NR565 Final Exam Study Guide

This study guide covers content for the question bank for this course. There are 100 questions on the exam and more content in the exam study bank than will be seen on any given exam. Therefore, you may note more than 100 topic items noted in this study guide. However, there may also be more than one question for a topic listed so you should know each one well. Some items listed are more specific than others. If the item listed seems vague, if it's a more general question and to be more specific would be to risk the integrity of the question itself.

Number of Questions on Exam:	**100**
Point Value of Each Question:	2
Styles of Questions of Exam:	Multiple Choice Only
Knowledge Levels:	Various (remember, understand, apply)
Time Limit:	150 minutes
Number of Attempts:	1
Use of Support Materials:	Not Allowed
Platform Used for Exam:	ExamSoft/Examplify
Exam Expectations:	Review Exam Expectations in Course Announcements

Tips on Using this Study Guide

1. Review the topics each week to take notes as you move through the course and focus your reading and content review in the course.
2. You can make notes directly on each tab for the respective week or print out and hand write your notes.
3. If you choose to print, you will want to adjust the size of columns so the table width will fit on a printed page.
4. Re-write your notes if you type them to connect the content to your memory more readily as the activity of writing and saying it again as you write it creates repetition that helps commit the content to memory.
5. Create your own practice questions that are clinical scenario based to move the content from a memorization (Remember) level of learning to an application type of learning. Much of your exam will be at the application level so it's not enough to memorize your notes.
6. Review your study guide and notes as often as you can. Read them out loud so you hear the words externally as well as internally. The more senses you can engage while studying, the more likely you are to remember it.

Week 1

Medication Administration

- Educate pt on the routine of administration (e.g., PO w/ or w/out food), administration needs (e.g., suspensions should be shaken or rolled), demonstrate how to use devices & have pt repeat demonstration (e.g., teaching pt to use an inhaler)

Blood Flow Impact on Distribution

- The rate at which drugs are delivered to a particular tissue is determined by blood flow to that tissue
  - > Abscesses & tumors are 2 conditions in which low regional blood flow can affect drug therapy

Lipid Solubility and Absorption

- Highly lipid-soluble drugs are absorbed more rapidly than drugs whose lipid solubility is low (bc lipid-soluble drugs can readily cross the membranes that separate them from the blood, whereas drugs of low lipid solubility cannot)

Blood-Brain Barrier Impact

- To leave the blood and reach sites of action within the brain, a drug must be able to pass through cells of the capillary wall; only drugs that are lipid soluble or have a transport system can cross the BBB

Placental Drug Transfer

- The membranes of the placenta do NOT constitute an absolute barrier to the passage of drugs
- Lipid-soluble, nonionized compounds readily pass from the maternal bloodstream into the blood of the fetus
- Ionized, highly polar, or protein bound are prevented from reaching the fetal blood

First-Pass Effect

- First-pass effect refers to the rapid hepatic inactivation of certain oral drugs
- If the capacity of the liver to metabolize a drug is extremely high, that drug can be completely inactivated on its first pass through the liver; resulting in no therapeutic effect
  - > To temporarily bypass the liver, drugs are administered parenterally

Week 2

ACE Inhibitors

- Used for treating HTN, HF, diabetic nephropathy, & MI
- Adverse effects → cough, angioedema, first-dose hypotension, & hyperkalemia

ACE Inhibitors Advantages

- ACE inhibitors do not interfere w/ cardiovascular reflexes (exercise capacity is not impaired, & orthostatic hypotension is minimal after the initial dose), can be used safely in pts w/ bronchial asthma (a condition that precludes the use of β2-adrenergic antagonists), do not promote hypokalemia, hyperuricemia, or hyperglycemia (side effects seen w/ thiazide diuretics), & reduce the risk for cardiovascular mortality caused by hypertension

Loop Diuretics MOA

- Acts in the thick segment of the ascending limb of the loop of Henle to block reabsorption of sodium & chloride; interference w/ reabsorption here can produce profound diuresis

Spironolactone: MOA

- Blocks the actions of aldosterone in the distal nephron; inhibition of aldosterone promotes retention of potassium & ↑ excretion of sodium

> Diuresis caused by spironolactone is scanty bc most of the filtered sodium load has already been reabsorbed by the time the filtrate reaches the distal nephron

