140 MUST KNOW MEDS

Master Nursing Pharmacology

Jon Haws RN CCRN

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Nursing School Shouldn't be so DAMN Hard!
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140 Must Know Meds
Demolish Nursing Pharmacology

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Based on the "Med of the Day" Podcast

-- FREE NCLEX® Cheat Sheets at NRSNG.com --
How to use this book:

This book is divided into two sections; individual medications and medication classes. Under the individual medications you will find the most important information you need to know about the given medication to pass tests and provide safe patient care. This is not to be considered a complete list of all considerations for the medications but simply a guide to help you learn the MOST important tested information. The medication class section covers some of the most often tested medication classes and should be used to learn the general basics of some of the most common classes.
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Introduction

This book is based on the Med of the Day Podcast and is part of the MedMaster Course (use coupon code “140MEDS” at MedMasterCourse.com to get 35% off lifetime membership).

I remember my first day as a sophomore nursing student in Nursing Pharmacology. To say I was lost is an understatement. It was like someone had dropped me off in a completely foreign land with an incomprehensible language. When I entered nursing school the only real health care experience I had was working as a transporter in a large hospital. Pharmacology was new to me and I was terrified that I would never be able to grasp the lingo.

The good news was my study partner had actually attended pharmacy school in India before coming to the United States to study nursing. The bad news was the Pharmacology makes up about 15% of the questions on the NCLEX® and I only had a semester to learn it!

The next few months were spent intently studying and taking practice exams. During the course of taking countless practice exams I would jot down every medication that was tested. I also would jot down the fact about the specific medication or class that was being tested.

This book is a compilation of the 140 must know meds for the NCLEX® and Nursing Pharmacology. These medications were the most tested. While the nursing considerations listed are not complete (and are not intended to be) they contain the most frequently tested material that you need to know for a given medication.

If you can learn the key facts about these medications you will ace your course and the NCLEX. The fact that you have downloaded this book proves that you are serious about your nursing career!

Oh yeah! I did end up passing Nursing Pharmacology with an “A” and continue to study pharmacology . . . but now I really enjoy it.

Happy Nursing!

-Jon Haws RN CCRN

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Alteplase

Generic Name
alteplase

Trade Name
t-PA

Indication
MI, acute ischemic stroke, occluded central lines

Action
converts plasminogen to plasmin which degrades the fibrin found in clots

Therapeutic Class
thrombolytics

Pharmacologic Class
plasminogen activators

Nursing Considerations
- contraindicated in active bleeding
- monitor closely for signs of bleeding (petechiae)
  - q 15 min X1hr
  - q 15-30 min X 8 hr
- use caution with patient who have had recent surgery
- may cause intracranial hemorrhage
- monitor for anaphylaxis
- use caution with uncontrolled hypertension
- assess neuro status during therapy
**Atorvastatin**

**Generic Name**

atorvastatin

**Trade Name**

Lipitor

**Indication**

management of high cholesterol (hypercholesterolemia), primary prevention of cardiovascular disease

**Action**

lowers total cholesterol as well as LDL while slightly increasing HDL. Inhibits HMG-CoA reductase which plays a role in the liver in cholesterol formation

**Therapeutic Class**

lipid-lowering agent

**Pharmacologic Class**

HMG-CoA reductase inhibitor

**Similar Medications**

simvistatin (Zocor), rosuvastatin (Crestor)

**Nursing Considerations**

- contraindicated in active liver disease
- may cause rhabdomyolysis
- monitor renal function
- monitor serum cholesterol before, about 4 weeks after starting, and frequently during drug therapy
- monitor liver function tests
- instruct patient to report muscle weakness (sign of rhabdomyolysis)
Acetaminophen

Generic Name
acetaminophen

Trade Name
Tylenol

Indication
pain, fever

Action
inhibit the synthesis of prostaglandins which play a role in transmission of pain signals and fever response

Therapeutic Class
antipyretic, non-opioid analgesic

Nursing Considerations

- do not exceed 4g of acetaminophen per day to limit risk for liver, renal, and cardiac damage
- overdose will lead to hepatotoxicity
- Acetadote is the antidote for overdose
- may increase risk for bleed with warfarin therapy
- may alter blood glucose measurements
Acyclovir

Generic Name

acyclovir

Trade Name

Zovirax

Indication

genital herpes, herpes zoster, chicken pox

Action

interferes with viral DNA synthesis

Therapeutic Class

antiviral

Pharmacologic Class

purine analogues

Nursing Considerations

- may cause seizures, renal failure, Stevens-Johnson syndrome, thrombotic thrombocytopenic purpura syndrome, diarrhea, dizziness, nausea
- monitor renal panel during administration
- assess lesions
- instruct patient to use proper protection during sexual intercourse
Albuterol

Generic Name
albuterol

Trade Name
Proventil

Indication
bronchodilator used to prevent airway obstruction in asthma and COPD

Action
binds to Beta2 adrenergic receptors in the airway leading to relaxation of the smooth muscles in the airways

Therapeutic Class
bronchodilator

Pharmacologic Class
adrenergic

Nursing Considerations
- may decrease the effectiveness of Beta Blockers
- use caution with
  - heart disease
  - diabetes
  - glaucoma
  - seizure disorder
- overuse of inhalers can lead to bronchospasm
- monitor for chest pain and palpitations
- can decrease digoxin levels
**Alendronate**

**Generic Name**

alendronate

**Trade Name**

Fosamax

**Indication**

osteoporosis (aging, menopause, corticosteroid induced)

**Action**

inhibits osteoclast activity leading to inhibition of resorption of bone

**Therapeutic Class**

bone resorption inhibitor

**Pharmacologic Class**

bisphosphonates

**Nursing Considerations**

- take first thing in the morning with full glass of water 30 min prior to eating
- assess serum calcium and vitamin D
- may lead to muscle pain
Alprazolam

Generic Name

Alprazolam

Trade Name

Xanax

Indication

anxiety, panic disorder, manage symptoms of PMS, insomnia, mania, psychosis

Action

works in CNS to produce anxiolytic effect causing CNS depression.

Therapeutic Class

antianxiety agent

Pharmacologic Class

benzodiazepine

Nursing Considerations

- use caution with existing CNS depression, sleep apnea, renal dysfunction, hepatic dysfunction.
- may cause CNS depression, drowsiness, lethargy
- may lead to physical dependence, may experience tolerance effect
- assess anxiety and mental status
- Flumazenil is the antidote for overdose
- Grapefruit juice may increase blood levels
Amiodarone

Generic Name

Amiodarone

Trade Name

Cordarone

Indication

ventricular arrhythmias, SVT, ACLS protocol for v-fib and vTACH

Action

prolongs action potential, inhibits adrenergic stimulation, slows rate, decreases peripheral vascular resistance causing vasodilation

Therapeutic Class

Antiarrhythmic class III, Potassium channel blocker

Pharmacologic Class

none

Nursing Considerations

- may lead to ARDS, pulmonary toxicity, CHF, bradycardia, hypotension
- increases risk for QT prolongation
- increases digoxin levels
- increases activity of warfarin
- monitor EKG continuously while on therapy
- assess for signs and symptoms of ARDS
- monitor liver function test
- check dosage with another RN
- teach pt to monitor pulse daily and report abnormalities
- avoid drinking grapefruit juice
**Amitryptiline**

**Generic Name**

Amitryptiline

**Trade Name**

Elavil

**Indication**

depression, anxiety, insomnia

**Action**

increases effect of serotonin and norepinephrine in the CNS, exhibits anticholinergic effects

**Therapeutic Class**

antidepressant

**Pharmacologic Class**

tricyclic antidepressant

**Nursing Considerations**

- contraindicated in MI, heart failure, **QT prolongation**, glaucoma
- may increase risk for suicidal ideation
- may cause arrhythmias, hypotension, EKG changes
- may cause alterations in blood glucose levels
- may lead to general sedation and lethargy
- **do not use within 2 weeks of MAOIs**
- Instruct pt to take medication exactly as instructed
- monitor for orthostatic hypotension
- may lead to photosensitivity, instruct patient to use sunscreen
- may turn urine blue/green color.
Amlodipine

Generic Name

Amlodipine

Trade Name

Norvasc

Indication

hypertension, angina

Action

blocks transport of calcium into muscle cells inhibiting excitation and contraction

Therapeutic Class

antihypertensive

Pharmacologic Class

Ca channel blocker

Nursing Considerations

- may cause gingival hyperplasia
- grapefruit juice may increase drug level
- monitor blood pressure and pulse prior to and during therapy
- monitor intake and output
- assess for signs of CHF
- assess characteristics of angina
- instruct patient of interventions for hypertension and how to take blood pressure
**Amoxicillin**

**Generic Name**
amoxicillin

**Trade Name**
Moxatag

**Indication**
skin infections, respiratory infections, sinusitis, endocarditis prophylaxis, lyme disease

**Action**
Inhibits synthesis of bacterial cell wall leading to cell death.

**Therapeutic Class**
anti-infectives, antiulcer agent

**Pharmacologic Class**
aminopenicillins

**Nursing Considerations**
- Contraindicated with penicillin allergy
- may cause seizures
- assess for rash, anaphylaxis
- excreted by kidneys - monitor renal labs
- monitor patient for diarrhea - bloody stool should be reported immediately
**Ampicillin**

**Generic Name**
Ampicillin

**Trade Name**
Principen

**Indication**
Skin infections, soft tissue infections, otitis media, sinusitis, respiratory infections, GU infections, meningitis, septicemia

**Action**
Bactericidal, broader spectrum than penicillin, binds to cell wall leading to bacterial cell death

**Therapeutic Class**
Anti-infective

**Pharmacologic Class**
Aminopenicillin

**Nursing Considerations**
- Contraindicated in penicillin allergy, use caution in renal insufficiency
- May lead to seizures, diarrhea, anaphylaxes, super infection
- Assess for infection
- Monitor liver function tests
- Instruct patient on signs of super infection: fury over growth on tongue, vaginal itching, loose and foul smelling stool
- Pt should not use with oral contraceptive use.
Aspirin

Generic Name
Aspirin

Trade Name
Bayer Aspirin

Indication
rheumatoid arthritis, osteoarthritis, ischemic stroke and MI prophylaxis

Action
inhibits the production of prostaglandins which leads to a reduction of fever and inflammation, decreases platelet aggregation leading to a decrease in ischemic diseases

Therapeutic Class
antipyretics, non-opioid, analgesics

Pharmacologic Class
salicylates

Nursing Considerations
- use caution in bleeding disorders, chronic alcohol use
- may lead to Stevens-Johnson syndrome, laryngeal edema, and anaphylaxis
- increases risk for bleeding with warfarin, heparin, and clopidogrel
- increased risk for GI bleeding with NSAID use
- monitor liver function tests
- concurrent use with alcohol may increase risk for GI bleeding
**Atenolol**

**Generic Name**
atenolol

**Trade Name**
Tenormin

**Indication**
hypertension, angina, prevention of MI

**Action**
blocks the stimulation of beta\textsubscript{1} receptors in the SNS with minimal effect on beta\textsubscript{2} receptors

**Therapeutic Class**
antianginal, antihypertensive

**Pharmacologic Class**
beta blocker

**Nursing Considerations**

- Contraindicated in CHF, pulmonary edema, cardiogenic shock, bradycardia, heart block
- Monitor hemodynamic parameters (HR, BP)
- May cause bradycardia, CHF, pulmonary edema
- Masks symptoms associated with diabetes mellitus
- Advise to change positions slowly to prevent orthostatic hypotension
- Instruct patient on how to take blood pressure
Atropine

**Generic Name**

atropine

**Trade Name**

Atro-pen

**Indication**

decreases oral and respiratory secretions, treats sinus bradycardia and heart block, treatment of bronchospasm

**Action**

Atropine is an anticholinergic which means that it inhibits the effects of the parasympathetic nervous system, specifically acetylcholine. This inhibition causes increase in HR, bronchodilation, decreased GI and respiratory secretions.

**Therapeutic Class**

antiarrhythmic

**Pharmacologic Class**

anticholinergic, antimuscarinic

**Nursing Considerations**

- Avoid in acute hemorrhage, tachycardia, and angle closure glaucoma
- monitor patient for tachycardia and palpitations
- may cause urinary retention in elderly patients
- patients may experience constipation due to slowed GI motility
Azithromycin

Generic Name
azithromycin

Trade Name
Zithromax

Indication
URI, chronic bronchitis, lower respiratory infections, otitis media, skin infections, various STIs, prevention of bacterial endocarditis, treatment of cystic fibrosis

Action
inhibits bacterial protein synthesis

Therapeutic Class
agents for atypical mycobacterium, anti-infectives

Pharmacologic Class
Macrolide

Nursing Considerations
- may lead to pseudomembranous colitis, pain, diarrhea, nausea, Stevens-Johnson syndrome, angioedema
- may increase risks for warfarin toxicity
- monitor patient for signs of anaphylaxis
- instruct patient to notify physician for diarrhea, or blood or pus in stool
- instruct patient to take medication exactly as prescribed
**Benzotropine**

**Generic Name**

benzotropine

**Trade Name**

Cogentin

**Indication**

treatment for Parkinson's disease

**Action**

anticholinergic properties in the CNS to reduce rigidity and tremors

**Therapeutic Class**

Antiparkinson agent

**Pharmacologic Class**

Anticholinergic

**Nursing Considerations**

- may lead to arrhythmias, hypotension, palpitations, and tachycardia
- anticholinergic effects like constipation, dry mouth
- assess for extrapyramidal symptoms
- instruct patient to take as directed
- instruct patient to maintain good oral hygiene
Biscodyl

Generic Name
biscodyl

Trade Name
Ducolax

Indication
treatment of constipation, bowel regimen

Action
stimulates peristalsis leads to fluid accumulation in the colon

Therapeutic Class
laxatives

Pharmacologic Class
stimulant laxatives

Nursing Considerations
- may lead to hypokalemia
- may cause abdominal pain and cramps
- use caution with milk
- assess for abdominal distention and bowel function
- instruct patient to drink 1500-2000 mL/day during therapy
- monitor fluid and electrolyte levels
- instruct patient to take as ordered
**Bismuth Subsalicylate**

**Generic Name**

Bismuth Subsalicylate

**Trade Name**

Kaopectate, Pepto-Bismol

**Indication**

diarrhea, heartburn, indigestion, H. pylori associated ulcer

**Action**

Stimulates the absorption of fluids and electrolytes in the intestinal wall, reduction in hypermotility of the stomach, and binds to toxins.

