used as soon as symptoms of a migraine attack appear.
- Do not take medication within 24 hr of another vascular headache suppressant.

Nursing Dx: Risk for pain; Risk for injury (pharmacologic).

- Lying down in a darkened room following drug administration may further help relieve headache.
- Avoid pregnancy or breast-feeding.
- **Notify HCP prior to next dose of the drug if there is pain or tightness in the chest or if pain is severe or does not subside.**
- May cause dizziness or drowsiness.
- Avoid alcohol, which aggravates headache.
- Follow instructions for proper method of self-subcutaneous medication administration.

**Make the Connection**

- **Medication is contraindicated in basilar or hemiplegic migraine.**
- **Concurrent use with MAO-A inhibitors, SSRIs, or other 5-HT₁ agonists is contraindicated.**
- Tablets should be swallowed whole with liquid.
- Subcutaneously administered medications may abort a vascular headache within several minutes.



Epinephrine

(e-pi-nef-rin)

Adrenalin, Ana-Guard,
AsthmaHaler Mist,
AsthmaNefrin (Racepinephrine),
EpiPen, MicroNefrin, Nephron,
Primatene, Sus-Phrine, S-2

Therapeutic/Pharmacologic Class

Antiasthmatic agent, bronchodilator, vasopressor/
Adrenergic agent

Indications

Management of cardiac arrest. Increase of contractility, heart rate, and urinary output in shock.

Action

Results in the accumulation of cyclic adenosine monophosphate (cAMP) at beta-adrenergic receptors. Affects both beta₁ (cardiac)-adrenergic receptors and beta₂ (pulmonary)-adrenergic receptor sites. Produces bronchodilation. Also has alpha-adrenergic agonist properties, which result in vasoconstriction. Inhibits the release of mediators of immediate hypersensitivity reactions from mast cells.

Adverse Reactions/Side Effects

CNS: nervousness, restlessness, tremor, headache, insomnia. **Resp:** paradoxical bronchospasm (excessive use of inhalers). **CV:** angina, arrhythmias, hypertension, tachycardia. **GI:** nausea, vomiting. **Endo:** hyperglycemia.

Nursing Dx: Risk for injury (pharmacologic).

Keep in Mind

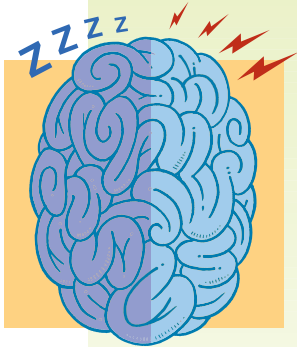
Teach client:

- Take medication exactly as directed.
- **Contact HCP immediately if shortness of breath is not relieved by medication or is accompanied by diaphoresis, dizziness, palpitations, or chest pain.**
- Follow instructions for proper use of metered dose inhalers.



Make the Connection

- Contraindicated in hypersensitivity to adrenergic amines and in cardiac arrhythmias.
- Assess lung sounds, respiratory pattern, pulse, and blood pressure.
- Observe for paradoxical bronchospasm (wheezing).
- **Assess for hypersensitivity reaction (rash; urticaria; swelling of the face, lips, or eyelids).**
- May cause an increase in blood glucose and serum lactic acid concentrations.
- **Client harm or fatalities have occurred from medication errors with this drug. Have second practitioner check dose (IV).**



Terbutaline

(ter-byoo-ta-leen)

Brethaire, Bricanyl

Therapeutic/Pharmacologic Class

Bronchodilator, tocolytic agent/Adrenergic agent

Indications

Management of reversible airway disease due to asthma or chronic obstructive pulmonary disease; inhalation and subcutaneous agents used for short-term control and oral agent for long-term control. Treatment for preterm labor.

Action

Results in the accumulation of cyclic adenosine monophosphate (cAMP) at beta-adrenergic receptors. Relaxes smooth muscle in the airways, vessels, and uterus.

Adverse Reactions/Side Effects

CNS: nervousness, restlessness, tremor, headache, insomnia. **Resp:** **paradoxical bronchospasm** (excessive use of inhalers). **CV:** angina, arrhythmias, hypertension, tachycardia. **GI:** nausea, vomiting. **Endo:** hyperglycemia.

Nursing Dx: Risk for injury (pharmacologic).

Keep in Mind

Teach client:

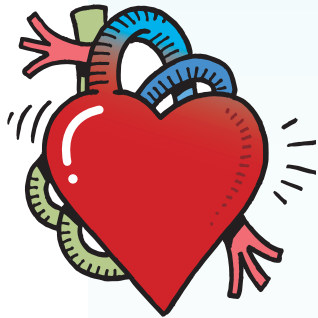
- Take the medication exactly as directed.
- **Contact health-care professional immediately if shortness of breath is not relieved or if chest pain occurs.**
- Consult HCP before taking any OTC medications or alcoholic beverages.
- Avoid smoking and other respiratory irritants.

**Make the Connection**

- Assess lung sounds, respiratory pattern, pulse, and blood pressure before administration and during peak of medication.
- **Observe for paradoxical bronchospasm (wheezing).**
- Symptoms of overdose include persistent agitation, chest pain or discomfort, decreased blood pressure, dizziness, hyperglycemia, hypokalemia, seizures, tachyarrhythmias, persistent trembling, and vomiting.

Also Used for: Reproductive system applications (tocolytic therapy for preterm labor).

CARDIOVASCULAR



Protamine Sulfate

*(**proe**-ta-meen **soll**-fate)*

Protamine Sulfate (Injection)

Therapeutic/Pharmacologic Class

Antidote/Antiheparin agent

Indications

Acute management of severe heparin overdosage. Neutralization of heparin received during dialysis, cardiopulmonary bypass, and other procedures.

Unlabelled Uses: Management of overdose of heparin-like compounds.

Action

A strong base that forms a complex with heparin (an acid).

Adverse Reactions/Side Effects

Resp: dyspnea. **CV:** bradycardia, hypertension, hypotension, pulmonary hypertension. **GI:** nausea, vomiting. **Derm:** flushing, warmth. **Hemat:** bleeding. **MS:** back pain. **Misc:** hypersensitivity reactions, including **anaphylaxis, angioedema, and pulmonary edema.**

Nursing Dx: Risk for injury (pharmacologic).

Keep in Mind

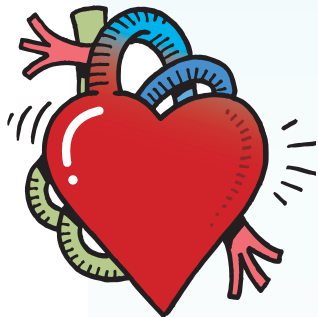
Teach client:

- Report recurrent bleeding immediately.
- Avoid activities that may result in bleeding.



Make the Connection

- Assess for bleeding and hemorrhage throughout therapy.
- **Assess for allergy to fish (salmon) or previous reaction to or use of insulins containing this drug or to the drug itself. Vasectomized and infertile men also have higher risk for hypersensitivity reaction because of the presence of antibodies to the drug found in their serum.**
- **Observe client for signs and symptoms of hypersensitivity reaction.**
- Monitor clotting factors.
- In severe cases, fresh frozen plasma or whole blood may also be required to control bleeding.
- Dosage varies with type of heparin, route of heparin therapy, and amount of time elapsed since discontinuation of heparin.
- May be given by direct IV infusion undiluted.



Heparin

(hep-a-rin)

Hep-Lock, Hep-Lock U/P

✿ Hepalean

Therapeutic/Pharmacologic Class

Anticoagulant/Antithrombotic agent

Indications

Prophylaxis and treatment of various thromboembolic disorders, including venous and arterial thrombosis, embolism, pulmonary emboli, coagulopathies, and atrial fibrillation with embolization.

Action

Potentiates the inhibitory effect of antithrombin on factor Xa and thrombin. In low doses, prevents the conversion of prothrombin to thrombin by its effects on factor Xa. Higher doses neutralize thrombin, preventing the conversion of fibrinogen to fibrin.

Adverse Reactions/Side Effects

GI: drug-induced hepatitis. **Derm:** alopecia (long-term use), rash, urticaria. **Hemat:** **bleeding, anemia, thrombocytopenia.** **Local:** pain at the injection site. **MS:** osteoporosis (long-term use). **Misc:** fever, hypersensitivity.

Nursing Dx: Risk for injury (pharmacologic).

Keep in Mind

Teach client:

- Report any symptoms of unusual bleeding or bruising to the health-care professional immediately.
- Do not take antiplatelet agents.
- Use a soft toothbrush and an electric razor.
- Wear a Medic-Alert bracelet at all times.



Make the Connection

- Assess client for signs of bleeding and hemorrhage.
- Monitor for hypersensitivity reactions.
- Assess LFT, K⁺, CBC, aPTT, and D-dimer studies.
- Two practitioners should independently check the order, calculate the dose (especially in weight-based applications), and set the infusion pump. The two practitioners then cosign the MAR.
- Antidote is protamine sulfate.



Dalteparin

(dal-te-pa-rin)

Fragmin

Enoxaparin

(e-nox-a-pa-rin)

Lovenox

Fondaparinux

(fon-da-par-i-nux)

Arixtra

Tinzaparin

(tin-za-pa-rin)

Innohep

Therapeutic/Pharmacologic Class

Anticoagulant/Antithrombotic agent

Indications

Prevention of deep vein thrombosis (DVT) and pulmonary embolus (PE) after abdominal surgery or knee/hip surgery or replacement.

Action

Potentiate the inhibitory effect of antithrombin on factor Xa and thrombin.

Adverse Reactions/Side Effects

CNS: dizziness, headache, insomnia. **CV:** edema.

GI: constipation, nausea, reversible increase in liver enzymes, vomiting. **Derm:** ecchymosis, pruritus, rash, urticaria. **Hemat:** **bleeding, anemia, thrombocytopenia.** **Local:** pain at the injection site, hematoma. **Misc:** fever, hypersensitivity.

Neuro: epidural or spinal hematoma with use of these anticoagulants during spinal procedures.

Nursing Dx: Risk for injury (pharmacologic).

