

N322 Pharmacology **4 HOURS**
Proctored ATI Remediation Template

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Assessment Name: Pharm 2023
Semester: Spring 2024

Instructions:

1. Download the report from your ATI product for the assessment you are completing this remediation template for
2. The report will be broken down into three (3) aspects:
 - a. Categories
 - i. These categories mimic the NCLEX-RN categories and include the following:
 1. Management of Care
 2. Safety and Infection Control
 3. Health Promotion and Maintenance
 4. Psychosocial Integrity
 5. Basic Care and Comfort
 6. Pharmacological and Parenteral Therapies
 7. Reduction of Risk Potential
 8. Physiological Adaptation
 - b. Subcategories
 - c. Topics
3. Complete the template on the following page by doing the following:
 - a. Main Category
 - i. Subcategories for each main category
 1. Topics for each subcategory → these will be the content areas you will be remediating on
 - a. Provide three (3) critical points to remember for each topic → these will come from the Focused Review module(s) within your ATI product
 - b. NOTE: You must remediate on all subcategories AND topics within the main categories listed under the “Topics to Review” section of the ATI report for this assessment.**
4. In the event you need additional space within the table, please add rows into the table to accommodate this
 - a. In the event, you need less space within the table than what is provided, you may delete those rows from the table to accommodate this OR put “N/A” → There may be main categories that you don’t have to remediate on and that is OK – you can either delete the table OR put “N/A”
5. An example is provided below:

SAMPLE Main Category: Management of Care
SAMPLE Subcategory: Case Management
SAMPLE Topic: Anemias: Discharge Teaching for a Client Who is Recovering from Sick Cell Crisis <ul style="list-style-type: none">• SAMPLE Critical Point #1: Anemia is the abnormally low amount of circulation RB, Hgb concentration, or both.• SAMPLE Critical Point #2: When a patient is going through sickle crisis, the nurse should monitor oxygen saturation to determine a need for oxygen therapy.• SAMPLE Critical Point #3: A patient should have their hemoglobin checking in 4 to 6 weeks to determine efficacy.
Proctored ATI Grading Scale – RN Pharmacology 2023

Level 3= 90 points

- **Remediation = 10 points:**
- *Minimum 1-hour Focused Review*
- *For each topic missed, complete an active learning template and/ or identify three critical points to remember. Must be a full sentence, not just bullet points.*

Level 2 = 80 points

- **Remediation = 10 points:**
- *Minimum 2-hour Focused Review*
- *For each topic missed, complete an active learning template and/ or identify three critical points to remember. Must be a full sentence, not just bullet points.*

Level 1 = 70 points

- **Remediation = 10 points:**
- *Minimum 3-hour Focused Review*
- *For each topic missed, complete an active learning template and/ or identify three critical points to remember. Must be a full sentence, not just bullet points.*

Below Level 1 = 60 points

- **Remediation = 10 points:**
- *Minimum 4-hour Focused Review*
- *For each topic missed, complete an active learning template and/ or identify three critical points to remember. Must be a full sentence, not just bullet points.*

6. Once the template is completed **and** at least the minimum remediation time has been completed within the Focused Review module(s) in ATI, upload the template to the corresponding dropbox in E360.
- 7.

Main Category: Management of care (0 total)

Subcategory: NO TOPICS TO REVIEW

Topic: N/A

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Topic: N/A

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Topic: N/A

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Main Category: Safety and Infection Control (0 total)

Subcategory: NO TOPICS TO REVIEW

Topic: N/A

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Topic: N/A

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Topic: N/A

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Main Category: Clinical Judgement (5 total)

Subcategory: Vitamins and minerals: caring for a client who has iron deficiency anemia

Topic: Iron preparations

- Iron preparations provide iron that is needed for RBC development and oxygen transport to cells.
- Complications to iron preparations could be GI distress such as nausea, constipation, and heartburn.
- We need to educate our patients that stools could become black or dark green when taking iron prep.

Topic: Vitamin B12/Cyanocobalamin

- The therapeutic use for these is for treatment of vitamin B12 deficiency and megaloblastic (macrocytic) anemia related to vitamin B12 deficiency.
- One complication of this could be hypokalemia so we need to be sure we are monitoring potassium levels during the start of the treatment.
- Other complications would be GR distress (nausea, vomiting, dyspepsia, abdominal discomfort, diarrhea).

Topic: Folic acid

- Nurses need to be aware to avoid indiscriminate use of folic acid to reduce the risk of masking manifestations of vitamin B12 deficiency.
- Folic acid levels are decreased when patient is also prescribed methotrexate and sulfonamides.
- We need to assess for manifestations of megaloblastic anemia (pallor, easy fatigability, palpitations, paresthesia of hands or feet).

Subcategory: Chemotherapy agents: educating on adverse effects of medication

Topic: Cytotoxic chemotherapy agents

- These agents kill fast-growing cancer cells as well as healthy cells, including skin, hair, intestinal mucosa, and hematopoietic cells.
- Many of the adverse effects that could happen when taking these drugs are typically related to the unintentional harm done to healthy rapidly proliferating cells.
- Common adverse effects could be nausea, vomiting, myelosuppression, and alopecia.