**Therapeutic Class**

antidiarrheal, antiulcer

**Pharmacologic Class**

adsorbant

**Nursing Considerations**

- contraindicated in aspirin hypersensitivity
- increase risk for impaction with geriatric and pediatric patients
- monitor liver profile
- bismuth may interfere with radiologic exams
**Bupropion**

**Name**
bupropion

**Trade Name**
Wellbutrin

**Indication**
depression, smoking cessation, treat ADHD in adults

**Action**

**Therapeutic Class**
Antidepressants, smoking deterrents

**Pharmacologic Class**
aminoketones

**Nursing Considerations**

- may lead to seizures, suicidal thoughts
- do not administer if patient is taking MAOI
- use caution with renal and liver impairment
- assess mental status
- instruct patient to avoid alcohol while taking bupropion
**Buspirone**

**Generic Name**
buspirone

**Trade Name**
Buspar

**Indication**
management of anxiety

**Action**
relieves anxiety by binding to dopamine and serotonin receptors

**Therapeutic Class**
Antidepressants, smoking deterrents

**Pharmacologic Class**
aminoketones

**Nursing Considerations**
- do not administer concurrently with MOAI or grapefruit juice
- may lead to dizziness, drowsiness, fatigue, and weakness
- patient may experience chest pain, palpitations, tachycardia
- instruct patient to take as directed
- instruct patient to avoid alcohol and other CNS depressants
**Butorphanol**

**Generic Name**

Butorphanol

**Trade Name**

Stadol

**Indication**

moderate to severe pain, labor pain, sedation

**Action**

alters perception and response to pain by binding to opiate receptors in CNS

**Therapeutic Class**

Opioid Analgesic

**Pharmacologic Class**

opioid agonists/antagonists

**Nursing Considerations**

- use caution with concurrent use of MAOIs
- may cause confusion, hallucinations, sedation
- monitor for CNS depression
- assess blood pressure pulse and respirations during administration
- administer slowly through IV line
**Calcium acetate**

**Generic Name**

Calcium acetate

**Trade Name**

PhosLo

**Indication**

treatment of hypocalcemia, prevention of post menopausal osteoporosis, treatment of hypokalemia and hypomagnesaemia, adjunct in cardiac arrest, control of hyperphosphatemia with ESRD

**Action**

calcium is essential for nervous muscular and skeletal systems, helps maintain cell membranes, aids in transmission of nerve impulses and muscle contraction, aids in blood formation and coagulation

**Therapeutic Class**

mineral and electrolyte replacements/supplements

**Pharmacologic Class**

antacids

**Nursing Considerations**

- may cause cardiac arrest and arrhythmias
- phlebitis at site of insertion
- monitor hemodynamics
- may causes hypotension, bradycardia, and arrhythmias
- hypercalcemia can increase risk for digoxin toxicity
- administer slowly
- instruct pt on foods that contain Vitamin D and encourage adequate intake.
- monitor parathyroid hormone
Calcium carbonate

**Generic Name**

Calcium carbonate

**Trade Name**

Tums / Rolaids

**Indication**

treatment of hypocalcemia, prevention of post menopausal osteoporosis, treatment of hypokalemia and hypomagnesaemia, adjunct in cardiac arrest, used as antacid

**Action**

calcium is essential for nervous muscular and skeletal systems, helps maintain cell membranes, aids in transmission of nerve impulses and muscle contraction, aids in blood formation and coagulation

**Therapeutic Class**

mineral and electrolyte replacements/supplements

**Pharmacologic Class**

antacids

**Nursing Considerations**

- may cause cardiac arrest and arrhythmias
- monitor hemodynamics
- may causes hypotension, bradycardia, and arrhythmias
- hypercalcemia can increase risk for digoxin toxicity
- instruct pt on foods that contain Vitamin D and encourage adequate intake.
- monitor parathyroid hormone
Captopril

Generic Name
captopril

Trade Name
Capoten

Indication
hypertension, management of CHF, decrease progression of DM neuropathy

Action
block conversion of angiotensin I to angiotensin II, increases renin levels and decreases aldosterone leading to vasodilation

Therapeutic Class
antihypertensives

Pharmacologic Class
ACE Inhibitor

Nursing Considerations
- can cause neutropenia - check WBCs regularly
- use cautiously with potassium supplements and potassium sparing diuretics.
- use cautiously with diuretic therapy
- administer 1 hour before meals
- monitor blood pressure often
- monitor weight and fluid status
- monitor renal profile
- monitor CBC frequently
- May lead to Rhabdomyolysis
- Dry cough
Carbamazepine

Generic Name
carbamazepine

Trade Name
Tegretol

Indication
seizures, DM neuropathy, pain associated with trigeminal neuralgia

Action
affects Na channels in neurons leading to decreased synaptic transmission

Therapeutic Class
Anticonvulsant

Pharmacologic Class
none

Nursing Considerations

- interferes with oral contraceptives
- do not use with MAOIs
- may cause suicidal thoughts
- may cause Stevens-Johnson syndrome, agranulocytosis, aplastic anemia, thrombocytopenia
- do not consume grapefruit juice while taking this medication
- monitor CBC and platelet count
- monitor serum blood levels of medication often
Carbidopa/levodopa

Generic Name
carbidopa/levodopa

Trade Name
Sinemet

Indication
Parkinson's disease

Action
levodopa is converted to dopamine and works as a neurotransmitter and carbidopa prevents the destruction of levodopa

Therapeutic Class
Antiparkinson agent

Pharmacologic Class
Dopamine Agonist

Nursing Considerations
- may cause orthostatic hypotension
- may cause dark urine
- weeks to months to take effect
- do not use with MAOIs
- don't use with glaucoma, melanoma
- assess for parkinsonian symptoms
- instruct patient to take as directed
Cefaclor

Generic Name
cefaclor

Trade Name
Ceclor

Indication
treatment of respiratory tract infections, skin infections, otitis media

Action
bacteriacidal, binds to bacterial cell wall causing cell death

Therapeutic Class
anti-infectives

Pharmacologic Class
Cephalosporin 2nd generations

Nursing Considerations
- contraindicated in cephalosporin and possibly penicillin allergies
- may need lead to seizures, pseudomembranous colitis, diarrhea, phlebitis at IV site, anaphylaxis
- Assess infection and allergies
- obtain cultures prior to therapy
- monitor bowel function
- may lead to super infection
Cefdinir

**Generic Name**

cefdinir

**Trade Name**

Omnicef

**Indication**

treatment of skin infections, otitis media

**Action**

bactericidal, binds to bacterial cell wall causing cell death

**Therapeutic Class**

anti-infectives

**Pharmacologic Class**

Cephalosporin 2nd generations

**Nursing Considerations**

- contraindicated in cephalosporin and possibly penicillin allergies
- may need lead to seizures, pseudomembranous colitis, diarrhea, phlebitis at IV site, anaphylaxis
- Assess infection and allergies
- obtain cultures prior to therapy
- monitor bowel function
- monitor for bleeding
- may lead to super infection
Celecoxib

Generic Name
celecoxib

Trade Name
Celebrex

Indication
osteoarthritis, rheumatoid arthritis, acute pain

Action
decreases pain and inflammation by inhibiting synthesis of prostaglandins

Therapeutic Class
antirrheumatics/NSAID

Pharmacologic Class
none

Nursing Considerations
- use caution with cardiovascular disease
- increases risk for MI, CVA, thrombosis
- may cause GI bleeding, Stevens-Johnson syndrome, dermatitis
- notify provider for new-onset abdominal pain or black stool
Cephalexin

Generic Name
cephalexin

Trade Name
Keflex

Indication
skin infections, pneumonia, UTI, otitis media

Action
bactericidal: binds to bacterial cell wall leading to cell death

Therapeutic Class
anti-infectives

Pharmacologic Class
Cephalosporin 1st generations

Nursing Considerations

- contraindicated with cephalosporin and serious penicillin allergies.
- may need lead to seizures, pseudomembranous colitis, diarrhea, phlebitis at IV site, anaphylaxis
- Assess infection and allergies
- obtain cultures prior to therapy
- monitor bowel function
- may lead to super infection
- may cause elevated liver enzymes
Chlorpromazine

Generic Name
chlorpromazine

Trade Name
Thorazine

Indication
second line treatment of schizophrenia and psychosis, nausea/vomiting, pre-op sedation, acute intermittent porphyria, headache, bipolar

Action
exhibits anticholinergic activity, alters effects of dopamine in CNS

Therapeutic Class
Antipsychotic, antiemetic

Pharmacologic Class
phenothiazines (dopamine D2 receptor antagonist)

Nursing Considerations

• may cause neuroleptic malignant syndrome, sedation, tardive dyskinesia, hypotenstion, agranulocytosis
• assess mental status prior to and during treatment
• monitor blood pressure
• ensure patient is taking medication
• monitor CBC and liver function tests
• instruct patient not to skip doses or double dose.
Cimetidine

Generic Name
cimetidine

Trade Name
Tagamet

Indication
treatment of duodenal ulcers, GERD, heartburn, Zollinger Ellison syndrome, prevention of GI bleeding in critical patients.

Action
inhibits action of histamine leading to inhibition of gastric acid secretion

Therapeutic Class
antiulcer agent

Pharmacologic Class
Histamine H2 antagonist

Nursing Considerations

- increases serum level of warfarin
- can lead to respiratory infection (green sputum)
- monitor for arrhythmias
- may cause agranulocytosis, aplastic anemia
- monitor CBC during therapy
- take medication as directed
- instruct patient to increase fluid and fiber intake to decrease constipation
Ciprofloxacin

Generic Name

ciprofloxacin

Trade Name

Cipro

Indication

urinary tract infections, gonorrhea, respiratory tract infections, bronchitis, pneumonia, skin and bone infections, infectious diarrhea, abdominal infections

Action

inhibits bacterial DNA synthesis

Therapeutic Class

anti-infectives

Pharmacologic Class

Fluoroquinolone

Nursing Considerations

- contraindicated in allergies
- may cause QT prolongation, avoid use with other drugs that can cause QT prolongation
- can cause seizures, arrhythmias, pseudomembranous colitis, anaphalaxis, Stevens Johnson syndrome
- may decreased of phenytoin
- monitor renal panel
- assess for infection, obtain cultures prior to therapy
- monitor liver function tests
Clindamycin

Generic Name
clindamycin

Trade Name
Cleocin

Indication
skin infections, respiratory tract infections, septicemia, intra-abdominal infections, osteomyelitis

Action
inhibits protein synthesis

Therapeutic Class
Anti-infectives

Pharmacologic Class
none

Nursing Considerations
• arrhythmias, pseudomembranous colitis, diarrhea, phlebitis
• monitor bowel function
• assess for infection, obtain cultures prior to therapy
• monitor liver function tests.
• monitor CBC
**Clopidogrel**

**Generic Name**

clopidogrel

**Trade Name**

Plavix

**Indication**

atherosclerotic events, MI, CVA, PVD, acute coronary syndrome

**Action**

inhibits platelet aggregation

**Therapeutic Class**

Antiplatelet agent

**Pharmacologic Class**

platelet aggregation inhibitors

**Nursing Considerations**

- may cause GI bleeding, neutropenia, hypercholesterolemia
- may increase risk for bleeding in warfarin, aspirin, heparin
- can increase risk for bleeding with garlic, ginkgo, ginger
- monitor for signs of bleeding
- monitor bleeding times
- monitor CBS and platelet count
- discontinue use 5-7 days before surgery
**Codeine**

**Generic Name**

codeine

**Trade Name**

Paveral

**Indication**

management of pain, diarrhea, cough suppressant

**Action**

Binds to opiate receptors in the CNS and alters perception of pain while producing a general depression of the CNS. This depression also causes a decrease in the cough reflex and GI motility.

**Therapeutic Class**

allergy, cold, cough remedy, antitussive, opioid analgesic

**Pharmacologic Class**

opioid agonist

**Nursing Considerations**

- may cause alterations in mentation, hypotension, constipation, nausea, vomiting
- assess BP, pulse, and respiratory rate prior to administration and frequently during administration
- use caution if patient is receiving MAO Inhibitors
- Narcan (naloxone) is the antidote for opioid agonists
Cortisone

Generic Name
cortisone

Trade Name
Cortone

Indication
management of adrenocortical insufficiency (Addison's Disease).

Action
Replace cortisol in states of deficiency, suppress inflammation and normal immune response. The adrenal glands sit on top of the kidneys. The adrenal glands excrete steroid hormones, including cortisol that play a role in increasing blood sugars, immune suppression, and metabolism of fat, protein, and carbohydrates, as well as decreasing bone formation.

Therapeutic Class
antiasthmatics, corticosteroids

Pharmacologic Class
corticosteroids

**Nursing Considerations**

- Excreted by the liver - monitor liver profile
- Avoid in active untreated infections
- may cause CNS alterations
- may cause peptic ulcers
- may cause Cushingoid appearance (buffalo hump, moon face)
- Weight gain
- Osteoporosis
- Decrease wound healing
- May elevate blood sugars
- May increase cholesterol and lipid values
Cyclosporine

Generic Name

cyclosporine

Trade Name

Sandimmune

Indication

prevention of rejection in transplantation, treatment of severe RA, management of ulcerative colitis

Action

inhibits normal immune response

Therapeutic Class

immunosuppressants, antirheumatics (DMARD)

Pharmacologic Class

polypeptides (cyclic)

Nursing Considerations

- may cause seizures, tremors, hypertension, hepatotoxicity, diarrhea, N/V, gingival hyperplasia
- increases immune suppression with corticosteroids
- avoid grapefruit juice while taking this medications
- assess for signs of organ rejection
- monitor renal panel, liver enzymes
- take medication as directed
- lifelong therapy required for transplant patients
- instruct pt on how to take blood pressure
Dexamethasone

Generic Name
dexamethasone

Trade Name
Decadron

Indication
Manage cerebral edema, assess for Cushing's Disease

Action
Suppress inflammation and normal immune response. Used in inflammatory states to decrease inflammation.

Therapeutic Class
antiasthmatics, corticosteroids

Pharmacologic Class
corticosteroids

Nursing Considerations
- Excreted by the liver - monitor liver profile
- Avoid in active untreated infections
- may cause CNS alterations
- may cause peptic ulcers
- may cause Cushingoid appearance (buffalo hump, moon face)
- Weight gain
- Osteoporosis
- Decrease wound healing
- May elevate blood sugars
- May increase cholesterol and lipid values
**Diazepam**

**Generic Name**
diazepam

**Trade Name**
Valium

**Indication**
anxiety, pre-op sedation, conscious sedation, treatment of seizures, insomnia, management of alcohol withdrawal

**Action**
depresses the CNS

**Therapeutic Class**
antianxiety agents, anticonvulsants, sedative/hypnotics, skeletal muscle relaxants (centrally acting)

**Pharmacologic Class**
Benzodiazepine

**Nursing Considerations**
- contraindicated in hepatic dysfunction
- use caution with renal impairment
- can cause dizziness, drowsiness, lethargy, hypotension, physical dependence, tolerance
- instruct patient to take as directed
- caution to avoid alcohol use
- Romazicon is the reversal agent
**Digoxin**

**Generic Name**

digoxin

**Trade Name**

Lanoxin

**Indication**

CHF, A-fib, A-flutter

**Action**

Positive inotropic effect (increases force of myocardial contraction), prolongs refractory period, ↓ conduction through SA and AV nodes. Essentially digoxin is given to increase cardiac output and slow the rate.

**Therapeutic Class**

antiarrhythmic, inotropics

**Pharmacologic Class**

digitalis glycosides

**Nursing Considerations**

- Excreted by kidneys
- Assess patient for hypersensitivity
- Contraindicated with uncontrolled ventricular arrhythmias
- Hypokalemia increase risk for toxicity
- Hypercalcemia ↑ risk for toxicity
- Use caution with diuretic use as they may cause electrolyte abnormalities that can lead to toxicity
- Assess patient for cardiac arrhythmias including bradycardia
- Signs of toxicity include vision changes (blurred vision, yellow, green vision disturbances)
- Monitor pulse rate for 1 full minute prior to dosing patient (hold for pulse <60)
**Diltiazem**

**Generic Name**

diltiazem

**Trade Name**

Cardizem

**Indication**

hypertension, angina, SVT, a-fib, aflutter

**Action**

inhibits calcium transport resulting in inhibition of excitation and contraction, leads to depression of AV and SA node leading to decreased HR, leads to vasodilatation and decreased blood pressure.