Keep in Mind

Teach client:

- **Report any symptoms of unusual bleeding or bruising to the HCP immediately.**
- Do not concurrently take antiplatelet agents.
- Use a soft toothbrush and an electric razor.
- Wear a Medic-Alert bracelet at all times.
- Follow instructions for proper method of injecting the drug.



Make the Connection

- **Assess client for signs of bleeding and hemorrhage.**
- Monitor for hypersensitivity reactions.
- Monitor CBC with platelets and D-dimer studies.
- Monitor liver function studies.
- Antidote is protamine sulfate.
- Injection systems have special instructions. “Love” nox – given in the “love handles.” Arixtra must be given with the thumb on the plunger, leaving the air bubble intact.



Warfarin

(*war-fa-rin*)

Coumadin

🍁 Warfilone

Therapeutic/Pharmacologic Class

Anticoagulant/Coumarin

Indications

Prophylaxis and treatment of venous thrombosis, pulmonary embolus (PE), atrial fibrillation with embolization. Management of MI. Decrease of risk for death and subsequent MI and PE. Prevention of thrombus formation and embolization after prosthetic valve placement.

Action

Interferes with hepatic synthesis of vitamin K-dependent clotting factors (II, VII, IX, X).

Adverse Reactions/Side Effects

GI: cramps, nausea. **Derm:** dermal necrosis.
Hemat: **bleeding**. **Misc:** fever.

Keep in Mind

Teach client:

- Take medication exactly as directed.
- Do not eat excessive amounts of foods containing vitamin K; Give client a list.

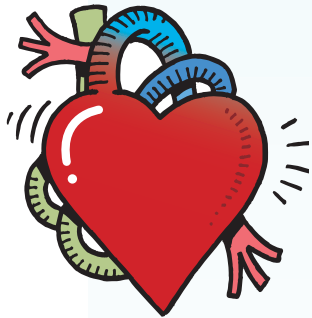
Nursing Dx: Risk for injury (pharmacologic); Knowledge deficit.

- Use a soft toothbrush, do not floss, and shave with an electric razor during therapy.
- **Report any symptoms of unusual bleeding or bruising.**
- **Do not drink alcohol or take anti-platelet medications.**
- **Frequent lab tests will be done.**
- Wear a Medic-Alert bracelet at all times.
- Inform all involved health-care personnel of anticoagulant therapy before lab tests, treatment, or surgery.



Make the Connection

- **Assess client for signs of bleeding and hemorrhage.**
- Monitor PT, INR, and CBC.
- Assess stool and urine occult blood before and periodically throughout therapy.
- **The antidote is vitamin K.**
- This medication requires 3–5 days to reach effective levels.



Ticlopidine

(tye-cloe-pi-deen)

Ticlid

Clopidogrel

(kloh-pid-oh-grel)

Plavix

Therapeutic/Pharmacologic Class

Antiplatelet agent/Platelet aggregation inhibitor

Indications

Reduction of atherosclerotic events (MI, stroke, vascular death) in clients at risk for such events, including those with recent MI, acute coronary syndrome (unstable angina/non-Q-wave MI), stroke, or peripheral vascular disease.

Action

Decrease blood viscosity by inhibiting platelet aggregation and decreasing fibrinogen. Inhibit platelet aggregation by irreversibly inhibiting the binding of ATP to platelet receptors.

Adverse Reactions/Side Effects

CNS: depression, dizziness, fatigue, headache.
EENT: epistaxis. **Resp:** cough, dyspnea. **CV:** chest pain, edema, hypertension. **GI:** GI bleeding, abdominal pain, diarrhea, dyspepsia, gastritis.
Derm: pruritus, purpura, rash. **Hemat:** bleeding, neutropenia, thrombotic thrombocytopenic purpura. **Metab:** hypercholesterolemia. **MS:** arthralgia, back pain. **Misc:** fever, hypersensitivity reactions.

Nursing Dx: Risk for injury (pharmacologic); Readiness for enhanced home maintenance management.

Keep in Mind

Teach client:

- Take the medication exactly as directed.
- **Notify health-care professional promptly if fever, chills, sore throat, or unusual bleeding or bruising occurs.**
- Avoid taking OTC medications containing aspirin or NSAIDs without consulting health-care professional.



Make the Connection

- Assess client for symptoms of stroke, peripheral vascular disease, and MI periodically during therapy.
- **Monitor client for signs of thrombotic thrombocytopenic purpura.**
- **Monitor bleeding time during therapy. Prolonged bleeding time, which is time and dose dependent, is expected. Monitor CBC with differential and platelet count periodically during therapy.**
- Monitor liver function studies, lipid panel, and uric acid concentrations.
- Contraindicated in idiopathic thrombocytopenic purpura.



Aminocaproic Acid

*(a-mee-noe-ka-**pro**-ik)*

Amicar

Therapeutic/Pharmacologic Class

Hemostatic agent/Fibrinolysis inhibitor

Indications

Management of acute, life-threatening hemorrhage due to systemic hyperfibrinolysis or urinary fibrinolysis. Prevention of recurrent subarachnoid hemorrhage. Prevention of bleeding following oral surgery in hemophiliacs. Management of severe hemorrhage caused by thrombolytic agents.

Action

Inhibits activation of plasminogen. Plasminogen is a serum protease that can be activated to form clots.

Adverse Reactions/Side Effects

CNS: dizziness, malaise. **EENT:** nasal stuffiness, tinnitus. **CV:** arrhythmias, hypotension (IV only).

GI: anorexia, bloating, cramping, diarrhea, nausea. **GU:** diuresis, renal failure. **MS:** myopathy.

Keep in Mind

Teach client:

- Notify the nurse immediately if bleeding recurs or if thromboembolic symptoms develop.

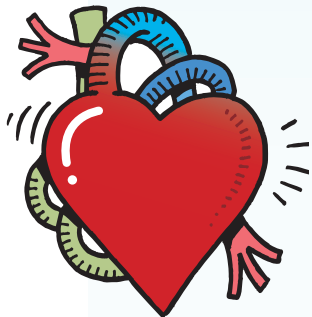
Nursing Dx: Risk for injury (hypovolemia); Deficient fluid volume; Knowledge deficit.

- When medication is given IV, make position changes slowly to avoid orthostatic hypotension.



Make the Connection

- Contraindicated in active intravascular clotting.
- Concurrent use with conjugated estrogens may result in a hypercoagulable state and resultant thrombus formation.
- Monitor blood pressure, pulse, and respiratory status as indicated by severity of bleeding.
- Monitor for overt bleeding every 15–30 min.
- Monitor neurologic status in clients with subarachnoid hemorrhage.
- Monitor intake and output (I&O) frequently.
- Notify physician of positive Homans' sign, leg pain and edema, hemoptysis, dyspnea, or chest pain.
- Monitor platelet count and clotting factors.
- Monitor for increased CPK, AST, and serum aldolase, which may indicate myopathy.
- May elevate serum potassium, so assess electrolytes frequently.



Alteplase

(al-te-plase)

Cathflo Activase,
Tissue Plasminogen Activator (t-PA),
Activase
* Activase rt-PA

Streptokinase

(strep-toe-kye-nase)

Kabikinase, Streptase

Therapeutic/Pharmacologic Class

Thrombolytic agent/Plasminogen activator

Indications

Treatment of acute MI. Treatment of acute ischemic stroke. Treatment of PE. Clearance of occluded central venous access devices. Treatment of DVT. Treatment of acute peripheral arterial thrombosis.

Action

Directly convert plasminogen to plasmin, which then degrades clot-bound fibrin.

Adverse Reactions/Side Effects

CNS: intracranial hemorrhage. **EENT:** epistaxis, gingival bleeding. **Resp:** bronchospasm, hemoptysis. **CV:** reperfusion arrhythmias, hypotension, recurrent ischemia/thromboembolism. **GI:** GI bleeding, nausea, retroperitoneal bleeding, vomiting. **GU:** GU tract bleeding. **Derm:** ecchymoses, flushing, urticaria. **Hemat:** bleeding. **Local:** hemorrhage at injection site, phlebitis at injection site. **MS:** musculoskeletal pain. **Misc:** allergic reactions including anaphylaxis, fever.

Nursing Dx: Risk for injury (hemorrhage); Knowledge deficit.

Keep in Mind

Teach client:

- Be aware of the need for bedrest and minimal handling during therapy to avoid injury.



Make the Connection

- Contraindicated in clients with active internal bleeding, history of CVA or recent (within 2 mo) history of arterial or venous or CNS structural abnormalities, severe HTN, or bleeding tendencies.
- **Assess client carefully for bleeding.**
- **Assess client for hypersensitivity reaction.**
- **Assess neurologic status throughout therapy.**
- For MI, must be given within 6 hrs of onset of symptoms.
- For CVA, must be given within 2–3 hr of onset of symptoms.
- For PE, monitor VS and breath sounds.
- Monitor CBC, D-dimer, fibrinogen, PT, aPTT, and thrombin time.
- **Antidote is aminocaproic acid (Amicar).**



Phytonadione

(fye-toe-na-dye-one)

AquaMEPHYTON,
Mephyton, Vitamin K

Therapeutic/Pharmacologic Class

Antidote, vitamin/Fat-soluble vitamin

Indications

Prevention and treatment of hypoprothrombinemia, which may be associated with excessive doses of oral anticoagulants, salicylates, certain anti-infective agents, nutrition deficiencies, and prolonged total parenteral nutrition (TPN). Prevention of hemorrhagic disease of the newborn.

Action

Required for hepatic synthesis of blood coagulation factors II (prothrombin), VII, IX, and X.

Adverse Reactions/Side Effects

GI: gastric upset, unusual taste. **Derm:** flushing, rash, urticaria. **Hemat:** hemolytic anemia.
Local: erythema, pain at injection site, swelling.
Misc: allergic reactions, hyperbilirubinemia (large doses in very premature infants), kernicterus.

Keep in Mind

Teach client:

- Take this medication as ordered.

Nursing Dx: Risk for injury (pharmacologic and physiologic).

