PHARMACOLOGIC PRINCIPLES RELATED TO THE PREPARATION AND ADMINISTRATION OF INTRAVENOUS MEDICATIONS pdf

1: Basic principles of pharmacology | Nurse Key

This item exam covers the principles of pharmacology and the nurse's role in drug administration. Test your knowledge with this NCLEX practice quiz! Keep it up! If you hear a voice within you say 'you cannot paint,' then by all means paint, and that voice will be silenced. - Vincent Van.

Medication errors were estimated to account for more than 7, deaths annually. With the growing reliance on medication therapy as the primary intervention for most illnesses, patients receiving medication interventions are exposed to potential harm as well as benefits. Harm from medications can arise from unintended consequences as well as medication error wrong medication, wrong time, wrong dose, etc. With inadequate nursing education about patient safety and quality, excessive workloads, staffing inadequacies, fatigue, illegible provider handwriting, flawed dispensing systems, and problems with the labeling of drugs, nurses are continually challenged to ensure that their patients receive the right medication at the right time. The purpose of this chapter is to review the research regarding medication safety in relation to nursing care. We will show that while we have an adequate and consistent knowledge base of medication error reporting and distribution across phases of the medication process, the knowledge base to inform interventions is very weak. Defining Medication Errors Shared definitions of several key terms are important to understanding this chapter. Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use. Medications with similar names or similar packaging Medications that are not commonly used or prescribed Commonly used medications to which many patients are allergic e. Misreading medication names that look similar is a common mistake. These look-alike medication names may also sound alike and can lead to errors associated with verbal prescriptions. This list is available at www. Medication errors occur in all settings 5 and may or may not cause an adverse drug event ADE. Medications with complex dosing regimens and those given in specialty areas e. Most of the common types of errors resulting in patient death involved the wrong dose The causes of these deaths were categorized as oral and written miscommunication, name confusion e. Adverse Drug Events and Adverse Drug Reactions Adverse drug events are defined as injuries that result from medication use, although the causality of this relationship may not be proven. These warnings are intended to be the strongest labeling requirement for drugs or drug products that can have serious adverse reactions or potential safety hazards, especially those that may result in death or serious injury. The authors concluded that BBWs did not prevent the inappropriate use of high-risk medications. The researchers found that 3. About one in four of these adverse events were judged to be attributable to negligence, and 58 percent were judged to be preventable. It is difficult to reduce or eliminate medication errors when information on their prevalence is absent, inaccurate, or contradictory. Bates 20 put forth the notion that for every medication error that harms a patient, there are , mostly undetected, errors that do not. Most medication errors cause no patient harm or remain undetected by the clinician. Rates of medication errors vary, depending on the detection method used. For example, among hospitalized patients, studies have shown that errors may be occurring as frequently as one per patient per day. The impact was less in male patients, younger patients, and patients with less severe illnesses and in certain diagnosis-related groups. Without an infrastructure to capture and assess all medication errors and near misses, the real number is not known. These rates could be expected to be higher once patient safety organizations begin to collect nationwide errors and health care clinicians become more comfortable and skilled in recognizing and reporting all medication errors. The concern raised in To Err Is Human 1 about the potential prevalence and impact of ADEsâ€”2 out of every hospitalized patientsâ€”was just the beginning of our understanding of the potential magnitude of the rates of medication errors. Yet, despite numerous research findings, we cannot estimate the

