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Chapter 1 : Poisoning, emergency treatment | Treatment summary | BNF content published by NICE

The candidates also appreciate it; it is easy marks, and having appeared many times in the past papers, the act of matching poisons and their antidotes has become an automatism for many of us. Unfortunately, this specific panel of toxins has not been seen for a few years.

Technical guidance - 7. Antidotes and their availability Introduction Antidotes may play an important role in the treatment of poisoning. While good supportive care and elimination techniques may, in many cases, restore a poisoned patient to good health and stabilize his or her body functions, the appropriate use of antidotes and other agents may greatly enhance elimination and counteract the toxic actions of the poison. In certain circumstances they may significantly reduce the medical resources otherwise needed to treat a patient, shorten the period of therapy, and, in some cases, save a patient from death. Thus, antidotes may sometimes reduce the overall burden on the health service of managing cases of poisoning. In areas remote from good hospital services, and particularly in developing countries that lack adequate facilities for supportive care, antidotes may be even more essential in the treatment of poisoning. Physicians frequently express concern about the difficulty of obtaining certain antidotes in an emergency. The IPCS and the EC, in consultation with the World Federation, are undertaking a project designed to evaluate the efficacy of antidotes and to encourage their availability. In a preparatory phase of this project an antidote was defined as a therapeutic substance used to counteract the toxic action s of a specified xenobiotic. A preliminary list of antidotes, and of other agents used to prevent the absorption of poisons, to enhance their elimination, and to counteract their effects on body functions, was established; preliminary classification of these agents was based on urgency of treatment and efficacy in practice. Antidotes and substances for veterinary use were also listed. Methods and principles for the evaluation of antidotes and other agents used in the treatment of poisoning were drafted and are being used as a framework for preparing monographs on specific antidotes, which are being published in a special series. Model List of Essential Drugs ninth list. Cambridge, Cambridge University Press. Early in the course of this preparatory work, it became apparent that the availability of antidotes differed from one country to another. A survey of selected poison information centres was undertaken in order to identify the specific difficulties experienced in obtaining antidotes. Results showed that poison centres in industrialized countries generally have few problems in obtaining most antidotes, although administrative difficulties and the lack of suitable preparations and of importers and manufacturers hinder access to certain antidotes. Centres in developing countries, however, reported many problems in obtaining even the common antidotes that are readily available elsewhere. Problems generally arose in the following three interrelated areas: The clinical efficacy of an antidote in humans may be mare difficult to ascertain and document than that of other pharmaceutical agents, since there is little opportunity for clinical trials. The potential toxicity of an antidote is important in deciding its use, and the possibility of adverse reactions should always be considered. An antidote known to be non-toxic may be used in cases of poisoning even if its efficacy is uncertain; a toxic antidote, however, should be used only if its therapeutic effect is known and the diagnosis certain. Adverse effects and chronic toxicity may be less important than in the case of an ordinary pharmaceutical agent, since an antidote is likely to be used only once. It is important that increased toxicity does not result from mobilization of the toxic substance from tissue stores or from changes in tissue distribution, as in the case of the transient rise in blood levels of lead, and precipitation of acute encephalopathy, after inappropriate use of antidotes in children. The importance of full validation of the efficacy of substances to be used as antidotes must be emphasized. Improved knowledge of the mechanisms of toxicity of different poisons and of the kinetics of toxic substances may also facilitate the development and use of specific antidotes. Once an effective antidote has been identified, there remains the problem of its manufacture as a pharmaceutical substance suitable for use in humans. The formulation of a preparation for oral use will, in many cases, make it easier to administer the antidote, for example in ambulatory patients. The scientific study of antidotes thus has implications for drug regulation authorities and governments, for the commercial sector, and for poison information centres. Comprehensive scientific studies will enable regulatory authorities to facilitate the registration of useful,

effective antidotes. Governments are responsible for ensuring the availability of antidotes and should recognize the importance of this group of therapeutic agents and the need to support their scientific study. The manufacture and supply of antidotes are usually the responsibility of the commercial sector, which may also need to support appropriate studies. Industries involved in the manufacture and supply of potentially toxic agents must consider their possible effects on users and on others who may be exposed; they should ensure that appropriate antidotes are available on the local market. Poison information centres, and especially the treatment units, have an essential role in monitoring the use of antidotes. Ideally, data on antidote use should be collected in an internationally standardized manner to allow results to be compared and recommendations made. International exchange of information should be encouraged to allow critical assessment of the efficacy and side-effects of antidotal agents. Health care professionals should be aware that the data required at the time certain antidotes were registered may have been quite limited and may therefore need updating in the light of more recent findings. Even an effective and readily available antidote will be useless if the attending physician is unable to establish a correct diagnosis or is uninformed about the availability or indications for use of the antidote. Information programmes should be arranged by toxicological and poison information centres in order to familiarize clinical personnel with the proper use of antidotes, particularly for individuals in high-risk groups, such as those exposed to hazardous chemicals in the course of their work. Technical aspects Registration Registration of a pharmaceutical for use as an antidote would seem a satisfactory means of dealing with problems of distribution and availability. However, some pharmaceutical manufacturers are disinclined to register antidotes because of the small volume of production required to meet market demand. It is therefore suggested that a means should be found of encouraging industries that market potentially toxic drugs or chemicals to provide information on antidotal treatment, and to facilitate the provision and registration of appropriate antidotes. Pharmaceutical companies that produce antidotes should be encouraged to register them in their countries of use. It would also be helpful to ease the administrative procedures required to permit the use of an antidote - for example by making it an "orphan drug"1 or a "common drug" for which the registration procedure is less complicated. Chemicals as antidotes Some chemical substances with antidotal properties, for example calcium chloride, sodium nitrite, and methylene blue, are marketed as chemicals but are not available in appropriate formulations for use as drugs. It is therefore important to ensure that the quality and purity of these chemicals will permit their administration as antidotes. Pharmacopoeia commissions should consider issuing monographs on such chemicals. Formulation of antidotes Certain pharmaceutical agents may be registered for uses other than as antidotes and are thus not available in appropriate formulations, or in adequate quantities, to meet the needs of poisoned patients. Additional authorization for use of these agents as specific antidotes should not present a major problem, but the necessary procedures need to be facilitated. National distribution of antidotes Demographic, geographical, and economic factors sometimes hinder the availability of antidotes. In addition, the high cost that results from infrequent demand and short shelf-life may prevent their widespread distribution. A central "bank" of antidotes could be an economic and effective means of ensuring distribution, and this should be organized by health authorities in such a way that any poison victim may be assured of receiving an antidote within the appropriate period of time. The United States Government provides incentives for the production of such drugs, including tax credits, seven-year exclusive rights, facility in the Food and Drug Administration registration process, and a financial grant to cover part of the clinical research. Economic aspects When considering the cost of antidotes, governments should take into account the social and medical consequences of failure to treat poisoned patients in an appropriate manner and the continued economic burden on local or national resources that may ensue. In general, pharmaceutical companies will manufacture and supply antidotes only if they are encouraged by adequate economic returns for their investment and by simple registration procedures. To this end, governments should consider recent WHO recommendations1 concerning products for export and facilitate the registration of antidotes already evaluated and registered elsewhere. If antidotes cannot be supplied by the pharmaceutical industry, other means of ensuring their availability should be considered. These could include the establishment of government manufacturing facilities, a manufacturing pharmacy laboratory, or a system that allows the importation of antidotes registered elsewhere. Other ways of