Topic: Antimetabolites

- These types of medications are methotrexate, pemetrexed, pralatrexate, cytarabine, fluorouracil, capecitabine, gemcitabine, mercaptopurine, and thioguanine.
- Some complications of these medications could be bone marrow suppression and GI discomfort (nausea and vomiting).
- Because of these complications, we need to be monitoring for GI bleed (coffee-ground emesis or tarry black stools).

Topic: Antitumor (cytotoxic) antibiotics

- There are two different groups to these medications, there are anthracyclines and nonanthracyclines.
- Complications to these medications are bone marrow suppression, GI manifestations, severe tissue damage and alopecia.
- We need to be sure we monitor ECG and echocardiogram.

Subcategory: medications affecting urinary output: caring for a client with heart failure**Topic: High-ceiling loop diuretics**

- The therapeutic action of these drugs is used when there is an emergent need for rapid mobilization of fluids. For example, pulmonary edema caused by heart failure and hypertension (torsemide).
- Complications with these drugs are dehydration, hypotension, ototoxicity, hypokalemia, and other electrolyte imbalances.
- We need to use these drugs cautiously in patients who have severe liver disease, DM, dehydration, electrolyte depletion, and gout.

Topic: Thiazide diuretics

- Therapeutic use for these drugs are often the medication of first choice for essential hypertension. They also are used for edema of mild to moderate heart failure and liver and kidney disease.
- Nurses need to be aware of complications with dehydration, hyponatremia, hypokalemia, hypochloremia, and hyperglycemia.
- These drugs are contraindicated in clients who have renal impairment.

Topic: Potassium-sparing diuretics

- These diuretics are paired with other diuretics (loop and thiazide diuretics) for potassium-sparing effects to treat hypertension and edema.
- ACE inhibitors, angiotensin receptor blockers, and direct renin inhibitors interact with these diuretics and increase the risk for hyperkalemia.
- One nursing intervention that needs to happen is weighting the patient at the same time each day with the same amount of clothing on. Usually first thing in the morning.

Subcategory: medications affecting urinary output: caring for the client who is taking hydrochlorothiazide**Topic: Osmotic diuretics**

- These diuretics help promote sodium retention and water excretion in clients who have hyponatremia and fluid volume excess.
- Complications to these diuretics are heart failure and pulmonary edema.
- We want to make sure to monitor for increased ICP (change in level of consciousness, change in pupils, headache, nausea, and vomiting).

Topic: Potassium-sparing diuretics

- One major contraindication to these diuretics are patients that are pregnant, exposure is associated with fetal harm, wear gloves when handling medication.
- We do not want to administer these to patients who have severe kidney failure and anuria.
- Education should be made to our patients about avoiding salt substitutes that contain potassium and reduce intake of potassium-rich foods (oranges, bananas, potatoes, dates).

Topic: Thiazide diuretics

- These diuretics have medication and food interactions that are the same for loop diuretic medications.
- Thiazide diuretics cause no risk of hearing loss and can be combined with ototoxic medications.
- We want to be sure we are monitoring blood pressure along with the patients intake and output.

Subcategory: chronic neurologic disorders: teaching about levodopa/carbidopa**Topic: Cholinesterase inhibitors**

- Irreversible inhibitors are used for long acting, and they are highly toxic.
- Reversible inhibitors effect lasts for a moderate duration (2 to 4 hours) and is used to treat Alzheimer's disease and Parkinson's disease.
- We need to educate the client about the potential adverse effects. If the effects become intolerable, the patient needs to notify the provider.

Topic: Anti-Parkinson's medications

- These medications are most effective for Parkinson's disease, but the beneficial effects diminish by the end of year five.
- If the patient begins to experience nausea, vomiting or drowsiness, we want to encourage our patients to eat foods containing large amounts of pyridoxine (vitamin B6), it can reduce the effects of levodopa.
- We want to advise the patient to eat protein in several small portions during the day.

Topic: Antiepileptics (AEDs)

- These medications can cause CNS effects such as drowsiness, sedation, and depression, and in the older adult can cause confusion and anxiety.
- We need to educate the client to avoid activities that require alertness (driving).
- When discontinuing the medication, we need to discontinue it slowly.

Main Category: Psychosocial Integrity (1 topic)

Subcategory: Substance Use Disorders: Teaching about Nicotine Gum

Topic: Medications to support withdrawal/abstinence from alcohol

- Effects of withdrawal can start within 4 to 12 hours of the last intake of alcohol and can continue 5 to 7 days.
- Manifestations of withdrawal could be nausea, vomiting, tremors, restlessness, and inability to sleep; depressed mood or irritability; increased heart rate, blood pressure, respiratory rate, temperature, diaphoresis, tonic-clonic seizures, and illusions.
- Delirium can occur 2 to 3 days after cessation of alcohol with alcohol withdrawal.

Topic: Medications to support withdrawal/abstinence from nicotine - Bupropion

- Bupropion intended effect is to decrease nicotine craving and manifestations of withdrawal.
- Nurses need to be aware that this drug needs to be avoided with patients who have an increased risk for seizures.
- Education that we would want to educate our client on while taking this medication would be how to treat dry mouth. They would want to chew sugarless gum or suck on hard candy and sip small amounts of water or such on ice chips.

Topic: Medications to support withdrawal/abstinence from nicotine – Nicotine Gum

- Nicotine gum is not recommended for longer than 6 months.
- Client needs to be aware that they should chew the gum slowly and intermittently over 30 minutes.
- They also need to avoid eating or drinking 15 minutes prior to and while chewing the gum.

