

Safety and Infection Control

Safety Medication administration and Error Reduction-

- (1) Knowledge of federal, state (nurse practice act), and local laws, and facilities policies that govern the prescribing, dispensing, and administration of medication.
- (2) Preparing and administering medication and evaluating clients' responses to medication.
- (3) Developing and maintaining an up-to-date knowledge base of medications they administer, including uses, mechanisms of action, routes of administration, safe dosage range, adverse effects, precautions, contraindications, and interactions
- (4) Reporting all medication errors.
- (5) Safeguarding and storing medications.

Prescription Medications-

- (1) Nurses administer prescription medication under the supervision of providers. These medications can be habit forming, have potential harmful effects, and require monitoring.
- (2) Uncontrolled substances require monitoring by a provider, but do not generally pose a risk of issue or addiction. Antibiotics are an example of uncontrolled prescription medications.
- (3) Controlled substances have a potential for misuse and dependence and have a "schedule classification. Heroin is in Schedule I and has no medical use in the United States. Medications in Schedule II through V have legitimate applications. For example, morphine is a Schedule II medication that has a greater risk for misuse and dependence than phenobarbital, which is a Schedule IV medication.

Types of Medication Prescription-

- (1) Routine or standing prescriptions identifies medications nurses give on a regular schedule with or without a termination date.
- (2)** Single or one-time prescriptions are for administering once at a specific time or as soon as possible. Common for preoperative or preprocedural medications.
- (3) Stat medication is only for administration once and immediately.
- (4) Now prescriptions are for administering once, but up to 90 min form when the nurse received the prescription.
- (5) PRN prescriptions specifies at what dosage, what frequency, and under what conditions a nurse can administer the medication.
- (6) Other prescriptions provider might prescribe are for specific circumstances or a specific unit.

Reduction of Risk Potential

Airflow Disorders-

- (1) Asthma is a chronic inflammatory disorder of the airways. It is intermittent and reversible airflow obstruction that affects the bronchioles. The obstruction occurs either by inflammation or airway hyperresponsiveness leading to bronchoconstriction.
- (2) Medication prototype used to treat asthma is Albuterol.
- (3) Beta2 adrenergic agonists act by selectively activating the beta2 receptors in the bronchial smooth muscle, resulting in bronchodilation.
- (4) Bronchospasm is relieved, histamine release is inhibited, and ciliary motility is increased.
- (5) Inhaled for short acting and oral for long acting (albuterol)
- (6) Oral agent can cause tachycardia and angina due to activation of alpha1 receptors in the heart.
- (7) Tremors usually resolve with continued medication use and dosage might need to be reduced.
- (8) Use cautiously in patients with DM, hyperthyroidism, heart disease, HTN, and angina.
- (9) Report changes in heart rate and chest pain.

Leukotriene Modifiers-

- (1) Suppress the effects of leukotrienes, thereby reducing inflammation, bronchoconstriction, airway edema, and mucus production.
- (2) Long-term therapy of asthma in adults and children, and to prevent exercise-induced bronchospasm.
- (3) Depression and suicidal ideation may occur; monitor for behavior changes and report to provider.
- (4) Monitor for indication of liver damage (nausea, anorexia, abdominal pain). Notify the provider if manifestations occur.
- (5) Use cautiously in patients who have liver dysfunction.
- (6) Inhibit metabolism of warfarin leading to increased warfarin levels. Monitor PT.

Methylxanthines-

- (1) Used for relaxation of bronchial smooth muscle, resulting in bronchodilation.
- (2) Oral theophylline is used for long-term control of chronic asthma or COPD.
- (3) Mild toxicity reaction can include GI distress and restlessness.
- (4) Use cautiously in patients who have heart disease, HTN, liver and kidney dysfunction, and DM.
- (5) Use cautiously in children and older adults.

Management of Care

Iron Preparations-

- (1) Provide iron needed for RBC development and oxygen transport to cells.

- (2) Used to treat and prevent iron-deficiency anemia.
- (3) Used to prevent iron deficiency anemia for patients who are at an increased risk (infants, children, and pregnant patients.)
- (4) Parenteral forms should only be used in patients who are unable to take oral medications, in which case the IV route is preferred.

Vitamin B12/ Cyanocobalamin-

- (1) Is necessary to convert folic acid from its inactive form to its active form. All cells rely on folic acid for DNA production.
- (2) Deficiency can result in megaloblastic anemia and cause dysrhythmias and heart failure if not corrected.
- (3) Deficiency affects all blood cells produced in the bone marrow.
- (4) Monitor potassium levels during the start of the treatment.
- (5) Masks manifestations of Vitamin B12 deficiency with concurrent administration of folic acid.

Magnesium Sulfate-

- (1) Supplements are used for patients who have hypomagnesemia (<1.3).
- (2) Complications can be muscle weakness, flaccid paralysis, painful muscle contractions, suppression of AV conduction through the heart, and respiratory depression.
- (3) IV administration requires careful monitoring of cardiac and neuromuscular status.
- (4) Have IV calcium available to reverse the effects of magnesium.

Pharmacological and Parenteral Therapies

Antibiotics Affecting the Bacterial Cell Wall-

- (1) Antibiotics that affect the cell wall are bactericidal.
- (2) Penicillin destroys bacteria by weakening the bacterial cell wall.
- (3) Penicillin treats infections due to gram-positive cocci.
- (4) Interview patients for prior allergy.
- (5) Observe for allergic reaction for 30 min following parenteral administration of penicillin.
- (6) Monitor kidney function and I&Os
- (7) Penicillin in the same IV solution as aminoglycosides inactivates aminoglycosides.
- (8) Give IM injections cautiously to avoid injecting into a nerve or an artery.

Medications affecting Coagulation-Heparin

- (1) Prevents clotting by activating antithrombin, thus indirectly inactivating both thrombin and factor Xa.
- (2) Used for conditions necessitating prompt anticoagulant activity.
- (3) As an adjunct for patients having open heart surgery or dialysis.
- (4) Low-dose therapy for prophylaxis against postoperative DVT.

- (5) If toxicity occurs, administer protamine, which binds with heparin and form a heparin protamine complex that has no anticoagulant properties.

Peptic Ulcer Disease-

- (1) Imbalance between gastric mucosal defenses, including mucus and bicarbonate, and h. Pylori infection the main cause.
- (2) Treat with antibiotics, amoxicillin.
- (3) Use 2-3 antibiotics for 14 days to increase effectiveness and to minimize the development of medication resistance.
- (4) Nausea and diarrhea are common adverse effect.
- (5) Take full course of prescribed medication.

Physiological Adaptation

Fluid Imbalances-

- (1) Dehydration is a lack of fluid in the body, from insufficient intake or excess loss.
- (2) Compensatory mechanism includes SNS responses of increased thirst, ADH release, and aldosterone release.
- (3) Rapid or severe dehydration can induce seizures.
- (4) FVD can lead to hypovolemic shock.

Risk Factors-

- (1) Excessive GI loss: vomiting, nasogastric suctioning, diarrhea.
- (2) Diaphoresis without water and sodium replacement.
- (3) Third spacing; burns.
- (4) Altered intake; anorexia, nausea, impaired swallowing, confusion, nothing by mouth.

Nursing Care-

- (1) Monitor respiratory rate, effort, and SaO₂.
- (2) Check UA, CBC, and electrolytes.
- (3) Administer supplemental oxygen as prescribed.
- (4) Measure patients weight daily at the same time of day using same scale.
- (5) Observe for nausea and vomiting.
- (6) Assess postural BP and pulse.