DOWNLOAD PDF CLASSIFICATION OF DRUGS ON THE BASIS OF DRUG ACTION

Chapter 1 : - Australian Standard Classification of Drugs of Concern,

Drugs can be categorized in a number of ways. In the world of medicine and pharmacology, a drug can be classified by its chemical activity or by the condition that it treats.

It is used to treat anemia. It is used to treat or prevent low vitamin B It may be given to you for other reasons. Talk with the doctor. If you have an allergy to cyanocobalamin or any other part of cyanocobalamin B12 injection. If you are allergic to any drugs like this one, any other drugs, foods, or other substances. Tell your doctor about the allergy and what signs you had, like rash; hives ; itching; shortness of breath; wheezing; cough; swelling of face, lips, tongue, or throat; or any other signs. This medicine may interact with other drugs or health problems. Tell your doctor and pharmacist about all of your drugs prescription or OTC, natural products, vitamins and health problems. You must check to make sure that it is safe for you to take cyanocobalamin B12 injection with all of your drugs and health problems. Do not start, stop, or change the dose of any drug without checking with your doctor. What are some things I need to know or do while I take Cyanocobalamin Injection? Tell all of your health care providers that you take cyanocobalamin B12 injection. This includes your doctors, nurses, pharmacists, and dentists. Have blood work checked as you have been told by the doctor. Talk with your doctor before you drink alcohol. Tell your doctor if you are pregnant or plan on getting pregnant. You will need to talk about the benefits and risks of using cyanocobalamin B12 injection while you are pregnant. Tell your doctor if you are breast-feeding. You will need to talk about any risks to your baby. Very bad and sometimes deadly allergic reactions have rarely happened. Talk with your doctor. Some products have benzyl alcohol. Do not give a product that has benzyl alcohol in it to a newborn or infant. Talk with the doctor to see if this product has benzyl alcohol in it. How is this medicine Cyanocobalamin Injection best taken? Use cyanocobalamin B12 injection as ordered by your doctor. Read all information given to you. Follow all instructions closely. To gain the most benefit, do not miss doses. Keep taking cyanocobalamin B12 injection as you have been told by your doctor or other health care provider, even if you feel well. It is given as a shot into a muscle or under the skin. If you will be giving yourself the shot, your doctor or nurse will teach you how to give the shot. Follow how to take cyanocobalamin B12 injection as you have been told by your doctor. Do not use more than you were told to use. Wash your hands before and after use. Do not use if the solution is cloudy, leaking, or has particles. Do not use if solution changes color. Do not reuse needles or other items. When the box is full, follow all local rules for getting rid of it. Talk with a doctor or pharmacist if you have any questions. What do I do if I miss a dose? Take a missed dose as soon as you think about it. If it is close to the time for your next dose, skip the missed dose and go back to your normal time. Do not take 2 doses at the same time or extra doses. Dosage Information in more detail What are some side effects that I need to call my doctor about right away? Even though it may be rare, some people may have very bad and sometimes deadly side effects when taking a drug. Tell your doctor or get medical help right away if you have any of the following signs or symptoms that may be related to a very bad side effect: Signs of an allergic reaction, like rash; hives; itching; red, swollen, blistered, or peeling skin with or without fever; wheezing; tightness in the chest or throat; trouble breathing, swallowing, or talking; unusual hoarseness; or swelling of the mouth, face, lips, tongue, or throat. Swelling, warmth, numbness , change of color, or pain in a leg or arm. Very loose stools diarrhea. Feeling very tired or weak. Shortness of breath, a big weight gain, or swelling in the arms or legs. A burning, numbness, or tingling feeling that is not normal. Any unexplained bruising or bleeding. What are some other side effects of Cyanocobalamin Injection? All drugs may cause side effects. However, many people have no side effects or only have minor side effects. Call your doctor or get medical help if any of these side effects or any other side effects bother you or do not go away:

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Chapter 2 : Drug - Types of drugs | calendrierdelascience.com

When a drug is therapeutically active and is used for the diagnosis, treatment or prevention of a disease, it is called medicine (legal drugs). They target the macromolecules inside the body and generate a biological response.

In the main classification structure of the ASCDC, these criteria are attributes, characteristics and effects of particular drugs of concern. They are used to establish how the individual drugs are related and how they can most usefully be grouped. The following classification criteria are used to determine the categories of the main classification structure: The most detailed level of the classification consists of separately identified drugs, aggregate groups of drugs and residual categories of drugs see Identifying the Base Level Units of the Classification. These base level units are combined to form the narrow groups of the classification primarily on the basis of their similarity in terms of chemical structure and mechanism of action. For example, Narrow Group 24, Benzodiazepines, contains drugs that all have the same core chemical structure and a similar profile in terms of the broad mechanisms by which they produce their effects. Narrow groups formed in this manner i. In three instances, the similarity of the broad effect of the drugs of concern on physiological activity is used as the primary classification criterion rather than the similarity in chemical structure and their mechanism of action when aggregating the base level units to form narrow groups. The Narrow Group 22, Anaesthetics, comprises drugs which are not similar in terms of chemical structure or broad mechanism of action but which form a useful narrow group on the basis of the similarity of their effect on physiological activity. The Narrow Group 56, Atypical Antipsychotics, comprises drugs that have different mechanisms of action but which produce a similar anti-psychotic effect. Similarly, the Narrow Group 91, Diuretics, is formed on the basis of the similarity of the effect of these drugs of concern on physiological activity. The use of the second classification criterion in this way also allows for the formation of meaningful residual categories of drugs of concern at the narrow group level. At the first and most general level of the main classification structure, broad groups are formed by aggregating narrow groups. This aggregation of narrow groups was undertaken, as far as possible, so that the broad groups consist of narrow groups of drugs of concern which are similar in terms of their effect on physiological activity. For example, Broad Group 1, Analgesics, consists of drugs which have the effect of blocking or relieving pain. In instances where drugs of concern are classified on the basis of their similarity of effect on physiological activity, the nature of the effect on the CNS is usually being addressed. The most obvious exception to this principle occurs with Broad Group 4, Anabolic Agents and Selected Hormones, which contains narrow groups of drugs which are similar in terms of their effect on the endocrine system rather than the CNS. Broad Group 6, Volatile Solvents is formed by the conventional application of the classification criteria as described above. However, the drugs included within this broad group have a similar broad physiological effect to drugs included in Broad Group 2, Sedatives and Hypnotics. Despite this similarity of physiological effect, volatile solvents have been separated from other sedatives and hypnotics. Broad Group 9, Miscellaneous Drugs of Concern, is a residual category which contains narrow groups of drugs which do not fit into any of the other broad groups on the basis of either of the classification criteria. The two substantive narrow groups contained within this broad group do not exhibit the same broad effect on physiological activity but are considered to be of sufficient importance to warrant separate identification within the main classification structure. This broad group also contains a residual narrow group which will allow for the classification of drugs not currently identified as being of concern and which could not be classified to residual categories in any other part of the classification. The third and most detailed level of the classification consists of the base units which are separately identified drugs of concern, aggregate groups of drugs of concern and residual categories of drugs of concern see Identifying the Base Level Units of the Classification. The 17 third level aggregate units comprise drugs which do not support individual identification but which are aggregated to form single base level units as they are chemically similar and, when grouped, represent useful categories. The 36 nec categories contain drugs which are not sufficiently