Main Category: Pharmacological and Parenteral Therapies (21 total)

Subcategory: Medications affecting the reproductive tract: priority reportable finding for a client taking combination oral contraceptives

Topic: Estrogens

- There are different routes this medication can be given, there is transdermal therapy to reduce incidents of nausea and vomiting, along with oral, intravaginal, IM and IV.
- When our patients are experiencing endometrial and ovarian cancers, we need to administer progestins along with estrogen.
- We need to educate the patient to schedule an endometrial biopsy every 2 years and pelvic exam yearly.

Topic: Progesterones (Progestin)

- The expected mechanism of action is that it binds with progesterone receptors in the cell nucleus.
- One complication with these meds is breast cancer, we want to encourage our patients to do a regular breast self-exam, mammograms and clinical breast exams as recommended.
- If our patient is at risk for a thromboembolic event, we need to be monitoring for pain, swelling, warmth, or erythema of lower legs.

Topic: Hormonal contraceptives

- The therapeutic use of this medication is to prevent pregnancy, premenstrual dysphoric disorder, acne, etc.
- We want to educate our client to report warmth, edema, tenderness, or pain in lower legs, chest pain, SOB, and severe headache.
- If our patient is showing signs of hypertension, we need to monitor for and report high blood pressure and vision changes.

Subcategory: Medications affecting coagulation: teaching about adverse effects of clopidogrel

Topic: anticoagulants

- Heparin is an adjunct for clients having open heart surgery or dialysis.
- Low molecular weight heparins help prevent deep-vein thrombosis (DVT) in clients who are postoperative, treat DVT and PE, and prevent complication in angina, non-Q wave MI, and ST elevation MI.
- If heparin toxicity becomes a complication, the nurse needs to administer protamine and it should be administered slow through the IV, no faster than 20 mg/min or 50 mg in 10 min.

Topic: Vitamin K inhibitors (Coumarins)

- If a hemorrhage occurs as a complication, we need to monitor vital signs and advise clients to observe for bleeding (increased heart rate, decreased blood pressure, bruising, petechiae, hematomas, black tarry stools).
- The patient needs to be educated on the observation for inclusion of aspirin in OTC medications.
- Vitamin K interacts with heparin, aspirin, acetaminophen, glucocorticoids, sulfonamides, and parenteral cephalosporins increases effects of warfarin, which increases the risk for bleeding.

Topic: Direct inhibitor of factor Xa

- With the complication of bleeding, we need to educate the patient to report bleeding, bruising, headache, or eye pain.
- We need to monitor baseline and periodic liver function because of the risk for elevated liver enzymes and bilirubin.
- This med is contraindicated in clients who have previous allergy to rivaroxaban, or who have active bleeding, severe kidney impairment, or moderate to severe liver impairment.

Subcategory: Opioid agonists and antagonists: documenting adverse effects of a transdermal fentanyl patch

Topic: Opioid agonists

- The therapeutic use is to help relieve moderate to severe pain (postoperative, myocardial infarction,

following childbirth, cancer).

- Nurses need to monitor respiratory depression when patients are taking this medication to because it needs to be discontinued if the patients' respiratory rate is less than 12/min and notify the provider.
- The patient needs to be educated to increase fluid/fiber intake and physical activity to reduce the risk of constipation.

Topic: Agonist-antagonist opioids

- The therapeutic use for these drugs are to relieve mild to moderate pain, treatment of opioid dependence, adjunct to balanced anesthesia and relieve labor pain.
- These drugs interact with CNS depressants and alcohol can cause additive effects.
- The nurse needs to obtain baseline vital signs and if the respiratory rate is less than 12/min we need to withhold the medication and notify the provider.

Topic: Opioid antagonists

- We need to monitor heart rhythm and respiratory function for tachycardia and tachypnea.
- If abstinence syndrome begins to occur, it can have signs/symptoms of cramping, hypertension, vomiting, and reversal of analgesia.
- The medication effectiveness is when respirations are regular, patient is without SOB, and respiratory rate is within normal range (12-20/min).

Subcategory: Connective tissue disorders: contraindications to prednisone therapy

Topic: Disease-modifying antirheumatic drugs

- The expected pharmacological action of these drugs are to slow joint degeneration and progression of rheumatoid arthritis.
- In case of hepatic fibrosis and toxicity, we need to monitor function tests and kidney function tests.
- We need to educate the client for observation of anorexia, abdominal fullness, and jaundice, and to notify the provider if these symptoms occur.

Topic: Antigout medication

- The client needs to be educated to drink 2.5 to 3 L fluid daily to decrease risk by alkalinizing the urine during the first few days of treatment.
- We need to monitor uric acid levels, CBC, urinalysis, and liver and kidney function tests if the patient is taking medications for gout.
- The client needs to understand to take oral gout medication with food or after meals to minimize GI distress.

Topic: Medication for systemic lupus erythematosus

- A complication with this medication is GI effects (nausea, vomiting, diarrhea) and patients need educated to utilize natural GI remedies for example ginger tea or hard candy.
- This med needs to infuse slowly over an hour, if anaphylaxis occurs, discontinue infusion, and begin emergency treatment.
- Cyclophosphamide or immune suppressants interact with these meds can increase risk for infection.