**Therapeutic Class**

antianginals, antiarrhythmics, antihypertensive

**Pharmacologic Class**

Ca Channel Blocker (Bezothiazepine)

**Nursing Considerations**

- contraindicated in 2nd and 3rd AV block
- may cause arrhythmias, CHF, bradycardia, peripheral edema, gingival hyperplasia
- increases digoxin levels
- don't drink grapefruit juice
- assess for signs of CHF
- monitor EKG continuously
- tell patient to change positions slowly
- monitor serum potassium
- instruct pt on how to take blood pressure
**Diphenhydramine**

**Generic Name**

diphenhydramine

**Trade Name**

Benadryl

**Indication**

allergy, anaphylaxis, sedation, motion sickness, antitussive

**Action**

antagonizes effects of histamine, CNS depression

**Therapeutic Class**

allergy, cold and cough remedy, antihistamine, antitussive

**Pharmacologic Class**

none

**Nursing Considerations**

- may cause drowsiness, anorexia, dry mouth, nausea, chest tightness, thick secretions, hypotension, blurred vision, headache
- anticholinergic effects
- assess purpose of medication prior to giving it
- assess allergies, sleep patterns, cough and lung sounds
- patient should avoid other over-the-counter cough and cold remedies
**Diphenoxylate/Atropine**

**Generic Name**

diphenoxylate/atropine

**Trade Name**

Lomotil

**Indication**

Treatment for diarrhea

**Action**

Inhibits GI motility via anticholinergic effects

**Therapeutic Class**

antidiarrheal

**Pharmacologic Class**

anticholinergic

**Nursing Considerations**

- Contraindicated with angle-closure glaucoma, dehydration
- Structurally related to opioids so use caution with patients that have allergies to opioids
- Side effects: constipation, tachycardia, dizziness, ileus
- Monitor liver function as medication is excreted by the liver
- Insure that client is taking medication as prescribed and not double dosing
Divalproex (valproic acid derivative)

**Generic Name**

divalproex

**Trade Name**

Depakote

**Indication**

seizures, manic episodes, prevention of headache

**Action**

increases the level of GABA in CNS

**Therapeutic Class**

Anticonvulsant, vascular headache suppressants

**Pharmacologic Class**

none

**Nursing Considerations**

- may cause suicidal thoughts, agitation, dizziness, insomnia, hepatotoxicity, pancreatitis
- increases risk for bleeding with Warfarin
- use caution with MAOIs
- monitor liver function tests
**Dobutamine**

**Generic Name**
dobutamine

**Trade Name**
Dobutrex

**Indication**
short term management of heart failure

**Action**
Dobutamine has a positive inotropic effect (increases cardiac output) with very little effect on heart rate. Stimulates Beta\(_1\) receptors in the heart.

**Therapeutic Class**
inotropic

**Pharmacologic Class**
beta-adrenergic agonist

**Nursing Considerations**
- Monitor hemodynamics: hypertension, ↑HR, PVCs
- Skin reactions may occur with hypersensitivity
- Beta blockers may negate therapeutic effects of dobutamine
- Monitor cardiac output
- Monitor peripheral pulses before, during, and after therapy
- DO NOT confuse dobutamine with dopamine
**Dopamine**

**Generic Name**

dopamine

**Trade Name**

Intropin

**Indication**

used to improve blood pressure, cardiac output, and urine output

**Action**

Smaller doses result in renal vasodilation

Doses 2-10mcg/kg/min result in cardiac stimulation by acting on beta1 receptors

Doses >10mcg/kg/min stimulate alpha receptors leading to vasoconstriction (↑SVR)

**Therapeutic Class**

inotropic, vasopressor

**Pharmacologic Class**

adrenergic

**Nursing Considerations**

- Monitor hemodynamics closely: BP, HR, EKG, CVP, and PAOP if available
- Obtain parameters for hemodynamic values
- Titrate to obtain appropriate BP (more potent vasoconstrictors may be required)
- Irritation may occur at IV site
- Beta blockers may counteract therapeutic effects
Enalapril

Generic Name

enalapril

Trade Name

Vasotec

Indication

hypertension, management of CHF

Action

block conversion of angiotensin I to angiotensin II, increases renin levels and decreases aldosterone leading to vasodilation

Therapeutic Class

antihypertensives

Pharmacologic Class

ACE Inhibitor

Nursing Considerations

- can cause neutropenia - check WBCs regularly
- use cautiously with potassium supplements and potassium sparing diuretics.
- use cautiously with diuretic therapy
- administer 1 hour before meals
- monitor blood pressure often
- monitor weight and fluid status
- monitor renal profile
- monitor CBC frequently
- dry cough
Enoxaparin

Generic Name

enoxaparin

Trade Name

Lovenox

Indication

prevention of VTE, DVT, and PE

Action

prevents thrombus formation by potentiating the inhibitory effect of antithrombin on factor Xa and thrombin

Therapeutic Class

anticoagulant

Pharmacologic Class

antithrombotic

Nursing Considerations

- contraindicated in pork hypersensitivity
- monitor for signs of bleeding
- administer in subcutaneous tissue
- DO NOT eject air bubble prior to injection
- DO NOT aspirate or massage site
Epinephrine

Generic Name

epinephrine

Trade Name

Adrenalin, EpiPen

Indication

Asthma and COPD exacerbations, allergic reactions, cardiac arrest, anesthesia adjunct

Action

Affects both beta_1 and beta_2 also has alpha agonist properties. Results in bronchodilation, increases in HR and BP

Therapeutic Class

antiasthmatic, bronchodilator, vasopressor

Pharmacologic Class

adrenergic agonist

Nursing Considerations

- Side effects include: angina, tachycardia, hypertension, restlessness, nervousness, hyperglycemia
- Use with MAOI may lead to hypertensive crisis
- Patients should not use stimulants (caffeine, guarana, etc)
- Excessive use may cause bronchospasm
- Assess lung sounds, pulse, BP, and other hemodynamic parameters
- Monitor for chest pain
- Instruct patient to use as directed
- Patient should insure adequate fluid intake to liquefy secretions
- Mouth should be rinsed after inhalation
- Beta blocker may negate effects
- May increase blood glucose levels
Epoetin

Generic Name
epoetin

Trade Name
Epogen

Indication
anemia

Action
stimulates erythropoiesis

Therapeutic Class
antianemics

Pharmacologic Class
hormones

Nursing Considerations

- contraindicated in albumin hypersensitivity
- may cause seizures, CHF, MI, CVA, HTN
- monitor blood pressure during therapy
- monitor for signs of anemia
- assess dialysis shunts
- monitor bleeding times
- initiate seizure precautions
- do not shake vial
**Erythromycin**

**Generic Name**
erythromycin

**Trade Name**
E-Mycin

**Indication**
useful in place of penicillin when patient cannot take penicillin, upper and lower respiratory tract infections, otitis media, skin infections, pertussis, syphilis, rheumatic fever

**Action**
suppresses bacterial protein synthesis, bacteriostatic

**Therapeutic Class**
anti-infective

**Pharmacologic Class**
macrolide

**Nursing Considerations**
- Causes QT prolongation, ventricular arrhythmias
- diarrhea
- assesses infection
- monitor liver function tests
- instruct patient to finish medication dosage even if they are feeling better
- medication should not be shared
Escitalopram

Generic Name
escitalopram

Trade Name
Lexapro

Indication
major depressive disorder, anxiety disorder, PCD, PTSD, social phobia

Action
selectively inhibits reuptake of serotonin

Therapeutic Class
Antidepressant

Pharmacologic Class
SSRI

Nursing Considerations
- contraindicated with MAOI
- may cause suicidal thoughts, insomnia, drowsiness, diarrhea, nausea, serotonin syndrome
- may cause QT prolongation with certain medications
- assess for sexual dysfunction
- may take 4-6 weeks for full affect to take place
Famotidine

Generic Name
famotidine

Trade Name
Pepcid

Indication
short term treatment of active ulcer, GERD, treatment of heartburn, indigestion, management of Zollinger Ellison syndrome, prevention of GI bleeding in critically ill patients, management of symptoms associated with overuse of NSAIDs

Action
blocks action of histamine located in gastric parietal cells, inhibits gastric acid secretion

Therapeutic Class
antiulcer agent

Pharmacologic Class
Histamine H2 antagonist

Nursing Considerations
- may cause arrythmias, agranulocytosis, aplastic anemias
- assess for abdominal pain and occult blood
- monitor CBC
- instruct pt to increase fluid and fiber intake to prevent constipation
Fentanyl

Generic Name
fentanyl

Trade Name
Sublimaze

Indication
supplement to general anesthesia, continuous IV infusion for purpose of analgesia

Action
binds to opiate receptors in CNS altering perception of pain, producing CNS depression

Therapeutic Class
Opioid Analgesic

Pharmacologic Class
opioid agonists

Nursing Considerations
- use caution with increased ICP, head trauma, adrenal insufficiency
- avoid use with MAOIs
- may cause apnea, laryngospasm, decreased respirations, bradycardia, hypotension
- do not consume grapefruit while taking this medication
- monitor hemodynamics during administration
- assess patient pain scale frequently
Ferrous sulfate

**Generic Name**
ferrous sulfate

**Trade Name**
Feosol

**Indication**
prevention and treatment of iron-deficiency anemia

**Action**
Iron is essential for hemoglobin, myoglobin and enzymes, it is transported to organs where it becomes part of iron stores

**Therapeutic Class**
antianemics

**Pharmacologic Class**
iron supplements

**Nursing Considerations**
- may cause seizures, hypotension, constipation, epigastric pain, diarrhea, skin staining, anaphylaxis
- assess nutritional status, bowel function
- monitor hemoglobin, hematocrit, iron levels
- may cause elevated liver enzymes
- take on an empty stomach to increase absorption/vitamin c helps with absorption
- use z-track for IM injections
Fluoxetine

Generic Name
fluoxetine

Trade Name
Prozac

Indication
depressive disorder, OCD, bulimia, panic disorder, bipolar, anorexia, ADHD, DM neuropathy, obesity

Action
inhibits reuptake of serotonin

Therapeutic Class
Antidepressant

Pharmacologic Class
SSRI

Nursing Considerations

- do not use while taking MAOIs
- may cause suicidal thoughts, drowsiness, anxiety, sexual dysfunction, insomnia, palpitations
- monitor closely for serotonin syndrome
- concurrent use with certain medications may lead to QT prolongation
- monitor mood changes and assess for suicidal ideation
- monitor nutrition status
- may cause elevated liver enzymes
- instruct pt to maintain good oral hygiene
Fluticasone

**Generic Name**
Fluticasone

**Trade Name**
Flovent

**Indication**
prophylactic asthma treatment

**Action**
locally acting anti-inflammatory

**Therapeutic Class**
antiasthmatics, anti-inflammatory (steroid)

**Pharmacologic Class**
Corticosteroids, Inhalation

**Nursing Considerations**
- use cautiously with untreated infections and suppressed immune function
- may cause headache, insomnia, bronchospasm, nasal congestion, adrenal suppression
- monitor patient's respiratory status
- may lead to decreased bone density
- instruct patients using corticosteroids and bronchodilators that they need to use bronchodilators first.
- instruct patient to stop smoking
Furosemide

Generic Name
Furosemide

Trade Name
Lasix

Indication
edema, hypertension

Action
prevents reabsorption of sodium and chloride in the kidneys, increase excretion of water, sodium, chloride, magnesium, potassium.

Therapeutic Class
Diuretics

Pharmacologic Class
loop diuretics

Nursing Considerations

- use caution with liver disease
- may cause hypotension, dry mouth, excessive urination, dehydration, electrolyte abnormalities, metabolic alkalosis
- hypokalemia may lead to increase risk of digoxin toxicity
- monitor renal panel
- use caution with other anithypertensives
- causes arthritic symptoms/do not administer with aminoglycosides due to ototoxicity
Gabapentine

Generic Name

gabapentine

Trade Name

Neurontin

Indication

seizures, peripheral neuropathy, neuropathic pain, prevention of migraines

Action

exact method of action unknown

Therapeutic Class

analgesic adjuncts, therapeutic, anticonvulsants, mood stabilizers

Pharmacologic Class

none

Nursing Considerations

- may cause suicidal thoughts, confusion, depression, drowsiness, ataxia, facial edema, hypertension
- monitor pt closely for changes in behavior and depression
- assess seizure activity
- assess pain level
- patient should take medications exactly as prescribed
**Gentamicin**

**Generic Name**
gentamicin

**Trade Name**
cidomycin

**Indication**
Treatment of gram negative infections when penicillin is ineffective

**Action**
Inhibits bacterial protein synthesis

**Therapeutic Class**
anti-infectives

**Pharmacologic Class**
Aminoglycoside

**Nursing Considerations**
- causes tinnitus-hearing loss/do not administer with penicillin
- use caution in renal impairment
- assess for infection
- obtain cultures prior to therapy
- monitor liver function tests
- monitor blood levels of drug
**Glipizide**

**Generic Name**
glipizide

**Trade Name**
Glucotrol

**Indication**
type 2 diabetes mellitus

**Action**
stimulates release and sensitivity to insulin to lower blood glucose

**Therapeutic Class**
anti-diabetic

**Pharmacologic Class**
sulfonylureas

**Nursing Considerations**

- may cause aplastic anemias, hypoglycemia, photosensitivity, dizziness, drowsiness, headache, diarrhea
- monitor CBC, assess for allergy to sulfonamides
- beta blockers may create signs of hypoglycemia
- instruct patient on how to check blood sugars and
- instruct patient on importance of carrying source of sugar in case of hypoglycemia
Glucagon

Generic Name

glucagon

Trade Name

GlucaGen

Indication

Severe hypoglycemia, antidote for Beta Blockers and calcium channel blockers

Action

Stimulates production of glucose, relaxes Gi tract,

Therapeutic Class

hormones

Pharmacologic Class

pancreatics

Nursing Considerations

- may cause anaphylaxis
- may cause hypotension
- assess for signs of hypoglycemia, neuro status
- monitor serum glucose levels
- teach patient signs of hypoglycemia
Guaifenesin

Generic Name

Guaifenesin

Trade Name

Robitussin

Indication

Cough suppression, expectorant

Action

Decreases viscosity of and mobilizes secretions

Therapeutic Class

allergy, cold and cough remedies, expectorant

Pharmacologic Class

none

Nursing Considerations

- patient should avoid over the counter cold medications
- assess lung sounds
- maintain adequate fluid intake
Haloperidol

Generic Name
haloperidol

Trade Name
Haldol

Indication
Schizophrenia, mania, aggressive and agitated patient

Action
Alters the effect of dopamine

Therapeutic Class
Antipsychotic

Pharmacologic Class
butyrophenones

Nursing Considerations

- extrapyramidal symptoms
- use caution in QT prolongation
- may cause seizures, constipation, dry mouth, agranulosytosis
- assess for hallucinations
- monitor hemodynamics
- monitor for neuroleptic malignant syndrome
- monitor CBC with differential
Heparin

**Generic Name**

heparin

**Trade Name**

Hep-Lock

**Indication**

Venous thromboembolism prophylaxis and treatment, low dose used to ensure patency of IV catheters

**Action**

increases the inhibitory effect of antithrombin on factor Xa

**Therapeutic Class**

anticoagulant

**Pharmacologic Class**

antithrombotic

**Nursing Considerations**

- monitor for signs of bleeding
- monitor platelet count
- may cause hyperkalemia
- have patient report any signs of bleeding
Hydralazine

Generic Name
hydralazine

Trade Name
Apresoline

Indication
hypertension

Action
arterial vasodilator

Therapeutic Class
anti-hypertensive

Pharmacologic Class
vasodilator

Nursing Considerations

- may cause tachycardia, sodium retention, arrhythmias, angina
- use caution with MAOIs
- monitor blood pressure
- instruct patient on how to take blood pressure
Hydrochlorothiazide

Generic Name

hydrochlorothiazide

Trade Name

HydroDiuril

Indication

Hypertension, CHF, renal dysfunction, cirrhosis, glucocorticoid therapy

Action

Increases sodium and water excretion produces arterial dilation

Therapeutic Class

antihypertensives, diuretics

Pharmacologic Class

thiazide diuretics

Nursing Considerations

- May cause dizziness, hypokalemia, hyponatremia, hypophosphatemia, hypomagnesemia, dehydration
- Hypokalemia can increase risk for digoxin toxicity
- Monitor blood pressure and intake and output
- Monitor electrolyte levels
- Patient should take medication at the same time each day even if feeling better
- Instruct patient on how to take blood pressure
Hydrocodone/Acetaminophen

**Generic Name**
hydrocodone/acetaminophen

**Trade Name**
Norco

**Indication**
management of moderate to severe pain

**Action**
alters the perception and reaction to pain by binding to opiate receptors in the CNS, also suppresses the cough reflex

**Therapeutic Class**
opioid Analgesic, allergy, cold and cough remedies, antitussive

**Pharmacologic Class**
opioid agonists, nonopioid analgesic combinations

**Nursing Considerations**
- use caution with concurrent use of MAOI - avoid use within 14 days of each other
- hypotension - monitor hemodynamics and respirations after administering
- may increase ICP use caution with head trauma
- Narcan is the antidote for overdose
- do not exceed 4g of acetaminophen per day
Hydromorphone

