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Poison management protocol

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Abstract
Evidence-based medicine (EBM) to expand its application from medicine to the allied health professions is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients". EBM seeks to evaluate the strength of the evidence of risks and benefits of treatments and diagnostic tests. This helps clinicians predict whether a treatment will do more good than harm. Evidence quality can be assessed based on the source type, as well as other factors including statistical validity, clinical relevance, currency, and peer-review acceptance. EBM recognizes that many aspects of health care depend on individual factors such as quality- and value-of-life judgments, which are only partially subject to quantitative scientific methods. Application of EBM data therefore depends on patient circumstances and preferences, and medical treatment remains subject to input from personal, political, philosophical, religious, ethical, economic, and aesthetic values.

Keywords: Evidence based medicine, poison, protocol

Introduction
More precisely as "the use of mathematical estimates of the risk of benefit and harm, derived from high-quality research on population samples, to inform clinical decision-making in the diagnosis, investigation or management of individual patients".

Background
Evidence-based medicine (EBM) has evolved from clinical epidemiology, a discipline promoted by the creation of the Journal of Clinical Epidemiology in 1988. Clinical epidemiology aims to bridge the gap between clinical practice and public health using population health sciences to inform clinical practice. Thus, the methodology that underpins EBM applies methods used in the field of epidemiology to the clinical context (i.e. clinical epidemiology). In essence, EBM incorporates this quantitative (as well as qualitative) methodology in the "art" of clinical practice, so as to make the framework for clinical decisions more objective by better reflecting the evidence from research. By introducing scientific methods – particularly the methods of the population sciences – in clinical decision making, EBM has driven a transformation of clinical practice in medicine.

Process and Progress
The five steps of EBM in practice were first described in 1992 and the experience of delegates attending the 2003 Conference of Evidence-Based Health Care Teachers and Developers was summarized into five steps and published in 2005. This five step process can broadly be categorized as:

1. Translation of uncertainty to an answerable question and includes critical questioning, study design and levels of evidence
2. Systematic retrieval of best evidence available
3. Critical appraisal of evidence for internal validity that can be broken down into aspects regarding:

- Systematic errors as a result of selection bias, information bias and confounding.
- Quantitative aspects of diagnosis and treatment.
- The effect size and aspects regarding its precision.
- Clinical importance of results.

4. External validity or generalizability
5. Application of results in practice
6. Evaluation of performance

Using techniques from science, engineering and statistics, such as the systematic review of medical literature, meta-analysis, risk-benefit analysis, and randomized controlled trials (RCTs), EBM aims for the ideal that healthcare professionals should make "conscientious, explicit, and judicious use of current best evidence" in their everyday practice. Ex cathedra statements by the "medical expert" are considered to be the least valid form of evidence. All "experts" are now expected to reference their pronouncements to scientific studies.

The systematic review of published research studies is a major method used for evaluating particular treatments. The Cochrane Collaboration is one of the best-known, respected examples of systematic reviews. Like other collections of systematic reviews, it requires authors to provide a detailed and repeatable plan of their literature search and evaluations of the evidence. Once all the best evidence is assessed, treatment is categorized as

- likely to be beneficial
- likely to be harmful
- Evidence did not support either benefit or harm.[1]

In this paper, we explain about the protocol for the management of various types of poison.

1. Protocol for the Management of Super Vasmol Poisoning based On EBM

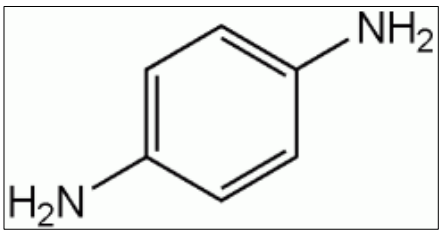
It is an emulsion based hair dye commonly used in India.

Common name: Vasmol

Ingredients: Paraphenylenediamine(< 4%), resorcinol, propylene glycol, liquid paraffin, cetostearyl alcohol, sodium lauryl sulfate, EDTA sodium, herbal extracts and preservatives and perfumes.Some of these ingredients like paraphenylene diamine and resorcinol are known toxicants with multi-organ effects, while the toxicity profiles of others are not known.

Clinical features of poisoning

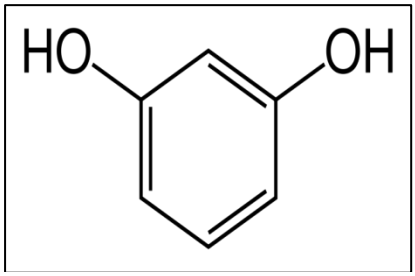
Paraphenylene diamine (PPD)



Accidental or suicidal ingestion of PPD causes systemic toxicity, manifested by severe edema of neck and face and laryngeal edema with respiratory distress frequently requiring emergency tracheostomy and mechanical ventilation. It also causes rhabdomyolysis and acute renal failure, culminating in death if not treated aggressively. Other symptoms include:

- Angioneuroticedema
- Intravascular hemolysis
- Hemoglobinuria
- Asphyxia and respiratory failure
- Severe hypocalcemia and hyperuricemia
- Hypercalcemia
- Myoglobinuria
- Myocarditis and Arrhythmias leading to sudden death.

Resorcinol



Resorcinol is a Phenolic chemical used in photography, tanning and cosmetics (hair dye) industry. It is also a pharmaceutical agent used topically in skin diseases. Resorcinol is a moderately toxic and corrosive chemical. After oral administration, resorcinol is readily absorbed from the gastrointestinal tract, metabolized, and excreted by male and female rats, indicating little potential for bioaccumulation in animal tissues. It is known to cause eye, skin, oral and gastrointestinal injuries. Systemic toxicity is manifested as vomiting, dyspnea, methemoglobinemia, hypothermia, tachypnea, pallor, profuse sweating. Hypotension and tachycardia. Other symptoms include:

- Renal & Neuro toxicity.
- Pulmonary edema, bronchospasm.
- Seizures followed by CNS depression.