Subcategory: medications affecting coagulation: monitoring a client following alteplase administration

Topic: Antiplatelets

- The routes of administration are aspirin: oral, abciximab: IV, clopidogrel: oral, dipyridamole: oral.
- The nurse should administer aspirin 325 mg and should be taken during initial acute episode of myocardial infarction.
- The client needs to be educated to prevent strokes, myocardial infarctions, and reinfarction can be accomplished with low-dose aspirin (81 mg).

Topic: Thrombolytic medications

- The therapeutic use for these medications are to treat acute myocardial infarction, treat massive PE, treat acute ischemic stroke, and restore patency to central IV catheters.
- The route of administration is IV only.
- The nurse needs to monitor aPTT and PT, Hgb, and Hct.

Topic: Vitamin K inhibitors (Coumarins)

- If these medications are used concurrently, the nurse needs to monitor carefully for indications of

bleeding and increased PT, INR, and aPTT levels.

- Foods high in vitamin K (dark green leafy vegetables, cabbage, broccoli, brussels sprouts, mayonnaise, and canola and soybean oil) can decrease anticoagulant effects.
- The nurse needs to administrate is usually oral, one daily, and at the same time each day.

Subcategory: medications affecting blood pressure priority finding to report with Lisinopril

Topic: Angiotensin-converting enzyme inhibitors

- The therapeutic use for these inhibitors is hypertension, heart failure, myocardial infarction, diabetic and nondiabetic nephropathy, and clients at high risk for cardiovascular event.
- The client needs to be educated to change positions slowly and lie down if feeling dizzy, lightheaded, or faint.
- A complication of this medication is hyperkalemia, so we need to monitor potassium levels to maintain a level within the expected reference range of 3.5-5 mEq/L.

Topic: Angiotensin II receptor blockers

- The nursing actions for these drugs are to treat sever effects with subcutaneous injection of epinephrine and discontinue medications.
- We need to educate the client to observe for manifestations (skin wheals, swelling of tongue and pharynx) and notify the provider immediately.
- Antihypertensive medications interact with these meds by additive effect when used with ARBs.

Topic: Aldosterone antagonists

- The client needs to be educated to avoid using salt substitutes that contain potassium.
- We can administer these meds orally with or without food and do not administer with potassium supplements.
- When these meds are taking with diuretics, it increases the risk for orthostatic hypotension.

Subcategory: immunizations: contraindications to receiving the herpes zoster vaccine

Topic: Immunity

- The maximum age for the final dose of RV vaccine is 8 months, 0 days.
- Active-artificial immunity develops when a vaccine is administered, and the body produces antibodies in response to exposure to a killed or attenuated virus.
- Passive-natural immunity develops when antibodies are passed from a client to their fetus through the placenta, or parent to newborn/infant via colostrum and breast milk.

Topic: Live, attenuated influenza vaccine

- Some adverse effects of these vaccines are vomiting, diarrhea, cough, fever, headache, myalgia, and nasal congestion/runny nose.
- Age less than 2 years, age 50 years or older and pregnancy are all contraindications of this vaccine.
- We need to be cautious of the patient occurring Guillain-Barre syndrome within 6 weeks of prior influenza vaccine.

Topic: Varicella

- Mild adverse effects of this vaccine is tenderness and swelling at injection site, fever, and rash (mild) for up to 1 month after immunization.
- Severe adverse effects are pneumonia, low blood count, and severe brain reactions.
- The nurse needs to be cautious when transfusing with blood products containing antibiotics within the prior 3 to 11 months.

Subcategory: antibiotics affecting protein synthesis recognizing adverse effects of Clindamycin

Topic: Tetracyclines

- The mechanism of action for these drugs are broad-spectrum antibiotics that inhibit micro-organism growth by preventing protein synthesis.
- GI discomfort includes cramping, nausea, vomiting, diarrhea, and esophageal ulceration which is a complication when taking these medications.
- Education needs to be addressed to avoid taking these meds at bedtime to reduce the risk of esophageal ulceration.

Topic: Macrolides

- Prolonged QT intervals which cause dysrhythmias and possible sudden cardiac death.
- The nurse needs to monitor for hearing loss, vertigo, and tinnitus in the case of ototoxicity with high-dose therapy.
- To avoid GI discomfort, these meds need to be administered with meals.

Topic: Aminoglycosides

- Complications that come with these medications with ototoxicity, nephrotoxicity, intense neuromuscular blockade, hypersensitivity, and streptomycin.
- We need to use these meds cautiously with clients who have kidney impairment, hearing loss, and myasthenia gravis.
- Penicillin inactivates aminoglycosides when in the same IV solution.

Subcategory: Medications affecting the reproductive tract: identifying a contraindication for receiving sildenafil.

Topic: Estrogens

- Endometrial and ovarian cancers are complications with these meds, and we need to administer progestins along with estrogen.
- We need to educate patient to examine breast regularly and to obtain yearly breast exams by a provider, and periodic mammograms.
- There is a risk for altered coagulation because estrogen either suppresses blood coagulation or promotes it; the effect depends on genetic influences.

Topic: Emergency oral contraceptive

- The mechanism of actions is to inhibit ovulation and the transport of sperm if taken within at least 72 hours following unprotected sexual intercourse.
- The therapeutic use is to prevent fertilization of sperm/ovum and cessation/delay of ovulation.
- The education to the client is to monitor adverse effects of abdominal pain, headache, nausea, menorrhagia, and dizziness.