using resources efficiently, such as rationalizing the purchase and distribution of antidotes, should also be considered by health authorities and should take into account the time within which antidotes need to be available for use in treatment. Local transport conditions should also be considered. Registration and administrative requirements Antidotes are pharmaceutical products, and almost all countries have an official body concerned with the registration and approval of pharmaceutical substances. Many antidotes are drugs that have undergone a full range of tests before registration and are authorized for distribution and use in many countries. Such tests usually cover the physicochemical properties, stability of the formulation, and toxicity as determined by animal experiments, pharmacological studies, and clinical trials. However, certain pharmaceutical agents that have been evaluated for other uses may require additional authorization for antidotal use. This type of registration should present no major problem and could follow the procedure for a new antidote referred to in the next paragraph. There may, however, be a need to develop special formulations to allow sufficient quantities to be available for administration as an antidote. For a new pharmaceutical substance to be used only as an antidote, the registration procedure could be modified so that it is less comprehensive than that for a normal drug. Authorities often accept different criteria for the registration of certain pharmaceutical substances, for example anticancer drugs, because of the special conditions that apply to their use. A new antidote could be considered in a similar light, thereby facilitating its registration and encouraging manufacturers to make it more widely available. As already mentioned, a number of chemical substances that are not strictly pharmaceutical products, such as calcium chloride, sodium nitrite, and methylene blue, may be used as antidotes. If they are to be made available for administration to poisoned patients, their quality and purity become important considerations. Some antidotes that have been registered and approved in individual countries, after extensive testing, are faced with trade or administrative barriers when their importation into other countries is considered; examples include activated charcoal, syrup of ipecacuanha, and oximes. Countries should select from the list of essential antidotes those agents that are most appropriate to their needs; in some cases, these drugs are already listed in the WHO List of Essential Drugs. Special legal provision should be made for practising physicians in clinical toxicology and poison control centres to use these agents - particularly in "life-saving" circumstances - on the basis of their own judgement. In addition, it should be possible to stock these substances under controlled conditions at poison control centres and to exchange them between such centres. These measures would encourage the interchange of experience and improve the database for subsequent registration. It is important, though, that a mechanism be established to ensure the purity and sterility of unregistered antidotal agents. Considerations of time and geography The availability of an antidote is highly dependent on its distribution within a country as well as its source, particularly if it has to be imported from another country. The best way of ensuring the importation of antidotes into a country might be to entrust it entirely to a central organization or institution. The establishment of a central agency responsible for the importation and distribution of antidotes is therefore recommended; alternatively, the task could be entrusted to clinically oriented poison control centres. Many countries already have such centralized systems for the importation of pharmaceutical agents. It is essential for the institutions concerned to consult and cooperate with national poison control and clinical toxicology centres, or associations of such centres, so that the importation of antidotes reflects local needs. Where certain antidotes are not available, either from local manufacturers or as imports, the central institution may cooperate with poison centres in recommending their local manufacture by hospital pharmacies or through pharmaceutical associations. Furthermore, in the event of an emergency or chemical disaster, an exchange arrangement between poison centres in different countries might make it possible to obtain a supply of some antidotes that are commercially available elsewhere. Since many antidotes are expensive, infrequently used, and have a limited shelf-life, central stocking of antidotes makes sound economic sense; it makes inspection easier and ensures a supply of products that have not lost their effectiveness. However, any such centralized system must be able to guarantee that a poisoned patient will receive an antidote within the time required for treatment. Certain agents used in the treatment of poisoning, for example, syrup of ipecacuanha and activated charcoal, are used frequently; others are required for use immediately, e. Antidotes have been classified as those needed: It may also be necessary to have certain antidotes available at places of work for use under

medical supervision e. Antidotes needed within 2 hours can be stocked at certain main hospitals; patients can be taken to these hospitals for treatment or the antidotes can be transported - within the time limit - to the health facilities at which treatment is provided. Antidotes needed within 6 hours may be stocked at central regional depots, provided that there are adequate facilities for transporting them within the time limit. For all categories of antidotes, there is the further option of keeping a small amount, sufficient to start treatment, in stock locally, further supplies being obtained from a central source as required. Where certain types of poisoning are frequent, or in areas where certain chemicals are heavily used, the appropriate antidotes may be kept in ambulances, operated by physicians, that are sent out to treat cases of poisoning. Poisoning by natural toxins may be seasonal and may be specific to certain regions e. Antivenoms may be sent to rural areas during these seasons to be readily available in case of need. The rapid transport of antidotes may be needed in certain cirumstances, and appropriate advance arrangements should be made, e. In certain situations, arrangements for the rapid transport of patients to hospitals with appropriate facilities and antidotes may be necessary. Comprehensive instructions on interim treatment measures should be given to first-aid workers or other medical or paramedical professionals. In deciding where antidotes should be stocked, a number of factors should be taken into consideration, notably the following:

Chapter 2 : List of Common Antidotes Nurses Should Know - Nurseslabs

poisons and their antidotes. How Poisons Enter the System.â€" Under the head of poisons, it is intended to include all those substances which exercise pernicious, as distinguished from medicinal, effects upon the human body, tending to disturb its action or organization injuriously, and if not remedied to possibly cause death.

Paracetamol overdose treatment graph Antidepressant poisoning Tricyclic and related antidepressants Tricyclic and related antidepressants cause dry mouth, coma of varying degree, hypotension, hypothermia, hyperreflexia, extensor plantar responses, convulsions, respiratory failure, cardiac conduction defects, and arrhythmias. Dilated pupils and urinary retention also occur. Metabolic acidosis may complicate severe poisoning; delirium with confusion, agitation, and visual and auditory hallucinations are common during recovery. Assessment in hospital is strongly advised in case of poisoning by tricyclic and related antidepressants but symptomatic treatment can be given before transfer. Supportive measures to ensure a clear airway and adequate ventilation during transfer are mandatory. Intravenous lorazepam or intravenous diazepam preferably in emulsion form may be required to treat convulsions. Activated charcoal given within 1 hour of the overdose reduces absorption of the drug. Although arrhythmias are worrying, some will respond to correction of hypoxia and acidosis. The use of anti-arrhythmic drugs is best avoided, but intravenous infusion of sodium bicarbonate can arrest arrhythmias or prevent them in those with an extended QRS duration. Diazepam given by mouth is usually adequate to sedate delirious patients but large doses may be required. Selective serotonin re-uptake inhibitors SSRIs Symptoms of poisoning by selective serotonin re-uptake inhibitors include nausea, vomiting, agitation, tremor, nystagmus, drowsiness, and sinus tachycardia; convulsions may occur. Rarely, severe poisoning results in the serotonin syndrome, with marked neuropsychiatric effects, neuromuscular hyperactivity, and autonomic instability; hyperthermia, rhabdomyolysis, renal failure, and coagulopathies may develop. Management of SSRI poisoning is supportive. Convulsions can be treated with lorazepam, diazepam, or midazolam oromucosal solution [unlicensed use in adults and children under 3 months] see Convulsions. Contact the National Poisons Information Service for the management of hyperthermia or the serotonin syndrome. Antimalarial poisoning Overdosage with quinine, chloroquine, or hydroxychloroquine is extremely hazardous and difficult to treat. Urgent advice from the National Poisons Information Service is essential. Life-threatening features include arrhythmias which can have a very rapid onset and convulsions which can be intractable. Antipsychotic poisoning Phenothiazines and related drugs Phenothiazines cause less depression of consciousness and respiration than other sedatives. Hypotension, hypothermia, sinus tachycardia, and arrhythmias may complicate poisoning. Dystonic reactions can occur with therapeutic doses particularly with prochlorperazine and trifluoperazine , and convulsions may occur in severe cases. Arrhythmias may respond to correction of hypoxia, acidosis, and other biochemical abnormalities, but specialist advice should be sought if arrhythmias result from a prolonged QT interval; the use of some anti-arrhythmic drugs can worsen such arrhythmias. Dystonic reactions are rapidly abolished by injection of drugs such as procyclidine hydrochloride or diazepam emulsion preferred. Second-generation antipsychotic drugs Features of poisoning by second-generation antipsychotic drugs include drowsiness, convulsions, extrapyramidal symptoms, hypotension, and ECG abnormalities including prolongation of the QT interval. Charcoal, activated can be given within 1 hour of ingesting a significant quantity of a second-generation antipsychotic drug. Benzodiazepine poisoning Benzodiazepines taken alone cause drowsiness, ataxia, dysarthria, nystagmus, and occasionally respiratory depression, and coma. Charcoal, activated can be given within 1 hour of ingesting a significant quantity of benzodiazepine, provided the patient is awake and the airway is protected. Benzodiazepines potentiate the effects of other central nervous system depressants taken concomitantly. Use of the benzodiazepine antagonist flumazenil [unlicensed indication] can be hazardous, particularly in mixed overdoses involving tricyclic antidepressants or in benzodiazepine-dependent patients. Flumazenil may prevent the need for ventilation, particularly in patients with severe respiratory disorders; it should be used on expert advice only and not as a diagnostic test in patients with a reduced level of consciousness. Beta blockers poisoning Therapeutic overdosages with