- The diet should remain consistent, with no drastic changes, while taking this drug.
- Be aware of the rationale for this drug therapy.
- Watch for and report any symptoms of unusual bleeding or bruising.
- While on this drug, consult with the health-care professional about taking OTC medications.
- Wear a Medic-Alert bracelet.
- Frequent lab tests will be required to monitor coagulation factors.



Make the Connection

- Monitor for frank and occult bleeding.
- Monitor pulse and blood pressure frequently.
- PT and INR should be monitored.
- **The parenteral route is preferred for this drug. Because of severe, potentially fatal hypersensitivity reactions, the IV route is not recommended.**
- This drug is the antidote for warfarin overdose.
- Hint: “K” is for “Koagulation” (German form of the word coagulation).



Digoxin

(di-jox-in)

Digitek, Lanoxicaps,
Lanoxin

Therapeutic/Pharmacologic Class

Antiarrhythmic agent, inotropic agent/Cardiac glycoside

Indications

Treatment of CHF, tachyarrhythmias, atrial fibrillation, atrial flutter, and paroxysmal atrial tachycardia.

Action

Slows and strengthens the force of myocardial contraction by prolonging the refractory period of the atrioventricular (AV) node and decreasing conduction through the sinoatrial (SA) and AV nodes.

Adverse Reactions/Side Effects

CNS: fatigue, headache, weakness. **EENT:** blurred vision, yellow or green vision. **CV: arrhythmias,** bradycardia, ECG changes, AV block, SA block.

GI: anorexia, nausea, vomiting, diarrhea.

Endo: gynecomastia. **Hemat:** thrombocytopenia.

Metab: hyperkalemia with acute toxicity.

Keep in Mind

Teach client:

- Take medication as directed. Report nausea, vomiting, or anorexia.

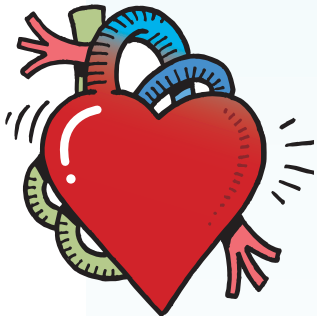
Nursing Dx: Decreased cardiac output; Excess fluid volume.

- Wear a Medic-Alert bracelet, and inform other health-care providers of this drug regimen.
- **Routine follow-up exams will be scheduled.**



Make the Connection

- Contraindicated in hypersensitivity, uncontrolled ventricular arrhythmias, and AV blocks.
- Electrolyte abnormalities, especially of potassium (low), predisposes to toxicity. Monitor electrolytes, LFTs, and RFTs.
- Monitor apical pulse for 1 full min before administering
- Monitor intake, output, and daily weight. Assess for peripheral edema, and auscultate lungs for rales/crackles throughout therapy.
- **Therapeutic serum digoxin levels range from 0.5–2 ng/mL.**
- Digoxin immune fab (Digibind) is the antidote.
- Monitor the brain natriuretic peptide (BNP).



Milrinone

(mill-ri-none)

Primacor

Therapeutic/Pharmacologic Class

Inotropic agent, vasodilator/Phosphodiesterase isozyme-III inhibitor

Indications

Short-term treatment of CHF unresponsive to conventional therapy with digoxin, diuretics, and vasodilators.

Action

Increases myocardial contractility. Decreases preload (amount of blood returning to the heart) and afterload (pressure in the aorta that the heart must overcome to push blood out of the heart) by a direct dilating effect on vascular smooth muscle.

Adverse Reactions/Side Effects

CNS: headache, tremor. **CV:** **ventricular arrhythmias, angina pectoris, chest pain, hypotension, supraventricular arrhythmias.**
CV: skin rash. **GI:** liver function abnormalities.
F and E: hypokalemia. **Hemat:** thrombocytopenia.

Nursing Dx: Decreased cardiac output; Excess fluid volume.

Keep in Mind

Teach client:

- Be aware of the reasons for administration and the desired effect.
- ECG will be monitored.
- A decrease in shortness of breath and edema should be experienced.
- This drug will not cure CHF, but its use is a temporary measure to control the symptoms.



Make the Connection

- **Monitor pulse and blood pressure. Slow or stop the infusion if the blood pressure drops significantly, because this is a sign of overdose.**
- Monitor intake, output, and daily weight.
- **Monitor ECG continuously during infusion. Arrhythmias are common and may be life threatening.**
- Monitor platelet count, electrolytes, and renal function frequently during administration.
- **Have second practitioner check dose.**
- Monitor peripheral IV site carefully.
- Monitor the brain natriuretic peptide (BNP).



Nesiritide

(ne-sir-i-tide)

Natrecor

Therapeutic/Pharmacologic Class

Vasodilator/Human B-type natriuretic peptide

Indications

Treatment of acutely decompensated CHF in hospitalized clients who have dyspnea at rest or with minimal activity.

Action

Binds to guanyl cyclase receptors in vascular smooth muscle and endothelial cells, producing increased intracellular guanosine 3'5'-cyclic monophosphate (cGMP) and smooth muscle cell relaxation. cGMP acts as a “second messenger” to dilate veins and arteries.

Adverse Reactions/Side Effects

CNS: anxiety, confusion, dizziness, headache, hypotension (dose related), insomnia, drowsiness.
EENT: amblyopia. **Resp:** apnea, cough, hemoptysis.
CV: hypotension, arrhythmias, bradycardia. **GI:** abdominal pain, nausea, vomiting. **GU:** ↑ creatinine, renal failure. **Derm:** itching, rash, sweating.

Hemat: anemia. **Local:** injection site reactions.
MS: back pain, leg cramps. **Neuro:** paresthesia, tremor. **Misc:** fever.

Keep in Mind

Teach client:

- ECG will be monitored.
- This drug will not cure CHF but control the symptoms.



Make the Connection

- Monitor BP, pulse, ECG, respiratory ease, CVP (hypotension can be severe). Remember blood pressure low—down you go [head], blood pressure high—head to the sky [head up]).
- Monitor I&O, daily weight, and RFT.
- Monitor BNP.
- **Have second practitioner independently check dose calculations.**

Nursing Dx: Decreased cardiac output; Excess fluid volume.



Dopamine

(dope-a-meen)

Intropin

🍁 Revimine

Therapeutic/Pharmacologic Class

Inotropic agent, vasopressor/Adrenergic agent

Indications

Adjunct to standard measures to improve blood pressure, cardiac output, and urinary output in treatment of shock unresponsive to fluid replacement.

Action

Small doses (0.5–3 mcg/kg/min) stimulate dopaminergic receptors, producing renal vasodilation. Larger doses (2–10 mcg/kg/min) stimulate dopaminergic and beta₁-adrenergic receptors, producing cardiac stimulation and renal vasodilation. Doses greater than 10 mcg/kg/min stimulate alpha-adrenergic receptors and may cause renal vasoconstriction.

Adverse Reactions/Side Effects

CNS: headache. **EENT:** mydriasis (high dose).
Resp: dyspnea. **CV:** arrhythmias, hypotension, angina, ECG change, palpitations, vasoconstriction. **GI:** nausea, vomiting. **Derm:** piloerection. **Local:** irritation at IV site.

Nursing Dx: Ineffective tissue perfusion (renal, cerebral, cardiopulmonary, peripheral).

Keep in Mind

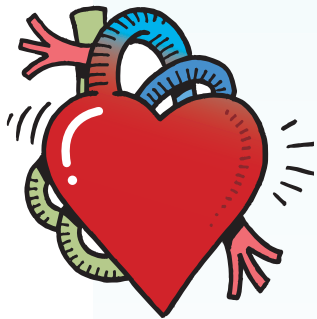
Teach client:

- Inform the nurse immediately if chest pain, dyspnea, numbness, tingling, or burning of extremities occurs.
- Inform nurse immediately of pain or discomfort at the site of administration.



Make the Connection

- Contraindicated in tachyarrhythmias, pheochromocytoma, or hypersensitivity to bisulfites.
- **Do not administer with MAOI, ergot alkaloids (ergotamine), or some antidepressants, because the combination can result in severe HTN.**
- **Using with IV phenytoin may cause hypotension and bradycardia.**
- Monitor BP, heart rate, PCWP, CO, CVP, ECG, and urinary output continuously during administration.
- If hypotension occurs, administration rate should be increased; HTN, rate is decreased.
- **Have second practitioner independently check dose.**



Metoprolol

(me-toe-proe-lole)

Lopressor, Toprol-XL

- ❁ Betaloc,
- ❁ Lopressor

Atenolol

(a-ten-oh-lole)

Tenormin

- ❁ Apo-Atenolol

Carvedilol

(kar-ve-dil-ole)

Coreg

Labetalol

(la-bet-a-lole)

Normodyne, Trandate

Therapeutic/Pharmacologic Class

Antihypertensive agent/Beta-adrenergic receptor blocker (beta blocker)

Indications

Treatment of hypertension. Prevention of MI and decrease of mortality in clients with recent MI. Management of stable, symptomatic CHF.

Action

Block stimulation of beta₁ adrenergic receptors. Do not usually affect beta₂ adrenergic receptor sites if cardioselective.

Adverse Reactions/Side Effects

CNS: fatigue, weakness, anxiety, depression, dizziness, drowsiness, insomnia, memory loss, mental status changes, nervousness, nightmares.

EENT: blurred vision, stuffy nose. **Resp:** bronchospasm, wheezing. **CV:** **bradycardia, congestive heart failure (CHF), pulmonary edema,**

hypotension, peripheral vasoconstriction. **GI:** constipation, diarrhea, drug-induced hepatitis, nausea, vomiting. **GU:** erectile dysfunction, decreased libido, urinary frequency. **Derm:** rash. **Endo:** hyperglycemia, hypoglycemia. **MS:** arthralgia. **Misc:** drug-induced lupus syndrome.

Keep in Mind

Teach client:

- Notify HCP if slow pulse or dyspnea occurs.



Make the Connection

- Assess the pulse and BP prior to administering.
- Monitor LFT, RFT, electrolytes, ANA, I&O and daily weight.
- Notice the *olol*, *ilol*, or *alol* ending in the generic names.