Topic: Hormonal contraceptives

- We need to advise client to avoid smoking and report warmth, edema, tenderness, or pain in lower legs, chest pain, SOB, and severe headache to decrease the risk of thromboembolic events.
- The nurse needs to monitor for indications of toxicity. Provider may need to decrease dosage.
- The patient needs educated to take pills at the same time each day.

Subcategory: Antibiotics affecting the bacterial cell wall: adverse reactions.

Topic: Penicillin

- If there is an allergy to this medication, the patient needs to wear an allergy identification bracelet.
- The nurse needs to make sure not to mix penicillin and aminoglycosides in the same IV solution because penicillin inactivates the aminoglycoside.
- The client needs to report if they any allergic reaction for example, dyspnea, a skin rash, itching, and hives.

Topic: Cephalosporins

- These medications are a broad-spectrum bacterial med with a high therapeutic index that treat a wide variety of infections.
- If the patient has a renal insufficiency, the nurse needs to give a lower dosage of these meds to prevent accumulation to toxic levels.
- The nurse should assess for diarrhea and notify the provider if present.

Topic: Carbapenems

- If we use carbapenems and imipenem-cilastatin together, we must monitor for increased seizure activity and consider supplemental anti-seizure therapy.
- If the patient has a GI upset, the nurse must observe for manifestations and notify provider if they occur along with monitoring I&O.
- The patient needs to be educated to complete the entire course of therapy, even if manifestations resolve.

Subcategory: Miscellaneous pain medications: priority adverse effect of epidural anesthesia

Topic: Migraine medications

- If aspirin-like drugs (NSAIDs, acetaminophen combination) are used together, the patient could be at risk for bone marrow suppression, so we need to periodically be checking their CBC, along with platelets.
- We want to educate our patients' to not exceed the prescribed dose or exceed the recommended duration of treatment.
- These medications could cause manifestation withdrawal such as headache, nausea, vomiting, and restlessness.

Topic: Local anesthetics

- These medications are used to help manage pain for dental procedures, minor surgical procedures, labor and delivery, and diagnostic procedures.
- Spinal headache could be a potential complication, we want to monitor for indications of severe headache and educate the patient to remain flat in bed for 12 hours postop.
- The nurse needs to monitor heart rate and blood pressure when using these anesthetics.

Topic: Aspirin-like drugs

- Aspirin should be avoided if the patient is pregnant, especially within the third trimester.
- These medications are contraindicated with patients who have severe renal/hepatic disease.
- We want to make sure we are using cautiously when patients who have bleeding, GI or cardiac disorders, and with older adult clients.

Subcategory: mycobacterial, fungal, and parasitic infections: indications for administration of metronidazole**Topic: Antimycobacterial (selective antituberculosis)**

- The therapeutic use for these medication are indicated for active and latent tuberculosis.
- Peripheral neuropathy is a complication with these meds, patient should look for tingling, numbness, burning, and pain resulting from deficiency of pyridoxine, vitamin B6.
- We want to educate our client to notify their provider if they notice any of these symptoms starting to occur.

Topic: Broad-spectrum antimycobacterial (antituberculosis)

- Rifampin is a broad-spectrum antibiotic effective for gram-positive and gram-negative bacteria.
- The nurse needs to instruct patients to avoid alcohol consumption and monitor liver function.
- We administer these drugs orally or by IV assess.

Topic: Antiprotozoals

- Educate patient is they start to notice darkening of urine, that it is a harmless effect of metronidazole.
- If consumption of alcohol is used while taking these meds, it can cause disulfiram-like reaction (facial flushing, vomiting, dyspnea, tachycardia).
- Patient needs to understand to complete the prescribed course of antimicrobial therapy, even though manifestation can resolve before the full course is completed.

Subcategory: medications affecting blood pressure: hypertensive crisis**Topic: Angiotensin-converting enzyme inhibitors**

- Complications of these inhibitors could be first-dose orthostatic hypotension, cough, hyperkalemia, rash and dysgeusia (altered taste), angioedema, neutropenia.
- These enzymes interact with diuretics and can cause that first-dose hypotension.
- We want to educate the patient to temporarily stop taking diuretics 2 to 3 days before the start of therapy with an ACE inhibitor.

Topic: Angiotensin II receptor blockers

- The purpose of these medication are to vasodilate and excrete sodium and water from the body.
- These help with hypertension, heart failure, stroke prevention, delay progression of diabetic nephropathy, protect against MI, stroke, and death from cardiac causes, reduce mortality following an MI, and slow the development of diabetic retinopathy.
- The nurse will want to monitor blood pressure and advise the patient to rise slowly from a

lying/sitting position.

Topic: Direct renin inhibitors

- These are used to relieve hypertension when used alone or with another antihypertensive medication.
- If allergy symptoms arise, the patient needs to stop the medication and notify the provider or call 911.
- We also should be monitoring for dehydration, especially in older adults when taking these meds.

Subcategory: mycobacterial, fungal, and parasitic infections: evaluating use of anti-infective medications.

Topic: Antifungals

- Antifungals are used for treatment of choice in systemic fungal infection, and nonopportunistic mycoses.
- Infusion reactions could have manifestations of fever, chills, rigors, and headache 1 to 3 hour after initiation.
- A test dose of 1 mg amphotericin B can be infused slowly through the IV to assess for client reaction.