beta-blockers may cause lightheadedness, dizziness, and possibly syncope as a result of bradycardia and hypotension; heart failure may be precipitated or exacerbated. These complications are most likely in patients with conduction system disorders or impaired myocardial function. Bradycardia is the most common arrhythmia caused by beta-blockers, but sotalol may induce ventricular tachyarrhythmias sometimes of the torsade de pointes type. The effects of massive overdosage can vary from one beta-blocker to another; propranolol overdosage in particular may cause coma and convulsions. Acute massive overdosage must be managed in hospital and expert advice should be obtained. Maintenance of a clear airway and adequate ventilation is mandatory. An intravenous injection of atropine sulfate is required to treat bradycardia. A cardiac pacemaker can be used to increase the heart rate. Calcium-channel blockers poisoning Features of calcium-channel blocker poisoning include nausea, vomiting, dizziness, agitation, confusion, and coma in severe poisoning. Metabolic acidosis and hyperglycaemia may occur. Verapamil and diltiazem have a profound cardiac depressant effect causing hypotension and arrhythmias, including complete heart block and asystole. The dihydropyridine calcium-channel blockers cause severe hypotension secondary to profound peripheral vasodilatation. Charcoal, activated should be considered if the patient presents within 1 hour of overdosage with a calcium-channel blocker; repeated doses of activated charcoal are considered if a modified-release preparation is involved. In patients with significant features of poisoning, calcium chloride or calcium gluconate is given by injection; atropine sulfate is given to correct symptomatic bradycardia. In severe cases, an insulin and glucose infusion may be required in the management of hypotension and myocardial failure. For the management of hypotension, the choice of inotropic sympathomimetic depends on whether hypotension is secondary to vasodilatation or to myocardial depressionâ€”advice should be sought from the National Poisons Information Service. Iron salts poisoning Iron poisoning in childhood is usually accidental. The symptoms are nausea, vomiting, abdominal pain, diarrhoea, haematemesis, and rectal bleeding. Hypotension and hepatocellular necrosis can occur later. Coma, shock, and metabolic acidosis indicate severe poisoning. Advice should be sought from the National Poisons Information Service if a significant quantity of iron has been ingested within the previous hour. Mortality is reduced by intensive and specific therapy with desferrioxamine mesilate , which chelates iron. The serum-iron concentration is measured as an emergency and intravenous desferrioxamine mesilate given to chelate absorbed iron in excess of the expected iron binding capacity. In severe toxicity intravenous desferrioxamine mesilate should be given immediately without waiting for the result of the serum-iron measurement. Lithium poisoning Most cases of lithium intoxication occur as a complication of long-term therapy and are caused by reduced excretion of the drug because of a variety of factors including dehydration, deterioration of renal function, infections, and co-administration of diuretics or NSAIDs or other drugs that interact. Acute deliberate overdoses may also occur with delayed onset of symptoms 12 hours or more owing to slow entry of lithium into the tissues and continuing absorption from modified-release formulations. Vomiting, diarrhoea, ataxia, weakness, dysarthria, muscle twitching, and tremor may follow. Severe poisoning is associated with convulsions, coma, renal failure, electrolyte imbalance, dehydration, and hypotension. Therapeutic serum-lithium concentrations are within the range of 0. In acute overdosage much higher serum-lithium concentrations may be present without features of toxicity and all that is usually necessary is to take measures to increase urine output e. Otherwise, treatment is supportive with special regard to electrolyte balance, renal function, and control of convulsions. Gastric lavage may be considered if it can be performed within 1 hour of ingesting significant quantities of lithium. Whole-bowel irrigation should be considered for significant ingestion, but advice should be sought from the National Poisons Information Service. Stimulant-drug poisoning Amfetamines cause wakefulness, excessive activity, paranoia, hallucinations, and hypertension followed by exhaustion, convulsions, hyperthermia, and coma. The early stages can be controlled by diazepam or lorazepam ; advice should be sought from the National Poisons Information Service on the management of hypertension. Later, tepid sponging, anticonvulsants, and artificial respiration may be needed. Cocaine Cocaine stimulates the central nervous system, causing agitation, dilated pupils, tachycardia, hypertension, hallucinations, hyperthermia, hypertonia, and hyperreflexia; cardiac effects include chest pain, myocardial infarction, and arrhythmias. Initial treatment of cocaine poisoning involves intravenous administration of diazepam to control agitation and cooling measures for hyperthermia see Body

temperature ; hypertension and cardiac effects require specific treatment and expert advice should be sought. Ecstasy Ecstasy methylenedioxymethamfetamine, MDMA may cause severe reactions, even at doses that were previously tolerated. The most serious effects are delirium, coma, convulsions, ventricular arrhythmias, hyperthermia, rhabdomyolysis, acute renal failure, acute hepatitis, disseminated intravascular coagulation, adult respiratory distress syndrome, hyperreflexia, hypotension and intracerebral haemorrhage; hyponatraemia has also been associated with ecstasy use. Treatment of methylenedioxymethamfetamine poisoning is supportive, with diazepam to control severe agitation or persistent convulsions and close monitoring including ECG. Self-induced water intoxication should be considered in patients with ecstasy poisoning. Theophylline poisoning Theophylline and related drugs are often prescribed as modified-release formulations and toxicity can therefore be delayed. They cause vomiting which may be severe and intractable , agitation, restlessness, dilated pupils, sinus tachycardia, and hyperglycaemia. More serious effects are haematemesis, convulsions, and supraventricular and ventricular arrhythmias. Severe hypokalaemia may develop rapidly. Repeated doses of activated charcoal can be used to eliminate theophylline even if more than 1 hour has elapsed after ingestion and especially if a modified-release preparation has been taken see also under Active Elimination Techniques. Ondansetron may be effective for severe vomiting that is resistant to other antiemetics [unlicensed indication]. Convulsions should be controlled by intravenous administration of lorazepam or diazepam see Convulsions. Sedation with diazepam may be necessary in agitated patients. Provided the patient does not suffer from asthma, a short-acting beta-blocker can be administered intravenously to reverse severe tachycardia, hypokalaemia, and hyperglycaemia. Cyanide poisoning Oxygen should be administered to patients with cyanide poisoning. The choice of antidote depends on the severity of poisoning, certainty of diagnosis, and the cause. Dicobalt edetate is the antidote of choice when there is a strong clinical suspicion of severe cyanide poisoning, but it should not be used as a precautionary measure. Dicobalt edetate itself is toxic, associated with anaphylactoid reactions, and is potentially fatal if administered in the absence of cyanide poisoning. A regimen of sodium nitrite followed by sodium thiosulfate is an alternative if dicobalt edetate is not available. If necessary, ethanol by mouth or by intravenous infusion can be used, but with caution. Advice on the treatment of ethylene glycol and methanol poisoning should be obtained from the National Poisons Information Service. It is important to start antidote treatment promptly in cases of suspected poisoning with these agents. Dimercaprol in the management of heavy metal poisoning has been superseded by other chelating agents. In all cases of heavy metal poisoning, the advice of the National Poisons Information Service should be sought. Noxious gases poisoning Carbon monoxide Carbon monoxide poisoning is usually due to inhalation of smoke, car exhaust, or fumes caused by blocked flues or incomplete combustion of fuel gases in confined spaces. Immediate treatment of carbon monoxide poisoning is essential. Artificial respiration should be given as necessary and continued until adequate spontaneous breathing starts, or stopped only after persistent and efficient treatment of cardiac arrest has failed. The patient should be admitted to hospital because complications may arise after a delay of hours or days. Cerebral oedema may occur in severe poisoning and is treated with an intravenous infusion of mannitol. Sulfur dioxide, chlorine, phosgene, and ammonia All of these gases can cause upper respiratory tract and conjunctival irritation. Pulmonary oedema, with severe breathlessness and cyanosis may develop suddenly up to 36 hours after exposure. Patients are kept under observation and those who develop pulmonary oedema are given oxygen.