significant, in the current Australian context, to support separate identification or representation as an aggregate base level unit. All drugs which have been identified as drugs of concern, but which are not listed separately or contained within one of the aggregate base level units, are included in the nec category of the narrow group to which they relate. The second level of the classification consists of 38 narrow groups which contain base level units which are similar in terms of the classification criteria. These residual categories contain base level units which do not belong in any of the alternative narrow groups contained within the broad group on the basis of the classification criteria. The first and most general level of the classification comprises eight broad groups. The broad groups are formed, in the main, by aggregating narrow groups which are broadly similar in terms of the classification criteria. An important consideration in developing a classification for statistical purposes is that the structure be statistically balanced. The classification should not have categories at the same level in its hierarchy which are excessively disparate in their population size the number of classifiable observations or responses each category represents in any application. This allows the classification to be used effectively for the cross-tabulation of aggregate data and for the dissemination of data from sample surveys. Strict application of this principle was not possible in the ASCDC as it was necessary to incorporate the statistical requirements of a diverse range of community activity sectors such as health, welfare, and crime and justice. As a result, not all of the categories of the classification are applicable in all collections and the categories of the classification may not represent a significant number of observations in all applications. For each individual application, the classification, while not necessarily providing an even spread of data across its whole structure, provides a framework that is useful and practical for collecting and presenting data. One of the more notable constraints in the development of the classification was the practical requirement to represent the diverse range of available drugs of concern within a manageable classification structure. The principle adopted to achieve this end, and to serve the statistical and research purposes of the classification, was to separately identify only those drugs which are of significant concern in the Australian context. Many of the base level drugs of concern are known by a number of proprietary brand or trademark names. Some potential users of the classification indicated they would prefer all these names to be represented in the classification structure for purposes of completeness. While proprietary names are often more readily recognised, it is not practical to have a list of all the known brand names of a drug as the title of each base level unit. As the categories of a classification must be mutually exclusive it is not feasible to identify each brand name as a separate category. An additional limitation to the use of proprietary names to represent base level units is that many of the more popular or well known brand names are often used, in a generic manner, to refer to all brands of the same product. For example, Panadol to refer to paracetamol, Valium to refer to diazepam, and Prozac to refer to fluoxetine. Therefore, each drug of concern is identified once only in the classification, and where applicable, the base level units reflect the generic name of a drug. Proprietary names are included in the Coding Indexes data cube. In some instances the generic name of a drug constituting a category of the classification is expressed as an abbreviation of the full chemical name of the psychoactive substance. This is done because of the length of the name or because the abbreviation is more commonly used than the full chemical name. Where abbreviations are used for category names in the main classification structure, the full name is provided in the List of Abbreviations and in the Coding Indexes. A further factor which influenced the once only representation and titles of the base level units relates to the coverage of the classification. Many drugs can exist in more than one chemical form. Although most are available in their crystalline salt form hydrochloride, sulphate, citrate, etc. Drugs are also available in different physical forms. As the main classification structure is not intended to classify the form of a drug, substances such as cannabis, hash oil or cannabis resin are all coded to the base level unit, Cannabinoids, which represents the psychoactive compounds common to all the forms of the drug. Similarly, morphine hydrochloride, morphine sulfate and morphine tartrate are all coded to the base level unit Morphine. Many collectors and users of data relating to drugs of concern require information on the form of a drug as well as the chemical substance. To distinguish between different forms of a particular drug a form of drug classification has been included in the ASCDC

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Type of Drug Classification and Additional Classifications data cube. The purpose of this classification is to act in conjunction with the main classification structure to further define data relating to drugs of concern without compromising the principles of the main classification structure. The first digit identifies the broad group in which each narrow group and base level unit is contained. The first and second digits identify the narrow group in which each base level unit is contained. The four-digit codes represent each of the base level units which are separately identified drugs of concern, aggregate groups of drugs of concern and residual nec categories of drugs of concern. For example, the one-digit code 3, denotes the third broad group in the classification structure, Stimulants and Hallucinogens. The two-digit code 31 identifies the first narrow group, Amphetamines, contained within this broad group. The four-digit code denotes the third base level unit, Methamphetamine, contained within the first narrow group, Amphetamines, of the third broad group, Stimulants and Hallucinogens. This example is presented as follows:

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Chapter 3 : Lomotil - FDA prescribing information, side effects and uses

On the basis of drug action It is based on the action of a drug on a particular biochemical process. For example, all antihistamines inhibit the action of the compound, histamine which causes inflammation in the body.