Nursing Dx: Ineffective tissue perfusion (renal, cerebral, cardiopulmonary, peripheral).

Also Used for: Cardiovascular system applications (angina pectoris); central nervous system applications (migraine headache, aggressive behavior); sensory system applications (glaucoma)

Amlodipine

(am-**loe**-di-**peen**)

Norvasc

Verapamil

(ver-**ap**-a-mil)

Calan, Calan SR,
Covera-HS, Isoptin,
Isoptin SR
* Novo-Veramil,
* Apo-Verap

Nifedipine

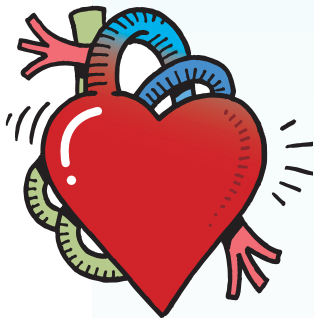
(nye-**fed**-i-**peen**)

Procardia, Procardia XL
Adalat, Adalat CC,
* Apo-Nifed,
* Novo-Nifedin

Diltiazem

(dil-**tye**-a-zem)

Cardizem, Cardizem LA,
CartiaXT, Dilacor XR,
Diltia XT, Tiazac
* Apo-Diltiaz,
* Novo-Diltazem



Therapeutic/Pharmacologic Class

Antianginal agent, antiarrhythmic agent (class IV), antihypertensive agent/Calcium channel blocker

Indications

Treatment of hypertension, angina pectoris and Prinzmetal's angina, and arrhythmias.

Action

Inhibit transport of calcium into myocardial and vascular smooth muscle cells, resulting in inhibition of excitation of muscle.

Adverse Reactions/Side Effects

CNS: abnormal dreams, anxiety, confusion, dizziness, drowsiness, headache, nervousness, psychiatric disturbances, weakness. **EENT:** blurred vision, disturbed equilibrium, epistaxis, tinnitus. **Resp:** cough, dyspnea. **CV:** **arrhythmias, CHF, peripheral edema, bradycardia, chest pain, hypotension, palpitations, syncope, tachycardia.** **GI:** abnormal liver function studies, anorexia, constipation, diarrhea. **GU:** dysuria, nocturia, polyuria, sexual dysfunction, urinary

Nursing Dx: Pain; Activity intolerance; Ineffective tissue perfusion (renal, cerebral, cardiopulmonary, peripheral).

frequency. **Derm:** dermatitis, flushing, increased sweating, photosensitivity, rash. **Endo:** gynecostasia, hyperglycemia. **Hemat:** anemia, leukopenia, thrombocytopenia. **Metab:** weight gain. **MS:** joint stiffness, muscle cramps. **Neuro:** paresthesia, tremor. **Misc:** **Stevens-Johnson syndrome**, gingival hyperplasia.

Keep in Mind

Teach client:

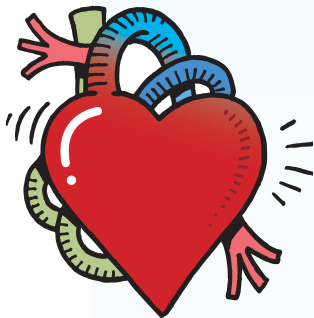
- Report unrelieved chest pain or SOB immediately.



Make the Connection

- Take BP and pulse prior to administration.
 - Monitor ECG, I&O, and daily weight.
- Monitor LFT, RFT, CBC, serum glucose level, and K⁺.
- Notice the “Ca” in most brand names.

Also Used for: Cardiovascular system applications (Raynaud's phenomenon); central nervous system applications (mood stabilizer [Calan])



Enalapril

(e-nal-a-pril)

Vasotec,
Vasotec IV

Lisinopril

(lyse-sin-oh-pril)

Prinivil, Zestril

Ramipril

(ra-mi-pril)

Altace

Captopril

(kap-toe-pril)

Capoten

Therapeutic/Pharmacologic Class

Antihypertensive agent/Angiotensin converting enzyme (ACE) inhibitor

Indications

Used alone or with other agents in the management of hypertension. Reduction of death or development of CHF after MI. Slowed progression of left ventricular dysfunction.

Action

ACE inhibitors block the conversion of angiotensin I to angiotensin II, a potent vasoconstrictor. They also inhibit the renin-angiotensin-aldosterone system, reducing the amount of aldosterone (the body's salt) in the bloodstream.

Adverse Reactions/Side Effects

CNS: dizziness, fatigue, headache, insomnia, weakness. **Resp:** cough, eosinophilic pneumonitis. **CV:** hypotension, angina pectoris, tachycardia. **GI:** taste disturbances, anorexia, diarrhea, hepatotoxicity (rare), nausea. **GU:** proteinuria, erectile dysfunction, renal failure. **Derm:** rash.

Nursing Dx: Ineffective tissue perfusion (renal, cerebral, cardiopulmonary, peripheral).

F and E: hyperkalemia. **Hemat:** bone marrow suppression. **Misc:** **angioedema**, fever.

Keep in Mind

Teach client:

- Take this medication exactly as directed.
- Report to the HCP immediately if chest pain, palpitations, or swelling of the lips, face, or tongue occurs.
- This medication may cause drowsiness.



Make the Connection

- Always take the blood pressure prior to administration.
- Monitor I&O and daily weight.
- **Monitor for signs of angioedema.**
- **Assess for signs of CHF.**
- Monitor LFT, RFT, CBC, serum glucose, and K^+ (↑).
- Notice the “pril” ending in the generic names.

Also Used for: Central nervous system applications (migraine headache); urological system applications (diabetic nephropathy prophylaxis)



Losartan

(loe-sar-tan)

Cozaar

Valsartan

(val-sar-tan)

Diovan

Candesartan

(can-de-sar-tan)

Atacand

Irbesartan

(ir-be-sar-tan)

Avapro

Therapeutic/Pharmacologic Class

Antihypertensive agent/Angiotensin II receptor antagonist

Indications

Management of hypertension. Treatment of CHF in clients who cannot tolerate ACE inhibitors. Reduction of stroke risk in clients with CHF and left ventricular hypertrophy.

Action

Block receptors for angiotensin II, disabling the renin-angiotensin-aldosterone system.

Adverse Reactions/Side Effects

CNS: dizziness, fatigue, headache. **CV:** hypotension. **GI:** diarrhea, drug-induced hepatitis. **GU:** renal failure. **F and E:** hyperkalemia.

Keep in Mind

Teach client:

- Take this medication exactly as directed.
- Report to the health-care professional immediately if a rash, mouth sores, sore throat, fever, swelling

Nursing Dx: Tissue perfusion (renal, cerebral, cardiopulmonary, peripheral).

of the hands or feet, irregular heartbeat, chest pain, dry cough, hoarseness, swelling of the face, lips, or tongue, difficulty swallowing, or breathing occurs.

- Report nausea, vomiting, diarrhea, or a metallic taste that produces anorexia.
- **Do not use salt substitutes.**
- Follow instructions for correct method of assessing blood pressure.
- Women of childbearing age should use contraception.
- This medication may cause drowsiness.



Make the Connection

- Always take the blood pressure prior to administration.
- Monitor ECG periodically during prolonged therapy. May cause prolonged PR interval.
- Monitor intake, output, and daily weight.
- **Assess for signs of CHF.**
- Monitor LFT, RFT, CBC, and K⁺ level.
- Notice the “sartan” ending in the generic names.

Also Used for: Urological system applications (diabetic nephropathy prophylaxis)



Clonidine

(klon-i-deen)

Catapres, Catapres-TTS



Dixarit

Therapeutic/Pharmacologic Class

Antihypertensive agent/Alpha-adrenergic stimulant (centrally acting)

Indications

Management of mild to moderate hypertension.

Epidural: Management of cancer pain unresponsive to opioids alone. **Unlabelled Uses:** Management of opioid withdrawal.

Action

Stimulates alpha-adrenergic receptors in the brainstem, which decreases sympathetic outflow inhibiting cardioacceleration and vasoconstriction centers. Prevents pain signal transmission to the CNS by stimulation of alpha-adrenergic receptors in the spinal cord.

Adverse Reactions/Side Effects

CNS: drowsiness, depression, dizziness, nervousness, nightmares. **CV:** bradycardia, hypotension (increased with epidural), palpitations. **GI:** dry

Nursing Dx: Ineffective tissue perfusion (renal, cerebral, cardiopulmonary, peripheral).

mouth, constipation, nausea, vomiting. **GU:** impotence. **Derm:** rash, sweating. **F and E:** sodium retention. **Metab:** weight gain. **Misc:** withdrawal phenomenon.

Keep in Mind

Teach client:

- Take the drug at the same time each day.
- Notify HCP if itching or redness of skin (with transdermal patch), mental depression, swelling of feet and lower legs, or vivid dreams or nightmares occur.
- Self-monitor BP.
- Follow instructions for proper application of transdermal system. Change every 7 days.



Make the Connection

- Monitor I&O, daily weight, and assess for edema daily.
- Monitor BP and pulse prior to administering this medication.

Also Used for: Central nervous system applications (epidural administration for cancer pain adjunct; mood stabilizer; impulse control in adolescence; opioid withdrawal)

Procainamide

(proe-kane-ah-mide)

Procanbid, Promine,
Pronestyl,
Pronestyl-SR

Amiodarone

(am-ee-oh-da-rone)

Cordarone, Pacerone

Lidocaine (Parenteral)

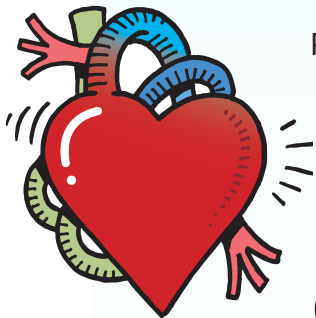
(lye-doe-kane)

LidoPen, Xylocaine,
🍁 Xylocard

Quinidine

(kwin-i-deen)

Quiniglute



Therapeutic/Pharmacologic Class

Antiarrhythmic agent/Electrolyte channel blocking agent

Indications

Treatment of a wide variety of ventricular and atrial arrhythmias.