actual rates because they vary by site, organization, and clinician; because not all medication errors are detected; and because not all detected errors are reported. Error-Prone Processes There are five stages of the medication process: Some of the most noted and early work on medication safety found hospitalized patients suffer preventable injury or even death as a result of ADEs associated with errors made during the prescribing, dispensing, and administering of medications to patients, 12 , 27â€”29 although the rates of error in the stages of the medication process vary. A few studies have indicated that one of every three medication errors could be attributed to either a lack of knowledge about the medication or a lack of knowledge about the patient. In this stage, the wrong drug, dose, or route can be ordered, as can drugs to which the patient has known allergies. Workload, knowledge about the prescribed drug, and attitude of the prescriberâ€”especially if there is a low perceived importance of prescribing compared with other responsibilitiesâ€”are significantly associated with ADEs. Similar results have been found in mandatory adverse event reporting systems. An analysis of reports associated with significant harm or death reported to the State of New York noted that, when the error occurred during the prescribing stage, written prescriptions accounted for 74 percent of the errors, and verbal orders accounted for 15 percent. One investigation of the occurrence of ADRs in outpatient veterans found no difference in ADR events between physicians and nurse practitioners. Transcribing, dispensing, and delivering In some settings, medication orders are transcribed, dispensed, and then delivered for nurse administration. In certain circumstances and settings, both nurses and pharmacists are involved in transcribing, verifying, dispensing, and delivering medications. Yet errors of these two stages transcribing and verifying, dispensing and delivering have been predominately studied for pharmacists. Medication administration Nurses are primarily involved in the administration of medications across settings. Nurses can also be involved in both the dispensing and preparation of medications in a similar role to pharmacists , such as crushing pills and drawing up a measured amount for injections. Early research on medication administration errors MAEs reported an error rate of 60 percent, 34 mainly in the form of wrong time, wrong rate, or wrong dose. In other studies, approximately one out of every three ADEs were attributable to nurses administering medications to patients. The causes of the deaths were categorized as miscommunication, name confusion, similar or misleading labeling, human factors e. The most common causes were human factors Nurses are not the only ones to administer medications. Physicians, certified medication technicians, and patients and family members also administer medications. Part of the challenge in understanding the impact of nursing in medication administration is the need for research that clearly differentiates the administrators of medications. Several studies have reported medication administration errors that have included nonnurses. National Council of State Boards of Nursing assessed whether there were any identifiable characteristics common to those nurses who committed medication administration errors. These rights are critical for nurses. A survey of patients discharged from the hospital found that about 20 percent were concerned about an error with their medications, and 15 percent of them were concerned about being harmed from mistakes by nurses compared to 10 percent who were concerned about mistakes by physicians. The essential environmental conditions conducive to safe medication practices include a the right to complete and clearly written orders that clearly specify the drug, dose, route, and frequency; b the right to have the correct drug route and dose dispensed from pharmacies; c the right to have access to drug information; d the right to have policies on safe medication administration; e the right to administer medications safely and to identify problems in the system; and f the right to stop, think, and be vigilant when administering medications. Of the errors for physicians, the majority were wrong dose, wrong choice of drug, and known allergy. Among the nursing administration errors, the majority were associated with wrong dose, wrong technique, and wrong drug. Each type of error was found to occur at various stages, though some more often during the ordering and administration stages. Since the study by Leape and colleagues, research has captured some of the types of error identified by Leape and added yet others e. The categorization approach used determines whether the implication can be targeted to stage, and therefore discipline, or to types of error. For example, 11 studies reported rates of types of medication errors using institution-specific and national databases, yet not specifying whether the error