Bring fact-checked results to the top of your browser search. Types of drugs Drugs used in medicine generally are divided into classes or groups on the basis of their uses, their chemical structures, or their mechanisms of action. These different classification systems can be confusing, since each drug may be included in multiple classes. The distinctions, however, are useful particularly for physicians and researchers. For example, when a patient experiences an adverse reaction to a drug, these classification systems allow a physician to readily identify an agent that has comparable efficacy but a different structure or mechanism of action. The following sections provide a general overview of some major types of drugs, grouped according to the disease or human tissues or organ systems on which they act. This is not intended as a comprehensive list, given that the number of drugs that have been developed is vast and research into them is ongoing. Additional information, however, can be found in separate articles on the different classes of drugs and on certain individual drugs themselves. Antimicrobial drugs Antimicrobial drugs can be used for either prophylaxis prevention or treatment of disease caused by bacteria, fungi, viruses, protozoa, or helminths. These agents generally are of three types: Antimicrobial agents often are effective against a specific microorganism or group of closely related microorganisms, and they often do not affect host e. A number of antimicrobial compounds, however, produce significant toxic effects in humans, but they are used because they have a favourable chemotherapeutic index the amount required for a therapeutic effect is below the amount that causes a toxic effect. The phenomenon of resistance, in which infectious agents develop the ability to evade drug effects, has required an ongoing search for different agents. The increase in resistance to antimicrobial drugs has resulted from their widespread and sometimes indiscriminate use see also antibiotic resistance. Central nervous system drugs Several major groups of drugs, notably anesthetics and psychiatric drugs, affect the central nervous system. These agents often are administered in order to produce changes in physical sensation, behaviour, or mental state. Local anesthetics, on the other hand, induce a loss of sensation in just one area of the body by blocking conduction in nerves at and near the injection site. Diazepam Valium is a benzodiazepine drug that is commonly used to reduce symptoms of anxiety. Drug Enforcement Administration Drugs that influence the operation of neurotransmitter systems in the brain can profoundly influence and alter the behaviour of patients with mental disorders. Psychiatric drugs that affect mood and behaviour may be classified as antianxiety agents , antidepressants , antipsychotics , or antimanics. Bloom Cardiovascular drugs Cardiovascular drugs affect the function of the heart and the blood vessels. Given the relatively high prevalence of certain cardiovascular diseases , including hypertension high blood pressure and atherosclerosis hardening of the arteries caused primarily by the deposition of fat on the inner walls of the arteries , these agents necessarily rank among some of the most widely used drugs in medicine. They frequently are classified according to the tissues they act on and the specific actions they produce. Thus, there are drugs that act on the heart and that are distinguished further by their ability to alter either the frequency of heartbeat, the force of contraction of the heart muscle, or the regularity of the heartbeat. There also are a number of drugs that act on the blood vessels, typically causing the vessels to constrict to raise blood pressure or to relax to lower blood pressure. For detailed information on these agents, see cardiovascular drug and cardiovascular disease. Drugs affecting blood Drugs may also affect the blood itself, such as by activating or inhibiting enzymes involved in the formation of clots thrombi within blood vessels. Thrombi form when blood vessels are damaged, such as by wounding or by the accumulation of harmful substances e. Thrombi are further defined by their adherence to vessel walls, which in the case of a condition such as atherosclerosis can give rise to thrombosis , in which the thrombus partially impedes the flow of blood through the vessel. When a portion of a thrombus breaks off, the circulating clot becomes known as an embolus. An embolus travels in the bloodstream and may become lodged in an artery, blocking