Action

Decrease myocardial excitability.

Adverse Reactions/Side Effects

CNS: seizures, confusion, dizziness. **CV:** asystole, heart block, ventricular arrhythmias, congestive heart failure, hypotension. **GI:** diarrhea, anorexia, bitter taste, nausea, vomiting. **Derm:** rash.

Hemat: bone marrow suppression. **Misc:** chills, drug-induced systemic lupus syndrome, fever.

Keep in Mind

Teach client:

- Take medication as directed.
- **Notify health-care professional immediately if**

Nursing Dx: Decreased cardiac output.

fever, chills, joint pain or swelling, pain with breathing, skin rash, or unusual bleeding or bruising occur.



Make the Connection

- **CBC with differential should be monitored every 2 wk during the first 3 mo of therapy for signs of bone marrow suppression.**
- Monitor ANA, LFTs, chemistries, and hematology tests during prolonged therapy.
- Monitor serum drug levels to prevent toxicity.
- When using antiarrhythmic agents, it is important to remember that by interfering with the electrolytes responsible for cardiac conduction, new arrhythmias can occur or the heart rate may slow and cause CHF.

Also Used for: Dermatologic system applications (infiltration for suturing [lidocaine]); central nervous system applications (transdermal system and topical preparations for pain control [lidocaine])

Isosorbide Mononitrate

(eye-soe-**so**-bide mo-noe-**nye**-trate)

Imdur, Ismo,
Isotrate ER,
Monoket

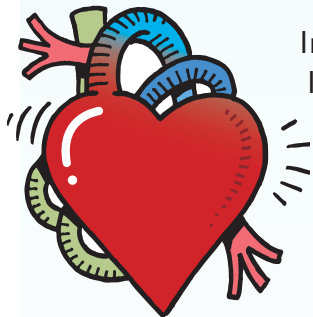
Nitroglycerin

(nye-tro-**gli**-ser-in)

Isosorbide Dinitrate

(eye-soe-**so**-bide dye-**nye**-trate)

Isonate, Isorbid,
Isordil, Isotrate
* Apo-ISDN,
* Novosorbide, Sorbitrate



EXTENDED-RELEASE CAPSULES Nitrocot, NitroglynE-R, Nitro-par, Nitro-Time **EXTENDED-RELEASE TABLETS** Nitrong

EXTENDED-RELEASE BUCCAL TABLETS Nitrogard * Nitrogard SR **INTRAVENOUS** Nitro-Bid IV, Tridil **TRANSLIN-**

GUAL SPRAY Nitrolingual **OINTMENT** Nitro-Bid, Nitrol **SUBLINGUAL** Nitrostat, NitroQuick **TRANSDERMAL SYSTEM**

Deponit, Minitran, Nitrek, Nitrodisc, Nitro-Dur, Transderm-Nitro

Therapeutic/Pharmacologic Class

Anti-anginal agent/Nitrate

Indications

Acute (translingual and SL) and long-term prophylactic (oral, buccal, transdermal) management of angina pectoris. Adjunctive treatment of chronic CHF.

Action

Increase coronary blood flow by dilating coronary arteries and improving collateral flow to ischemic regions. Produce vasodilation (venous greater than arterial). Decreases preload. Reduce myocardial oxygen consumption.

Adverse Reactions/Side Effects

CNS: dizziness, headache, apprehension, restlessness, weakness. **EENT:** blurred vision.

CV: hypotension, tachycardia, syncope.

GI: abdominal pain, nausea, vomiting.

Derm: contact dermatitis (transdermal or ointment). **Misc:** cross-tolerance, flushing, tolerance.

Nursing Dx: Acute pain; Ineffective tissue perfusion (cardiac).

Keep in Mind

Teach client:

- Take medication exactly as directed.
- Avoid concurrent use of alcohol with this medication.
- Headache is a common side effect.
- **Acute anginal attacks: Sit down and use medication. If pain does not subside, repeat dose and call EMS.**
- Store tablets in dark glass container away from (body) heat. Replace in 6 mo.



Make the Connection

- **Use of nitrates in any form with sildenafilafil, tadalafil, and vardenafil increases the risk for serious and potentially fatal hypotension.**
- Always assess the blood pressure prior to administration.
- Clients receiving IV nitrates require continuous ECG and blood pressure monitoring.



Gemfibrozil

(gem-fye-broe-zil)

Lopid

Fenofibrate

(fen-o-fi-brate)

Antara, Lofibra, Tricor, Triglide

Therapeutic/Pharmacologic Class

Lipid-lowering agent/Fibric acid derivative

Indications

Management of type IIb hyperlipidemia (decreased HDLs, increased LDLs, increased triglycerides) in clients who do not yet have clinical coronary artery disease and have failed therapy with diet, exercise, weight loss, or other agents (niacin, bile acid sequestrants).

Action

Inhibit peripheral lipolysis. Decrease triglyceride production by the liver. Decrease production of the triglyceride carrier protein. Increase HDL.

Adverse Reactions/Side Effects

CNS: dizziness, headache. **EENT:** blurred vision.

GI: abdominal pain, diarrhea, epigastric pain, flatulence, gallstones, heartburn, nausea, vomiting. **Derm:** alopecia, rash, urticaria.

Hemat: anemia, leukopenia. **MS:** myositis.

Keep in Mind

Teach client:

- Take the medication exactly as directed.

Nursing Dx: Ineffective tissue perfusion (cardiac); Risk for injury (renal).

- This medication should be used in conjunction with dietary restrictions, exercise, and cessation of smoking.
- Notify health-care professional promptly if any of the following symptoms occurs: severe stomach pains with nausea and vomiting, fever, chills, sore throat, rash, diarrhea, muscle cramping, general abdominal discomfort, or persistent flatulence.



Make the Connection

- Serum triglyceride and cholesterol levels should be monitored before and periodically throughout therapy. LDL and VLDL levels should be assessed before and periodically throughout therapy. Medication should be discontinued if paradoxical increase in lipid levels occurs.
- Liver function tests should be assessed before and periodically throughout therapy.
- CBC and electrolytes should be evaluated.
- Administration of these drugs with HMG Co-A reductase inhibitors increases the risk for rhabdomyolysis (breakdown of skeletal muscle fibers that form microemboli that flow through the kidney, clogging nephrons and resulting in renal failure).

Atorvastatin

(*a-tore-va-stat-in*)

Lipitor

Simvastatin

(*sim-va-sta-tin*)

Zocor

Rosuvastatin

(*roe-soo-va-sta-tin*)

Crestor

Lovastatin

(*loe-va-sta-tin*)

Mevacor



Therapeutic/Pharmacologic Class

Lipid-lowering agent/HMG-CoA reductase inhibitor

Indications

Adjunctive management of primary hypercholesterolemia and mixed dyslipidemia. Primary prevention of coronary heart disease (MI, stroke, angina, and coronary revascularization) in asymptomatic clients with increased total and low-density lipoprotein (LDL) cholesterol and decreased high-density lipoprotein (HDL) cholesterol.

Action

Inhibit 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase, an enzyme responsible for catalyzing an early step in the synthesis of cholesterol.

Adverse Reactions/Side Effects

CNS: dizziness, headache, insomnia, weakness.

EENT: rhinitis. **Resp:** bronchitis. **CV:** chest pain, peripheral edema. **GI:** abdominal cramps, constipation, diarrhea, flatus, heartburn, altered taste, drug-induced hepatitis, dyspepsia, elevated liver enzymes, nausea, pancreatitis. **GU:** impotence. **Derm:** rash,

Nursing Dx: Ineffective tissue perfusion (cardiac); Risk for injury (renal).

pruritus. **MS:** **rhabdomyolysis**, arthralgia, arthritis, myalgia, myositis. **Misc:** hypersensitivity reactions, including **angioneurotic edema**.

Keep in Mind

Teach client:

- Take this medication exactly as directed.
- Avoid drinking more than 1 quart of grapefruit juice per day during therapy.
- **Notify HCP if unexplained muscle pain, tenderness, or weakness occurs, especially if accompanied by fever or malaise.**
- Avoid pregnancy or breast-feeding.



Make the Connection

- Evaluate serum cholesterol and triglyceride levels before initiating medication, after 2–4 wk of therapy, and periodically thereafter.
- Monitor LFT prior to and then every 6 mo.
- **If muscle tenderness develops during therapy with CPK ↑**, this is indicative of rhabdomyolysis.



Ezetimibe

(e-zet-i-mibe)

Zetia

Therapeutic/Pharmacologic Class

Lipid-lowering agent/Cholesterol absorption inhibitor

Indications

Used alone or with other agents (HMG-CoA reductase inhibitors) in the management of dyslipidemias, including primary hypercholesterolemia and genetically induced hypercholesterolemia.

Action

Inhibits the absorption of cholesterol in the small intestine.

Adverse Reactions/Side Effects

GI: cholecystitis, cholelithiasis, ↑ hepatic transaminases (with HMG-CoA reductase inhibitors), nausea, pancreatitis. **Derm:** rash.

Misc: angioedema.

Keep in Mind

Teach client:

- Take this medication as directed, at the same time each day, even if feeling well.
- Be aware that medication helps control, but does not cure, elevated serum cholesterol levels.

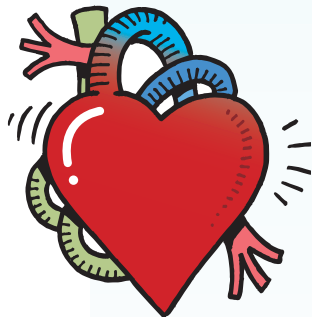
Nursing Dx: Ineffective tissue perfusion (cardiac).

- This medication should be used in conjunction with diet restrictions, exercise, and cessation of smoking.
- Notify health-care professional if unexplained muscle pain, tenderness, or weakness occurs. Risk of symptoms may increase when used with HMG-CoA reductase inhibitors.
- Notify health-care professional immediately if breathing or swallowing becomes difficult.
- Follow-up exams will be scheduled.