Generic Name
hydromorphone

Trade Name
Dilaudid

Indication
moderate to severe pain

Action
alters the perception and reaction to pain by binding to opiate receptors in the CNS, also suppresses the cough reflex

Therapeutic Class
Opioid Analgesic, allergy, cold and cough remedies, antitussive

Pharmacologic Class
opioid agonist

Nursing Considerations

- Assess BP, respirations, and pulse before and during administration - medication causes general CNS depression
- Narcan is the antidote for overdose
- use caution with concurrent use of MAOI - avoid use within 14 days of each other
- may be used as an antitussive
- advised to dilute with NS prior to administration and to administer slowly to decrease CNS depression
**Ibuprofen**

**Generic Name**

ibuprofen

**Trade Name**

Advil / Motrin

**Indication**

Mild to moderate pain, inflammatory states

**Action**

 Decreases pain and inflammation by inhibiting prostaglandins

**Therapeutic Class**

antipyretics, antirheumatics, nonopioid analgesics, nonsteroidal anti-inflammatory agents

**Pharmacologic Class**

nonopioid analgesics

**Nursing Considerations**

- may cause GI bleeding, hepatitis, Stevens-Johnson Syndrome
- may cause anaphylaxis
- monitor for headache, nausea, vomiting, constipation
- therapy should be discontinued after first sign of rash
- monitor renal and liver labs
- patient should avoid using alcohol
Indomethacin

Generic Name
indomethacin

Trade Name
Indocin

Indication
Inflammatory disorders when patients do not respond to other medications

Action
Decreases pain and inflammation by inhibiting prostaglandin synthesis

Therapeutic Class
antirheumatics, ductus arteriosus patency adjuncts (IV only), nonsteroidal anti-inflammatory agents

Pharmacologic Class
none

Nursing Considerations

- Monitor for hepatitis and GI bleeding
- Monitor for dizziness, drowsiness, and headache
- Assess for anaphylactic reaction
- Aspirin may decrease effectiveness
- Monitor renal labs
- Shake suspension before administration
- Patient should wear sunscreen and protective clothing to protect against photosensitivity
Insulin- short acting

Generic Name
regular

Trade Name
Humulin R/Novolin R

Indication
hyperglycemia with diabetes type 1 and 2, diabetic ketoacidosis

Action
stimulates uptake of glucose into muscle and fat cells, inhibits production of glucose in the liver, prevents breakdown of fat and protein

<table>
<thead>
<tr>
<th>Route</th>
<th>Onset</th>
<th>Peak</th>
<th>Duration</th>
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<tbody>
<tr>
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<td>30-45 min</td>
<td>1.5-2.5h</td>
<td>4.5-6h</td>
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Therapeutic Class
antidiabetics, hormones

Pharmacologic Class
pancreatics

Nursing Considerations
- assess for symptoms of hypoglycemia or hyperglycemia
- monitor body weight over time
- may cause decreased inorganic phosphates, potassium, and magnesium
- monitor blood sugars every 6 hours, monitor A1C every 3-6 months
Insulin- intermediate acting

Generic Name
NPH

Trade Name
Humulin N, Novolin N

Indication
hyperglycemia with diabetes type 1 and 2, diabetic ketoacidosis

Action
stimulates uptake of glucose into muscle and fat cells, inhibits production of glucose in the liver, prevents breakdown of fat and protein

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<th>Route</th>
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<th>Duration</th>
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<tbody>
<tr>
<td>Subcutaneous</td>
<td>1-2 hr</td>
<td>4-12 hr</td>
<td>18-24 hr</td>
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</table>

Therapeutic Class
antidiabetics, hormones

Pharmacologic Class
pancreatics

Nursing Considerations

- assess for symptoms of hypoglycemia or hyperglycemia
- monitor body weight over time
- may cause decreased inorganic phosphates, potassium, and magnesium
- monitor blood sugars every 6 hours, monitor A1C every 3-6 months
Insulin- long acting

Generic Name
detemir, glargine

Trade Name
Levemir, Lantus

Indication
hyperglycemia with diabetes type 1 and 2, diabetic ketoacidosis

Action
stimulates uptake of glucose into muscle and fat cells, inhibits production of glucose in the liver, prevents breakdown of fat and protein

<table>
<thead>
<tr>
<th>Route</th>
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<th>Peak</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Detemir</td>
<td>3-4 hr</td>
<td>3-14 hr</td>
<td>24 hr</td>
</tr>
<tr>
<td>Glargine</td>
<td>3-4 hr</td>
<td>none</td>
<td>24 hr</td>
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</table>

Therapeutic Class
antidiabetics, hormones

Pharmacologic Class
pancreatics

Nursing Considerations
- assess for symptoms of hypoglycemia or hyperglycemia
- monitor body weight over time
- may cause decreased inorganic phosphates, potassium, and magnesium
- monitor blood sugars every 6 hours, monitor A1C every 3-6 months
Insulin - rapid acting

Generic Name
aspart, lispro, glulisine

Trade Name
novolog, humalog, apidra

Indication
hyperglycemia with diabetes type 1 and 2, diabetic ketoacidosis

Action
stimulates uptake of glucose into muscle and fat cells, inhibits production of glucose in the liver, prevents breakdown of fat and protein

<table>
<thead>
<tr>
<th>Route</th>
<th>Onset</th>
<th>Peak</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Aspart</td>
<td>10-20 min</td>
<td>1-3 hr</td>
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<tr>
<td>Glulisine</td>
<td>15 min</td>
<td>1 hr</td>
<td>2-4 hr</td>
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<tr>
<td>Lispro</td>
<td>15 min</td>
<td>1-1.5 hr</td>
<td>3-4 hr</td>
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</table>

Therapeutic Class
antidiabetics, hormones

Pharmacologic Class
pancreatics

Nursing Considerations
- assess for symptoms of hypoglycemia or hyperglycemia
- monitor body weight over time
- may cause decreased inorganic phosphates, potassium, and magnesium
- monitor blood sugars every 6 hours, monitor A1C every 3-6 months

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Nursing School Shouldn't be so DAMN Hard!
**Insulin-mixtures**

**Generic Name**

Lispro mixture, Aspart mixture, NPH/regular

**Trade Name**

Humalog Mix, NovoLog Mix, Humulin 70/30, Novolin 70/30

**Indication**

hyperglycemia with diabetes type 1 and 2, diabetic ketoacidosis

**Action**

stimulates uptake of glucose into muscle and fat cells, inhibits production of glucose in the liver, prevents breakdown of fat and protein

<table>
<thead>
<tr>
<th>Route</th>
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<th>Duration</th>
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<td>Lispro mix</td>
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<td>24 hr</td>
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<tr>
<td>Aspart mix</td>
<td>15 min</td>
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<td>18-24 hr</td>
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<tr>
<td>NPH regular</td>
<td>30 min</td>
<td>4-8 hr</td>
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</table>

**Therapeutic Class**

antidiabetics, hormones

**Pharmacologic Class**

pancreatics

**Nursing Considerations**

- assess for symptoms of hypoglycemia or hyperglycemia
- monitor body weight over time
- may cause decreased inorganic phosphates, potassium, and magnesium
- monitor blood sugars every 6 hours, monitor A1C every 3-6 months
Iodine

Generic Name
radioactive iodine

Trade Name
none

Indication
thyroidectomy pretreatment, thyrotoxic crisis, radiation exposure

Action
inhibits the release of thyroid hormones

Therapeutic Class
Antithyroid Agent, control of hyperthyroidism

Pharmacologic Class
none

Nursing Considerations
- may cause GI bleeding, diarrhea, hypothyroidism, goiter
- monitor for hypersensitivity
Isoniazide

Generic Name
isoniazide

Trade Name
INH

Indication
tuberculosis

Action
Inhibits synthesis of mycobacterial cell wall

Therapeutic Class
Antitubercular

Pharmacologic Class
none

Nursing Considerations
- can cause jaundice
- may cause peripheral neuropathy, seizures, hepatitis
- patient should avoid high amounts of tyramine (pickled meats, aged/smoked meats, alcohol, exotic/aged cheese)
- monitor liver function tests
- complete full course of therapy (6-12 months)
- often used in combination with Rifampin
Ketorolac

Generic Name
ketorolac

Trade Name
Toradol

Indication
pain

Action
Pain relief due to prostaglandin inhibition

Therapeutic Class
nonsteroidal anti-inflammatory agents, nonopioid analgesics

Pharmacologic Class
pyrroziline carboxylic acid

Nursing Considerations
- may cause GI bleeding, Stevens-Johnson Syndrome, anaphylaxis, drowsiness
- should not exceed 5 days of therapy
- bleeding risk increased with garlic, ginger, and ginkgo
- may decrease effectiveness of hypertensive medications and diuretics
Lactulose

Generic Name
lactulose

Trade Name
Kristalose

Indication
Constipation, portal-systemic encephalopathy

Action
Draws water into the stool and softens stool, inhibits ammonia passing into the colon

Therapeutic Class
laxative

Pharmacologic Class
osmotic

Nursing Considerations
- use caution with DM
- may cause cramps, abdominal distention, hyperglycemia
- assess mental status, ammonia levels, abdominal distention
- patient should average 2-3 bowel movements per day
Lamotrigine

Generic Name
lamotrigine

Trade Name
Lamictal

Indication
Seizures r/t epilepsy, bipolar

Action
Inhibits sodium transport in neurons

Therapeutic Class
anticonvulsant

Nursing Considerations

- May cause suicidal thoughts, dizziness, behavior changes, nausea, vomiting, photosensitivity, rash, Stevens-Johnson Syndrome
- Use caution with oral contraceptive use
- Assess mental status
- Assess for seizures
- Do not discontinue use abruptly
Levetiracetam

Generic Name
levetiracetam

Trade Name
Keppra

Indication
Seizures

Action
Decreases severity and incidence of seizures

Therapeutic Class
anticonvulsants

Pharmacologic Class
pyrrolidines

Nursing Considerations

- May cause suicidal thoughts, dizziness, weakness
- May alter RBC, WBC, and liver function
- May cause somnolence
- Should be infused over 15 minutes
Levofloxacin

Generic Name
levofloxacin

Trade Name
Levaquin

Indication
urinary tract infections, gonorrhea, respiratory tract infections, bronchitis, pneumonia, skin and bone infections

Action
Inhibits DNA synthesis in bacteria

Therapeutic Class
Anti-infective

Pharmacologic Class
fluoroquinolone

Nursing Considerations
- contraindicated in allergies
- may cause QT prolongation, avoid use with other drugs that can cause QT prolongation
- can cause seizures, arrhythmias, pseudomembranous colitis, anaphylaxis, Stevens Johnson syndrome
- may decreased of phenytoin
- monitor renal panel
- assess for infection, obtain cultures prior to therapy
- monitor liver function tests
Levothyroxine

Generic Name
levothyroxine

Trade Name
Levothroid

Indication
thyroid hormone replacement in hypothyroidism

Action
replaces thyroid hormone increasing metabolism, promotes gluconeogenesis, stimulates protein synthesis, restores normal hormone balance and suppresses thyroid cancer

Therapeutic Class
hormone

Pharmacologic Class
thyroid preparations

Nursing Considerations
- assess pulse and monitor for tachyarrhythmias and chest pain
- monitor TSH levels
- overdose is presented as hyperthyroidism
- start with low doses and increase as indicated
- therapy is lifelong
- take directly after breast feeding
- increases the effects of warfarin
Lisinopril

Generic Name
lisinopril

Trade Name
Prinivil

Indication
hypertension, management of CHF

Action
block conversion of angiotensin I to angiotensin II, increases renin levels and decreases aldosterone leading to vasodilation

Therapeutic Class
antihypertensives

Pharmacologic Class
ACE Inhibitor

Nursing Considerations
- Dry cough
- 1st dose hypotension
- use cautiously with potassium supplements and potassium sparing diuretics.
- use cautiously with diuretic therapy
- administer 1 hour before meals
- monitor blood pressure often
- monitor weight and fluid status
- monitor renal profile
- monitor liver function tests
Lithium

**Generic Name**
lithium

**Trade Name**
Lithizine

**Indication**
mania

**Action**
alters cation transport and neurotransmitter reuptake

**Therapeutic Class**
Mood Stabilizer

**Pharmacologic Class**
none

**Nursing Considerations**

- do not administer with NSAIDs
- monitor drug blood levels frequently
- may cause seizures, arrhythmias, fatigue, confusion, nausea, anorexia, hypothyroidism, tremors
- Ace Inhibitors may increase serum levels
- instruct patient to maintain adequate fluid intake
- therapeutic level: 0.5-1.5 mEq/L
Loperamide

Generic Name
loperamide

Trade Name
Imodium

Indication
acute diarrhea, decrease drainage post ileostomy

Action
inhibits peristalsis, reduces the volume of feces while increasing the bulk and viscosity

Therapeutic Class
antidiarrheal

Nursing Considerations

- may lead to constipation - insure proper use
- assess bowel function
- assess fluid and electrolyte levels
Lorazepam

Generic Name
lorazepam

Trade Name
Ativan

Indication
anxiety, sedation, seizures

Action
general CNS depression

Therapeutic Class
anesthetic adjuncts, antianxiety agents, sedative hypnotics

Pharmacologic Class
Benzodiazepine

Nursing Considerations
- use caution with COPD and sleep apnea
- avoid alcohol use
- antidote is Flumazenil (Romazicon)
- may cause apnea, cardiac arrest, bradycardia, hypotension
- use caution with other CNS depressants
- administer slowly and dilute to decrease complications
Losartan

Generic Name
Losartan

Trade Name
Cozaar

Indication
hypertension, DM neuropathy, CHF

Action
inhibits vasoconstrictive properties of angiotensin II

Therapeutic Class
antihypertensives

Pharmacologic Class
angiotensin II receptor antagonist

Nursing Considerations

• may cause hypotension, tachycardia, angiodema, hyperkalemia
• may increase digoxin levels
• assess blood pressure and heart rate
• assess fluid levels
• monitor daily weights with CHF
• monitor renal and liver
• instruct patient on how to take blood pressure
Magnesium sulfate

Generic Name
magnesium sulfate

Trade Name
MgSO4

Indication
treatment of hypomagnesaemia, hypertension, preterm labor, torsade de pointes, asthma, anticonvulsant with eclampsia

Action
magnesium plays a role in muscle excitability

Therapeutic Class
mineral and electrolyte replacements/supplements

Pharmacologic Class
minerals/electrolytes

Nursing Considerations

- use caution with renal insufficiency
- may cause decreased respiratory rate, arrythmias, hypotension, muscle weakness
- monitor EKG and respiratory status
- monitor Mg levels
- ensure dosage with secondary practitioner
- Calcium gluconate is the antidote
  - Magnesium toxicity results in respiratory depress and loss of deep tendon reflexes
Mannitol

**Generic Name**
mannitol

**Trade Name**
Osmitrol

**Indication**
increased ICP, oliguric renal failure, edema, intraocular pressure

**Action**
inhibits reabsorption of water and electrolytes by increasing osmotic pressure, excreted by kidneys

**Therapeutic Class**
diuretic

**Pharmacologic Class**
osmotic diuretic

**Nursing Considerations**
- may cause phlebitis at IV site
- may cause dehydration, fluid and electrolyte imbalances
- monitor neuro status
- administer via a filter
Meperidine

Generic Name
meperidine

Trade Name
Demerol

Indication
moderate to severe pain, sedation

Action
Binds to opiate receptors in the CNS and alters perception of pain while producing a general depression of the CNS.

Therapeutic Class
Opioid Analgesic

Pharmacologic Class
opioid agonists

Nursing Considerations
- may cause alterations in mentation, hypotension, constipation, nausea, vomiting
- assess BP, pulse, and respiratory rate prior to administration and frequently during administration
- use caution if patient is receiving MAOIs
- Narcan (naloxone) is the antidote for opioid agonists
- can cause seizure
- may increase pancreatic enzyme levels
- assess bowel function
Metformin

Generic Name

metformin

Trade Name

Glucophage

Indication

management of Type II DM, PCOS

Action

decreases glucose production in the liver, decreases absorption, increases cellular insulin sensitivity.