occluding blood flow. This can lead to heart attack or stroke. Anticoagulants , antiplatelet drugs , and fibrinolytic drugs all affect the clotting process to some degree; these classes of drugs are distinguished by their unique mechanisms of actions. Other drugs that act on the blood include the hypolipidemic drugs or lipid-lowering agents and the antianemic drugs. The former are used in the treatment hyperlipidemia high serum levels of lipids , which frequently is associated with elevated cholesterol; examples include the widely prescribed statins HMG-CoA reductase inhibitors. Antianemic agents increase the number of red blood cells or the amount of hemoglobin an oxygen-carrying protein in the blood, deficiencies that underlie anemia. Digestive system drugs Drugs may act on the digestive system either by affecting the actions of the involuntary muscle motility and thus altering movement or by altering the secretion of digestive juices or gastric emptying. Some examples of major groups of digestive drugs include antidiarrheal drugs , laxatives , antiemetics , emetics , proton pump inhibitors , and antacids. The antacid Tums contains calcium carbonate as the active ingredient. Within the central nervous system, sensitive sites include the hypothalamus and adjacent areas of the brain and the anterior lobe of the pituitary gland. Regions outside the brain that are vulnerable include the gonads i. The body has anatomic or physiological barriers that tend to protect the reproductive system. The so-called placental barrier and the blood-testis barrier impede certain chemicals, although both allow most fat-soluble chemicals to cross. Drugs that are more water-soluble and that possess higher molecular weights tend not to cross either the placental or the blood-testis barrier. In addition, if a drug binds to a large molecule such as a blood-borne protein, it is less likely to be transported into the testes or less likely to come in contact with the fetus. The sedative and antiemetic agent thalidomide and the anticonvulsant drug phenytoin are notorious examples of teratogens. Women frequently are advised to avoid all drugs including nicotine during pregnancy , unless the medicine is well-tried and essential. Drugs taken by males may be teratogenic if they damage the genetic material chromosomes of the spermatozoa. There appears to be little, if any, barrier to chemicals, or drugs, gaining entry to breast milk or semen. Endocrine system drugs Control of most body functions is achieved by the nervous system and the endocrine system , which constitute the two main communication systems of the body. They function in a closely coordinated way, each being dependent on the other for its proper operation. The total behaviour of the organism is integrated by a constant traffic of both neural and hormonal signals, which are received and responded to by appropriate tissues. The activities of the central nervous system and of the endocrine glands are themselves dependent on feedback control through neural and hormonal stimuli. Most are polypeptides; some are derivatives of amino acids epinephrine, norepinephrine, dopamine , or thyroid hormones ; and some are steroids the sex hormones and the hormones of the adrenal cortex. Polypeptide and amino acid hormones bring about their effects by acting on cell membrane receptors that are specifically sensitive to their action. Steroid hormones penetrate the cell membrane and interact with receptors on specific binding proteins, which then act on the cell nucleus to modify protein synthesis. The techniques of recombinant DNA technology have begun to provide improved methods for obtaining large amounts of scarce human hormones in pure form. The functions of hormones fall into three general categories: The therapeutic use of hormones is concerned primarily with replacement therapy in deficiency states e. Hormones and their analogs and antagonists , however, can be used for a variety of additional purposesâ€”e. Renal system drugs The kidney is primarily concerned with maintaining the volume and composition of body fluids. Thus, drugs that affect the renal system generally alter the levels of fluids in the body, often by facilitating either the excretion or the retention of fluid through changes in the concentrations of solutes in the fluid. The kidneys work by nonselectively filtering blood, under pressure, in millions of small units called glomeruli. The glomeruli are contained within the nephrons , the so-called functional units of the kidneys. The nephrons can be divided into distinct regions in which the absorptive processes are different: Carbonic anhydrase inhibitors, such as acetazolamide and methazolamide, depress the reabsorption of sodium bicarbonate in the proximal tubule by inhibiting an enzyme, carbonic anhydrase, which is involved in the reabsorption of bicarbonate. Urine formation is increased. The urine, which is rich in sodium bicarbonate and is alkaline, also has an increased concentration of potassium ions, which can lead to a

serious loss of potassium from the body hypokalemia. Diuretics rid the body of fluid that builds up in edema accumulation of body fluid with dissolved solutes in the intercellular spaces of the connective tissue by interfering with the mechanisms of solute transport, thus increasing the production of urine. Diuretics that act in the loop of Henle produce a rapid peak in the excretion of urine diuresis , which then wanes as the drugs are excreted and because of the compensatory factors due to fluid loss. These diuretics clear sodium chloride salt from the body and interfere indirectly with the mechanisms by which water is reabsorbed from the collecting duct. Consequently, large volumes of dilute urine containing sodium, potassium, and chloride ions are formed. The loop diuretics are also called high-ceiling diuretics because they can produce an extra level of diuresis over and above the maximum produced by other classes of diuretic drugs. Examples of this class are furosemide, ethacrynic acid, and bumetanide. Loop diuretics are used in the treatment of pulmonary edema associated with congestive heart failure. The major side effect of these drugs is hypokalemia. The thiazide class of diuretics, which are widely used in the treatment of hypertension , interferes with salt reabsorption in the first part of the distal tubule. A mild diuresis results in which sodium , potassium , and chloride ions are eliminated in the urine. Examples of these drugs are chlorothiazide and hydrochlorothiazide. The adrenal gland releases a hormone, aldosterone , which promotes sodium absorption in the latter part of the distal tubule. Its function is to increase sodium retention in sodium-depleted states. Aldosterone levels, however, may be abnormally high in hyperaldosteronism and in hypertension. Drugs such as spironolactone act as antagonists of aldosterone and compete with it for its site of action in the distal tubule. As with most antagonists, spironolactone has no direct action of its own but simply prevents the action of the hormone, thereby correcting the excess sodium reabsorption. In the latter part of the distal tubule, there are mechanisms that exchange one ion for another; for example, sodium is exchanged for potassium and hydrogen. Sodium is absorbed across the tubule wall while potassium and hydrogen are added to the urine. Thus, diuretics such as the thiazides, loop diuretics, and carbonic anhydrase inhibitors, which prevent sodium absorption in the early parts of the nephron, cause an unusually large sodium load to be delivered to the distal tubule, where sodium may be exchanged for other ions, especially potassium, and reabsorbed from the urine. The result is that the body loses a large amount of potassium ions, which is serious if the loss exceeds the capacity of the diet to restore it. Potassium depletion leads to failure of neuromuscular function and to abnormalities of the heart, among other serious effects. The potassium-sparing diuretics block the exchange processes in the distal tubule and thus prevent potassium loss. Sometimes a mixture of diuretics is used in which a thiazide is taken together with a potassium-sparing diuretic to prevent excess potassium loss. In other instances, the potassium loss may be made up by taking oral potassium supplements in the form of potassium chloride. They limit the reabsorption of water in the tubule. Osmotic diuretics cannot be reabsorbed from the urine, so they set up a situation of nonequilibrium across the tubule membrane. In order to maintain normal osmotic pressure, water is moved across the membrane, increasing the volume of urine. In some situations it is desirable to change the acidity or alkalinity of the urine, usually to promote the loss of toxic substances from the body. Urine may be made more alkaline by giving sodium bicarbonate or citrate salts. It may be made more acid by giving ammonium chloride. Dermatologic drugs Few drugs are absorbed rapidly through intact skin.

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Chapter 4 : Introduction to Drug Action

Drug Classification: Drugs can be classified according to various criteria including chemical structure or pharmacological action. The preferred classification is the latter one which may be divided into main groups as follows.