occurred during the prescribing, dispensing, or administration stage of the medication process or not clearly specifying administration errors associated with nurse administration. One of these studies analyzed deaths associated with medication errors, finding that the majority of deaths were related to overdose and wrong drug 7 â€"again, not specified by stage. Yet among these, it may be possible to see that wrong dose, dose omission, wrong drug, and wrong time are the most frequent type of medication error. Even then, comparisons and practice implications are challenging due to the lack of standardization among the types of categories used in research. Working Conditions Can Facilitate Medication Errors Following the release of To Err Is Human, 1 the focus on deaths caused by medication errors targeted system issues, such as high noise levels and excessive workloads, 47 and system interventions, such as the need for computerized order entry, unit dose e. Thus, if health care institutions want to ensure safer, higher-quality care, they will need to, among other things, redesign systems of care using information technology to support clinical and administrative processes. Early research in this area found a relationship between characteristics of the work environment for nurses and medication errors. Also, research has found that health care clinicians should be aware of the repeated patterns of medication errors and near misses to provide insight on how to avoid future errors. This approach focuses on identifying predisposing factors within the working environment or systems that lead to errors. Latent conditionsâ€"Organizational processes, management decisions, and elements in the system, such as staffing shortages, turnover, and medication administration protocols. Error-producing conditionsâ€"Environmental, team, individual, or task factors that affect performance, such as distractions and interruptions e. Threats to medication safety include miscommunication among health care providers, drug information that is not accessible or up to date, confusing directions, poor technique, inadequate patient information, lack of drug knowledge, incomplete patient medication history, lack of redundant safety checks, lack of evidence-based protocols, and staff assuming roles for which they are not prepared. An additional risk is a hospital without hour pharmacy coverage, especially when procedural barriers to offset the risk of accessing high-risk drugs are absent. Together these studies indicate that the medication errors that are reported do not represent the actual incidence of medication errors. Without reporting, many errors may not be known. Based on a survey of nurses on barriers to reporting, Wakefield and colleagues 62 suggested several strategies to increase the reporting of MAEs: Incident reports, retrospective chart reviews, and direct observation are methods that have been used to detect errors. Incident reports, which capture information on recognized errors, can vary by type of unit and management activities; 73 they represent only a few of the actual medication errors, particularly when compared to a patient record review. There were two studies that compared detection methods. One of these studies of medication administration in 36 hospitals and skilled nursing facilities found errors made on 2, doses. Direct observation was able to detect 80 percent of true administration errors, far more than detected through other means. A second study compared detection methods and found that more administration errors were detected by observation a When automated systems that use triggers are not in place, multiple approaches such as incident reports, observation, patient record reviews, and surveillance by pharmacist may be more successful. State-based and nationally focused efforts to better determine the incidence of medication errors are also available and expanding Patient Safety and Quality Improvement Act of Research reported to date clearly reveals that medication errors are a major threat to patient safety, and that these errors can be attributed to all involved disciplines and to all stages of the medication process. Unfortunately, the research also reveals that we have only weak knowledge of the actual incidence of errors. Our information about ADEs those detected, reported, and treated is better, but far from complete. Research Evidenceâ€"Medication Administration by Nurses The research review targeted studies involving medication administration by nurses. This excluded several studies that assessed medication administration errors without differentiating whether the errors were associated with physicians, assistants, or nurses. None of these studies included interventions. The incidence of MAEs was detected either formally through incident reports, chart reviews, or direct observation, or informally through anonymous surveys. Two studies conducted retrospective assessments, one using medical records 43 and the other malpractice claims. Eight studies assessed MAEs using direct

observation of the medication administration process. Using chart reviews, Grasso and colleagues 43 found that 4. Direct observation studies placed the estimate of total incorrect doses between 19 percent and 27 percent, 87 and when an extra review was done to separate the errors into stages of the medication process, between 6 percent and 8 percent of doses were in error because of administration. The majority of types of MAEs reported were wrong dose, wrong rate, wrong time, and omission. All of the studies reviewed here reported wrong drug and dose, but varied across the other types of MAE categories see Evidence Table 1 ; this was dependent upon the study methodology.

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2: Medication Administration Safety - Patient Safety and Quality - NCBI Bookshelf

Principals of IV fluids, care, and maintenance, pharmacologic principles related to IV medications, IV nutrition, and administration of blood and blood products are more than adequately covered. ""Think About it"" and ""Ask Yourself"" boxes contain useful tips and situations to consider to help the practitioner deliver IV therapy safely.