Chapter 3 : Poisons and Their Antidotes

An antidote is a substance that can counteract a form of poisoning. The term antidote is a Greek word meaning "given against". This post will help you familiarize with the common antidotes that are used in the hospital setting.

Most of the poisons are deadly. To neutralize their impact, the use of antidotes in case of poisoning, a table of classification which are presented in this article. Overview of antidotes for poisoning Like any strong medicine, an antidote given in case of poisoning, have their own pharmacological properties, which evaluate the specificity of different drugs. To them in particular are: Depending on the period and severity of the disease the value of antidote therapy may vary. Thus, treatment of poisoning antidotes are effective only at an early stage, called toxicogenic. The duration of the stage varies and depends on the substance that caused the poisoning. The greatest duration of this phase is hours and refers to the effects on the body of heavy metals. The minimum time applies to poisoning with cyanides, chlorinated hydrocarbons and other highly toxic and bystrorastvorimami connections. You should not use antidote therapy, if there are doubts about the reliability of the diagnosis and the type of poisoning, as due to a certain specificity to this kind of treatment can have double the damage to the body, because often the antidote is not less toxic than the subject of intoxication. If you missed the first stage of the disease and develop severe in the blood stream, in addition to antidote therapy, the effectiveness of which will be now reduced, should the event of urgent CPR. Antidotes are indispensable for the irreversibility conditions of a delayed or acute poisoning, but in the second phase of the disease, called somatogenic, cease to have a therapeutic effect. All the antidotes in the mechanism of action can be divided into three groups: Thus, the effective antidotes that are more likely to help in cases of poisoning, have a high level of toxicity. And Vice versa â€” the t the antidote, the less it is effective. Classification of antidotes Types of antidotes have developed S. Golikov â€” it was his version of the classification is often used by modern medicine: Antidotes are classified and separated also by nature. Depending on the kind of poison, poisoning can be food and non-food. Any toxicity leading to deterioration of the patient, must be neutralized by antidotes. They prevent the spread and poisoning poisons in the organs, system, biological processes, and slow functional impairment caused by intoxication. Food poisoning The condition of acute indigestion occurs after eating poor quality food or drinking called food poisoning. It occurs when receiving spoiled food infected with organisms, or which have got dangerous chemical compounds. The main symptoms are nausea, vomiting, diarrhea. There are infectious and toxic poisoning: Toxic poisoning is called once ingested poisons, heavy metals, non-edible plants and other products with critical levels of toxins. Manifestations of the disease develop within hours after exposure and are characterized by rapid development of symptoms. Among the infectious poisoning, the greatest danger of infection is posed by meat and dairy products, which, if they have the infection and have undergone insufficient thermal treatment can cause serious harm, because they represent an ideal environment for bacteria and other organisms. Ways to identify dangerous products Externally, fresh and delicious product can also be dangerous, as initially selected microorganisms multiply gradually, but their very presence threatens to ruin the functionality of the gastrointestinal tract. Therefore, the first and most important rule of food consumption is to control security. Food products can only be purchased at specially designated places they should be sold by people who have medknizhki. Food must be kept in the premises, the last health inspection was in the system and eligible for activity. Of course, a variety of eateries with Shawarma, street cakes and other food of questionable points in this list are not included. Infectious poisoning is extremely dangerous and can lead to infection. Freshly prepared foods have minimal chances to be infected, but have lain down food becoming potentially hazardous within a few hours. In addition to the expiration date, which you should always check, even if the purchase is made at a large trading network, for signs that may indicate that the food lay more than the period include the following: The presence of these characteristics should stop from buying such a product and choose the one that is not in doubt. Symptoms Toxin or microbe that has entered the organism, can act in different ways, but there are common symptoms that occur most frequently. Is the temperature, General weakness, disturbance of the digestive tract. Doctors often note the patient loss of appetite, nausea, pain and bloating in the abdomen.