Topic: Antiprotozoals

- Patient should refrain from meds if pregnant and in the first trimester, the safety for second and third trimester has not yet been established.
- We need to use these meds cautiously with patients who have blood dyscrasias, renal or hepatic impairment, seizures, or other neurological problems.
- We want to advise our patients to avoid alcohol consumption when taking these.

Topic: Broad-spectrum antimycobacterial (antituberculosis)

- Client might see a discoloration of body fluids, it is expected to see orange color of urine, saliva, sweat, and tears.
- In cause of hepatotoxicity, the nurse needs to be monitoring the patient's liver function.
- Mild GI discomfort could have manifestations of anorexia, nausea, and abdominal discomfort.

Subcategory: airflow disorders: evaluating understanding of theophylline

Topic: Beta2 adrenergic agonists

- The therapeutic uses for albuterol and levalbuterol are a short-acting prevention of asthma episodes (exercise induced).
- When they patients begin to experience the complication of tachycardia or angina, we need to observe for chest, jaw, or arm pain or palpations, and notify provider if they occur.
- We need to educate our patients to follow manufacturer's instruction for use of metered-dose inhaler (MDI), dry-powder (DPI), and nebulizer.

Topic: Methylxanthines

- The mechanism of action of these meds are to relax the bronchial smooth muscle, resulting in bronchodilation.
- The therapeutic use for this oral theophylline is used for long-term control of chronic asthma or COPD.
- We can administer these oral or IV (emergency use only).

Topic: Inhaled anticholinergics

- We need to educate client to rinse the mouth after inhalation to decrease unpleasant taste.
- Our patients also need to understand that if there are two inhaled medications prescribed, then they need to wait 5 min between medications.
- The therapeutic effect for these meds are to control bronchospasms in clients who have COPD, prevent of allergen-induced and exercise-induced bronchospasm.

Subcategory: endocrine disorders: evaluating therapeutic response of desmopressin

Topic: Thyroid hormone

- An interaction is that this increases cardiac responsiveness to catecholamines (epinephrine, dopamine, dobutamine) thereby increasing the risk for dysrhythmias.
- Levothyroxine can increase the anticoagulant effects of warfarin by breaking down vitamin K.
- The nurse needs to monitor the patients PT and INR levels.

Topic: Thionamides

- If a patient starts to experience jaundice, dark urine, light-colored stools, and elevated liver function tests during the treatment, the nurse needs to know that this is a complication of a liver injury for the patient.
- PT, INR and activated partial thromboplastin time (aPTT) need to be monitored when taking this med.
- The nurse should monitor vital signs, weight, and I&O at baseline and periodically through treatment.

Topic: Radiopharmaceuticals

- Client needs to be educated to maintain 6 feet from others.
- Patient needs to increase fluid intake, usually 2 to 3 L/day.
- The patient needs to be aware of disposal of body wastes as instructed (saliva, stool, emesis, bronchial secretions).

Subcategory: gastrointestinal therapeutic procedures teaching about receiving total parenteral nutrition**Topic: Enteral feedings**

- These feedings are instituted for a patient who has a functioning GI tract but is unable to swallow or take in adequate calories and protein orally.
- The nurse needs to monitor for new onset of confusion or seizures, assess for shallow respirations, monitor for increased muscular weakness, and notify provider if these manifestations appear.
- There is a risk of overfeeding the patient, the nurse needs to assess the patients' tolerance while receiving these feedings.

Topic: Total parenteral nutrition

- TPN is typically administered through a central line.
- A patient would receive a TPN for any conditions that affect the ability to absorb nutrition, has a prolonged recovery, creates a hypermetabolic state, creates a chronic malnutrition.
- The patient would present with a weight loss greater than 10% of body weight and NPO or unable to eat or drink for more than 5 days.

Topic: Paracentesis

- The client could present with compromised lung expansion, increased abdominal girth, rapid weight gain to need one of these done.
- The nurse needs to assess pertinent blood testing results (albumin, protein, glucose, amylase, BUN, and creatinine).
- Before having this procedure done, the nurse needs to obtain an informed consent form from the client.

Subcategory: bone disorders: factors affecting client safety while taking alendronate**Topic: Calcium supplements**

- The mechanism of action with these supplements are to maintain musculoskeletal, neurologic, and cardiovascular function.
- Calcium supplements are contraindicated in clients who have hypercalcemia, renal calculi, hypophosphatemia, digoxin toxicity, and ventricular fibrillation.
- Foods such as spinach, rhubarb, beets, bran, and whole grains can decrease calcium absorption.

Topic: Selective estrogen receptor modulator (agonist/antagonist)

- The therapeutic use of these are to prevent and treat postmenopausal osteoporosis to prevent spinal fractures in female clients and protect against breast cancer.
- The nurse should administer this med with or without food once per day.
- The nurse should also monitor bone density, patients should undergo a bone density scan every 12 to 18 months.

Topic: Bisphosphonates

- The purpose of this med is to decrease the number and action of osteoclasts and inhibit bone resorption.

- Nurses can provide mild analgesic if the patient is experiencing musculoskeletal pain.
- We want to educate the patient to take the med first thing in the morning after getting out of bed.

Subcategory: adverse effects, interactions, and contraindications: priority teaching for use of epinephrine auto-injector.

Topic: Adverse medication effects

- Education needs to be made to manage these effects to minimize danger and discomfort.
- We want to educate them to avoid activities that could lead to overheating, because there is a decreased ability to produce sweat to cool the body.
- When there are two or more medications that are hepatotoxic are combined, the risk for liver damage is increased.