Introduction Some medications must be given by an intravenous IV injection or infusion. The catheter allows your healthcare provider to give you multiple safe doses of medication without needing to poke you with a needle each time. Uses of IV medications IV medication is often used because of the control it provides over dosage. For instance, in some situations, people must receive medication very quickly. This includes emergencies, such as a heart attack, stroke, or poisoning. In these instances, taking pills or liquids by mouth may not be fast enough to get these drugs into the bloodstream. IV administration, on the other hand, quickly sends a medication directly into the bloodstream. Other times, medications may need to be given slowly but constantly. IV administration can also be a controlled way to give drugs over time. Certain drugs may be given by IV administration because if you took them orally by mouth , enzymes in your stomach or liver would break them down. Therefore, these drugs would be much more effective if sent directly into your bloodstream by IV administration. For instance, they may be used during a short hospital stay to administer medication during surgery or to give pain medications, nausea medications, or antibiotics. A standard IV line can typically be used for up to four days. With standard IV administration, a needle is usually inserted into a vein in your wrist, elbow, or the back of your hand. The catheter is then pushed over the needle. The needle is removed, and the catheter remains in your vein. All IV catheters are typically given in a hospital or clinic. A standard IV catheter is used for two kinds of IV medication administration: A syringe is inserted into your catheter to quickly send a one-time dose of drug into your bloodstream. IV infusion An IV infusion is a controlled administration of medication into your bloodstream over time. The two main methods of IV infusion use either gravity or a pump to send medication into your catheter: In the United States, a pump infusion is the most common method used. The pump is attached to your IV line and sends medication and a solution, such as sterile saline, into your catheter in a slow, steady manner. Pumps may be used when the medication dosage must be precise and controlled. This method uses gravity to deliver a constant amount of medication over a set period of time. With a drip, the medication and solution drip from a bag through a tube and into your catheter. Types of central venous catheters Long-term medication treatment, such as chemotherapy or total parenteral nutrition, usually requires a central venous catheter CVC instead of a standard IV catheter. A CVC is inserted into a vein in your neck, chest, arm, or groin area. CVCs can be used for a longer period of time than a standard IV line. A CVC can stay in place for several weeks or even months. The three main types of CVCs include: Peripherally inserted central catheter PICC A PICC has a long line that sends medication from the area of insertion, through your blood vessels, all the way to a vein near your heart. A PICC is typically placed in a vein above your elbow in your upper arm. Tunneled catheter With a tunneled catheter, medication can be sent directly into blood vessels in the heart. One end of the catheter is placed into a vein in the neck or chest during a short surgical procedure. The rest of the catheter is tunneled through the body, with the other end coming out through the skin. Medications can then be given into that end of the catheter. Implanted port Like a tunneled catheter, an implanted port inserts a catheter into a vein in the neck or chest. This device is also placed during a short surgical procedure. But unlike a tunneled catheter, an implanted port is located completely beneath the skin. To use this device, a healthcare provider injects medication through the skin into the port, which sends the medication into the bloodstream. Many different types of medications can be given by IV. Some of the drugs more commonly given by this method include: Medications given intravenously act on the body very quickly, so side effects, allergic reactions, and other effects can happen fast. In most cases, a healthcare provider will observe you throughout your infusion and sometimes for a period afterward. Examples of IV side effects include: Infection Infection can occur at the injection site. To help prevent

infection, the administration process must be done carefully using sterile germ-free equipment. An infection from the injection site can also travel into the bloodstream. This can cause a severe infection throughout the body. Infection symptoms can include fever and chills, as well as redness, pain, and swelling at the injection site. If you have any symptoms of infection, call your doctor right away. Damage to blood vessels and injection site A vein can be damaged during injection or by the use of an IV catheter line. This can cause infiltration. When this occurs, medication leaks into surrounding tissue instead of going into the bloodstream. Infiltration can cause tissue damage. IV administration can also cause phlebitis, or inflammation of the veins. Symptoms of both infiltration and phlebitis include warmth, pain, and swelling at the injection site. Call your doctor right away if you have any of these symptoms. Air embolism If air gets into the syringe or the IV medication bag and the line runs dry, air bubbles can enter your vein. These air bubbles can then travel to your heart or lungs and block your blood flow. An air embolism can cause severe problems such as heart attack or stroke. Blood clots IV therapy can cause blood clots to form. Clots can block important blood vessels and cause problems such as tissue damage or death. Deep vein thrombosis is one type of dangerous blood clot that IV treatment can cause. Talk with your doctor IV drug administration is a fast, effective way to send medication into your bloodstream. If your doctor has prescribed it for you, they will likely explain the purpose and the process for your treatment. But if you have questions, be sure to ask. Your questions may include: How long will I need to have my IV treatment? Am I at high risk of any side effects? Can I receive my IV medication at home? Can I give it to myself?

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3: Pharmacology: Essential Principles and Drug Administration (20 Items) â€¢ Nurseslabs

Intravenous (IV)Administration -medications and fluids are administered directly into the bloodstream and are immediately avaliable for use by the body -the IV route is used when a very rapid onset of action is desired.