Virtual ChemBook Drug Classification: Drugs can be classified according to various criteria including chemical structure or pharmacological action. The preferred classification is the latter one which may be divided into main groups as follows: Drugs have three or more names including a: The chemical name is assigned according to rules of nomenclature of chemical compounds. The brand name is always capitalized and is selected by the manufacturer. The generic name refers to a common established name irrespective of its manufacturer. In most cases, a drug bearing a generic name is equivalent to the same drug with a brand name. However, this equivalency is not always true. Although drugs are chemically equivalent, different manufacturing processes may cause differences in pharmacological action. Several differences may be crystal size or form, isomers, crystal hydration, purity- type and number of impurities , vehicles, binders, coatings, dissolution rate, and storage stability. Introduction to Drug Action Definition: A very broad definition of a drug would include "all chemicals other than food that affect living processes. However, if a drug causes a harmful effect on the body, the drug is a poison. The same chemical can be a medicine and a poison depending on conditions of use and the person using it. Another definition would be "medicinal agents used for diagnosis, prevention, treatment of symptoms, and cure of diseases. A disease is a condition of impaired health resulting from a disturbance in the structure or function of the body. Diseases may be classified into the following major categories: The original definition applied only to drugs which were used in the treatment of infectious diseases. The proper term for the treatment of non-infectious diseases is pharmacodynamics. Sites of Drug Action: Drugs act within the cell by modifying normal biochemical reactions. Enzyme inhibition may be reversible or non reversible; competitive or non-competitive. Antimetabolites may be used which mimic natural metabolites. Gene functions may be suppressed. This is usually through specific drug receptor sites known to be located on the membrane. A receptor is the specific chemical constituents of the cell with which a drug interacts to produce its pharmacological effects. Some receptor sites have been identified with specific parts of proteins and nucleic acids. In most cases, the chemical nature of the receptor site remains obscure. Drugs act exclusively by physical means outside of cells. These sites include external surfaces of skin and gastrointestinal tract. Drugs also act outside of cell membranes by chemical interactions. Neutralization ofstomach acid by antacids is a good example. Mode of Drug Action: It is important to distinguish between actions of drugs and their effects. Actions of drugs are the biochemical physiological mechanisms by which the chemical produces a response in living organisms. The effect is the observable consequence of a drug action. For example, the action of penicillin is to interfere with cell wall synthesis in bacteria and the effect is the death of the bacteria. One major problem of pharmacology is that no drug produces a single effect. The primary effect is the desired therapeutic effect. Secondary effects are all other effects beside the desired effect which may be either beneficial or harmful. Drugs are chosen to exploit differences between normal metabolic processes and any abnormalities which may be present. Since the differences may not be very great, drugs may be nonspecific in action and alter normal functions as well as the undesirable ones. This leads to undesirable side effects. The biological effects observed after a drug has been administered are the result of an interaction between that chemical and some part of the organism. Mechanisms of drug action can be viewed from different perspectives, namely, the site of action and the general nature of the drug-cell interaction. Chemotherapeutic agents act by killing or weakening foreign organisms such as bacteria, worms, viruses. The main principle of action is selective toxicity, i. Drugs act by stimulating or depressing normal physiological functions. Stimulation increases the rate of activity while depression reduces the rate of activity.

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Chapter 5 : Cyanocobalamin (B12) Injection Information - calendrierdelascience.com

Drugs used in medicine generally are divided into classes or groups on the basis of their uses, their chemical structures, or their mechanisms of action. These different classification systems can be confusing, since each drug may be included in multiple classes.

What Are Drug Classifications? Drug classifications are a way to organize drugs into categories. There are many reasons to do this. Classifying drugs by chemical similarities is useful because drugs that are chemically similar often have similar impacts and risks. An individual who is addicted to a drug is also more likely to abuse and become addicted to another drug if it is chemically similar. Also, the same treatment is often effective for chemically similar drugs. Despite these generalities, chemically similar drugs may have very different legal and medical impacts. Many people classify drugs by how they impact the mind and body. For example, some drugs have a tendency to make a user active and energetic while others make an individual feel relaxed and calm. This is especially common among drug users and those who work closely with drug users. Many of these drug classifications have little basis in chemical similarity or legal outcomes, although there is often overlap. Most countries have a legal classification system for drugs. These systems determine the circumstances, if any, under which that drug is legal, various requirements for that drug, and any legal penalties associated with possession, distribution, or manufacture of it. Legal classifications are generally based on the perceived medical value of a drug and its perceived risk and danger. There is a considerable disagreement about how drugs should be classified, even among experts. This means that the same drug may be classified differently under two schemes or two systems may use categories with the same name. However, some of the most common are listed below. Drug Classifications Based on Chemical Makeup Alcohol Alcohol is the most widely abused substance across most of the world, including in the United States. Legal to some extent in all 50 states, alcohol impacts numerous body systems, which in turn causes numerous effects in users. Alcohol creates feelings of euphoria and lowers inhibitions, but it also severely impairs judgment, perception, and reaction times. There are many forms of alcohol, including: Beer Liquor Opioids Also called opiates, opioids are either derived from the drug opium or chemicals designed to mimic it. Opioids work by interacting with neurotransmitters in the brain and blocking the signals that they are sending. This enables opioids to serve as powerful pain killers, but it also can cause feelings of intense pleasure, leading to addiction. Opioid addiction is one of the most serious problems faced by America today. Opioids are some of the most addictive of all known substances, and they are also some of the deadliest. Some of the most well-known opioids include:

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Chapter 6 : Therapeutic Classification of Drugs | Medindia

Many of these drug classifications have little basis in chemical similarity or legal outcomes, although there is often overlap. Most countries have a legal classification system for drugs. These systems determine the circumstances, if any, under which that drug is legal, various requirements for that drug, and any legal penalties associated.