Topic: GI adverse effects

- NSAIDs can cause a GI upset, you want to educate patient to take these with food.
- The nurse should offer stool softeners with certain medications because of their risk for constipation.
- Opioid analgesics can also slow peristalsis and can cause nausea and sedation.

Topic: Toxicity adverse effect

- This can be caused by an excessive dose, but it also can occur at therapeutic dose levels as well.
- Liver function tests need to be monitored when clients start a medication known to be hepatotoxic and periodically thereafter.
- Manifestation of hepatotoxicity include nausea, vomiting, jaundice, dark urine, abdominal discomfort, and anorexia.

Subcategory: medications affecting urinary output: administering mannitol

Topic: high-ceiling loop diuretics

- These are used in an emergent need for rapid mobilization of fluid.
- The nurse needs to obtain a baseline data, including orthostatic blood pressure, weight, electrolytes, and location and extent of edema.
- We need to avoid administering the medication late in the day to prevent nocturia, usually needs to be administered from 0800 and 1400.

Topic: Thiazide diuretics

- These work in the early distal convoluted tubule.
- The nurse needs to monitor potassium levels.
- Chlorothiazide is administered orally or IV, but all other meds within this class are given orally.

Topic: Potassium-sparing diuretics

- We want to educate our patients to avoid salt substitutes that contain potassium and reduce intake of potassium-rich foods (oranges, bananas, potatoes, dates).
- Education to report cramps, diarrhea, thirst, altered menstruation, or deepened voice needs to be reported to physician.
- We also want to educate our patient to keep a log of blood pressure and weight while taking this med.

Subcategory: pain management: identifying the quality of a client's pain.

Topic: Pain categories

- Acute pain is protective, temporary, usually self-limiting, has a direct cause, and resolves with tissue healing.
- Chronic pain is not protective. It is an ongoing or recurs frequently, lasting longer than 6 months and persisting beyond tissue healing.
- Idiopathic pain is a form of chronic pain without a known cause, or a pain that exceeds typical pain levels associated with the client's condition.

Topic: Patient-centered care

- When pain is persistent, schedule pain interventions around the clock to keep pain at a more tolerable level. Including PRN dosing is helpful for managing pain exacerbations.
- Nurse needs to ensure bed linens are clean and smooth, and that the client is not lying on tubing or other equipment that could cause discomfort.

- We could distract patients from pain such as ambulation, deep breathing, visitors, television, games, prayer, and music.

Topic: Risk factors of pain

- Undertreatment of pain could be cultural and societal attitudes, lack of knowledge, fear of addiction, exaggerated fear of respiratory depression.
- Populations at risk for undertreatment of pain could be infants, children, older adults, and clients who have a substance use disorder.
- Patients who are cognitive impaired might not be able to report pain or report it accurately.

Main Category: Reduction of Risk Potential (5 total)

Subcategory: Medications affecting Blood Pressure: assessment prior to administering Propranolol.

Topic: Angiotensin-converting enzyme inhibitors

- The expected mechanism of action for these drugs are to vasodilate (mostly arteriole), excrete sodium and water, and the retention of potassium by actions of the kidneys.
- ACE inhibitors are used for hypertension, heart failure, myocardial infarctions, diabetic and nondiabetic nephropathy, and patients at high risk for a cardiovascular event.
- We need to educate the patient to change positions slowly and lie down if feeling dizzy, lightheaded, or faint.

Topic: Angiotensin II receptor blockers

- The expected mechanism of action for these drugs are to block the action of angiotensin II in the body by vasodilation (Arterioles and veins) and excrete sodium and water (by decreasing release of aldosterone).
- A complication of this drug would be angioedema. The nurse would need to treat severe effects with subcutaneous injection of epinephrine along with discontinuing the medication.
- We would educate the client to observe skin wheals, swelling of tongue and pharynx, and notify the provider immediately.

Topic: Aldosterone antagonists

- These medications reduce blood volume by blocking aldosterone receptors in the kidney, while promoting excretion of sodium and water and retention of potassium.
- Two major complications of these drugs could be hyperkalemia and hyponatremia.
- The nurse would want to make sure they are monitoring blood potassium and sodium levels periodically. We do not want to combine with potassium-sparing diuretics.

Subcategory: Medications affecting cardiac rhythm: adverse effect of amiodarone

Topic: Antidysrhythmic medications

- The purpose for Class 1A medications is to slow impulse conductions in the atria, ventricles, and his-purkinje system.
- These are long term suppression for supraventricular tachycardia (SVT), ventricular tachycardia, atrial flutter, and atrial fibrillation.
- These medications delay repolarization.

Topic: Verapamil (Calcium channel blocker)

- These medications therapeutic use is to help with bradycardia, hypotension, heart failure, AV block, constipation, and peripheral edema.
- The nurse will want to monitor ECG and blood pressure. They will need to treat severe hypotension with IV fluid therapy, modified Trendelenburg position, or IV calcium gluconate.
- The physician needs to be notified for a pulse rate less than 50/min, or any other prescribed rate.

Topic: Amiodarone

- Nurses need to be aware of this medication having contradictions with newborns, infants, and patients who have AV block and bradycardia.
- Patients who have liver, thyroid, or respiratory dysfunction, heart failure, and fluid and electrolyte imbalances need to use this medication cautiously.
- If a patient is breast feeding, this medication can be found in breast milk causing hard to neonate. Needs to be advised to avoid breastfeeding.