If the desired peak concentration is 6. Half-life describes the time it takes for the serum concentration of a medication to decrease by one half of its original concentration. Half-life may be influenced by other medications, tissue perfusion and organ function. Clearance of a medication depends on many factors, including the volume of distribution, the half-life, the physiologic status of the patient, blood flow to the organs, organ function, and the properties of the medication itself. In clinical practice, clearance is generally referred to a linear or nonlinear. For a drug whose clearance follows linear pharmacokinetics, an increase in the dose will proportionately and predictably increase the serum proportional to the concentration of drug achieved at steady state. The majority of medications used in neonates follow this type of elimination. A drug that follows nonlinear pharmacokinetics may have rapid rise in serum concentration in response to a small increase in dose. This unpredictable dose response is a result of enzyme saturation in the liver. Elimination now becomes dose dependent. All medications cleared hepatically follow nonlinear pharmacokinetics; however, elimination may appear linear over the therapeutic range and change to nonlinear elimination when levels exceed the therapeutic range. An increased in dose yields a predictable increase in serum concentration unless the serum concentration exceeds what is normally considered therapeutic. In clinical practice, the steady state is considered to be achieved after about four to five half-lives of the drug have passed. Although drug concentrations will be the same after each dose at steady state, constant drug concentration does not define steady state. Use of loading dose may lead to rapid attainment of constant circulating drug concentrations, but drug equilibration continues among body compartments for at least five half-lives. Collection of the drug eliminated from the body or sampling of tissue compartments will reveal this continued equilibrium. The time required to reach steady state concentration is dependent upon the elimination rate which is inversely related to the half-life. Concentration increases with increasing infusion rate, or increasing dose and decreases with larger distribution volume. Doubling the infusion rate doubles the steady state concentration but the time to reach the steady state concentration remains constant. Therapeutic Drug Monitoring The goals of monitoring drug concentrations are to avoid concentrations that are toxic and to achieve concentrations that are effective at the site of drug action. This requires a close association between drug concentrations and these two effects: For many drugs this association is not as well established in neonates as it is in adults. Therapeutic drug monitoring is not appropriate or indicated for all drugs. The importance of antibiotic concentration monitoring to ensure therapeutic concentrations is often more important to neonates than avoiding concentrations considered toxic. Requirements for application of a target concentration strategy include: Analytic â€” drug assay is available that is accurate, precise and requires small blood volumes Pharmacokinetic â€” large interindividual variability exists in drug absorption, elimination and distribution. Adequate pharmacokinetic data about the drug are available. Pharmacologic â€” pharmacologic effect is proportional to plasma drug concentrations. A narrow range exists between effective and toxic drug concentrations. Pharmacologic effect is constant over an extended period of time. Clinical â€” clinical studies have provided information regarding the therapeutic and toxic ranges of drug concentrations. A therapeutic range is a definable range of drug concentrations in which the drug is expected to exert the desired effect with little or low toxicity. Therapeutic drug monitoring requires an assay be available to measure serum concentrations and is part of the day-today monitoring of drug therapy. Peak and trough drug concentrations are used frequently in therapeutic drug monitoring. The trough concentration is the lowest concentration just prior to the next dose. This concentration can be obtained within 30 to 60 minutes of drug administration. The peak concentration refers to the concentration immediately after the end of the distribution phase. Samples drawn during the distribution phase overestimate the peak concentration; sampling times should be selected to