Hallucinogens Anabolic steroids All of these drugs, with the exception of anabolic steroids, are considered to be psychoactive â€" meaning they affect one or more of the mental faculties including mood, feelings, thoughts, perception, memory, cognition, and behavior. Additionally, use of these drugs can be associated with a host of physical, mental health, and personal complications, including alcoholic liver cirrhosis, cannabis-induced psychosis, social problems like stigma, occupational difficulties, financial problems, and even legal problems. Physical dependence to a drug suggests that the body has become habituated to the presence of a drug. Consequently, physical dependence is reflected in both the development of tolerance and the presence of a withdrawal syndrome. Tolerance refers to reduced effects compared to what was experienced with a previous amount of the substance. Withdrawal develops when excessive or prolonged use of a drug is sharply reduced or stopped. The onset of withdrawal often prompts the dependent individual to resume use of the drug or one similar to it to avoid withdrawal. For example, withdrawal symptoms such as shaking, sweating, nausea, vomiting, or seizures may occur once alcohol use is stopped after regular or excessive use. Psychological dependence is manifested in the form of craving for a drug. A person with psychological dependence has an excessive, irresistible, uncontrollable desire to use the drug. Psychological dependence may not cause physical symptoms, but can lead to drug-seeking behavior. Chemical Classifications of Drugs Each of the regulated drugs that act on the central nervous system or alter your feelings and perceptions can be classified according to their physical and psychological effects. The different drug types include the following: Drugs that suppress or slow the activity of the brain and nerves, acting directly on the central nervous system to create a calming or sedating effect. This category includes barbiturates phenobarbital, thiopental, butalbital , benzodiazepines alprazolam , diazepam , clonazepam , lorazepam , midazolam , alcohol, and gamma hydroxybutyrate GHB. Depressants are taken to relieve anxiety, promote sleep and manage seizure activity. Drugs that accelerate the activity of the central nervous system. Stimulants can make you feel energetic, focused, and alert. This class of drugs can also make you feel edgy, angry, or paranoid. Stimulants include drugs such as cocaine , crack cocaine , amphetamine , and methamphetamine. According to the recent World Drug Report published by the United Nations Office on Drugs and Crime, amphetamine-derived stimulants like ecstasy and methamphetamine are the most commonly abused drugs around the world after marijuana. Also known as psychedelics, these drugs act on the central nervous system to alter your perception of reality, time, and space. Hallucinogenic drugs include psilocybin found in magic mushrooms , lysergic acid diethylamide LSD , peyote , and dimethyltryptamine DMT. These are the drugs that act through the opioid receptors. Opioids are one of the most commonly prescribed medicines worldwide and are commonly used to treat pain and cough. These include drugs such as heroin , codeine , morphine , fentanyl , hydrocodone , oxycodone , buprenorphine , and methadone. These are a broad class of drugs with the shared trait of being primarily consumed through inhalation. Most of the substances in this class can exist in vapor form at room temperature. As many of these substances can be found as household items, inhalants are frequently abused by children and adolescents. These include substances such as paint, glue, paint thinners, gasoline, marker or pen ink, and others. Though ultimately all of these substances cross through the lungs into the bloodstream, their precise method of abuse may vary but can include sniffing, spraying, huffing, bagging, and inhaling, among other delivery routes. Cannabis is a plant-derived drug that is the most commonly used illicit drug worldwide. It acts through the cannabinoid receptors in the brain. Cannabis is abused in various forms including bhang, ganja, charas, and hashish oil. New psychoactive substances NPS. These are drugs designed to evade the existing drug laws. Drugs such as synthetic cannabinoids, synthetic cathinones, ketamine , piperazines, and

some plant-based drugs such as khat and kratom are examples of NPS. Legal Classifications of Drugs The Controlled Substances Act established five classifications, or schedules, for drugs regulated by law. According to the DEA , these classifications are broken down based on their potential for abuse and if they have a legitimate medical use: Schedule I include the drugs that have a high potential for abuse, that have no currently accepted medical use in treatment in the United States, and that there is a lack of accepted safety for use of the drug under medical supervision. Schedule II includes drugs that have a high potential for abuse, have currently accepted medical use in treatment in the United States or currently accepted medical use with severe restrictions, and that the abuse of may lead to severe psychological or physical dependence. Drugs such as amphetamine, cocaine, fentanyl, hydromorphone oxycodone, and hydrocodone are included in Schedule II. Schedule III includes drugs that have a potential for abuse less than the drugs or other substances in schedules I and II, have a currently accepted medical use in treatment in the United States, and that the abuse of may lead to moderate or low physical dependence or high psychological dependence. Drugs such as anabolic steroids, buprenorphine, and ketamine are included in Schedule III. Schedule IV includes drugs that have a low potential for abuse relative to the drugs or other substances in schedule III, have a currently accepted medical use in treatment in the United States, and that the abuse of may lead to limited physical dependence or psychological dependence relative to the drugs or other substances in schedule III. Drugs such as benzodiazepines, modafinil, and tramadol are included in Schedule IV. Schedule V includes drugs that have a low potential for abuse relative to the drugs or other substances in schedule IV, have a currently accepted medical use in treatment in the United States, and that the abuse of may lead to limited physical dependence or psychological dependence relative to the drugs or other substances in schedule IV. Drugs such as diphenoxylate in combination with atropine , lacosamide, and pregabalin are included in Schedule V. The legal and personal consequences of misusing controlled substances can be severe. We can help you find treatment.