Subcategory: Opioid Agonists and Antagonists: Adverse Effects of Exycodone

Topic: Opioid agonists

- The therapeutic use of opioid agonists is to relieve moderate to severe pain, sedation, reduction of bowel motility relief of diarrhea, and cough suppression.
- One major complication of these medications is respiratory depression. We need to make sure we are monitoring vital signs.
- Constipation is another major complication when it comes to opioid agonists. We need to make sure we are educating the client to increased fiber/fluid intake and physical activity.

Topic: Agonist-antagonist opioids

- The therapeutic use of these medication is to relieve mild to moderate pain, treatment of opioid dependence, adjunct to balanced anesthesia, and relief of labor pain.
- Complications of these drugs include cramping, hypertension, vomiting, fever, and anxiety.
- These complications can be precipitated when these medications are given to patients who are physically dependent on opioid agonists.

Topic: Opioid antagonists

- These medications therapeutic use is to help with the treatment of opioid abuse by preventing euphoria, reversal of effects of opioids, reversal of respiratory depression in an infant, reversal of severe opioid-caused constipation in clients who have late-stage cancer or other disorders, and reversal of post-operative opioid effects.
- Two major complications of these medication are tachycardia and tachypnea.
- We need to make sure we are monitoring heart rhythm and respiratory function with these patients.

Subcategory: Sedative-Hypnotics: Priority assessment for a Client who Received Midazolam**Topic: Benzodiazepines**

- These meds are tended to help with anxiety disorders, seizure disorders, insomnia, muscle spasm, alcohol withdrawal, panic disorder, and induction of anesthesia/preoperative sedation.
- We need to discontinue this medication slowly by tapering dose over week to months.
- Some symptoms of acute toxicity with the oral route could be drowsiness, lethargy, and confusion.

Topic: Nonbenzodiazepines

- We want to educate our patients that absorption happens faster when the medication is taken when the stomach is empty.
- Patients should be educated to take the medication just before bedtime.
- These medications contradict with pregnant patients because it can increase risk of respiratory depression in neonates after birth.

Topic: Melatonin agonist

- These medications help with management of chronic insomnia when falling asleep is difficult. This will not help with maintenance of sleep.
- Long term use of these medications is permitted.
- We want the patient to avoid activities (driving) is manifestations occur.

Subcategory: Sedative Hypnotics: Monitoring for Adverse reaction to Midazolam**Topic: Intravenous anesthetics**

- The therapeutic use is induction an maintenance of surgical anesthesia, moderate sedation and intubation and mechanical ventilation.
- Nurses need to provide continuous monitoring of vital signs and ECG.
- A major complication of these meds are respiratory and cardiovascular depression with high risk for hypotension.

Topic: Benzodiazepines

- We need to monitor the patient for 3 weeks after discontinuation for indications of withdrawal or recurrence of original symptoms.
- Priority nursing actions should be to monitor vital signs, maintain patent airway, and provide fluids to maintain blood pressure.
- Acute toxicity through the IV route could have signs/symptoms of respiratory depression, cardiac arrest, and profound hypertension.

Topic: Melatonin agonist

- We want to advise the patient to avoid high-fat meals before taking the medication.
- Depending on the therapeutic intent, effectiveness can be evidenced by improvement in sleep patterns.
- Our patients will want to avoid dangerous activities (driving and operating heavy machinery).

Main Category: Physiological Adaptation (2 total)

Subcategory: Burns: Fluid Resuscitation for a client who had major burns

Topic: Types of burns

- There is a dry heat injury which results from open flames and explosions.
- There are contact burns that occur when hot metal, tar, or grease contacts the skin.
- There are also thermal burns which result when clothes ignite from heat or flames that electrical spark produced.

Topic: Burn classification

- Minor burns are treated at the scene and followed up at a local emergency department.
- Moderate burns are treated at the scene, then the client is transported to a burn center or specialized medical facility.
- Major burns require emergency treatment at the closest facility, then immediate transfer to a burn center.

Topic: Health promotion and disease prevention

- Keep emergency numbers near the phone.
- Have a family exit and meeting plan for fires, reinforce that no one should ever re-enter a burning building.
- Follow the principles of “stop, drop, and roll” to extinguish fire on clothing or skin.

Subcategory: Bipolar disorders: assessing a client who is taking lithium for an electrolyte imbalance

Topic: Mood stabilizer

- Lithium is used in treatment of bipolar disorder. Lithium can control episodes of acute mania.
- If the patient experiences nausea, diarrhea, or abdominal pain then this could be a sign of GI distress.
- The nurse will want to monitor CBC, blood electrolytes, renal function tests, and thyroid function tests during lithium therapy.

Topic: Mood-stabilizing antiepileptics

- There are to help treat and manage bipolar disorders by various mechanisms.
- The nurse should assess baseline liver function, and monitor liver function regularly.
- We can tell that the medication is working when relief of manifestation of acute mania occur.

Topic: Carbamazepine

- This drug can minimally affect the cognitive function, but CNS effects can include nystagmus, double vision, vertigo, stagger gait, and headache.
- The nurse will want to administer low doses initially, then gradually increase dosage.
- The nurse will also want to make sure they are administering at bedtime.