Therapeutic Class

Antidiabetic

Pharmacologic Class

Biguanide

Nursing Considerations

- do not use with renal dysfunction, metabolic acidosis
- may cause diarrhea, nausea, vomiting, lactic acidosis
- monitor patient closely for ketoacidosis and lactic acidosis, discontinue medication immediately if acidotic
- may cause metallic taste
- instruct patient that medication does not cure diabetes
Methadone

**Generic Name**
methadone

**Trade Name**
Mathadose

**Indication**
withdrawal symptoms, pain

**Action**
Binds to opiate receptors in the CNS and alters perception of pain while producing a general depression of the CNS. Suppresses withdrawal symptoms. This depression also causes a decrease in the cough reflex and GI motility.

**Therapeutic Class**
opioid analgesic

**Pharmacologic Class**
opioid agonist

**Nursing Considerations**
- use caution if patient is receiving MAO Inhibitors
- may cause QT prolongation, hypotension, respiratory depression, dependence, confusion, sedation
- assess pain, vital signs, bowel function
- may increase pancreatic enzyme levels
- assess withdrawal symptoms
Methylergonovine

Generic Name
methylergonovine

Trade Name
Methergine

Indication
treatment of post-partum hemorrhage

Action
stimulates uterine muscles causing uterine contraction

Therapeutic Class
oxytocic

Pharmacologic Class
ergot alkaloids

Nursing Considerations
  • can cause hypertension, cramps, nausea, vomiting, dyspnea
  • monitor BP, heart rate, uterine response
  • assess calcium levels - effectiveness ↓ with hypocalcemia
  • monitor uterine bleeding and notify physician of any changes
Methylphenidate

Generic Name
methylphenidate

Trade Name
Ritalin

Indication
ADHD, narcolepsy

Action
improves attention span in ADHD by producing CNS stimulation

Therapeutic Class
central nervous system stimulant

Pharmacologic Class
none

Nursing Considerations
- can cause sudden death, hypertension, palpitations, anorexia, hyperactivity, insomnia
- may decrease effects of Warfarin and Phenytoin
- do not use with MAOIs
- monitor cardiovascular system
- monitor for behavioral changes
- monitor for dependence
- do not consume caffeinated beverages

"Drug Holiday" used to assess dependence and status
Methylprednisone

Generic Name

methylprednisone

Trade Name

Solu-medrol

Indication

Inflammation, allergy, autoimmune disorders, prevent organ rejection

Action

suppress inflammation and normal immune response, the adrenal glands sit on top of the kidneys. The adrenal glands excrete steroid hormones that play a role in increasing blood sugars, immune suppression, and metabolism of fat, protein, and carbohydrates, as well as decreasing bone formation.

Therapeutic Class

antiasthmatics, corticosteroids

Pharmacologic Class

corticosteroids

Nursing Considerations

- Excreted by the liver - monitor liver profile
- Avoid in active untreated infections
- may cause CNS alterations
- may cause peptic ulcers
- may cause Cushingoid appearance (buffalo hump, moon face)
- Weight gain
- Osteoporosis
- Decrease wound healing
- May elevate blood sugars
- May increase cholesterol and lipid values
- depress immune system/report signs of infection (sore throat)
- avoid grapefruit juice
Metoclopramide

Generic Name

metoclopramide

Trade Name

Reglan

Indication

prevention of nausea, vomiting, hiccups, migraines, gastric stasis

Action

accelerates gastric emptying by stimulating motility

Therapeutic Class

antiemetic

Pharmacologic Class

none

Nursing Considerations

- don’t use with GI obstruction
- may cause extrapyramidal reaction, neurolyptic malignant syndrome, tardive dyskinesia, arrhythmias, blood pressure alterations, hematologic alterations, facial movements, sedation
- can decrease effects of levodopa
- assess nausea/vomiting
- monitor liver function tests
**Metoprolol**

**Generic Name**

metoprolol

**Trade Name**

Lopressor

**Indication**

tachyarrhythmias, HTN, angina, prevention of MI, heart failure management, may be used for migraine prophylaxis

**Action**

blocks the stimulation of beta\(_1\) receptors in the SNS with does not usually effect on beta\(_2\) receptors (cardioselective)

**Therapeutic Class**

antianginal, antihypertensive

**Pharmacologic Class**

beta blocker

**Nursing Considerations**

- monitor hemodynamics
- may lead to bradycardia, pulmonary edema
- use caution with MAOIs
- assess I&Os and monitor for signs of CHF
**Metronidazole**

**Generic Name**

metronidazole

**Trade Name**

Flagyl

**Indication**

intra-abdominal infections, gynecological infections, skin infections, bone and joint infections, CNS infections, septicemia, endocarditis, amebic liver abscess, peptic ulcer disease

**Action**

Inhibits DNA and protein synthesis in bacteria, bactericidal

**Therapeutic Class**

anti-infectives, antiprotozoals, antiulcer agents

**Pharmacologic Class**

none

**Nursing Considerations**

- do not take with alcohol-disulfiram reaction
- assess for infection before and during treatment
- obtain cultures before therapy
- monitor neurologic status: parasthesia, weakness, ataxia, or seizures
- monitor intake and output, daily weights
- may alter liver enzyme tests
Midazolam

Generic Name
midazolam

Trade Name
Versed

Indication
sedation, conscious sedation, anesthesia, status epilepticus

Action
Acts to produce CNS depression, may be mediated by GABA.

Therapeutic Class
Antianxiety agent, sedative/hypnotics

Pharmacologic Class
Benzodiazepine

Nursing Considerations
- assess level of sedation during and for 2-6 hours following
- monitor blood pressure, pulse, respirations during IV administration
- The antidote for overdose is flumazenil
Montelukast

Generic Name
montelukast

Trade Name
Singulair

Indication
prevent or treat asthma, manage seasonal allergies, prevent exercise-induced bronchoconstriction

Action
disrupts the effects of leukotrienes which effect airway edema, smooth muscle constriction, and cellular activity.

Therapeutic Class
allergy, cold, and cough remedies, bronchodilators

Pharmacologic Class
Leukotriene Antagonist

Nursing Considerations
- assess respiratory status
- assess liver function tests
- medication does not treat acute asthma attacks
Morphine

**Generic Name**
morphine

**Trade Name**
MS Contin

**Indication**
pain, pulmonary edema, MI

**Action**

Binds to opiate receptors in the CNS and alters perception of pain while producing a general depression of the CNS. This depression also causes a decrease in the cough reflex and GI motility.

**Therapeutic Class**

opioid analgesic

**Pharmacologic Class**

opioid agonist

**Nursing Considerations**

- may cause alterations in mentation, hypotension, constipation, nausea, vomiting
- assess BP, pulse, and respiratory rate prior to administration and frequently during administration
- use caution if patient is receiving MAO Inhibitors
- Narcan (naloxone) is the antidote for opioid agonists
Nalbuphine

Generic Name
nalbuphine

Trade Name
Nubain

Indication
pain, analgesia during labor, sedation before surgery, supplement to balance anesthesia

Action
alters perception and response to pain, causes CNS depression

Therapeutic Class
Opioid Analgesic

Pharmacologic Class
opioid agonists/analgesics

Nursing Considerations
- use caution with head trauma
- can cause dizziness, headache, nausea, vomiting, respiratory depression
- do not use with MAOIs
- assess pain
- assess hemodynamic parameters
- may elevate pancreatic enzymes
- narcan (naloxone) is the antidote
Naproxen

Generic Name

naproxen

Trade Name

Aleve

Indication

pain, dismenorrhea, fever, inflammation

Action

inhibits prostaglandin synthesis

Therapeutic Class

nonsteroidal anti-inflammatory agents, nonopioid analgesics, antipyretics

Pharmacologic Class

none

Nursing Considerations

- use caution with GI bleeding
- may increase risk for stroke and MI
- can cause GI bleeding, anaphylaxis, Steven's Johnson syndrome
- aspirin can decrease blood levels and effectiveness
- assess pain
- patients should remain up-right for 30 minutes after administration
Nifedipine

Generic Name
nifedipine

Trade Name
Procardia

Indication
hypertension, angina, migraines, CHF

Action
blocks calcium transport resulting in inhibition of contraction causing systemic vasodilation

Therapeutic Class
antianginals, antihypertensives

Pharmacologic Class
Ca Channel Blocker

Nursing Considerations
- use caution in heart block, decreased blood pressure
- don’t consume grapefruit juice while taking medication
- may cause arrhythmias
- may cause elevated liver function tests
- may cause gingival hyperplasia, Steven’s Johnson syndrome
- monitor blood pressure and pulse
- monitor calcium levels
- instruct patient on taking heart rate and blood pressure
Nitroprusside

Generic Name
nitroprusside

Trade Name
Nitropress

Indication
hypertensive crisis, cardiogenic shock

Action
peripheral vasodilation of arteries and veins decreasing preload and afterload

Therapeutic Class
antihypertensive

Pharmacologic Class
vasodilator

Nursing Considerations
- monitor HR, BP, and EKG continuously during therapy
- may cause cyanide toxicity
- sympathomimetics may decrease effectiveness
- PAOP monitoring may help with MI and CHF patients
Norepinephrine

Generic Name

norepinephrine

Trade Name

Levophed

Indication

treatment of severe hypotension and shock

Action

increase blood pressure and cardiac output by stimulating alpha-adrenergic receptors in the blood vessels, demonstrates minor beta activity

Therapeutic Class

vasopressor

Nursing Considerations

- monitor BP continuously if possible or every couple of minutes
- double check all concentrations with additional nurse
- may result in rebound hypotension due to tissue ischemia when discontinued
- monitor EKG and CVP if possible
- if patient is awake instruct them to report headaches, dizziness, or chest pain
Nystatin

Generic Name
nystatin

Trade Name
Mycostatin

Indication
candidiasis, denture stomatitis

Action
causes leakage of fungal cell contents

Therapeutic Class
Antifungal

Pharmacologic Class
none

Nursing Considerations

- may cause diarrhea, nausea, vomiting
- can be used to soak dentures
- assess mucus membrane
Olanzapine

Generic Name
olanzapine

Trade Name
Zyprexa

Indication
schizophrenia, mania, depression, anorexia nervosa, nausea/vomiting related to chemotherapy

Action
antagonizes dopamine and serotonin

Therapeutic Class
Antipsychotic, mood stabilizers

Pharmacologic Class
thienobenzodiazepines

Nursing Considerations

- do not use while breastfeeding
- can cause neurolyptic malignant syndrome, seizures, suicidal thoughts, insomnia, tardive dyskinesia, agranulocytosis, constipation, tremors
- assess mental status
- monitor hemodynamics
- assess blood sugars
- assess intake and output
- monitor liver function tests
Omeprazole

Generic Name
omeprazole

Trade Name
Prilosec

Indication
GERD, ulcers, Zollinger-Ellison syndrome, reduce the risk of GI bleed in critically ill patients, heart burn

Action
prevents the transport of H ions into the gastric lumen by binding to gastric parietal cells, ↓ gastric acid production

Therapeutic Class
antiulcer agent

Pharmacologic Class
proton-pump inhibitor

Nursing Considerations

- take 30-60 minutes prior to eating
- capsules should be swallowed whole
- instruct patient to report black tarry stool
**Ondansetron**

**Generic Name**
ondansetron

**Trade Name**
Zofran

**Indication**
a nausea/vomiting

**Action**
blocks effects of serotonin on vagal nerve and CNS

**Therapeutic Class**
Antiemetic

**Pharmacologic Class**
5-HT3 antagonist

**Nursing Considerations**
- administer slowly over 2-5 minutes - fatal QT prolongation and VTach, respiratory arrest
- may cause headache, constipation, diarrhea, dry mouth
- assess nausea and vomiting
- assess for extrapyramidal symptoms
- monitor liver function tests
Oxycodone

Generic Name
oxycodone

Trade Name
Oxycontin

Indication
pain

Action
binds to opiate receptors in CNS altering the perception and sensation of pain

Therapeutic Class
Opioid Analgesic

Pharmacologic Class
opoid agonists, opioid agonists/nonopioid, analgesic combinations

Nursing Considerations
- may cause respiratory depression, constipation, confusion, sedation, hallucinations, urinary retention
- use caution with increased intracranial pressure
- don't use with MAOIs
- assess hemodynamics
- assess pain
- may elevate pancreatic enzymes
- can cause physical dependence
- assess bowel function
Oxytocin

Generic Name
oxytocin

Trade Name
Pitocin

Indication
labor induction, postpartum bleeding

Action
stimulates uterine smooth muscle

Therapeutic Class
hormones

Pharmacologic Class
oxytocics

Nursing Considerations
- can cause ICH in fetus
- can cause asphyxia in fetus
- may cause coma and seizures in mother
- may cause painful contractions
- assess fetus
- assess contractions
- monitor blood pressure
- assess maternal electrolytes
- may cause uterine tetany
**Pancrelipase**

**Generic Name**

pancrelipase

**Trade Name**

Creon

**Indication**

pancreatic insufficiency, ductal obstruction

**Action**

replacement of pancreatic enzymes: lipase, amylase, protease

**Therapeutic Class**

digestive agent

**Pharmacologic Class**

pancreatic enzyme

**Nursing Considerations**

- contraindicated with pig products allergy
- can cause shortness of breath, nausea, diarrhea, rash
- assess nutritional status
- monitor for steatorrhea
- may increase uric acid levels
- instruct patient to follow diet
- take with meals and snacks
Pantoprazole

Generic Name

pantoprazole

Trade Name

Protonix

Indication

GERD, heartburn, reduce the risk of GI bleed in critically ill patients

Action

prevents the transport of H ions into the gastric lumen by binding to gastric parietal cells, ↓ gastric acid production

Therapeutic Class

antiulcer agents

Pharmacologic Class

proton-pump inhibitors

Nursing Considerations

- can cause hyperglycemia, abdominal pain
- decreases absorption of certain drugs
- may increase bleeding with warfarin
- assess for occult blood
- assess liver enzymes
- assess symptoms of heart burn
Paroxetine

**Generic Name**
paroxetine

**Trade Name**
Paxil

**Indication**
major depressive disorder, OCD, anxiety, PTSD

**Action**
block reuptake of serotonin in CNS

**Therapeutic Class**
antianxiety agent, antidepressant

**Pharmacologic Class**
SSRI

**Nursing Considerations**
- do not use with MAOIs
- can cause neurolyptic malignant syndrome, suicidal thoughts, serotonin syndrome, constipation, diarrhea, insomnia
- decrease effectiveness of digoxin
- increase bleeding with warfarin
- assess for suicidal thoughts
Phenazopyridine

Generic Name
phenazopyridine

Trade Name
Pyridium

Indication
urological pain

Action
provides analgesia to the urinary tract mucosa

Therapeutic Class
nonopioid analgesics

Pharmacologic Class
urinary tract analgesics

Nursing Considerations

- will turn urine red or orange
- may cause headache, vertigo, hepatic toxicity
- monitor renal function
Phenytoin

Generic Name
phenytoin

Trade Name
Dilantin

Indication
tonic clonic seizures, arrhythmias, neuropathic pain

Action
interferes with ion transport, shortens action potentials and decreases automaticity. Blocks sustained high frequency repetitive firing of action potentials.

Therapeutic Class
antiarrhythmics, anticonvulsants

Pharmacologic Class
hydantoin

Nursing Considerations
- monitor serum phenytoin levels
- therapeutic levels 10-20 mcg/mL
- use cautiously in all patients
- can cause suicidal thoughts, ataxia, extrapyramidal symptoms, hypotension, tachycardia, arrhythmias, gingival hyperplasia, nausea, rash, drug induced hepatitis, agranulocytosis, Steven's Johnson syndrome
- concurrent administration of enteral feedings may decrease absorption
- monitor for hypersensitivity
- assess seizures
- assess hemodynamics
Procainamide

Generic Name

procainamide

Indication

wide variety ventricular and atrial arrhythmias, PAC, PVC, VTach, post cardioversion

Action

decreases excitability and slows conduction velocity

Therapeutic Class

antiarrhythmic (Class IA Na Channel Blocker)

Nursing Considerations

- may cause ventricular arrhythmias, seizure, asystole, heart block
- monitor EKG continuously may cause widening of QRS complex
- may cause hypotension keep patient supine
- monitor for signs of agranulocytosis monitor CBC frequently
- can cause drug induced lupus syndrome
**Promethazine**

**Generic Name**

promethazine

**Trade Name**

Promethacon

**Indication**

allergic reactions, nausea and vomiting, sedation

**Action**

blocks the effects of histamine, histamine plays a role in the immune response. Also plays an inhibitory role on the chemoreceptor trigger zone in the medulla leading to an antiemetic effect. Possess anticholinergic properties producing CNS depression.