ensure that distribution has ended. In neonates with slow IV infusion rates, it is often quite hard to determine the end of the infusion. For some medications it is important to evaluate both peak and trough serum concentrations. If trough concentrations are elevated, this reflects an inability of the body to eliminate a medication and the dosing interval should be extended. If the trough concentration is below a desired level, shortening the dosage interval is needed. Sub-therapeutic or elevated peak levels require actual dosage adjustments instead of interval changes. For other medications it is most important to be able to determine that serum drug concentration remains within the therapeutic range throughout the dosing interval e. In such cases, an evaluation of trough concentration will provide the most benefit. For these medications, peak concentrations are obtained only if the patient exhibits signs of toxicity. Obtaining drug levels once a patient achieves steady-state concentrations will usually only provide the health care provider with the most accurate information about how the patient may handle the medication on a long-term basis. Obtaining serum concentrations requires significant volumes of blood in the neonate so assessment of the clinical status may provide more useful information than obtaining serum concentrations of drugs. Certain medications are highly protein bound. There are two types of tests available for highly protein-bound medications: Free levels indicate the amount of free, unbound drug that is available to exert its effects on target tissues. If free serum assays are not available, caution must be used in interpretation of total serum concentrations for medications that are highly bound to plasma protein. Levels may be falsely interpreted as low when the actual amount of active drug is adequate or toxic. Understanding drug interactions, not only with other medications but also with food and other laboratory tests is important. The potential for a drug interaction should be evaluated in all patients receiving more than one drug. It is important to look at the expected timing for potential interactions. Not all interactions occur immediately when two drugs are administered to the same patient. Each interaction has a time course of maximal risk. Drug-drug interactions can be of several types. Some drugs may interfere with the absorption of other medications from the gastrointestinal tract. The interference can result from altered motility, altered gastrointestinal pH, altered gastrointestinal flora, and drug binding within the gut lumen. Medications that decrease gastrointestinal transit time may reduce the time available for drug absorption of other medications. Altered tissue and protein binding can cause drug-drug interactions. One drug may interfere with the metabolism or excretion of another medication, thereby increasing effectiveness, creating toxicity or producing sub-therapeutic levels. For example, phenobarbital induces liver enzymes and increases clearance of some medications, whereas cimetidine reduces enzyme activity which decreases clearance of medications. Drug-disease interactions must be considered too when monitoring therapeutic drug levels. Concurrent disease states can interfere with drug actions. Disease states that result in blood flow alterations to the liver such as congestive heart failure can decrease metabolism of medications that require hepatic biotransformation. Metabolism Many drugs must be metabolized to a more highly charged, less lipid soluble form before elimination from the body by renal, biliary, or other routes of excretion. The process of biotransformation occurs mainly in the liver. Although the liver is the major organ responsible, other organs are quite active for newborns kidneys, intestine, adrenal, and skin. Each pathway matures at a different rate. A variety of factors after birth from nutrition to acquired illnesses may accelerate or retard the maturation of drug metabolism. These factors along with changes in hepatic blood flow, enzyme induction, renal tubular and glomerular function, protein binding, and biliary secretion prevent accurate estimations of drug metabolism after birth. Maternal medications during pregnancy must also be considered. There is evidence that prenatal exposure to drugs that have the capacity to induce liver enzymes may affect neonatal metabolism. Absorption No absorption time is required for intravenous or intra-arterial administration. Other routes of administration require absorption of the medication from the site of administration for the drug to be recovered from the blood stream. Absorption from an intramuscular injection is influenced by muscle tone, muscle mass, and regional blood flow to the area. Neonates have significantly decreased muscle mass and decreased tone. Blood flow to the muscle tissue can be complicated by hypoxemia, sepsis, shock, and congestive heart failure. IM injections of some medications may result in a delay in therapy because of poor or erratic absorption. A longer

duration of action and a delay in the time to peak serum levels may occur with IM medications. IM administration should only be used if absolutely necessary for the patient to receive drug therapy. Problems common in neonates alter enteral drug absorption. Absorption from the gastrointestinal tract depends on many variables. Most GI absorption occurs outside the stomach in the large surface of the intestine. Delayed gastric emptying or delayed peristalsis delays distribution of the drug along the intestine and decreases drug absorption. Rapid intestinal transit due to diarrhea may prevent complete absorption. Antacids used to raise gastric pH binds with some drugs in the intestinal tract, such as digoxin, which is excreted with the stool and reduces the amount of absorption. Disease states with venous engorgement and decreased perfusion of the GI tract will decrease drug absorption. Neonates have a gastric pH at birth of 6 â€” 8. Medications that are weak acids will be poorly absorbed. Medications that are weak bases will be absorbed to a much greater extent. Absorption and time for peak serum concentration are influenced by the contact time of the medication with the absorptive surface. Neonates and especially premature infants have a delayed gastric emptying. Neonates have a relative state of pancreatic insufficiency. Pancreatic enzymes are required for the intraluminal hydrolysis of some medications. Biliary function and bile acid pool increases over the first month of life.

PHARMACOLOGIC PRINCIPLES RELATED TO THE PREPARATION AND ADMINISTRATION OF INTRAVENOUS MEDICATIONS pdf

4: Nursing Related Courses

Intravenous infusion therapy for nurses: principles & practice. Pharmacologic principles related to the preparation and administration of intravenous medications.