Regulation of Arterial Pressure

- Arterial pressure is the driving force that moves blood through the arterial side of the systemic circulation
  > AP= PR (peripheral resistance) x CO (cardiac output)
  > ↑ PR & CO = ↑ AP ; ↓ PR & CO = ↓ AP

Week 3

Adverse Psychological Effects of High-Dose Marijuana

- High-dose marijuana can cause hallucinations, delusions, & paranoia, euphoria may be displaced by intense anxiety, & a dissociative state may occur in which the user feels "outside of himself or herself", and toxic psychosis

Codeine and Analgesic Efficacy

- For analgesic use, codeine is formulated alone & in combination w/ nonopioid analgesics (either aspirin or acetaminophen) bc they relieve pain by different mechanisms, the combinations can produce greater pain relief than either agent alone

Fentanyl Transmucosal Use

- Approved only for breakthrough cancer pain in pts at least 18 yrs old who are already taking opioids around-the-clock & have developed some degree of tolerance, defined as needing, for 1 week or longer, at least: 60 mg of oral morphine a day, or 30 mg of oral oxycodone a day, or 25 mg of oral oxymorphone a day, or 8 mg of oral hydromorphone a day, or 25 mcg of fentanyl per hour, or an equianalgesic dose of another opioid
  > Must not be used for acute pain, postoperative pain, headache, or athletic injuries

Opioid Withdrawal

- Agonist-antagonists opioids given to a pt who is physically dependent on a pure opioid agonist, these drugs can precipitate withdrawal
- Abrupt withdrawal of opioids will precipitate an abstinence syndrome
  > Opioids should be withdrawn slowly, tapering the dosage over 3 days. If dependence is high, dosage should be tapered over 7 to 10 days

Opioids in Pregnancy

- Taking opioids in early pregnancy can ↑ the risk for congenital heart defects, spina bifida, & gastroschisis
- Regular use of opioids during pregnancy can cause physical dependence in the fetus, resulting in withdrawal after delivery

Week 4

Alendronate

- Used for the prevention & treatment of osteoporosis in postmenopausal women, in whom benefits derive from ↓ bone resorption by osteoclasts
  > 1st line treatment for glucocorticoid induced osteoporosis & Paget disease
- Adverse effects → esophagitis (from prolong use if alendronate fails to pass completely through the esophagus), musculoskeletal pain, afib, hyperparthyroidism (causes blood levels of calcium to fall resulting in ↑ PTH secretion), atypical femur fractures (suppression of bone turnover reduces bone remodeling), osteonecrosis of the jaw (ONJ), ocular problems (e.g., conjunctivitis, scleritis, blurred vision, & eye pain)

Alendronate Administration

- Absorption is dramatically diminished when taken w/ food
  - > Should be taken in the morning before breakfast (i.e., on an empty stomach); No food or drink, other than water, should be consumed for at least 30 minutes after administration
  - > Wait at least 2 hrs after administration before taking calcium products, mineral supplements, or antacids

Colchicine

- An anti-inflammatory agent w/ effects specific for gout; can be used short term for acute gouty attack or for long term to prevent recurring attacks
  - > In the past, was considered 1st line agent for gout; due to GI toxicity is now reserved for pts who are unresponsive to or intolerant of safer agents
- Adverse effects→nausea, vomiting, diarrhea, and abdominal pain, myelosuppression, & rhabdomyolysis
  - > Use of Statins & Colchicine ↑ the risk colchicine-induced muscle injury
  - > P-glycoprotein (PGP) inhibitors (e.g. cyclosporine & ranolazine) & inhibitors of CYP3A4 (e.g. ketoconazole, clarithromycin, nelfinavir & ritonavir); combing w/ colchicine should avoid & contraindicated in pts w/ hepatic or renal impairment
  - > Avoid use during pregnancy

Treatment of RA

- Treatment is directed at 1.) relieving symptoms (e.g., pain, inflammation, & stiffness), 2.) maintaining joint function & range of motion, 3.) minimizing systemic involvement, & 4.) delaying disease progression
  - > A combination of pharmacologic (e.g., NSAIDs, DMARDS, & glucocorticoids) & nonpharmacologic measures (e.g., physical therapy, exercise, & surgery) are used to achieve treatment goal