**Therapeutic Class**

antiemetic, antihistamine, sedative/hypnotic

**Pharmacologic Class**

phenothiazine

**Nursing Considerations**

- IV administration may cause damage to tissue, hypertension, impaired liver function
- Monitor for neuroleptic malignant syndrome, confusion, sedation
- May cause CNS depression
- assess sedation level and anticholinergic effects
Propofol

Generic Name

propofol

Trade Name

Diprivan

Indication

anesthesia, induction, sedation,

Action

hypnotic, produces amnesia

Therapeutic Class

general anesthetic

Pharmacologic Class

none

Nursing Considerations

- use cautiously with CVD, lipid disorder, increased ICP
- can cause apnea, bradycardia, hypotension
- burning and pain at insertion site
- can turn urine green
- assess respiratory status and hemodynamics
- maintain patent airway
- assess level of sedation
Propranolol

Generic Name
propranolol

Trade Name
Inderal

Indication
hypertension, angina, arrhythmias, cardiomyopathy, alcohol withdrawal, anxiety

Action
blocks Beta 1&2 adrenergic receptors

Therapeutic Class
antianginal, antiarrhythmic (class II beta blockers), antihypertensive, headache suppressant

Pharmacologic Class
beta blocker

Nursing Considerations
- Contraindicated in CHF, pulmonary edema, cardiogenic shock, bradycardia, heart block
- monitor hemodynamic parameters (HR, BP)
- May cause bradycardia, CHF, pulmonary edema
- Masks symptoms associated with diabetes mellitus
- advise to change positions slowly to prevent orthostatic hypotension
- instruct patient on how to take blood pressure
- stopping abruptly may result in life threatening arrhythmias
- monitor daily intake and output
- advise patient to notify physician for difficulty breathing
Propylthiouracil

Generic Name
propylthiouracil

Trade Name
PTU

Indication
hyperthyroidism

Action
inhibits thyroid hormones

Therapeutic Class
Antithyroid Agent

Pharmacologic Class
none

Nursing Considerations

- hepatotoxicity, nausea, vomiting, agranulocytosis
- monitor symptoms of hyperthyroidism
- monitor for hypothyroidism
- monitor WBC and liver function tests
- weight patient frequently
- may cause leukopenia, thrombocytopenia, jaundice
- take with meals
Quetiapine

Generic Name
quetiapine

Trade Name
Seroquel

Indication
schizophrenia, depressive disorder, mania

Action
dopamine and serotonin antagonist

Therapeutic Class
Antipsychotic, mood stabilizers

Pharmacologic Class
none

Nursing Considerations

- may cause neurolytic malignant syndrome, seizures, dizziness, palpitations, weight gain, anorexia
- QT interval prolongation
- don't use with CNS depressants
- assess weight frequently
- monitor liver function test and CBC
- may increase cholesterol
Ranitidine

**Generic Name**
ranitidine

**Trade Name**
Zantac

**Indication**
duodenal ulcers, GERD, heartburn, esophagitis, GI bleed

**Action**
inhibits action of histamine in gastric parietal cells, decreases gastric acid secretion

**Therapeutic Class**
antiulcer agents

**Pharmacologic Class**
histamine H2 antagonists

**Nursing Considerations**

- may cause arrhythmias, agranulocytosis, aplastic anemia, confusion
- assess abdominal pain
- monitor for blood in stool
- monitor CBC
Rifampin

Generic Name
rifampin

Trade Name
Rimactane

Indication
tuberculosis

Action
inhibits RNA synthesis

Therapeutic Class
Antitubercular

Pharmacologic Class
rifamycins

Nursing Considerations

- can turn body fluids red
- may cause diarrhea, nausea, vomiting, confusion
- assess lung sounds and sputum characteristics
- evaluate renal and liver function tests
- instruct patient not to skip or double dose
- must complete entire dose (6-12 month therapy)
Salmeterol

Generic Name

salmeterol

Trade Name

Serevent

Indication

reversible airway obstruction, exercise induced asthma

Action

bronchodilation through stimulation of beta 2 adrenergic receptors

Therapeutic Class

bronchodilators

Pharmacologic Class

adrenergics

Nursing Considerations

- instruct patient to avoid excessive use
- can cause headache palpitations tachycardia, abdominal pain, paradoxical bronchospasm
- beta blockers and decrease effectiveness
- assess respiratory status
- may increase glucose levels
- always take bronchodilator first
Sertraline

Generic Name

sertraline

Trade Name

Zoloft

Indication

major depressive disorder, OCD, anxiety

Action

inhibits uptake of serotonin

Therapeutic Class

Antidepressant

Pharmacologic Class

SSRI

Nursing Considerations

- don't use with MAOIs
- can cause neurolyptic malignant syndrome, suicidal thoughts, drowsiness, insomnia, diarrhea, dry mouth, tremors, serotonin syndrome, sexual dysfunction
- monitor mood changes in patient
- takes 1-4 weeks for therapy to be effective.
Spironolactone

**Generic Name**
spironolactone

**Trade Name**
Aldactone

**Indication**
potassium loss, hypertension, edema, CHF

**Action**
inhibits sodium reabsorption while sparing potassium and hydrogen

**Therapeutic Class**
Diuretics

**Pharmacologic Class**
potassium sparing diuretics

**Nursing Considerations**
- contraindicated with hyperkalemia
- monitor intake and output
- monitor blood pressure
- monitor potassium levels and renal panel
Streptokinase

Generic Name

streptokinase

Trade Name

Streptase

Indication

pulmonary embolism, DVT, occluded lines, arterial thrombus

Action

converts plasminogen to plasmin which degrades fibrin clots

Therapeutic Class

Thrombolytic

Pharmacologic Class

plasminogen activators

Nursing Considerations

- contraindicated with active bleeding, hypersensitivity, bronchospasm, intracranial hemorrhage, hypotension
- begin therapy as soon as possible
- monitor vital signs continuously
- monitor closely for bleeding
- monitor hemodynamics
- avoid invasive procedures
**Sucralfate**

**Generic Name**

sucralfate

**Trade Name**

Carafate

**Indication**

management of GI ulcers, GI injury prevention from high dose aspirin and NSAID treatment

**Action**

reacts with gastric acid to form a paste that adheres to ulcer

**Therapeutic Class**

antiulcer agent

**Pharmacologic Class**

GI protectant

**Nursing Considerations**

- use caution in renal failure patients
- concurrent use of antacids may decrease the effect of sucralfate - administer 30 min before or after
- administer on empty stomach 1 hour before meals
Tertbutaline

Generic Name
terbutaline

Trade Name
Brethaire

Indication
asthma, COPD, preterm labor

Action
produces bronchodilation

Therapeutic Class
bronchodilators

Pharmacologic Class
adrenergics

Nursing Considerations

- may cause nervousness, restlessness, tremors
- beta blockers can reduce effect
- assess respiratory status
- monitor maternal/fetal vital signs if using for preterm labor
- monitor for hypoglycemia
- may cause decreased potassium level
**Tetracycline**

**Generic Name**
tetracycline

**Trade Name**
Doxycycline

**Indication**
treatment of infection, gonorrhea & syphilis with penicillin allergy, chronic bronchitis

**Action**
bacteriostatic by inhibiting protein synthesis

**Therapeutic Class**
anti-infectives

**Pharmacologic Class**
Tetracyclines

**Nursing Considerations**

- use caution with liver impairment
- may cause pseudomembranous colitis, diarrhea, nausea, vomiting, photosensitivity, rash
- may increase effects of warfarin
- assess for infection
- obtain culture prior to initiating therapy
- monitor renal and liver labs
- instruct patient to complete entire dose.
Trimethoprim/sulfamethoxazole

Generic Name
trimethoprim/sulfamethoxazole

Trade Name
Bactrim/TMP-SMZ

Indication
bronchitis, UTI, diarrhea, pneumonia, multiple types of infection

Action
bacteriicidal by preventing metabolism of folic acid

Therapeutic Class
anti-infectives, antiprotozoals

Pharmacologic Class
folate antagonists, sulfonamides

Nursing Considerations

- may cause renal damage, Steven Johnsons Syndrome - rash, pseudomembranous colitis, nausea, vomiting, diarrhea, rash, agranulocytosis, aplastic anemia, phlebitis
- contraindicated with sulfa allergies
- monitor CBC
- obtain cultures prior to initiating therapy
- monitor intake and output
- instruct patient to complete dose
- drink 8-10 glasses of water
Vancomycin

Generic Name
vancomycin

Trade Name
Vancocin

Indication
life threatening infections, sepsis

Action
bactericidal

Therapeutic Class
anti-infectives

Pharmacologic Class
none

Nursing Considerations
- can cause ototoxicity, nausea, vomiting, nephrotoxicity, anaphylaxis, red-man syndrome
- assess for infection
- obtain culture prior to initiating therapy
- monitor blood pressure
- dose dependent draw serum trough levels frequently
- administer over at least 60 minutes to avoid skin irritation
Vasopressin

Generic Name

vasopressin

Trade Name

Pitressin

Indication

management of diabetes insipidus, VT/VF unresponsive to initial shock, GI hemorrhage

Action

increases water permeability of the kidney’s collecting duct and distal convoluted tubule leading to water retention, also increases peripheral vascular resistance leading to increased BP

Therapeutic Class

hormone

Pharmacologic Class

antidiuretic hormone

Nursing Considerations

- use caution with HF and CV disease
- contraindicated in renal failure and hypersensitivity to pork
- monitor BP, HR, and EKG during therapy
- monitor urine specific gravity and osmolality
- weigh patient and assess for edema
- monitor electrolyte panel
- do not use with alcohol
Verapamil

Generic Name
verapamil

Trade Name
Isoptin

Indication
hypertension, angina, SVT, migraine

Action
prevents transport of calcium, leading to decreased contraction, decreases SA and AV node conduction

Therapeutic Class
antianginals, antiarrhythmic, antihypertensive, vascular headache suppressants

Pharmacologic Class
Ca Channel Blocker

Nursing Considerations
- don't use with 2nd and 3rd degree heartblock
- don't use with systolic BP < 90
- may cause anxiety, confusion, cough, dyspnea, arrhythmias, CHF, bradycardia, hypotension, elevated liver enzymes, Steven's Johnson syndrome, hyperglycemia, gingival hyperplasia
- grapefruit juice can increase effects
- can increase levels of digoxin
- monitor heart rhythm, intake and output, blood pressure
- assess angina
Warfarin

Generic Name

warfarin

Trade Name

Coumadin

Indication

venous thrombosis, pulmonary embolism, A-fib, myocardial infarction

Action

disrupts liver synthesis of Vitamin K dependent clotting factors

Therapeutic Class

Anticoagulant

Pharmacologic Class

coumarins

Nursing Considerations

- contraindicated with bleeding, severe hypertension
- can cause bleeding
- aspirin and NSAIDs can increase risk of bleeding
- azole antifungals increase effects of warfarin
- cimetidine(Tagamet) increases warfarin levels
- obtain full history of supplements and herbs
- large amounts of vitamin K may antagonize effects of warfarin
- assess for signs of bleeding
- therapeutic levels: PT 1.3-1.5, INR 2.5-3.5
- instruct patient to report any signs of bleeding
- patient should not drink alcohol
- bleeding times need to be monitored frequently
- vitamin K is antidote
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Common Medication Classes

**ACE Inhibitors**

Angiotensin-converting enzyme (ACE) inhibitors are a type of drug class most often used to lower blood pressure by relaxing blood vessels. ACE Inhibitors work by causing the body to block the production of a hormone known as angiotensin II by inhibiting the angiotensin-converting enzyme.

Angiotensin II, found naturally in the body, constricts blood vessels and releases a hormone that elevates blood pressure. The hormone also reduces the amount of water re-absorbed by the kidneys. These drugs also work in the body by decreasing the conversion of angiotensin I to angiotensin II, hence their name.

Decreasing levels of angiotensin II causes the blood vessels to dilate and for less water to be put back into the blood by the kidneys, reducing blood pressure. Some common ACE Inhibitors include: captopril, enalapril, fosinopril, imidapril, lisinopril, perindopril, ramipril, and trandolapril.

ACE Inhibitors are typically taken once a day and may be prescribed by a doctor for some of the following conditions: high blood pressure (hypertension), heart failure, kidney disease, diabetes, heart attacks, coronary artery disease, scleroderma, and migraines. Doctors may prescribe calcium channel blockers and diuretics in addition to drugs in this class. ACE inhibitors should not be taken by women that are pregnant or planning to become pregnant, as they can cause birth defects.

ACE Inhibitors are commonly prescribed by doctors because of their uncommon and mild side effects. Side effects may include: dry cough, increased blood potassium levels (hyperkalemia), fatigue, dizziness, headaches, rapid heartbeat, and fainting. In rare cases, particularly with those of African descent and tobacco users, use of ACE Inhibitors has been tied to angioedema, or swelling of the tissue. This can be life threatening if the tissues in the throat swell. Repeated use of NSAIDs (nonsteroidal anti-inflammatory drugs) such as Ibuprofen, Advil, and Motrin IB in addition to naproxen (Aleve) can decrease the effectiveness of ACE Inhibitors.

**Questions about ACE Inhibitors:**
1. What are some of the contraindications of the use of ACE Inhibitors?
2. How do ACE Inhibitors specifically work to lower blood pressure?
3. What are some potential side-effects that should be monitored in patients taking ACE Inhibitors?
Angiotension II Receptor Blockers

The cardiovascular system reacts in various ways to the natural Angiotensin II in the body. Angiotensin II is a potent chemical that causes contraction of muscles that surround blood vessels. Blood vessels narrow. The narrowing causes increased blood pressure. The heart is forced to work harder. Amounts of water and sodium caused by a hormone that Angiotensin II starts to release also cause increased blood pressure. Blood vessels and heart walls thicken and stiffen due to Angiotensin II.

How the Drug Works in the Body

Angiotensin II receptor blockers relax blood vessels. The heart pumps blood more effortlessly. As the blood vessels relax, blood pressure lowers. The use of Angiotensin II receptor blockers blocks the action of Angiotensin II. The blockers prevent binding to receptors on blood vessels. Blood vessels widen or dilate.

Listed here are conventional Angiotensin II receptor blockers and their trade names. The condition being treated and the health of the patient determine the best choice.

- Candesartan (Atacand)
- Irbesartan (Avapro)
- Olmesartan (Benicar)
- Losartan (Cozaar)
- Valsartan (Diovan)
- Azilsartan (Edarbi)
- Temisartan (Mecardis)
- Eprosartan (Teveten)

Indications for Use

Conditions that merit prescribing Angiotensin II receptor blockers include thickening and hardening of the skin, known as scleroderma. They are beneficial when prescribed for chronic kidney diseases, diabetic renal failure, heart failure and high blood pressure. Kidney disease progression due to diabetes or high blood pressure diminishes. Reduced risk of stroke or diabetes prevention is possible in high blood pressure patients. Patients who cannot tolerate ACE (angiotensin-converting-enzyme) inhibitors are often prescribed Angiotensin II receptor blockers because they produce similar effects.

Side Effects

Very few people suffer from Angiotensin II receptor blocker side effects. Those who do, report bouts of

- Diarrhea
- Leg and back pain
- Nasal congestion
- Lightheadedness
- Dizziness
- Headaches.
Some people taking Olmesartan reported sprue-like enteropathy that is an intestinal problem. Other rare, but serious, side effects are angioedema (localized tissue swelling), white blood cell drop, allergic reaction, liver failure, and kidney failure. Women planning a pregnancy, or are already pregnant should not take Angiotensin II receptor blockers. They are a possible cause of birth defects.