The patient is weak, looks pale, he can be a cold sweat and reduced pressure. Toxic poisoning symptoms and effects are more serious: Possible salivation, hallucinations, paralysis, loss of consciousness, convulsions, coma. Risk group â€" young children, pregnant women and the elderly. For them, the signs may be more dramatic, the disease has a poor prognosis. The primary symptoms of poisoning with certain toxins can appear in an hour and grow up to a few days. It is important to identify the disease and begin treatment. Treatment You should immediately call an ambulance and start to provide the victim first aid: In this state, you must wait for the ambulance and not to take other treatment. Antibiotics, bifidobacteria, any antiemetic drugs or alcohol, and any medications will be given without a confirmed diagnosis and if you suspect a poisoning, can be detrimental to the person and substantially complicate the treatment. All further actions must be conducted in a hospital under the supervision of experts. With timely treatment the prognosis is often favorable. The antidotes used in acute intoxications At the first sign of acute poisoning first need to diagnose the nature of intoxication. This will require a data history, a variety of evidence â€" the remains of the containers with traces of use poisonous liquid and otherwise. Also pay attention to the presence of a specific smell, which can determine the nature of the substance that caused the poisoning. Should immediately capture and transmit all the data to physicians about clinical symptoms of poisoned. Toxicomania phase of poisoning â€" the first stage of intoxication in which the poison has not had time to affect the entire body, and has not yet reached its maximum concentration in the blood. But at this stage there is a loss of the body toxins with the characteristic manifestations of toxic shock. Treatment it is important to start as soon as possible. Usually, the doctor will apply help toxicomany in the first phase, until the patient has been admitted. Since at this stage the provision of or failure to provide assistance is decided the entire future forecast. Primarily used gastric lavage, enterosorbents and administered laxatives, then injected the antidote. In certain types of poisoning gastric lavage through the probe, so such issues should be discussed with your doctor. Symptomatic treatment is the maintenance and control of the functions of life-support. If the violation of the airway, you should release it in the desired manner. Analgesics are used for pain relief, but only before the process of gastric lavage is administered glucose and ascorbic acid. A table of the most common poisoning antidotes Toxin.

Chapter 4 : Drugs & Their Antidotes: A Nurse's Ultimate Guide - NurseBuff

Toxins and alkaloids: Antidotes and antidotes: Application Description: Hemlock. Mixture of glucose, novocaine: A mixture of liters of a 5% solution of glucose, ml of a 1% solution of novocaine is administered intravenously, drip.

Being knowledgeable about antidotes is critical especially during times of emergencies so you can quickly reverse overdosage effects of the used drug. What Is An Antidote? Antidotes have long been used since the ancient times. Hundreds of years ago, potions and concoctions were formulated in apothecaries to treat poisons and stings. Nowadays, there is a wide range of antidotes made to counteract accidental or intentional overdosage in clinical settings. Basic knowledge about antidotes is essential for nurses especially those who are working in acute care settings. To help you get started, here are some of the most common drugs and their antidotes: Paracetamol, Carbon tetrachloride Mode of Action: Protects against liver damage by enhancing production of glutathione thereby increasing microcirculation and increasing blood flow. Most poisons Mode of Action: Inhibits systemic absorption of toxin through its high adsorptive capacity. Cyanide Mode of Action: Ampoule contents should be inhaled for 30 seconds every minute. Use new ampoule every three minutes. Organophosphates and carbamate poisoning Mode of Action: Inhibits the action of acetylcholine at the muscarinic sites to interrupt initial effects of organophosphate and carbamate poisoning. Protects the liver by inhibiting entry of amatoxins into the hepatic cells. Hydrofluoric acid, calcium channel blockers and oxalates Mode of Action: Increases calcium concentration to overcome calcium channel blockade in the cells and upkeep with depletion of calcium concentration in the system. Anti-coagulants Mode of Action: Inhibits the absorption of anti-coagulants in the system by forming non-adsorbable complex with bile acids in the intestines. Binds with cyanide ions to facilitate excretion into the urine. Cyanide toxicity Mode of Action: Forms stable ion-complexes with cyanide to facilitate its excretion in the urine. Initial dose may be repeated if inadequate and can be further followed by a mg dose. Arsenic, gold and inorganic mercury poisoning Mode of Action: Binds with heavy metals to form dimercaprol-metal complex which can be readily excreted in the urine. Ethylene glycol and methanol poisoning Mode of Action: Inhibits formation of toxic metabolites so the toxic alcohol ingested can be excreted in the urine. Benzodiazepine overdose Mode of Action: Acts on benzodiazepine receptors to block central effects of benzodiazepine. If there is no response, 0. Additional doses at 0. Beta blockers, calcium channel blockers and hypoglycemic toxicity Mode of Action: Increases myocardial contractility and heart rate similar to beta-agonist effects. It also decreases vascular resistance to improve cardiac output. Glucagon works on improving glucose levels by activating hepatic glycogen. For hypoglycemic toxicity, mg through intramuscular injection. Paracetamol poisoning Mode of Action: Protects against liver and renal toxicity in cases of paracetamol poisoning. It acts as a precursor of glutathione to replenish gluthione stores in the liver cells. Opioid overdose Mode of Action: A specific opioid antagonist that acts directly at opioid receptors to inhibit its toxicity effects. Lead, copper and arsenic poisoning Mode of Action: Binds with heavy metals to form stable water-soluble complexes that can be excreted in the urine. Total of grams daily in divided doses throughout the day. Alpha-adrenergic poisoning, cocaine toxicity Mode of Action: Blocks alpha1 adrenoreceptors to inhibit vasoconstriction and decrease peripheral resistance thereby reducing blood pressure. For cocaine toxicity, it acts as an alpha-blocker to reduce cocaine-induced coronary vasoconstriction thereby resolving cocaine-induced myocardial ischemia. Phytomenadione Vitamin K Indication: Anti-coagulant poisoning Mode of Action: Organophosphorous insecticides Mode of Action: Restores acetylcholinesterase activity by removing phosphate compounds in the phosphorylated acetylcholinesterase to reestablish normal acetylcholinesterase activities. Induced dystonia caused by anti-psychotic drugs and metoclopramide Mode of Action: Elicits anti-muscarinic actions to relieve parkinsonian symptoms caused by antipsychotic drugs and metoclopramide Dosage: Additional oral doses may be required for days. Protamine sulfate Mode of Action: Binds with heparin to neutralize anti-coagulative effects in the bloodstream. Maximum of 50mg dosage in a ten-minute period. Thallium poisoning Mode of Action: Mobilizes intracellular thallium by absorbing thallium into the insoluble crystal lattice of Prussian blue in the gastrointestinal tract. Protects the liver by blocking entry of amatoxins into the hepatic cells. Lead