Glucocorticoids in RA

- Provide rapid relief of symptoms & slows disease progression; used short-term bc long-term use can cause toxicity (e.g., osteoporosis, gastric ulceration, adrenal suppression)
  - > May also be employed for flares or disease exacerbations
- Both NSAIDs & glucocorticoids place a patient at risk for GI ulceration & GI bleeding
  - > NSAID therapy is usually d/c whenever the pt is taking glucocorticoids to reduce the risk for GI ulcers & bleeding

NSAID Selection in RA

- NSAIDs inhibiting cyclooxygenase (COX); provide rapid relief of symptoms but does not prevent joint damage & do not slow disease progression
- Selection of an NSAID is based largely on efficacy, safety, & cost
  - > All NSAIDs have equal antirheumatic effects; however, pts may respond better to one NSAID than to another
  - > Coxibs are more expensive than first-generation NSAIDs (If symptoms are controlled w/ a 1st gen NSAID & the drug is well tolerated, cost considerations will dictate using that drug)
  - > All prescription-strength NSAIDs carry a boxed warning for risk of thrombotic events, GI ulceration, & bleeding (less GI problems w/ COX-2 inhibitors but ↑ risk for thrombotic events;); Selection must balance these risk factors benefit ratio (e.g., if a first-generation NSAID produces serious gastric ulceration and the patient is at low risk for thrombosis, then switching to celecoxib might be appropriate despite the cost)

Raloxifene MOA

- Approved only for prevention & treatment of osteoporosis & for prevention of breast cancer in high-risk women

- Mimic or block the actions of estrogen, depending on the SERM & the tissue involved; Raloxifene mimics the effects of estrogen on bone, lipid metabolism, & blood clotting & blocks estrogen effects in the breast & endometrium

Week 5

Chapter 48: Drugs for Diabetes

Glycemic Goals in Type 2 Diabetes

- "Tight glycemic control": the process of maintaining glucose levels w/in a normal range, around the clock
- Pts w/ T2DM must take several medications w/ complementary mechanisms of action to meet glycemic goals to prevent complications related to uncontrolled glucose levels

Glycemic Control Targets

- Targets for nonpregnant adults' w/ diabetes:
  - A1c <7.0%
  - Premeal glucose 70-130mg/dL
  - Peak postmeal glucose <180mg/dL
  - 100-140mg/dL at bedtime

Diabetic Nephropathy Prevention

- Managing HTN w/ an ACE inhibitor (e.g., lisinopril) or ARB (e.g., losartan) & dyslipidemia w/ statins (e.g., atorvastatin) can reduce the risk for diabetic nephropathy, a long-term consequence of poor glycemic control

1st generation vs 2nd generation Sulfonylurea

- 2^{nd} gen agents have almost completely replaced the 1^{st} gen agents in clinical practice bc 2^{nd} gens are more potent requiring lower doses than 1^{st} gens & significant drug–drug interactions are less common in 2^{nd} gens
  - 1^{st} gen (e.g., Tolbutamide, Tolazamide, Chlorpropamide)
  - 2^{nd} gen (e.g., Glucotrol, Glimepiride, Nonmicronized, & Micronized)

Sulfonylurea: MOA

- Act primarily by stimulating the release of insulin from pancreatic islets
  - If the pancreas is incapable of insulin synthesis, sulfonylureas will be ineffective which is why they do not work in pts w/ T1DM

Sulfonylurea: Pregnancy

- Contraindicated during pregnancy & breast-feeding

Sulfonylurea: Side Effect

- Hypoglycemia
  - Hypoglycemic reactions are more likely in pts w/ kidney or liver dysfunction bc its eliminated by hepatic metabolism & renal excretion

Meglitinides vs sulfonylureas

- Meglitinides that have the same mechanism as the sulfonylureas → stimulation of pancreatic insulin release
- Main difference between glinides & sulfonylureas is their pharmacokinetic profile— glinides are shorter acting & are taken w/ each meal

Repaglinide: pt education

- Classified as a Meglitinide agent; also known as glinides
- Educate pts about S&S of hypoglycemia
  - Pt should eat no later than 30 mins after taking drug