Questions:

When are Angiotensin II receptor blockers prescribed?
How do Angiotensin II receptor blockers work?
What are possible side effects of Angiotensin II receptor blockers?
**Antianginals**
Antianginals are used to manage the pain of angina. They act by either reducing the oxygen needs of the heart or by improving the oxygen flow to the heart, or both. There are three major classes of antianginals and three different types of angina.

Stable angina is caused by a partial occlusion of a coronary artery. Unstable angina is due to the rupture of an atherosclerotic plaque. Variant angina is due to vasospasm of coronary arteries.

**Beta-adrenoreceptor antagonists**
These drugs reduce the heart rate, which reduces the metabolic needs of the heart. They are used to prevent attacks of stable angina due to exertion. They block the beta receptors and keep the heart rate down below the point at which pain occurs.

Beta blockers are indicated as a first-line treatment for stable angina. They are often used in combination with calcium blockers. Beta blockers are contradicted in variant angina and in people with severe asthma. They should be used cautiously in diabetics because they can cause hypoglycemia.

**Organic nitrates**
These drugs are vasodilators that improve perfusion of the heart. They stimulate the endothelium-derived relaxing factor that dilates the veins and reduces pressure in the ventricles. Both of these mechanisms of action reduce oxygen requirements of the heart muscle.

Nitrates are taken both for immediate relief of painful stable angina attacks and as maintenance therapy to prevent future attacks. However, long-term maintenance nitrate use may cause increased oxidative stress and endothelial dysfunction and may not be safe.

**Calcium antagonists**
Calcium blockers, or antagonists, dilate blood vessels, improve heart efficiency and reduce the heart rate. Calcium blockers come in three different classes. Class I blockers have a strong negative inotropic effect. Class II blockers do not affect the conductivity or contractions of the heart. Class III blockers have no inotropic effects.

Calcium blockers are used to treat stable angina and variant angina. For treating stable angina, they can be used alone or in combination with beta blockers.

**Study Questions**
1. Which class of drug is used to abort angina attacks?
2. Which class of drug can cause hypoglycemia in diabetics?
3. Which two classes of drugs are often used together to treat stable angina?
Antidysrhythmics
Antidysrhythmic drugs are commonly used to treat dysrhythmias. A dysrhythmia is an abnormal heart beat, and these drugs can help to correct any abnormalities. There are four different classes of drugs that medical professionals should consider when administering the drugs. Here are some details of the four classes and the contraindications.

Classes of Antidysrhythmic

Class I:
Class I drugs are known for interacting with the sodium channels. This class is further subdivided into a, b, or c class.

Class II:
Class II drugs are beta-blockers and work by reducing the sympathetic nervous system stimulation associated with the heart. Impulses in the heart are also reduced or blocked with impulse and transmissions. They work by blocking the effects of catecholamines. If you need to treat supraventricular tachycardias, these drugs are particularly useful.

Class III:
Class III drugs increase the APD through the prolonging of repolarization. These drugs will block potassium channels, but will not affect the conduction velocity. The combination of these two actions will prevent any re-entrant arrhythmias. "Class III agents have the potential to prolong the QT interval of the EKG."

Class IV:
Class IV drugs inhibit the calcium channels by reducing the movement of calcium ions during action potentials. Cardiac action potential is shortened when the conduction through the AV node is decreased. Adrenergic control of heart rate and contractility is controlled through Class IV drugs, which include verapamil or diltiazem.

Adverse Effects
Some common reactions include nausea, diarrhea, vomiting, blurred vision, and headache. Even some antiarrhythmics are known for causing dysrhythmias. Drug toxicity is another adverse effect. Antidysrhythmic drugs involve circulation, CNS, and the heart.

Contraindications
All known drug allergies should be included in addition to cardiogenic shock, major ECG changes, sick sinus syndrome, and bundle branch block.
Interactions

Anticoagulant activity with warfarin is a strong potential with these types of drugs.

The Benefits of Antidysrhythmics are Far-Reaching

Antidysrhythmics are important to any medical professional treating patients with irregular heartbeats and other abnormalities associated with heart rhythms. When used properly the drugs are effective. Consider the use of antidysrhythmics to alleviate symptoms in patients who are experiencing related health conditions.
Antiemetics
Medications that help to control nausea and vomiting from a variety of illnesses and conditions are called antiemetics. These medications help to calm the sensations that lead to repeated vomiting and that can lead to fluid loss and severe dehydration. However, these drugs do not treat the underlying medical condition that is causing the nausea and vomiting. A number of different drug classes are used to control nausea and vomiting, including dopamine antagonists, anticholinergics, antihistamines and others.

How Antiemetic Medications Work
Nausea and vomiting are caused by stimulation of the vomiting center in the medulla of the brain. Each class of antiemetic drug works in a different way:

· **Anticholinergics** – These drugs reduce the action of acetylcholine at the muscarinic receptor of the brain. Dimenhydrinate, diphenhydramine, scopolamine and meclizine are examples of these medications.

· **Antihistamines** – These drugs inhibit the action of histamine at the H1 receptor in the brain. Metoclopramide, promethazine and doxylamine are examples of these drugs.

· **Dopamine antagonists** – These drugs work by minimizing the effect of dopamine at the D2 receptor in the chemoreceptor trigger zone of the medulla. Prochlorperazine, chlorpromazine and phenothiazine are examples of this type of medication.

Indications For Use
Antiemetic medications are used for a number of conditions. They are frequently used for severe nausea and vomiting that occurs with pregnancy. Antiemetics are also useful in controlling symptoms of gastrointestinal problems caused by viruses, food poisoning or other issues. Antiemetics are important medications for relieving the nausea and vomiting related to chemotherapy and other cancer treatments. Nausea and vomiting can also occur after surgery, as a result of the effects of anesthesia.

Side Effects
Most side effects from antiemetic medications are minor and are outweighed by the value of the medication for patients. Generally, these side effects fade after a period of use. Side effects include:

· Dry mouth

· Sensitivity to sunlight

· Stuffy nose

· Constipation

However, if more severe side effects, the patient should receive further medical attention immediately:

· Hives
· Fever
· Swelling of lips
· Vision problems
· Uncontrollable facial or body movements
· Fainting
· Trembling
· Sweating
· Problems with breathing
· Seizures
· Loss of bladder control
Antidepressants

HOW ANTIDEPRESSANTS WORK IN THE BODY

The medications classified as antidepressants are used to treat a number of symptoms and conditions. These drugs work to create balanced chemical levels in the brain’s neurotransmitters, in order to reduce symptoms of depression or anxiety disorders.

Neurotransmitters link cells, providing communication within the brain. Neurotransmitters are released by a certain nerve and taken up by others; however, when they are not collected by another nerve, they are taken back by the original nerve—a process called "reuptake". The neurotransmitters commonly linked to depression are serotonin, dopamine and norepinephrine.

TYPES OF ANTIDEPRESSANTS

There are a few main types of antidepressants. These include:

Tricyclic (or tetracyclic) antidepressants (TCAs) - Called cyclic antidepressants in general, and categorized by the number of rings in their chemical makeup; three (tri) or four (tetra). These were among the first antidepressants created, but have been widely replaced by more common types (with less side effects). However, they have been found to be successful in certain cases where other antidepressants were not.

Selective serotonin reuptake inhibitors (SSRIs) - Because these particular antidepressants cause fewer side effects than the others, they are the kind that are most often prescribed.

Monoamine oxidase inhibitors (MAOIs) - The first antidepressants created, but they are being used less often because of the possible side effects and dietary restrictions. Because of the risk of high blood pressure, certain foods that may interact with this medication must be limited.

SIDE EFFECTS

Though they are different types, these antidepressants are used to treat the same disorders and symptoms, and generally have similar side effects. These effects may include: Dry mouth; dizziness; blurred vision; drowsiness; constipation; headache; anxiety; insomnia; nausea or vomiting; sexual dysfunction; seizures; and more. While each type of antidepressant has its own specific side effects, the number is quite small compared to the number that all three types have in common.

INDICATIONS FOR USE

The FDA outlines indications for use (conditions for which they are prescribed to treat) for drugs. Antidepressant indications for use typically include: Anxiety disorders; obsessive-compulsive disorder (OCD); panic disorder (PD); post-traumatic stress disorder (PTSD); anorexia and bulimia; personality disorders; attention deficit hyperactivity disorder (ADHD); and several other disorders and/or conditions.
QUESTIONS
What are the three main types of antidepressants used?
What are the neurotransmitters in the brain that are linked to depression?
Antiplatelet Medications

**General Information:** Antiplatelet drugs are a class of medications that inhibit thrombus (blood clot) formation.

**Indications:** Antiplatelet drugs are primarily used to treat and/or prevent thromboembolic ischemic events such as stroke or myocardial infarction. They are commonly prescribed to patients who have had cardiac stents placed. Antiplatelet drugs can be paired with thrombolytic (tPA) and/or anticoagulant medications (heparin, warfarin) either to treat acute events or for long-term prevention.

Commonly used antiplatelet drugs include aspirin (ASA), clopidogrel (Plavix), prasugrel (Effient), dipyridamole (Persantine, Aggrenox), and ticagrelor (Brilinta).

**Mechanism of Action:** Antiplatelet drugs all work by decreasing the platelets’ ability to stick to one another and form a clot, called aggregation. Aspirin indirectly inhibits the production of thromboxane, a substance important for clot formation. Clopidogrel, ticagrelor, and prasugrel all bind to and block a receptor called P2Y12, which is involved in the activation of platelets and cross-linkage with fibrin. It is important to know that some antiplatelet drugs, including aspirin, clopidogrel, and prasugrel, bind irreversibly to the platelet; their effects persist for the 7-10 day lifespan of the cell. Newer drugs like ticagrelor have the advantage of binding reversibly, and their effects will wear off within hours of discontinuation of the medication.

**Side Effects and Precautions:** Because they decrease the body’s ability to form blood clots, antiplatelet drugs make bleeding a serious risk for patients taking them. This is especially true for those who concurrently take NSAIDs, thrombolytics, or anticoagulants. Other side effects vary from drug to drug. Caution should be used in patients with a history of Gi bleeds or ulcers, or at other risk for bleeding (recent trauma or surgery). Safety has not been established in pregnant or lactating mothers or children. If patients require surgery, discontinuation of antiplatelet drugs is often recommended 7-10 days prior.

**Monitoring:** Periodic lab monitoring of bleeding time should be performed during therapy.

**Patient Education:** Teach patients signs of bleeding including CNS/hemorrhagic stroke symptoms. Ensure that patients understand the need for immediate medical attention if signs or symptoms of bleeding are observed.

**Questions:**

1. Why would a patient with newly placed coronary stents be prescribed an antiplatelet drug?
2. What are some signs and symptoms of bleeding that patients on antiplatelet drugs should be aware of?
3. Why is it recommended that patients discontinue taking aspirin one week before having surgery?
Benzodiazepines

Benzodiazepines are used as sedatives, hypnotics, anxiolytics, muscle relaxants and anticonvulsants. They act by enhancing the response of gamma-aminobutyric acid-A (GABA-A) receptors to GABA, a neurotransmitter. Neurons affected by benzodiazepines become resistant to excitation.

Benzodiazepines come in short-term, moderate-term and long-acting forms. They can be taken orally or in injectable or rectal forms.

Indications
Indications for treatment with benzodiazepines include sedation, seizures, insomnia, anxiety, agitation, alcohol withdrawal, and muscle spasms. It is unclear if benzodiazepines are safe during pregnancy. Alcohol should be avoided when using benzodiazepines.

In health-care settings, benzodiazepines are commonly used for their sedating properties. They are used in intensive care settings with patients experiencing extreme distress. They are commonly given before medical or dental procedures to relieve anxiety - in this use, they can also cause amnesia, so the patient doesn't recall any unpleasant details of the procedure.

In cases of prolonged seizures, administration of fast-acting benzodiazepines is the treatment of choice.

For occasional insomnia, benzodiazepines are quite effective in inducing sleep and keeping patients asleep. They can also be used for the treatment of acute anxiety or agitation and are commonly used to ease the symptoms of alcohol withdrawal.

Side Effects
The most common side effects of benzodiazepines are drowsiness, dizziness, and decreased alertness. Driving accidents and falls are both possible problems. Less-frequent side effects include nausea, confusion and nightmares.

Safety
Benzodiazepines are considered safe for short-term use, but occasionally some individuals will experience cognitive impairment.

Some individuals respond paradoxically to benzodiazepines with agitation and panic. Elderly individuals are more likely to suffer severe side effects, including dementia, in response to benzodiazepines. Long-term use of benzodiazepines is controversial because of the development of physical and mental dependence and withdrawal symptoms if the medication is stopped abruptly. Long-term use can also cause cognitive impairment, depression and anxiety. Many guidelines suggest using benzodiazepines continuously for no longer than two to four weeks. They can be used intermittently for longer periods of time.

Abuse
Benzodiazepines are frequently abused, often in association with other drugs of abuse. An overdose of benzodiazepine can cause deep unconsciousness but is rarely fatal on its own. However, when benzodiazepines are taken along with alcohol or opiates, the risk of a fatal reaction increases exponentially.

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Nursing School Shouldn't be so DAMN Hard!
Study Questions
1. Which neurotransmitter receptor do benzodiazepines act upon?
2. Why is long-term use of benzodiazepines considered unsafe?
3. What are the most common side effects of benzodiazepines?
Calcium Channel Blockers

Calcium channel blockers, or calcium antagonists, relax and widen blood vessels by acting on the muscle cells in the arterial walls. They do this by preventing calcium from entering the cells of the heart and blood vessels, which in turn lowers blood pressure.

Some calcium channel blockers provide the added benefit of also slowing down heart rate, which aside from reducing blood pressure, can also relieve angina (chest pain) and help stabilize an irregular heartbeat.

Calcium channel blockers are available in both short-acting and long-acting forms. The short-acting forms distribute quickly, but their effects only last a few hours. The long-acting forms release the medication more slowly, resulting in a longer lasting effect.

Examples of calcium channel blockers include:

- Isradipine
- Amlodipine (Norvasc)
- Diltiazem (Cardizem, Tiazac)
- Felodipine
- Nicardipine (Cardene SR)
- Verapamil (Calan, Veralan, Covera-HS)
- Nifedipine (Procardia)
- Nisoldipine (Sular)

Calcium channel blockers are prescribed to help treat, prevent, or improve the symptoms of a wide variety of conditions, including:

- Arrhythmia (irregular heartbeat)
- Angina (chest pain)
- Migraine
- Brain aneurysm complications
- A number of circulatory conditions, such as Raynaud's disease
- Hypertension (High blood pressure)
- Pulmonary hypertension (High blood pressure that affects the arteries in the lungs)

Calcium channel blockers might not be as effective in lowering blood pressure as beta blockers, diuretics, or angiotensin-converting enzyme (ACE) inhibitors. Therefore, they are usually not considered a first course of treatment when treating high blood pressure. Calcium channel blockers are oftentimes prescribed along with other blood pressure medications or with statins (cholesterol-lowering drugs).

However, in the case of African-Americans, calcium channel blockers have been shown to be more effective than other blood pressure medications such as ACE inhibitors, angiotensin II receptor blockers, or beta blockers.

Some side effects of calcium channel blockers include:
- Rash
- Flushing
- Fatigue
- Nausea
- Tachycardia (rapid heartbeat)
- Headache
- Dizziness
- Constipation
- Swelling in the lower legs and feet

Certain calcium channel blockers interact negatively with grapefruit juice, the most outstanding interaction occurring while taking Felodipine. Also, some calcium channel blockers can reduce the body's ability to eliminate calcium channel blockers. The medication then builds up in the system which causes serious side effects.

Questions:

What are calcium channel blockers and how do they work?
What are some examples of calcium channel blockers?
How do calcium channel blockers affect the African-American population differently?
Cardiac Glycosides
Cardiac glycosides are a medication made of an organic molecule with a glycoside sugar. The most common one used in medicine is digoxin, also known as digitalis.