toxicity Mode of Action: Binds with divalent and trivalent metals like lead to form water soluble ring-compound to be readily excreted in the urine. Nitrites facilitate conversion of hemoglobin to methemoglobin. Methemoglobin has higher binding affinity to cyanide which further facilitates its excretion. Acts as a precursor for the enzyme rhodanase which facilitates conversion of cyanide to non-toxic thiocyanate and thereby promoting its excretion. Converts iodine to iodide which is less harmful. Laboratory Values and Interpretation: This center is composed of doctors, nurses, pharmacists and other professionals who are experts in poison treatment and control. It is open 24 hours a day and accessible to everyone through a phone call. If you want to help in establishing a Poison Control Center in your area, take note of the following tips: Staff should have proper phone etiquette skills. They will be dealing with emergency poisoning situations in the home. For this reason, the staff on duty should maintain his presence of mind in giving first aid advices amidst panicked calls of poisoning. There are cases of poisoning that cannot be treated at home and need to be managed in the ER. The PC staff is responsible in ensuring that referred patients successfully reach the referred ER department. With these basic facts about common drugs and their antidotes, you are now armed with valuable knowledge about managing cases of poisoning in your areas.

DOWNLOAD PDF ELSDENS TABLE OF POISONS AND ANTIDOTES

Chapter 5 : WHO | Guidelines for poison control

TABLE 2 11 COMMON POISONS AND THEIR ANTIDOTES SUBSTANCE ANTIDOTE Acetaminophen from NR NR at Chamberlain College of Nursing.

Benzene Intravenous to ml, drip. White phosphorus Sulphate copper Appointed internally, at 0. Gastric lavage with 0. At the same time, gastric lavage and artificial diuresis are performed. Dichloroethane 50 mg per pound of weight per day. Dimethylmercury "Unithiol" is administered intramuscularly or intravenously, 5 ml. Sarin Usually - 1 ml of a 0. Zoocoumarin The drugs are administered intramuscularly. Soman Atropine 1 ml of 0. Diazepam is administered in a standard way to relieve emotional anxiety. Mustard gas In case of contact with skin, treat it with an individual anti-chemical package. Lewisite "Unithiol" is used intravenously or intramuscularly. Dimercaptopropanol is used in oil solutions. Total - up to five times. Morphine Naloxone is administered intramuscularly, intravenously or intranasally. Arsenic, lead salts The antidote is administered intravenously, ml. Izonitrosin is administered intravenously or intramuscularly. Oxides and other lead compounds Calcium salt of ethylenediaminetetraacetic acid Apply inside, on the capsule twice a day according to the standard scheme. Mercury vapor "Unithiol" is administered intravenously or intramuscularly in 5 ml. Copper, lead salts Penicillamine is administered orally, one tablet once a day. Hydrocyanic acid Intravenous administration of sodium thiosulfate, artificial induction of vomiting. Give the patient to drink activated charcoal.

Chapter 6 : History of poison - Wikipedia

An antidote is a drug, chelating substance, or a chemical that counteracts (neutralizes) the effects of another drug or a poison. There are dozens of different antidotes; however, some may only counteract one particular drug, whereas others (such as charcoal) may help reduce.

Recovery is to be attempted by fresh air, rhythmic traction upon the tongue, artificial respiration. Violent purging and vomiting occur. The bowel discharges are characteristic and known as rice water stools; that is upon standing in a glass a separation can be noticed into two layers; an upper watery and clear, and a lower white and flocculent. Give tannic acid freely to form the insoluble and inactive tannate of antimony. The general precautions taken in all cases of depression are to be observed. Maintain the prone position, not raising the head to vomit, nor the body for defecation. Apply heat and use stimulating treatment, whiskey, strychnia and digitalis hypodermically. Give opium to allay pain, but counteracting its tendency to after depression by strychnia. Its freshly broken surface is very brilliant. It is found in its native state in the rocks of many different localities. It is also a constituent of cobalt, copper, nickel and tin ores. There is a burning sensation in the mouth and esophagus. The stomach and bowels are strongly irritated. There is violent purging and vomiting with great pain over the entire abdominal region. The pain is of cramp-like character, and sometimes extends to the calves of the legs or legs in general. The bowel evacuations are bloody "rice water" in character, and contain stringy mucus, supposed to be mucous membrane stripped from the bowels. Solution of tersulphate of iron, one thousand parts; magnesia, one hundred and fifty parts; water, a sufficient quantity. Mix the solution of tersulphate of iron with twice its weight of water, and keep the mixture in a well-stoppered bottle. Rub the magnesia and water to thin and smooth mixture; transfer this to a bottle capable of holding thirty-two fluid ounces, and fill it up with water. When the preparation is wanted for use mix the two liquids by adding the magnesia mixture gradually to the iron solution, and shake them together until a homogeneous mass results.

Chapter 7 : Antidotes for poisoning: table, classification

Start studying Poisons, Toxins and Antidotes (Table). Learn vocabulary, terms, and more with flashcards, games, and other study tools.

