

## Pharmacology ATI Remediation

1. Complimentary, Alternative, and Integrative Therapies
  - Natural products and dietary herbal supplements are widely used but less tested and regulated than conventional medications.
  - Aloe vera has anti-inflammatory and analgesic properties like soothing pain, healing burns, and softening skin.
  - Medical marijuana can be taken through several routes, including inhalation, topical application, and ingestion.
2. Safe Medication Administration and Error Reduction: Priority Action to Take for Missed Medication Administration
  - Provider responsibilities include obtaining client's medical history and performing a physical examination.
  - Nurse responsibilities include preparing and administering medications and evaluating clients' responses to medications.
  - Uncontrolled substances require monitoring by a provider, but do not generally pose a risk of misuse or addiction.
3. Substance Use Disorders: Expected Prescription for Smoking Cessation
  - Abstinence syndrome occurs when clients abruptly withdraw from a substance to which they are physically dependent.
  - Effects of withdrawal usually start within 4 to 12 hours of the last intake of alcohol and can continue 5 to 7 days.
  - Benzodiazepines are the first-line treatment for treatment of alcohol withdrawal.
4. Adverse Effects, Interactions, and Contraindications: Using an Epinephrine Auto-Injector
  - Angioedema is a severe allergic reaction that affects deep tissues like blood vessels, skin, subcutaneous tissue, and mucous membranes.
  - One medication can decrease the metabolism of a second medication and therefore increase the blood level of the second medication.
  - Food can alter medication absorption and/or contain substances that react with certain medications.
5. Airflow Disorders: Contraindications for a Client Who is Taking Albuterol for Asthma
  - Asthma is a chronic inflammatory disorder of the airways.
  - Expected pharmacological action include bronchospasm relief, histamine release is inhibited, and ciliary motility is increased.
  - Oral agents can cause tachycardia and angina due to activation of alpha 1 receptors in the heart.
6. Antibiotics Affecting Protein Synthesis: Planning Care for a Client Prescribed Erythromycin Lactobionate
  - Antibiotics affecting protein synthesis are bacteriostatic and bactericidal.
  - Tetracyclines are broad-spectrum antibiotics that inhibit micro-organism growth by preventing protein synthesis.
  - GI discomfort include cramping, nausea, vomiting, diarrhea, and esophageal ulceration.

7. Antibiotics Affecting the Bacterial Cell Wall: Recognizing Manifestations of an Allergic Reaction
  - Antibiotics that are bactericidal include penicillin, cephalosporins, carbapenems, and monobactams.
  - Penicillin destroys bacteria by weakening the bacterial cell wall.
  - Some nursing actions for renal impairment include monitoring kidney function and monitoring input and output.
8. Bipolar Disorders: Intervention for a Lithium Level
  - Bipolar disorders are primarily managed with mood-stabilizing medications like lithium carbonate.
  - Atypical antipsychotics like olanzapine can be useful in early treatment to promote sleep and to decrease anxiety and agitation.
  - Antidepressant medications are typically prescribed in combination with a mood stabilizer to prevent rebound mania.
9. Cardiac Glycosides and Heart Failure: Indications for Titration of Dopamine
  - Heart failure results from inadequate pumping of the heart muscle with manifestations caused by the heart's inability to meet the circulation needs of the whole body.
  - A positive inotropic effect is an increased force of myocardial contraction.
  - A negative chronotropic effect is a decreased heart rate.
10. Chronic Neurologic Disorders: Adverse Effects of Cholinesterase Inhibitors
  - Medications administered for chronic neurologic disorders are used to manage manifestations and improve quality of life.
  - Transmission of nerve impulses is increased at all sites responding to Ach as a transmitter.
  - As evidenced by increased gastrointestinal motility, increased GI secretions, diaphoresis, increased salivation.
11. Complications of Diabetes Mellitus: Priority Intervention for Diabetic Ketoacidosis
  - Diabetic ketoacidosis is an acute, life-threatening condition characterized by uncontrolled hyperglycemia, metabolic acidosis, and an accumulation of ketones in the blood and urine.
  - Diabetic ketoacidosis is a lack of sufficient insulin related to undiagnosed or untreated type 1 diabetes mellitus or nonadherence to a diabetic regimen.
  - Increased hormone production stimulates the liver to produce glucose and decreases the effect of insulin.
12. Connective Tissue Disorders: Long-Term Adverse Effects of Glucocorticoids
  - Rheumatoid arthritis is a chronic, progressive disorder with autoimmune and inflammatory components.
  - Gout is a painful type of arthritis that is caused by elevated levels of uric acid, which can accumulate and cause localized inflammation in synovial areas.
  - Systemic lupus erythematosus is an autoimmune condition that can cause damage to joints, skin, blood vessels, and organs.
13. Dosage Calculation: Administering Sulfadiazine Tablets in Divided Doses
  - Nurses calculate IV flow rates for large-volume continuous IV infusions using electronic infusion pumps and manual IV tubing.