Mechanism of Cardiac Glycosides

Under normal conditions in the absence of cardiac glycoside, sodium-potassium pumps import potassium and export sodium. Another pump, the NCX exchanger, imports sodium into the cell and exports calcium. Cardiac glycosides halt the action of the sodium-potassium pump, making sodium build up in the cell. This stops the NCX pump from working because the cell is already hypernatremic. Calcium will then build up and the excess stored in the sarcoplasmic reticulum.

When released on stimulation, this excess calcium will cause a more powerful and rapid contraction. Cardiac glycosides also increase the repolarization phase of myocytes and thus increase the AV node's refractory period. In higher doses, cardiac glycosides may depress the SA node as well, which can be dangerous.

The result is more effective contraction of the heart muscle and a better regulated heart rate. Cardiac glycosides are anti-arrhythmic and increase cardiac output while reducing the heart rate.

Indications for the Use of Cardiac Glycosides

Cardiac glycosides are used mainly for congestive heart failure and atrial fibrillation. They are contraindicated in patients with ventricular fibrillation.

Side Effects

The most serious side effects of cardiac glycosides are arrhythmia, nausea and vomiting, anorexia, and blurry vision. These symptoms may also suggest toxicity. In addition, common side effects include:

- bradycardia
- loss of consciousness
- dizziness
- bleeding problems from liver toxicity
- rash
- petechiae
- abdominal pain

Because cardiac glycosides are used to treat arrhythmias but also can cause or worsen these, it is important for patients to be monitored when treatment is initiated. However, patients should seek medical care immediately if any of these side effects occur, as all can be dangerous to patients with cardiac failure and also may suggest toxicity.

Questions:
What electrolyte imbalance can mimic the effects of cardiac glycosides?

A patient is started on digoxin. A few days later, he calls his nurse to report side effects of edema, anorexia, and constipation. Which of these may suggest cardiac glycoside toxicity?
Diuretics

Diuretics, or water pills, are a classification of drugs used to treat many different conditions. They work by helping to rid the body of sodium and water by making the kidneys excrete more sodium into the urine. The sodium draws water with it from the blood which reduces the amount of fluid flowing through the blood vessels, thus reducing pressure on the artery walls.

The three main types of diuretics are thiazide, potassium-sparing and loop. Each works differently by affecting a different part of the kidneys.

Thiazides not only act on the kidneys, but they also help to dilate the blood vessels.

Loop diuretics make the kidneys excrete more fluid by interfering with the transport of salt and water across certain kidney cells in a structure known as the Loop of Henle, where the name is taken from.

Potassium-sparing diuretics are weak diuretics most often prescribed in combination with thiazide and loop diuretics to help prevent hypokalemia (low blood potassium).

Common thiazide diuretics include:

- Indapamide
- Chlorothiazide (Diuril)
- Hydrochlorothiazide (Microzide)
- Metolazone (Zaroxolyn)
- Chlorthalidone

Common potassium-sparing diuretics include:

- Spironolactone (Aldactone)
- Triamterene (Dyrenium)
- Amiloride
- Eplerenone (Inspira)

Common loop diuretics include:

- Furosemide (Lasix)
- Bumetanide
- Torsemide (Demadex)
- Ethacrynic Acid (Edecrin)

The type, and combination of diuretics prescribed depends on the patient's overall health and the condition being treated. Aside from high blood pressure, edema, and glaucoma, diuretics are used to treat, prevent, or improve symptoms in a range of other conditions such as:

- Heart Failure
- Kidney stones
- Polycystic ovarian disease
- Osteoporosis
- Diabetes insipidus
- Hirsutism (Male-pattern hair growth in women)

Diuretics are usually well tolerated but they do have some side effects, the most common being frequent urination with the use of loop diuretics.

**Other possible side effects include:**

- Hypokalemia (low blood potassium)
- Hyperkalemia (with potassium-sparing use)
- Hyponatremia (low sodium in the blood)
- Headaches
- Dizziness
- Muscle cramps
- Increased blood sugar or cholesterol
- Increased thirst
- Joint conditions such as gout
- Impotence
- Rashes
- Gynecomastia (enlargement of the breasts in men)

**Questions:**

What are the three main types of diuretics and how does each one work?
What conditions do diuretics treat?
What possible side effects are associated with the use of diuretics?
Insulin

Insulin is one of most important hormones in the human body. It helps to regulate the metabolism of carbohydrates and fats that are consumed. When insulin is not utilized in the body or is not produced in sufficient quantities, diabetes mellitus can result, a serious metabolic disease that can affect the function of many organs.

What Is Insulin?

Insulin is a protein produced by the human body. The word “insulin” comes from the Latin word meaning “island.” Insulin is produced in the pancreas in the islets of Langerhans, small areas of the pancreas that contain beta cells that produce the compound.

Insulin is produced when carbohydrate foods are ingested and convert to glucose. The insulin helps the body to store and absorb the glucose as it is needed. The insulin in different species of animal is similar to human insulin, but varies in strength. Insulin from pigs is considered to be closest in composition to human insulin.

How Does Insulin Work in the Body?

After eating, glucose in the bloodstream triggers the pancreas to release insulin. The insulin travels to the cells of the body, sending a message to open up to allow the glucose in, so that it can be used for energy or stored for later use. When the body cannot produce its own insulin, or cannot produce enough insulin, it must be introduced artificially into the body to produce this effect.

How Is Insulin Used?

Insulin comes as a solution or in suspension with particles that settle on standing. It must be injected into the body subcutaneously, that is, under the skin. Insulin may come in vials used with syringes; pre-filled disposable devices or cartridges used with insulin pens.

Indications For Use

Insulin is used to regulate blood glucose levels in patients who are not able to produce insulin, such as in Type-1 diabetes, or in patients with Type-2 diabetes whose blood glucose levels cannot be managed with other types of medication.

Side Effects of Insulin

The use of insulin sometimes causes side effects. If side effects are severe, they should be brought to the attention of the physician:

· Redness, swelling or itching at the injection site or on the body

· Skin thickening or depressions in the skin

· Weight gain

· Constipation

Severe side effects that need immediate medical attention include:
- Shortness of breath
- Wheezing
- Dizziness
- Fast heartbeat
- Sweating
- Blurred vision
- Difficulty breathing or swallowing
- Swelling of the extremities
- Muscle cramps
- Weakness
**NSAIDs**  
**Mechanism of Action**  
Nonsteroidal anti-inflammatory agents (NSAIDs) all act to block the cyclo-oxygenase (COX) enzymes. There are two COX enzymes. Both COX enzymes are involved in producing prostaglandins and thromboxanes. COX-1 is present in most tissues, but COX-2 is only produced in inflammatory cells and plays an essential role in inflammation.

Most NSAIDs inhibit both COX enzymes. Their desirable properties are caused by inhibition of COX-2 and most of their side effects are caused by inhibition of COX-1. Inhibition of COX-1 reduces the production of prostaglandins that protect the stomach from acid and support platelet function. As a consequence, all NSAIDs have the potential to cause stomach ulcers and reduce clotting time.

**Indications**  
NSAIDs are used to treat mild to moderate pain and inflammation, and to reduce fevers. Headaches, arthritis pain, and pain associated with minor viral infections are the most common indications for NSAIDs. Low doses of aspirin are also used to reduce the risk of strokes and heart attack by inhibiting clotting of the blood.

**Side Effects**  
The most common side effects of NSAIDs are gastrointestinal in nature and include nausea, reduced appetite, vomiting, diarrhea, and constipation. Some people develop headaches or dizziness. Occasionally swelling of the ankles will occur. More severe side effects include stomach ulcers, kidney failure, liver failure and prolonged bleeding. NSAIDs can also increase the risk of stroke and heart attacks, particularly in individuals already at risk for such conditions. Severe side effects are usually associated with chronic use of NSAIDs.

**Warnings and Drug Interactions**  
Some individuals are allergic to NSAIDs. Anyone with an allergy to one NSAID is likely to be allergic to all NSAIDs.

Aspirin should not be given to children or teenagers with chickenpox or influenza due to the risk of developing Reye’s syndrome.

NSAIDs may reduce the effectiveness of diuretics. Because NSAIDs inhibit clotting, they should only be used with care in individuals on anticoagulants such as warfarin.

**Administration**  
NSAIDs are almost always given orally. The dose and frequency of dosing vary by each type of NSAID. Taking the medication with food may reduce the risk of nausea.

**Study Questions**  
1. Which COX enzyme is responsible for protecting the stomach lining?  
2. Which NSAIDs can cause stomach ulcers and prolonged bleeding?  
3. Who should not be given aspirin?
Opioids

An opioid is within a class of drugs that affect the opioid receptors of the brain causing a general CNS depression. In doing such, the drugs alter perception of pain. Many opioids exist, and they all resemble morphine in some fashion. The drugs are in a pregnancy risk class C, which means they cannot be ruled out as harmful substances to pregnant women.

What Are Opioids Used For?

Opioid can be used for severe pain that drugs such as acetaminophen and ibuprofen cannot alleviate alone. Opioid pills are often mixed acetaminophen or ibuprofen. The mixture of the analgesic and the narcotic gives the patient maximum pain protection.

What Are the Side Effects of Opioids?

The most common side effects of an opioids are general CNS depression which can include decrease blood pressure, pulse, and in some patients decreased respiratory drive. Patients should be monitored closely during opiate use.

Nausea is another common side effect that occurs in people who take opioid pills. Some additional side effects include vomiting, itching, sweating, hot flashes and headaches. Such effects do not occur in all patients.
Statins

Statins reduce cholesterol levels in the body.

This drug group targets the liver's cholesterol production by inhibiting the enzyme HMG-CoA reductase.

This process replaces the HMG-CoA reductase in the liver.

The decreased production of cholesterol initiates two significant occurrences. Supplementary enzymes form and create a protein that significantly increases the production of LDL.

These additional receptors bind with the existing LDL and VLDL in the liver.

The liver digests this fatty substance; reducing cholesterol levels.

**Doctors prescribe a statin regimen for people with these conditions.**

Atheroma and related diseases, such as heart disease and atherosclerosis

Diabetes

A family history of heart attacks, especially at a young age

Increased age

High cholesterol

**There are nine statin drug types.**

Atorvastatin [most potent]

Rosuvastatin [most potent]

Cerivastatin

Pravastatin

Lovastatin

Mevastatin

Pitavastatin

Simvastatin

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Fluvastatin (least potent)

A single statin drug regimen can successfully reduce cholesterol levels. Sometimes a combination of a statin and niacin [niaspan or niacor] is required, as with these conditions.

**High LDL and High Triglycerides**
A statin drug and Fibric Acid such as, Fenofibrate {TriCor, Fenoglide} may be useful. There is an increased risk of developing muscle problems.

**High Triglycerides only**
*Niacin  
*Fibric Acid  
*Fish Oil, Omega3 fatty acids {Lovaza 2-4 gram doses}

**Low HDL**
*Niacin (especially if LDL remains high)  
*Exercise and weight loss

**Statin drug users may experience significant side effects.**

Muscle Aches  
Pain  
Weakness  
Neuropathy  
Hepatic and Pancreatic dysfunction  
Asymptomatic Liver damage

**The FDA reports these side effects.**

Cognitive impairment [some users report memory loss, forgetfulness, and confusion]  
Elevated blood sugar levels.

Lovastatin may interact with other patient medications.

These may indicate the development of severe complications. The physician might request the patient stop taking the medication. If the patient's condition remains unchanged, the doctor can do a more comprehensive evaluation. The physician may order blood tests, a percutaneous muscle biopsy, or genetic tests.

**Questions**
Can you describe the sequential process of how statins reduce cholesterol levels? Can you list the types of statin drugs and indicate which ones are the most potent and which are the least potent?
Respiratory Drugs

Drugs that affect the respiratory system can be divided into four general categories.

**Antihistamines**
Antihistamines, also called H1 blockers, block histamine from binding to receptors. Histamines are released in response to allergens, irritants and general inflammation. When they bind to their receptors, they cause the airways to constrict and release secretions.

Indications for antihistamines include simple allergic reactions, such as allergic sinusitis and urticaria. They can also be helpful for treating rhinitis. Antihistamines are contraindicated in pregnancy. They should only be used with caution in individuals with liver or kidney impairment, or with prolonged QT intervals.

Antihistamines come in two classes, first generation and second generation. First-generation drugs have many more side effects due to their stronger anticholinergic effects. The chief side effect to be aware of is sedation.

**Decongestants**
Decongestants stimulate the alpha-adrenergic receptors, which causes the blood vessels in the mucus membranes to constrict. This reduces the swelling of tissues and the production of secretions. Decongestants come in nasal spray and oral forms.

Decongestants are indicated for rhinitis, sinusitis, allergic reactions, and upper respiratory tract infections. They should only be used cautiously in patients with high blood pressure.

Side effects of decongestants include elevated blood pressure, nervousness and insomnia. Nasal sprays have fewer side effects than oral formulations, but if nasal sprays are used for more than a few days they can cause increased congestion.

**Expectorants and Mucolytics**
Expectorants act to help individuals clear their respiratory pathways of secretions by increasing the amount of fluid included in the secretions, causing the mucus to become less viscous. The mucolytics also help loosen and break down mucus so it is easier to cough up. They act by directly cleaving chemical bonds in the mucus to make it less viscous.

Indications for mucolytics and expectorants include upper respiratory infections, rhinitis, cystic fibrosis, chronic productive cough and pneumonia.

Side effects of mucolytics are nausea and irritation of the respiratory tract. Side effects of expectorants are nausea and vomiting.

**Antitussives**
Antitussives act to block the cough reflex. Most antitussives are narcotics that act directly on the nervous system to block coughing without affecting respiration.

Antitussives are indicated in cases of troublesome chronic dry cough. However, caution should be used
when administering these drugs because many individuals need to cough to keep their respiratory pathways clear of secretions.

Side effects include drowsiness, nausea, and drying of the mucus membranes.

**Questions**
What is the primary side effect of first-generation antihistamines?
Can decongestants be given to patients with high blood pressure?
What is the difference between expectorants and mucolytics?
**Beta Blockers**

Beta blockers, known medically as Beta-adrenergic blocking agents, are typically prescribed for people who have suffered a heart attack or who have high blood pressure. Some common names for these medications include atenolol, acebutolol, bisoprolol, metaprolol, nadalol, and propranolol. This type of medication is usually prescribed after diuretics and other blood pressure medications do not work. They can also be combined with other types of medications called angiotensin-converting enzyme (ACE) inhibitors. According to the American Heart Association, beta blockers can help people live longer after a suffering a heart attack.

**What do beta blockers do?**

According to the Mayo Clinic, beta blockers block adrenaline or epinephrine. This keeps the heart beating at a slower rate than what a person is used to, and it also keeps the heart from beating as hard as it had been. Beta blockers also open up blood vessels. The combination of opening the vessels and slowing down heart rate keeps blood pressure down.

Beta blockers help reduce systolic blood pressure numbers. These types of medications are prescribed for people who have had a heart attack. They are useful for stopping or lessening angina or chest pain. Beta blockers are also used to control migraines, glaucoma, hyperthyroidism, generalized anxiety disorder, heart failure, and some types of tremors.

**What are the side effects of taking beta blockers?**

Some of the side effects that people can experience while on this type of medication are fatigue, upset stomach, diarrhea, constipation, and dizziness. Rarer side effects include trouble breathing, depression, loss of sex drive, and trouble sleeping. People who have asthma are not usually prescribed this type of medication due to constriction of the bronchial tubes.

Because beta blockers reduce the heart's required oxygen input. Diabetics should always monitor blood sugar carefully when prescribed beta blockers because the medication can mask the symptoms of low blood pressure like a fast heartbeat.

Speaking to the prescribing physician about exercise and how beta blockers affect the body is always recommended. People who take beta blockers should not stop taking the medication without the advice of a doctor because sudden stopping can cause a heart attack or other heart problems to occur. Taking a beta blocker may help some people tolerate exercise better than they did before they began taking the medicine.
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Sick of spending hours and hours trying to find all the information you need for clinical and NCLEX® study? So was I . . . . That’s why I created NRSNG.com, a community of nurses and nursing students wanting to jump start their careers.

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