In fact, medication errors are the cause of 1. These errors are due to the wrong drug, dose, timing, or route of administration. Dosage and timing For all medications, you should only give the dosage described in the prescription label or other instructions. Dosage is carefully determined by your doctor and can be affected by your age, weight, kidney and liver health, and other health conditions. For some medications, dosage must be determined by trial and error. For these drugs, your healthcare provider would need to monitor you when you first start treatment. For instance, if your doctor prescribes thyroid medications or blood thinners, you would likely need to have several blood tests over time to show if the dosage is too high or too low. To be effective, many medications need to reach a certain level in your bloodstream. They need to be given at specific times, such as every morning, to keep that amount of drug in your system. Taking a dose too soon could lead to drug levels that are too high, and missing a dose or waiting too long between doses could lower the amount of drug in your body and keep it from working properly. Potential problems Adverse events, or unwanted and negative effects, can occur with any drug. A drug with high risk of adverse effects may be administered only by a healthcare provider. And in some uncommon cases, your healthcare provider may keep you in their facility so they can observe how the drug affects you. If you notice any problems, be sure to let your doctor know. Talk with your doctor Be sure to take your medications correctly to get the most out them and to reduce your risk of side effects and other problems. Make sure that you understand everything about taking your medication. If you have any questions, talk to your doctor. Some questions you might ask include: Can you explain your instructions more clearly? My nurse gives me my medication now. Can I be trained to give it to myself? Can a family member or healthcare provider give it to me instead? Are there any side effects I should watch for? What time of day should I take this drug? Or does it matter? Am I taking any medications that this drug could interact with? Why do I have to be so careful? Why would it matter if I took too little or too much medication? It might matter a lot. You have to take every dose on time, and you must take all of it until the prescription is gone. For instance, opioid pain medications, such as oxycodone or codeine, are dangerous if you take more than prescribed. You could become addicted to the drug or you could overdose and die. Healthline Medical Team Answers represent the opinions of our medical experts. All content is strictly informational and should not be considered medical advice.

5: NCLEX Pharmacology Quiz 1 (20 Items) â€¢ Nurseslabs

Continuous intravenous infusions require frequent monitoring to be sure that the correct volume and amount are administered and that the drug reaches safe, therapeutic blood levels.

6: Basic principles of pharmacology | Clinical Gate

IV administration, on the other hand, quickly sends a medication directly into the bloodstream. Other times, medications may need to be given slowly but constantly. IV administration can also be a.

7: CEUFast - Neonatal Pharmacology

Intravenous Infusion Therapy for Nurses: Principles & Practice is your trustworthy guide designed to help you navigate the challenging concepts and protocols of IV therapy and offer you the tools to master them in practice.

PHARMACOLOGIC PRINCIPLES RELATED TO THE PREPARATION AND ADMINISTRATION OF INTRAVENOUS MEDICATIONS pdf

Thromboembolic Risks in Angiography: Beers and Breweries Signifying contamination : on Austin Clarkes Nine men who laughed Smaro Kambourelli. Japans system of official development assistance Retreat or, the machinations of Henry Review and assessment of developmental issues concerning the metal parts treater design for the Blue Gras The constitution, Hizbollah, border tension, human rights and justice Application of gps in surveying The First Emperors Terracotta Legion American Clocks for Collectors And Robert Southeys Thalaba the Destroyer In the studio with Simon Michael Go math grade 5 teacher edition chapter 1 The life and times of Margaret of Anjou, queen of England and France Brahms Piano Works 2 (Kalmus Edition) Pine Kiss Vol. 1 (Pine Kiss) The Numerical Modelling of Nonlinear Stellar Pulsations: Problems and Prospects Spanish Programmatic Course (Spanish Programmatic Vol. 1) Sports nutrition a handbook for professionals 6th ed Zimbabwe national occupational safety and health policy The restoration: Harding. Coolidge. The Routledge Critical Dictionary of Global Economics Reclassification and recataloging of materials in college and university libraries Fata Morgana romance of art student life in Paris Sample questions and answers Fritzen, B. and Taylor, H. F. Introduction. Explaining long-term economic change Regional institutions and the evolution of employment regulation Poems of the Great War. Algebra 1 expressions equations and applications Collectors book of dolls clothes Teachers manual and key for Discovering You Carr family of Isle of Wight Nansemond counties, Virginia Going under lexi ryan Banner of the Stars Pioneer Work In Opening The Medical Profession To Women (Classics in Womens Studies) The verdicts and what came after District of Columbia House Voting Rights Act of 2007 American Story, Combined Volume (Penguin Academics Series), The Natural killer cells Wayne M. Yokoyama