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Chapter 7 : Drug Classifications - AddictionCenter

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Most receptors are made up of proteins, and the drugs can therefore interact with the amino acids to change the conformation of the receptor proteins. These interactions are very basic, just like that of other chemical bondings: Ionic bonds[edit] Mainly occur through attractions between opposite charges; for example, between protonated amino on salbutamol or quaternary ammonium e. Similarly, the dissociated carboxylic acid group on the drug can bind with amino groups on the receptor. This type of bond is very strong, and varies with the inverse of the distance between the atoms so that it can act over large distances. This type of interaction occurs when a cation, e. Ion-dipole and dipole-dipole bonds have similar interactions, but are more complicated and are weaker than ionic bonds. Hydrogen bonds[edit] There is a small but significant attraction between hydrogen atoms and polar functional groups e. These so-called hydrogen bonds only act over short distances, and are dependent on the correct alignment between functional groups. Receptors are located on all cells in the body. The same receptor can be located on different organs, and even on different types of tissues. There are also different subtypes of receptor which elicit different effects in response to the same agonist. For example, there are two types of histamine receptor: Activation of the H1 subtype receptor causes contraction of smooth muscle, whereas activation of the H2 receptor stimulates gastric secretion. It is this phenomenon that gives rise to drug specificity. Of course, drugs do not only act on receptors: How shape of drug molecules affect drug action[edit] When talking about the shape of molecules, biochemists are mainly concerned with the three-dimensional conformation of drug molecules. There are many isomers of a particular drug, and each one will have its own effects. Differences in isomer affect not only what the drug activates, but also changes the potency of each drug. Potency[edit] Potency is a measure of how much a drug is required in order to produce a particular effect. Therefore, only a small dosage of a high potency drug is required to induce a large response. The other terms used to measure the ability of a drug to trigger a response are: Intrinsic Activity which defines: The specificity of drugs[edit] Drug companies invest significant effort in designing drugs that interact specifically with particular receptors[citation needed], since non-specific drugs can cause more side effects. An example is the endogenous drug acetylcholine ACh. ACh is used by the parasympathetic nervous system to activate muscarinic receptors and by the neuromuscular system to activate nicotinic receptors. However, the compounds muscarine and nicotine can each preferentially interact one of the two receptor types, allowing them to activate only one of the two systems where ACh itself would activate both. Affinity[edit] The specificity of drugs cannot be talked about without mentioning the affinity of the drugs. The affinity is a measure of how tightly a drug binds to the receptor. If the drug does not bind well, then the action of the drug will be shorter and the chance of binding will also be less. This can be measured numerically by using the dissociation constant KD.

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Chapter 8 : ANTIVIRAL DRUGS: Classification and Anti-Herpes Virus drugs | MEDCHROME

3 Components of a Drug Profile â€¢Name - Generic, trade â€¢ Classification â€¢ Mechanism of Action â€¢ Indications â€¢ Pharmacokinetics â€¢ Side Effects/adverse.

Lomotil Description Each Lomotil tablet contains: A subtherapeutic amount of atropine sulfate is present to discourage deliberate overdosage. Inactive ingredients of Lomotil tablets include acacia, corn starch, magnesium stearate, sorbitol, sucrose, and talc. Lomotil - Clinical Pharmacology Diphenoxylate is rapidly and extensively metabolized in man by ester hydrolysis to diphenoxylic acid difenoxine , which is biologically active and the major metabolite in the blood. In a subject crossover bioavailability study, a linear relationship in the dose range of 2. The average peak plasma concentration of diphenoxylic acid following ingestion of four 2. In dogs, diphenoxylate hydrochloride has a direct effect on circular smooth muscle of the bowel that conceivably results in segmentation and prolongation of gastrointestinal transit time. The clinical antidiarrheal action of diphenoxylate hydrochloride may thus be a consequence of enhanced segmentation that allows increased contact of the intraluminal contents with the intestinal mucosa. Indications and Usage for Lomotil Lomotil is indicated as adjunctive therapy in the management of diarrhea in patients 13 years of age and older. Contraindications Lomotil is contraindicated in: Patients with diarrhea associated with pseudomembranous enterocolitis Clostridium difficile or other enterotoxin-producing bacteria due to the risk of gastrointestinal GI complications, including sepsis see WARNINGS. Patients with known hypersensitivity to diphenoxylate or atropine. Patients with obstructive jaundice. Anticholinergic and Opioid-Toxicities Toxicities associated with the atropine and diphenoxylate components of Lomotil have been reported. The initial presenting symptoms may be delayed by up to 30 hours due to prolonged gastric emptying time induced by diphenoxylate hydrochloride. Clinical presentations vary in terms of which toxicity anticholinergic vs. Dehydration and Electrolyte Imbalance The use of Lomotil should be accompanied by appropriate fluid and electrolyte therapy, when indicated. If severe dehydration or electrolyte imbalance is present, Lomotil should be withheld until appropriate corrective therapy has been initiated. Drug-induced inhibition of peristalsis may result in fluid retention in the intestine, which may further aggravate dehydration and electrolyte imbalance. Gastrointestinal Complications in Patients with Infectious Diarrhea Lomotil is contraindicated in patients with diarrhea associated with organisms that penetrate the GI mucosa toxigenic E. Antiperistaltic agents, including Lomotil, slow gastrointestinal motility and may enhance bacterial overgrowth and the release of bacterial exotoxins. Prolonged fever and the delay in the resolution of stool pathogens were reported in study of Shigellosis in adults who used Lomotil vs. Toxic Megacolon in Patients with Acute Ulcerative Colitis In some patients with acute ulcerative colitis, agents that inhibit intestinal motility or prolong intestinal transit time have been reported to induce toxic megacolon. Consequently, patients with acute ulcerative colitis should be carefully observed and Lomotil therapy should be discontinued promptly if abdominal distention occurs or if other untoward symptoms develop. Interaction with Meperidine Hydrocholoride Since the chemical structure of diphenoxylate hydrochloride is similar to that of meperidine hydrochloride, the concurrent use of Lomotil with monoamine oxidase MAO inhibitors may, in theory, precipitate hypertensive crisis. Hepatorenal Disease Lomotil should be used with extreme caution in patients with advanced hepatorenal disease and in all patients with abnormal liver function since hepatic coma may be precipitated. Therefore, the patient should be closely observed when any of these are used concomitantly. Precautions Atropinism Since a subtherapeutic dose of atropine has been added to Lomotil, consideration should be given to the development of adverse reactions associated with of atropine see WARNINGS. Monitor patients for signs of atropinism. Information for patients Advise patients: Accidental ingestion of Lomotil in children, especially in those less than 6 years of age, may result in severe respiratory depression or coma. To take Lomotil at the prescribed dosage. Report to a healthcare facility if they develop anticholinergic symptoms such as hyperthermia, flushing, tachycardia, tachypnea, hypotonia, lethargy, hallucinations, febrile convulsion, dry mouth, mydriasis or opioid symptoms