Etymology[edit] The word "poison" was first used in to mean "a deadly potion or substance"; the English term comes from the " Old French poison, puison 12c. Using the word "poison" with plant names dates from the 18th century. The term " poison ivy ", for example, was first used in and the term "poison oak" was first used in The term " poison gas " was first used in Paracelsus â€" , the father of toxicology , once wrote: Only the dose makes a thing not a poison " [7] see median lethal dose. The term "poison" is also used in a figurative sense: The law defines "poison" more strictly. Substances not legally required to carry the label "poison" can also cause a medical condition of poisoning. Some poisons are also toxins, which is any poison produced by animals, vegetables or bacterium, such as the bacterial proteins that cause tetanus and botulism. A distinction between the two terms is not always observed, even among scientists. The derivative forms "toxic" and "poisonous" are synonymous. Animal poisons delivered subcutaneously e. In normal usage, a poisonous organism is one that is harmful to consume, but a venomous organism uses venom to kill its prey or defend itself while still alive. A single organism can be both poisonous and venomous, but that is rare. Human antimicrobial peptides which are toxic to viruses, fungi, bacteria and cancerous cells are considered a part of the immune system. For an example, see nuclear poison. Environmentally hazardous substances are not necessarily poisons, and vice versa. For example, food-industry wastewaterâ€"which may contain potato juice or milkâ€"can be hazardous to the ecosystems of streams and rivers by consuming oxygen and causing eutrophication , but is nonhazardous to humans and not classified as a poison. Biologically speaking, any substance, if given in large enough amounts, is poisonous and can cause death. For instance, several kilograms worth of water would constitute a lethal dose. Many substances used as medicationsâ€"such as fentanyl â€"have an LD50 only one order of magnitude greater than the ED An alternative classification distinguishes between lethal substances that provide a therapeutic value and those that do not. Poisoning Acute poisoning is exposure to a poison on one occasion or during a short period of time. Symptoms develop in close relation to the exposure. Absorption of a poison is necessary for systemic poisoning. In contrast, substances that destroy tissue but do not absorb, such as lye , are classified as corrosives rather than poisons. Furthermore, many common household medications are not labeled with skull and crossbones, although they can cause severe illness or even death. In the medical sense, poisoning can be caused by less dangerous substances than those legally classified as a poison. Chronic poisoning is long-term repeated or continuous exposure to a poison where symptoms do not occur immediately or after each exposure. The patient gradually becomes ill, or becomes ill after a long latent period. Chronic poisoning most commonly occurs following exposure to poisons that bioaccumulate , or are biomagnified , such as mercury , gadolinium , and lead. Contact or absorption of poisons can cause rapid death or impairment. Agents that act on the nervous system can paralyze in seconds or less, and include both biologically derived neurotoxins and so-called nerve gases , which may be synthesized for warfare or industry. Inhaled or ingested cyanide , used as a method of execution in gas chambers , almost instantly starves the body of energy by inhibiting the enzymes in mitochondria that make ATP. Intravenous injection of an unnaturally high concentration of potassium chloride , such as in the execution of prisoners in parts of the United States, quickly stops the heart by eliminating the cell potential necessary for muscle contraction. Most biocides, including pesticides , are created to act as poisons to target organisms, although acute or less observable chronic poisoning can also occur in non-target organisms secondary poisoning , including the humans who apply the biocides and other beneficial organisms. For example, the herbicide 2,4-D imitates the action of a plant hormone, which makes its lethal toxicity specific to plants. Indeed, 2,4-D is not a poison, but classified as "harmful" EU. Many substances regarded as poisons are toxic only indirectly, by toxication. An example is "wood alcohol" or methanol , which is not poisonous itself, but is chemically converted to toxic formaldehyde and formic acid in the liver. Many drug molecules are made toxic in the liver, and the genetic variability of certain liver enzymes makes the toxicity of many compounds

differ between individuals. Exposure to radioactive substances can produce radiation poisoning , an unrelated phenomenon. Management[edit] Initial management for all poisonings includes ensuring adequate cardiopulmonary function and providing treatment for any symptoms such as seizures , shock , and pain. The pressure bandage prevents the poison being pumped throughout the body, and the hot water breaks it down. This treatment, however, only works with poisons composed of protein-molecules. Decontamination[edit] Treatment of a recently ingested poison may involve gastric decontamination to decrease absorption. Gastric decontamination can involve activated charcoal , gastric lavage , whole bowel irrigation , or nasogastric aspiration. Routine use of emetics syrup of Ipecac , cathartics or laxatives are no longer recommended. Activated charcoal is the treatment of choice to prevent poison absorption. It is usually administered when the patient is in the emergency room or by a trained emergency healthcare provider such as a Paramedic or EMT. However, charcoal is ineffective against metals such as sodium , potassium , and lithium , and alcohols and glycols ; it is also not recommended for ingestion of corrosive chemicals such as acids and alkalis. There are two types of cathartics used in poisoned patients; saline cathartics sodium sulfate , magnesium citrate , magnesium sulfate and saccharide cathartics sorbitol. They do not appear to improve patient outcome and are no longer recommended. The liquid is then removed along with the contents of the stomach. Lavage has been used for many years as a common treatment for poisoned patients. However, a recent review of the procedure in poisonings suggests no benefit. Nasogastric aspiration involves the placement of a tube via the nose down into the stomach, the stomach contents are then removed by suction. This procedure is mainly used for liquid ingestions where activated charcoal is ineffective, e. Whole bowel irrigation cleanses the bowel. This is achieved by giving the patient large amounts of a polyethylene glycol solution. The osmotically balanced polyethylene glycol solution is not absorbed into the body, having the effect of flushing out the entire gastrointestinal tract. Its major uses are to treat ingestion of sustained release drugs, toxins not absorbed by activated charcoal e. However, this may actually worsen the poisoning in some cases, so it should always be verified based on what substances are involved. Deaths from poisonings per million persons in

Chapter 8 : List of Antidotes - blog.quintoapp.com

Not to be reproduced without permission of the editor management of certain poisons, antidotes are only one aspect of the management of a poisoned patient.

Chapter 9 : Table of antidotes and antidotes

For the most commonly used antidotes, see Table: Common Specific Antidotes. Chelating drugs are used for poisoning with heavy metals and occasionally with other drugs (see Table: Guidelines for Chelation Therapy).