- Infusion pumps control an accurate rate of fluid infusion.
  - If an electronic infusion pump is not available, regulate the IV flow rate using the roller clamp on the IV tubing.
14. Endocrine Disorders: Identifying Need for Dosage Adjustment of Methimazole
- An endocrine disorder usually involves the over secretion or under secretion of hormones, or an altered response by the target area or receptor.
  - Thyroid hormone replacement is used for treatment of hypothyroidism of all ages and forms.
  - Overmedication can result in manifestations of thyrotoxicosis, nervousness, tremors, palpitations, abdominal cramping, heat intolerance, fever, diaphoresis, and weight loss.
15. Growth Factors: Preparing to Administer Epoetin Alfa
- Blood cells and platelets are produced in the body by the biological process hematopoiesis.
  - Epoetin alfa is anemia related to chronic kidney disease.
  - Leukopoietic growth factors stimulate the bone marrow to increase production of neutrophils.
16. Medications Affecting Coagulation: Clarifying a Prescription with a Provider
- Pharmaceutical agents that modify coagulation are used to prevent clot formation or break apart an existing clot.
  - The goal of medications that later coagulation is to increase circulation and perfusion, decrease pain, and prevent further tissue damage.
  - Anticoagulant medications include heparins, vitamin k antagonists, direct thrombin inhibitors, and direct factor Xa inhibitors.
17. Medications Affecting Coagulation: Reviewing Laboratory Results of a Client Who is Receiving Heparin
- Heparin prevents clotting by activating antithrombin, thus indirectly inactivating both thrombin and factor Xa.
  - Nursing actions of heparin toxicity include administering protamine, which binds with heparin and forms a heparin-protamine complex that has no anticoagulant properties.
  - Hemorrhage is secondary to heparin toxicity.
18. Medications Affecting Coagulation: Self-Administration of Enoxaparin
- The risk for hematoma at the puncture site for spinal or epidural medication administration is increased while taking heparin.
  - Neurologic changes can indicate hematoma development.
  - Heparin-induced thrombocytopenia is evidenced by low platelet count and increased development of thrombi.
19. Medications Affecting Coagulation: Teaching About Adverse Effects of Clopidogrel
- Garlic, ginger, glucosamine, and ginkgo biloba can increase the risk of bleeding.
  - Some medications cannot be absorbed by the intestinal tract and must be given via subcutaneous injections or IV infusion.
  - Enoxaparin does not require monitoring and is acceptable for home use.
20. Medications Affecting Coagulation: Treatment for Deep-Vein Thrombosis
- Nursing actions for a hemorrhage include monitoring vital signs and advise clients to observe for bleeding.

- Warfarin is pregnancy Risk Category D for clients with mechanical heart valves and Category X for other pregnancy populations due to high risk of fetal hemorrhage.
  - Concurrent use of heparin, aspirin, and acetaminophen increases the effects of warfarin, which increases the risk for bleeding.
21. Medications Affecting the Reproductive Tract: Identifying a Contraindication for Receiving Sildenafil
- Medications that affect the reproductive system include hormones that stimulate puberty, replace a hormonal deficiency, or prevent pregnancy in clients.
  - Estrogens are hormones needed for growth and maturation of the female reproductive tract, development of secondary sex characteristics, and are active in the follicular phase of the menstrual cycle.
  - At high levels, estrogens suppress the release of a follicle-stimulating hormone needed for conception.
22. Miscellaneous Pain Medications: Adverse Effects of Ergotamine
- Migraine headaches can be caused by the inflammation and vasodilation of cerebral blood vessels.
  - First-line treatment for migraine headaches includes nonspecific analgesics and migraine-specific medications.
  - Ergot alkaloid medications are second-line treatment for migraines, and prophylactic medications.
23. Opioid Agonists and Antagonists: Administering Pain Medication to a Client Who Has Moderate Pain
- Opioid analgesics are medications used to treat moderate to severe pain by attaching to a receptor in the central nervous system.
  - The desired outcome is to reduce pain and increase activity with few adverse effects.
  - Nursing actions for respiratory depression include monitoring vital signs, having naloxone and resuscitation equipment available, and avoiding use of opioids with CNS depressants.
24. Safe Medication Administration and Error Reduction: Priority Action When Administering a Controlled Substance
- The providers who can legally write prescriptions in the United States include physicians, advanced practice nurses, dentists, and physician assistants.
  - Nurses are responsible for having knowledge of federal, state, and local laws that govern prescribing and dispensing medications.
  - New drugs can have unidentified or unreported adverse effects can nurses observing these can report them.
25. Total Parenteral Nutrition: Initiating Therapy
- Parenteral nutrition is used when a client's gastrointestinal tract is not functioning, or when a client cannot physically or psychologically consume sufficient nutrients.
  - PPN is administered for up to 14 days into a peripheral vein.
  - TPN is commonly used in clients who need intense nutritional support for an extended period of time, including clients undergoing treatment for cancer, bowel disorders, and those who are critically ill.

26. Fluid Imbalances: Identifying Manifestations of Fluid Volume Deficit

- Body fluids are distributed between intracellular fluid and extracellular compartments.
- Actual dehydration is a lack of fluid in the body; relative dehydration involves a shift of water from the plasma to the interstitial space.
- Causes of isotonic fluid volume deficit include excessive gastrointestinal loss including vomiting, nasogastric suctioning, and diarrhea.