such as progressive CNS and respiratory depression, miosis, seizures, or paralytic ileus. Lomotil may produce drowsiness or dizziness. Concomitant use of alcohol or other drugs that also cause CNS depression e. Inform patients not to operate motor vehicles or other dangerous machinery until they are reasonably certain that Lomotil does not affect them adversely. To use fluid and electrolyte therapy, if prescribed along with Lomotil, as instructed by their healthcare provider. Clinical improvement of diarrhea is usually observed within 48 hours. If clinical improvement is not seen within 10 days, discontinue Lomotil and contact their healthcare provider. Avoid concomitant use of Lomotil with alcohol. Either Lomotil or the other interacting drug should be chosen, depending on the importance of the drug to the patient. Avoid use of Lomotil in patients who take MAOIs and monitor for signs and symptoms of hypertensive crisis headache, hyperthermia, hypertension. Carcinogenesis, mutagenesis, impairment of fertility No long-term study in animals has been performed to evaluate carcinogenic potential. The relevance of this finding to usage of Lomotil in humans is unknown. Pregnancy Diphenoxylate hydrochloride has been shown to have an effect on fertility in rats when given in doses 50 times the human dose see above discussion. Teratology studies were conducted in rats, rabbits, and mice with diphenoxylate hydrochloride at oral doses of 0. Due to experimental design and small numbers of litters, embryotoxic, fetotoxic, or teratogenic effects cannot be adequately assessed. However, examination of the available fetuses did not reveal any indication of teratogenicity. There are no adequate and well-controlled studies in pregnant women. Lomotil should be used during pregnancy only if the anticipated benefit justifies the potential risk to the fetus. Nursing mothers Caution should be exercised when Lomotil is administered to a nursing woman, since the physicochemical characteristics of the major metabolite, diphenoxylic acid, are such that it may be excreted in breast milk and since it is known that atropine is excreted in breast milk. Pediatric use The safety and effectiveness of Lomotil have been established in pediatric patients 13 years of age and older as adjunctive therapy in the management of diarrhea. The safety and effectiveness of Lomotil have not been established in pediatric patients less than 13 years of age. Adverse Reactions The following serious adverse reactions are described elsewhere in labeling: Drug Abuse and Dependence Controlled substance Lomotil is classified as a Schedule V controlled substance by federal regulation. Diphenoxylate hydrochloride is chemically related to the narcotic analgesic meperidine. Drug abuse and dependence In doses used for the treatment of diarrhea, whether acute or chronic, diphenoxylate has not produced addiction. Diphenoxylate hydrochloride is devoid of morphine-like subjective effects at therapeutic doses. At high doses it exhibits codeine-like subjective effects. The dose which produces antidiarrheal action is widely separated from the dose which causes central nervous system effects. The insolubility of diphenoxylate hydrochloride in commonly available aqueous media precludes intravenous self-administration. Since addiction to diphenoxylate hydrochloride is possible at high doses, the recommended dosage should not be exceeded. Overdosage Diagnosis Overdosage can be life-threatening. Respiratory depression has been reported up to 30 hours after ingestion and may recur despite an initial response to narcotic antagonists. Treatment A pure narcotic antagonist e. Refer to the prescribing information for naloxone. Consider Lomotil toxicity even in settings of negative toxicology tests. Following initial improvement of respiratory function, repeated doses of naloxone hydrochloride may be required to counteract recurrent respiratory depression. If over-exposure occurs, call your Poison Control Center at for current information on the management of poisoning or overdosage. Lomotil Dosage and Administration Management of Diarrhea in Patients 13 Years of Age and Older Lomotil is recommended as adjunctive therapy for the management of diarrhea in patients 13 years of age and older. Consider the nutritional status and degree of dehydration in patients prior to initiating therapy with Lomotil. The use of Lomotil should be accompanied by appropriate fluid and electrolyte therapy, when indicated. Initial and Maximum Recommended Dosage in Patients 13 Years of Age and Older The initial adult dosage is 2 Lomotil tablets four times daily maximum total daily dose of 20 mg per day of diphenoxylate hydrochloride. Most patients will require this dosage until initial control of diarrhea has been achieved. Clinical improvement of acute diarrhea is usually observed within 48 hours. Dosage after Initial Control of Diarrhea After initial control has been achieved, the Lomotil dosage may be reduced to meet individual

requirements. Control may often be maintained with as little as two Lomotil tablets daily. Duration of Treatment If clinical improvement of chronic diarrhea after treatment with the maximum recommended daily dosage is not observed within 10 days, discontinue Lomotil as symptoms are unlikely to be controlled by further administration.

Chapter 9 : An attempt to classify neuroleptic drugs on the basis of short-term clinical comparative studies.

The action of drugs on the human body is called pharmacodynamics, and what the body does with the drug is called pharmacokinetics. The drugs that enter the human tend to stimulate certain receptors, ion channels, act on enzymes or transporter proteins.