Make the Connection

- Obtain a diet history, especially with regard to fat consumption.
- Evaluate serum cholesterol and triglyceride levels before initiating medication, after 2–4 wk of therapy, and periodically thereafter.
- Administer without regard to meals. May be taken at the same time as HMG-CoA reductase inhibitor (medication is frequently combined with simvastatin [Vytorin]).



Colestipol

*(koe-**les**-ti-pole)*

Colestid

Colesevelam

*(koe-less-**sev**-i-lam)*

Welchol

Cholestyramine Resin

*(koe-less-**tear**-a-meen **re**-zin)*

LoCHOLEST, LoCHOLEST Light,
Prevalite, Questran, Questran Light

Therapeutic/Pharmacologic Class

Lipid-lowering agent/Bile acid sequestrant

Indications

Management of primary hypercholesterolemia.
Treatment of pruritus associated with elevated levels of bile acids.

Action

Bind bile acids in the GI tract, forming an insoluble complex. The liver must use more cholesterol to make more bile acids. Result is increased clearance of cholesterol.

Adverse Reactions/Side Effects

EENT: irritation of the tongue. **GI:** abdominal discomfort, constipation, nausea, fecal impaction, flatulence, hemorrhoids, perianal irritation, steatorrhea, vomiting. **Derm:** irritation, rash. **F and E:** hyperchloremic acidosis.
Metab: vitamin A, D, and K deficiency.

Keep in Mind

Teach client:

- Take this medication exactly as directed.

Nursing Dx: Ineffective tissue perfusion (cardiac);
Readiness for enhanced comfort level.

- Take medication before meals. May be mixed with cool foods.
- Constipation may occur.
- Notify health-care professional if unusual bleeding or bruising; petechiae; or black, tarry stools occur. Treatment with vitamin K may be necessary.



Make the Connection

- Obtain a diet history, especially with regard to fat consumption.
- Assess frequency, amount, and consistency of stools and presence of bowel sounds.
- Serum cholesterol and triglyceride levels should be evaluated before and frequently during the first few months of therapy.
- Administer before meals 1-2 hr apart from other drugs (may bind with them).
- Monitor LFT, electrolytes, and PT.

Also Used for: Dermatologic system applications (pruritus due to excess bile acid accumulation); gastrointestinal system applications (diarrhea)



Omega-3-Acid Ethyl Esters

(oh-me-ga three as-id eth-il es-ters)

Lovasa

Therapeutic/Pharmacologic Class

Lipid-lowering agent/Fatty acid

Indications

Treatment of hypertriglyceridemia in adults; used with specific diet.

Action

Inhibits synthesis of triglycerides.

Adverse Reactions/Side Effects

■ **GI:** altered taste, eructation. **Derm:** rash.

Keep in Mind

Teach client:

- Take this medication as directed.
- Be aware that medication helps control, but does not cure, elevated serum triglyceride levels.
- This medication should be used in conjunction with diet restrictions (fat, cholesterol, carbohydrates, alcohol), exercise, weight loss in overweight

clients, and control of medical problems (e.g., diabetes mellitus, hypothyroidism) that may contribute to hypertriglyceridemia.

- Follow-up exams and lab tests will be scheduled to determine effectiveness.



Make the Connection

- Use with caution in clients with hypersensitivity to fish.
- Obtain a diet history, especially with regard to fat consumption.
- Monitor serum triglyceride levels and serum LDL levels (may increase) prior to and periodically during therapy, and liver function studies periodically during therapy.
- May be taken as a single 4-g dose or as 2 g twice daily. May be administered with meals.

Nursing Dx: Risk for injury (pharmacologic).



Folic Acid

(foe-lik a-sid)

Folate, Folvite, Vitamin B

🍁 Apo-Folic

Therapeutic/Pharmacologic Class

Antianemic agent, vitamin/Water-soluble vitamin

Indications

Prevention and treatment of megaloblastic and macrocytic anemias. Given during pregnancy to promote normal fetal development.

Action

Required for protein synthesis and red blood cell function. Stimulates the production of red blood cells, white blood cells, and platelets. Necessary for normal fetal development.

Adverse Reactions/Side Effects

Derm: rash. **CNS:** irritability, difficulty sleeping, malaise, confusion. **Misc:** fever.

Keep in Mind

Teach client:

- Comply with diet recommendations of health-care professional. The best source of vitamins is a well-balanced diet.
- Foods high in this nutrient include vegetables (green leafy), fruits, and organ meats.

Nursing Dx: Fatigue; Risk for activity intolerance.

- The effectiveness of megadoses of this nutrient for treatment of various medical conditions is unproven and may cause side effects.
- This nutrient may make urine more intensely yellow.
- Notify health-care professional if rash occurs, which may indicate hypersensitivity.
- Follow-up exams and lab tests will be scheduled.



Make the Connection

- Monitor plasma vitamin levels and hemoglobin, hematocrit, and reticulocyte counts before and periodically during therapy.
- Because of infrequency of solitary vitamin deficiencies, combinations are commonly administered.
- May be given SC, deep IM, or IV when PO route is not feasible.
- Antacids should be given at least 2 hr after the medication.
- The medication should be given 2 hr before or 4–6 hr after cholestyramine.

Also Used for: Reproductive system applications (prevention of neural tube defects in the fetus [400 mcg in prenatal vitamins daily]); central nervous system applications (alcohol abuse [with other B vitamins])

RESPIRATORY

Aminophylline IV

(am-in-off-i-lin)

Phyllocontin, Truphylline
(A Salt of Theophylline)

Theophylline

(thee-off-i-lin)

Accurbron, Sustaire, Theobid, Theo-Dur, Theovent,
Theospan, Bronkodyl, Elixophyllin, Quibron-T,
Slo-Bid, Slo-Phyllin
🍁 Apo-Theo LA



Therapeutic/Pharmacologic Class

Bronchodilator/Xanthine

Indications

Long-term control of reversible airway obstruction caused by asthma or chronic obstructive pulmonary disease (COPD). Increases diaphragmatic contractility. Used to treat apnea of prematurity.

Action

Inhibit phosphodiesterase, producing increased tissue concentrations of cyclic adenosine monophosphate (cAMP). Increased levels of cAMP result in bronchodilation, CNS stimulation, positive inotropic and chronotropic effects, diuresis, and gastric acid secretion.

Adverse Reactions/Side Effects

CNS: seizures, anxiety, headache, insomnia.

CV: arrhythmias, angina, tachycardia, palpitations. **GI:** nausea, vomiting, anorexia, cramps.

Neuro: tremor.

Nursing Dx: Impaired gas exchange; Risk for altered respiratory pattern.

Keep in Mind

Teach client:

- PO doses need to be taken at the prescribed time.
- Increase fluid intake to a minimum of eight 8-oz glasses of fluid daily. Avoid caffeine.
- Do not eat charbroiled meats, use large amounts of pepper, or consume large amounts of cruciferous vegetables, because they interfere with the action of the drug.
- Supplement vitamin B₆ to overcome depletion caused by this drug.
- Avoid alcohol consumption while on this medication.
- Routine labs will be drawn.



Make the Connection

• Serum drug levels range from 10–15 mcg/mL. Low levels will precipitate bronchospasm. High levels will result in toxicity.

- Monitor I&O, CXR, respiratory ease, pulse oximetry, K⁺ and Mg⁺ levels.



Ipratropium

(i-pra-troe-pee-um)

Atrovent

Therapeutic/Pharmacologic Class

Allergy, cold, cough remedy; bronchodilator/
Anticholinergic agent

Indications

Inhalation: Maintenance therapy of reversible airway obstruction due to COPD and bronchospasm due to asthma. *Intranasal:* Treatment of rhinorrhea associated with allergic and nonallergic perennial rhinitis or the common cold.

Action

Given by inhalation, the drug inhibits cholinergic receptors in bronchial smooth muscle tissue, resulting in decreased concentrations of cyclic guanosine monophosphate (cGMP). Decreased cGMP produces local bronchodilation. Given intranasally, application inhibits secretions from glands lining the nasal mucosa (local effects).

Adverse Reactions/Side Effects

CNS: dizziness, headache, nervousness.

EENT: blurred vision, sore throat; epistaxis, nasal dryness/irritation (intranasal only).

Resp: bronchospasm, cough. **CV:** hypotension,

Nursing Dx: Ineffective airway clearance; Impaired gas exchange.

palpitations. **GI:** GI irritation, nausea. **Derm:** rash. **Misc:** allergic reactions.

Keep in Mind

Teach client:

- Follow instructions for proper use of inhaler or nasal spray, and take as directed.
- Pulmonary function tests will be scheduled.



Make the Connection

- When multiple inhalation medications are given, use beta₂-adrenergic agonists (adrenergics) first, then this class, and inhaled steroids last. Remember, 1 min between inhalations of the same medications, and 5 min between each different medication.
- Assess respiratory status carefully prior to and after inhalation of medication. Breath sounds should always be assessed prior to inhalation therapy; it is the best tool. Also assess pulse oximetry, ease of respiratory effort, and chest radiograph.
- Be aware that anticholinergic inhalers promote mucus plugging in clients with tracheostomy (drying effect). Have suction, normal saline, and catheters of varying size in the room to prevent damage.



Albuterol

(al-*byoo*-ter-ole)

Proventil, Proventil
Hydrofluoroakane
(HFA), Vento-Disk,
Ventolin, Ventolin
HFA, Volmax, VoSpira
ER, AccuNeb, Airet
🍁 Novo-Salmol

Salmeterol

(sal-*me*-te-role)

Serevent

Metaproterenol

(met-a-proe-*ter*-e-nole)

Alupent

Formoterol

(for-*mo*-te-role)

Foradil (Powder Inhaler)

Therapeutic/Pharmacologic Class

Bronchodilator/Adrenergic agent

Indications

Used as a bronchodilator for control and prevention of reversible airway obstruction caused by asthma or COPD. When inhaled, the medication is used for quick relief of bronchospasm (rescue) and for prevention of exercise-induced bronchospasm. Used PO for long-term control of chronic/persistent bronchospasm.

Action

Bind to beta₂-adrenergic receptors in airway smooth muscle, leading to activation of adenylcyclase and increased levels of cyclic adenosine monophosphate (cAMP). Relatively selective for beta₂ (pulmonary) receptors. cAMP decreases action of myosin and CA⁺ resulting in relaxation of airway smooth muscle.

Adverse Reactions/Side Effects

- CNS:** nervousness, restlessness, tremor, headache, insomnia (occurs more frequently in young children than in adults); hyperactivity in children.
- CV:** chest pain, palpitations, angina, arrhythmias,

Nursing Dx: Ineffective airway clearance; Impaired gas exchange.

hypertension. **GI:** nausea, vomiting. **Endo:** hyperglycemia. **F and E:** hypokalemia. **Neuro:** tremor.

Keep in Mind

Teach client:

- Take this medication exactly as directed.
- **Contact the HCP immediately if SOB is not relieved by medication.**
- A “spacer” may be used to assist in dose delivery.
- Adrenergic inhalers are used before anti-cholinergic or steroid inhalers. Inhalations of the same medications should be 1 min apart, and inhalations of different medications should be 5 min apart; rinse mouth.



Make the Connection

- **Using medication with MAOIs may lead to hypertensive crisis.**
- **Observe for paradoxical bronchospasm (wheezing).**
- Assess for effectiveness of medication.



Isoproterenol

*(eye-soe-proe-**ter**-e-nole)*

Isuprel, Medihaler-Iso

Therapeutic/Pharmacologic Class

Bronchodilator, antiarrhythmic agent/Adrenergic agent

Indications

Management of bronchospasm during anesthesia.
Treatment of asthma or COPD.

Action

Results in the accumulation of cyclic adenosine monophosphate (cAMP) at beta-adrenergic receptors. Produces bronchodilation. Inhibits the release of mediators of immediate hypersensitivity reactions from mast cells. Has additional significant beta (cardiac)-adrenergic action, which results in positive inotropic and chronotropic effects.

Adverse Reactions/Side Effects

CNS: nervousness, restlessness, tremor, headache, insomnia. **CV:** **arrhythmias, angina, hypertension, tachycardia**. **GI:** nausea, vomiting, xerostomia. **Endo:** hyperglycemia. **Misc:** pink/red discoloration of saliva.

Nursing Dx: Impaired gas exchange; Decreased cardiac output.

Keep in Mind

Teach client:

- Avoid smoking and other respiratory irritants.
- **Contact health-care professional immediately if shortness of breath is not relieved by medication or is accompanied by diaphoresis, dizziness, palpitations, or chest pain.**



Make the Connection

- Assess lung sounds, respiratory pattern, pulse, and blood pressure before administration and during peak of medication.
- Note amount, color, and character of sputum produced.
- Monitor pulmonary function tests.
- **Symptoms of overdose include persistent agitation, chest pain or discomfort, decreased blood pressure, dizziness, hyperglycemia, hypokalemia, seizures, tachyarrhythmias, persistent trembling, and vomiting. Treatment includes discontinuing beta-adrenergic agonists and instituting symptomatic, supportive therapy.**

Also Used for: Cardiovascular system applications (bradycardia [IV only])



Acetylcysteine

*(a-se-teel-**sis**-teen)*

Acetadote, Mucomyst, Mucosil

Therapeutic/Pharmacologic Class

Mucolytic, antidote for acetaminophen/Viscosity-reduction agent, antioxidant

Indications

IV use: Antidote for the management of potentially hepatotoxic overdosage of acetaminophen (should be administered within 8–24 hours of ingestion depending on overdosage amount). Inhaled use: Reduction of mucus viscosity associated with thick secretions.

Action

Decreases the buildup of a hepatotoxic metabolite in acetaminophen overdosage. Degrades mucus, allowing easier mobilization and expectoration.

Adverse Reactions/Side Effects

CNS: drowsiness. **CV:** vasodilation. **EENT:** rhinorrhea. **Resp:** bronchospasm, bronchial/tracheal irritation, chest tightness, increased secretions. **GI:** nausea, vomiting, stomatitis. **Derm:** pruritus, rash, urticaria, clamminess. **Misc:** allergic reactions

Nursing Dx: Ineffective airway clearance; Risk for injury (pharmacologic).

(primarily with IV), including **anaphylaxis, angioedema**, chills, fever.

Keep in Mind

Teach client:

- Clear airway by coughing deeply before taking aerosol inhalation treatment.
- There is an unpleasant odor to this drug.
- The face may feel sticky after using the mask nebulizer, and the residue can be easily cleaned.
- Suctioning may be necessary after mucolytic therapy.



Make the Connection

- Keep suction available; as mucus thins, it may be too copious for the client to expectorate.
- When used as antidote in acetaminophen overdose, assess plasma acetaminophen levels.
- Monitor LFT, RFT, ECG, glucose, and electrolytes.
- Notify HCP if nausea, vomiting, or urticaria occurs.

Also Used for: Urological system applications (prevention of radiocontrast-induced renal dysfunction); gastrointestinal system applications (dissolution of gall stones)



Guaifenesin

*(gwe-**fen**-e-sin)*

Robitussin, Hytuss, Guiatuss,
Mucinex, Humibid

🍁 Benlyn-E

Therapeutic/Pharmacologic Class

Allergy, cold, and cough remedy, expectorant/Mucus humectant

Indications

Treatment of coughs associated with viral upper respiratory tract infections. Treatment of chronic lung conditions.

Action

Reduces viscosity of tenacious secretions by increasing respiratory tract fluid.

Adverse Reactions/Side Effects

CNS: dizziness, headache. **GI:** nausea, diarrhea, stomach pain, vomiting. **Derm:** rash, urticaria.

Keep in Mind

Teach client:

- Cough effectively. Sit upright, take three deep breaths, and cough deeply with the hand placed loosely in front of the mouth (positive airway pressure). Do this several times.
- This drug may cause dizziness, so avoid activities

Nursing Dx: Ineffective airway clearance; Ineffective breathing pattern.

that require alertness until the effect of the drug is known.

- Limit talking, stop smoking, and maintain moisture in the environment. Cool mist is best.
- Sugarless gum and candy may be used to assist in keeping the mouth moist.
- If cough causes gagging; persists for greater than 1 wk; or is accompanied by a fever, rash, or sore throat; contact health-care professional.



Make the Connection

- Assess lung sounds, and frequency and type of cough during therapy.
- Assess color and amount of secretions. Clients may swallow secretions, so do not assume that the cough is nonproductive because of this. If on auscultation, rhonchi occur, move, and disappear with coughing, this is a finding that indicates a productive cough.
- Give with a full glass of water.
- **Extended-release tablets should be swallowed whole; not crushed, chewed, or broken.**

Also Used for: Reproductive system applications (thinning of cervical mucus [infertility])

Fexofenadine

(*fex-oh-fen-a-deen*)

Allegra

Loratadine

(*lor-a-ta-deen*)

Alavert, Claritin, Claritin
24-Hour Allergy, Claritin Hives
Relief, Children's Loratadine,
Claritin Reditabs, Clear-Atadine,
Dimetapp Children's ND Non-
Drowsy Allergy, Non-Drowsy
Allergy Relief for Kids, Tavist ND

Hydroxyzine

(*hye-drox-i-zeen*)

Atarax, Vistaril

🍁 Apo-Hydroxyzine

Diphenhydramine

(*dye-fen-hye-dra-meen*)

Benadryl, Sominex,
Unisom Nighttime
Sleep Aid, Benadryl Allergy
🍁 Allerdryl



Therapeutic/Pharmacologic Class

Allergy, cold, and cough remedy/Antihistamine, sleep-inducer

Indications

Relief of symptoms of seasonal allergic rhinitis. Management of chronic idiopathic urticaria. May be used, depending on product, as a sedative/hypnotic.

Action

Antagonize the effects of histamine at peripheral histamine₁ (H₁) receptors. Inhibition of these receptors can be used for histamine-related inflammation, like pruritus and urticaria. Medications also have a drying effect on the nasal mucosa.

Adverse Reactions/Side Effects

CNS: drowsiness, fatigue. **GI:** dyspepsia.
Endo: dysmenorrhea.

Keep in Mind

Teach client:

- Take the medication as directed.

Nursing Dx: Ineffective breathing patterns.

- This drug may cause drowsiness, so avoid driving or other activities requiring alertness until response to drug is known.
- Contact the health-care professional if symptoms persist.



Make the Connection

- Assess allergy symptoms (rhinitis, conjunctivitis, hives) before and periodically during therapy.
- Assess lung sounds and character of bronchial secretions.
- Maintain fluid intake of 1500–2000 mL/day to decrease viscosity of secretions.
- Medication causes false-negative reactions on allergy skin tests; discontinue 3 days before such testing.
- Administer with food or milk to decrease GI irritation. Capsules and tablets should be taken with water or milk, not juice.
- If the drug is taken for sleep, assess quality of sleep and sleep patterns.

Also Used for: Central nervous system applications (IM injection for anxiety [hydroxyzine]).

Beclomethasone

*(be-kloe-**meth**-a-sonə)*

Qvar, Vanceril

Fluticasone

*(floo-**ti**-ka-sonə)*

Flovent, Flovent Diskus

Triamcinolone

*(trye-am-**sin**-oh-lone)*

Azmacort, Nasacort



Therapeutic/Pharmacologic Class

Anti-inflammatory agent (steroidal)/Corticosteroid agent

Indications

Maintenance treatment of asthma as prophylactic therapy. Possible decrease in requirement for or elimination of systemic corticosteroid use in clients with asthma.

Action

Potent, locally acting anti-inflammatory and immune modifier.

Adverse Reactions/Side Effects

CNS: headache. **EENT:** cataracts, dysphonia, oropharyngeal fungal infections, pharyngitis, rhinitis, sinusitis. **Resp:** bronchospasm, cough, wheezing. **Endo:** adrenal suppression (increased dose, long-term therapy only), decreased growth (children). **MS:** back pain.

Nursing Dx: Impaired gas exchange; Readiness for enhanced breathing pattern.

Keep in Mind

Teach client:

- When using inhalation corticosteroids and bronchodilator, use bronchodilator first and allow 5 min to elapse before administering the corticosteroid, unless otherwise directed by HCP.
- **Do not use this drug for rescue.**
- Rinse the mouth after using.



Make the Connection

- Monitor respiratory status and lung sounds.
- Assess clients changing from systemic to inhalation corticosteroids for signs of adrenal insufficiency.
- Periodic adrenal function tests may be ordered.
- May cause increased serum and urine glucose concentrations if significant absorption occurs.

Also Used for: Respiratory system applications (asthma prophylaxis [steroid and beta adrenergic combinations]); dermatologic system applications (topical application for dermatitis)



Nedocromil

*(ne-doe-**kroe**-mil)*

Tilade

Cromolyn

*(**kroe**-moe-lin)*

Intal, NasalCrom

🍁 Apo-Cromolyn

Therapeutic/Pharmacologic Class

Antiasthmatic agent, antiallergy agent/Mast cell stabilizer

Indications

Management of mild to moderate asthma or allergy-induced asthmatic reactions.

Action

Prevent the release of histamine and slow-reacting substance of anaphylaxis (SRS-A) from sensitized mast cells.

Adverse Reactions/Side Effects

CNS: dizziness, fatigue, headache. **EENT:** pharyngitis, rhinitis. **CV:** chest pain. **Resp:** bronchospasm, cough, dyspnea. **GI:** unpleasant taste, diarrhea, dyspepsia, nausea, vomiting. **Derm:** rash. **Misc:** fever.

Keep in Mind

Teach client:

- Medication must be used as directed.
- Follow instructions for proper use of the metered-dose inhaler.

Nursing Dx: Ineffective breathing pattern; Impaired gas exchange.

- Prime the canister with three puffs before the first use, and if the canister remains unused for more than 7 days, to ensure adequate and accurate dosing.
- Notify health-care professional if asthmatic symptoms do not improve within 4 wk, worsen, or recur.
- **This medication is not for rescue during acute episodes of respiratory distress. Use bronchodilators for rescue.**

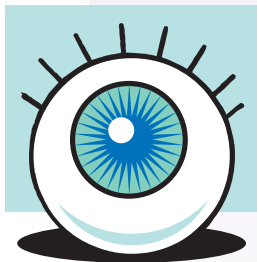


Make the Connection

- Evaluate pulmonary function testing.
- Assess lung sounds and respiratory function before and periodically during therapy.
- Reduction in dose of other asthma medications may be possible after 2–4 wk of therapy.
- Pretreatment with a bronchodilator may be required to increase delivery of inhalation product.

Also Used for: Sensory system applications (allergic sensitivity [eye drops])

EYE



Acetazolamide

(a-set-a-zole-a-mide)

Diamox, Diamox Sequels,
Storzolamide

🍁 Apo-Acetazolamide

Therapeutic/Pharmacologic Class

Antiglaucoma agent, diuretic, ocular hypotensive agent, anticonvulsant agent/Carbonic anhydrase inhibitor

Indications

Lowering of intraocular pressure in the treatment of glaucoma.

Action

Inhibition of carbonic anhydrase in the eye results in decreased secretion of aqueous humor. Inhibition of renal carbonic anhydrase results in self-limiting urinary excretion of sodium, potassium, bicarbonate, and water.

Adverse Reactions/Side Effects

CNS: depression, tiredness, weakness, drowsiness. **EENT:** transient nearsightedness. **GI:** anorexia, metallic taste, nausea, vomiting, melena.

GU: crystalluria, renal calculi. **Derm:** **Stevens-Johnson syndrome**, rash. **Endo:** hyperglycemia.

F and E: hyperchloremic acidosis, hypokalemia,

Nursing Dx: Risk for injury (pharmacologic); Disturbed sensory perception (visual).

growth retardation (in children receiving chronic therapy). **Hemat:** **aplastic anemia, hemolytic anemia, leukopenia**. **Metab:** weight loss, hyperuricemia. **Neuro:** paresthesias. **Misc:** allergic reactions including **anaphylaxis**.

Keep in Mind

Teach client:

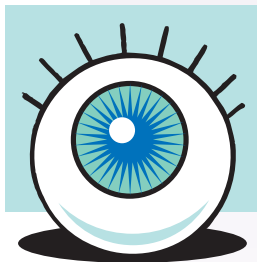
- Take the medication as directed.
- Take PO form with food.



Make the Connection

- Assess for hypersensitivity or cross-sensitivity with sulfonamides.
- Assess tonometry readings.
- Monitor serum electrolytes, CBC, glucose levels, and LFT.
- **Assess arterial blood gas for metabolic acidosis.**

Also Used for: Central nervous system applications (seizures/hydrocephalus); urologic system applications (diuretic/uric acid and cystine lith reduction agent); respiratory system applications (altitude sickness).



Carbachol

(*carb-a-kol*)

Carboptic, Isopto
Carbachol

Pilocarpine

(*pie-loe-car-peen*)

Adorbocarpine,
Isopto Carpine
Ocuser Pilo,
Pilopine, Pilostat
🍁 Miocarpine

Demecarium

(*de-me-car-ee-um*)

Humorsol

Acetylcholine

(*a-ceed-till-choe-leen*)

Miochol-E

Therapeutic/Pharmacologic Class

Intraocular pressure–reducing agent/Cholinergic

Indications

Management of open-angle glaucoma not controlled with short-acting miotics. Also used to facilitate miosis after ophthalmic surgery or to counteract mydriatics (after exam).

Action

Cholinergic nerve fibers are stimulated directly in the eye, promoting miosis. This increases outflow of aqueous humor, decreasing intraocular pressure.

Adverse Reactions/Side Effects

CNS: headache and eye pain. **CV:** hypotension, syncope, cardiac arrhythmias, flushing (large systemic absorption). **EENT:** change in eye accommodation, stinging and burning, iritis, salivation. **GI:** cramps, vomiting, diarrhea, epigastric distress. **GU:** bladder spasm.

Resp: bronchospasm. **Misc:** sweating.

Nursing Dx: Risk for injury (pharmacologic); Disturbed sensory perception (visual).

Keep in Mind

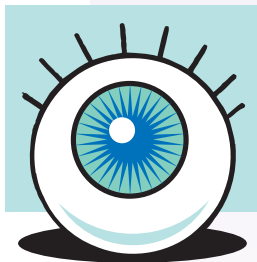
Teach client:

- Use this medication as directed by health-care professional.
- This medication may sting when administered.
- Follow instructions for proper method of instillation. Drop into conjunctival pocket, not directly onto the eyeball.
- Hold the lacrimal duct for 1 min following administration to prevent systemic absorption.
- Report immediately any changes in vision that are unexpected.
- Do not drive or operate machinery at night after use of this medication, because pupils will be constricted and vision impaired.
- Periodic exams will be scheduled.



Make the Connection

- Reverse this drug with atropine, an anticholinergic.
- Use cautiously in clients with chronic lung conditions, like asthma (large systemic absorption can cause bronchospasm).
- Assess tonometry readings.



Dipivefrin

(di-**pi**-ve-frin)

(Propine)

Apraclonidine

(a-pra-**clon**-i-deen)

Iopidine

Brimonidine

(bri-**mon**-i-deen)

Alphagan

Epinephrine

(e-pin-**eff**-rin)

Epifrin, Glaucon

Therapeutic/Pharmacologic Class

Antiglaucoma agent/Sympathomimetic agent

Indications

Management of glaucoma.

Action

Lower intraocular pressure by decreasing formation of aqueous humor.

Adverse Reactions/Side Effects

CNS: headache, nervousness, drowsiness.

CV: palpitations, arrhythmias, hypertension (large systemic absorption). **EENT:** stinging, burning eye pain, sensitivity to light.

Keep in Mind

Teach client:

- Follow instructions for proper method of instillation. Place in conjunctival pocket and not directly on eyeball.
- Hold lacrimal duct for 1 min after instillation to prevent systemic absorption.

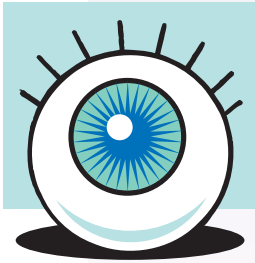
Nursing Dx: Disturbed sensory perception (visual); Risk for injury (pharmacologic).

- Avoid activities that require good visual acuity. Mydriasis causes visual disturbances and sensitivity to light.
- Report palpitations to the health-care provider.
- Periodic exams for intraocular pressure and visual acuity will be scheduled.



Make the Connection

- Monitor blood pressure, pulse, and rhythm when the client first begins to self-administer the medication.
- Monitor tonometry readings.
- Avoid concurrent use of MAOI agents.



Latanoprost

(lat-an-oe-prost)

Xalatan

Travoprost

(trav-oe-prost)

Travatan

Therapeutic/Pharmacologic Class

Antiglaucoma agent/Prostaglandin agonist

Indications

Management of glaucoma.

Action

Anti-inflammatory action reduces obstruction to aqueous humor outflow, lowering intraocular pressure.

Adverse Reactions/Side Effects

EENT: local irritation, stinging, foreign body sensation, increased eyelash growth, increased brown eye pigment (may change eye color to brown). **CV:** palpitations (excessive systemic absorption).

Keep in Mind

Teach client:

- Follow instructions for proper method of instillation. Place in conjunctival pocket and not directly on eyeball.

Nursing Dx: Disturbed sensory perception (visual); Risk for injury (pharmacologic).

- Hold lacrimal duct for 1 min after instillation to prevent systemic absorption.
- Avoid activities that require good visual acuity. Mydriasis causes visual disturbances and sensitivity to light.
- Report palpitations to the health-care provider.
- Eye color may change to brown.
- Periodic exams for intraocular pressure and visual acuity will be scheduled.



Make the Connection

- Monitor blood pressure, pulse, and rhythm when the client first begins to self-administer the medication.
- Do not administer when contact lenses are in the eye.
- Monitor tonometry readings.

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