Clinical manifestations:

- Respiratory
- Musculoskeletal
- Renal manifestations

Treatment

- There is no specific antidote for the super vasmol Poisioning
- Medical emergency
- Gastric lavage
- Monitor for respiratory distress
- Endotracheal intubation early if laryngeal edema develops [2].

2. Protocol for the Management Of Kerosene Poisoning based on EBM

Toxic content: Hydro carbon

Clinical features of poisoning: Coughing, choking, fever, tachypnea, grunting, cyanosis, rales, wheezing, head ache, dizziness, lethargy, ataxia, seizures, coma, gastro intestinal findings, nausea, vomiting, abdominal pain and arrhythmias.

Treatment

Life supportive procedures and symptomatic/specific treatment

- Stabilization of the air way is always the first priority of treatment.
- Give supplemental oxygen to all patients, and perform bedside pulse oximetry.
- Early intubation, mechanical ventilation, and use of positive end-expiratory pressure may be warranted in a patient in whom oxygenation is inadequate or in a

patient who has severe respiratory distress or a decreased level of consciousness.
- Take all precautions to minimize the patients risk of vomiting and further aspiration.
- A trial of bronchodilators may prove useful in patients with suspected bronchospasm.

Decontamination: A major complication of hydrocarbon poisoning is aspiration. Gastric lavage is indicated in large intentional ingestions. Air way must be stabilized to minimize the risk of aspiration secondary to vomiting and nasogastric lavage is preferred. Never induce emesis.
Elimination: No method is indicated to be beneficial.
Antidote treatment: No specific Antidote.

2. Protocol for the Management of Bleaching Powder Poisoning based on EBM [3]

Toxic content:
- **Ala**-Sodium hypo chlorite
- **Bleaching Powder**-Calcium hypochlorite (Chlorinated lime).

Clinical Features of Poisoning
Gastrointestinal irritation, with nausea, vomiting and diarrhea, is very common with ingestion of sodium hypochlorite solution. Haematemesis may occur with concentrated solutions. Household bleaches are unlikely to cause severe irritation unless contact is prolonged or the amount ingested is large. Severe esophageal damage may occur from ingestion of bleach, but several reports have concluded that it is not common. Corrosive injury of the stomach and hypernatraemia (Sodium hypo chlorite) / hypercalcaemia (chlorinated lime) with hyperchloraemic acidosis have all been reported usually following large intentional ingestions by adults.

Treatment
Life supportive procedures and symptomatic/specific treatment:
- Emesis is not recommended because of the risks associated with re-exposure of the esophagus to the bleach. In the majority of cases the only treatment necessary is plenty of fluids, especially milk. Less than 5 ml/kg oral ingestion of a 7 % solution is unlikely to cause severe effects.
- Where a concentrated or highly alkaline solution has been ingested or the quantity swallowed is thought to be large, nasogastric aspiration of the stomach contents should be considered. Monitor the pH, Sodium (sodium hypochlorite) / calcium (chlorinated lime) and chloride in severe cases. Symptomatic and supportive care with IV fluids for hypotension.

Decontamination: Emesis is not recommended because of the risk associated with re-exposure of the esophagus to the bleach.
Elimination: Not applicable.
Antidote treatment: No specific Antidote.

4. Protocol for the management of phenyl poisoning based on EBM

Toxic Content: Lysol (Cresol in soap solution)
Clinical features of poisoning
Ingestion produces burning pain and white necrotic lesions in the mouth, esophagus and stomach, vomiting and bloody diarrhoea. Headache, dizziness, hypotension, ventricular arrhythmia, shallow respiration, cyanosis, pallor, excitation and convulsions may occur initially, but it is quickly followed by unconsciousness. A fall in body temperature and pulmonary edema may occur. Methemoglobinemia and hemolytic anemia have been reported occasionally.

Treatment
- Make a proper assessment of airway, breathing, circulation and neurological status.
- Maintain a clear airway.
- If unconscious give artificial respiration.
- If the patient has breathing difficulties, put them in a sitting position.
- Monitor vital signs.
- Monitor blood pressure and ECG.
- Monitor fluid and electrolyte balance.
- Monitor acid-base balance.
- Control cardiac dysrythmias with appropriate drug regimen.
- Control convulsions with appropriate drug regimen.

Decontamination
- Remove and discard contaminated clothing.
- Irrigate exposed eyes with copious amounts of water.
- Wash skin with copious amounts of water or preferably if available wash with polyethylene glycol molecular weight 300 (Macrogol 300), isopropyl alcohol, industrial methylated spirit (PEG 3550) for at least 30 minutes.
- Do not induce vomiting, empty stomach by aspiration followed by polyethylene glycol or activated charcoal with cathartic.

Elimination
If acute renal failure occurs in phenol poisoning, dialysis should probably not be used alone, but in conjunction with charcoal hemoperfusion. Without renal failure the use of charcoal hemoperfusion may also be useful.
Antidote treatment: No specific antidote.

5. Protocol for the Management of Scorpion bite poisoning based on EBM

Grades of Centruroides envenomation
Grade I - Local pain and/or paresthesias at the site of envenomation
Grade II - Pain and/or paresthesias remote from the site of the sting, in addition to local findings
Grade III - Either cranial nerve/autonomic dysfunction or somatic skeletal neuromuscular dysfunction
- Cranial nerve dysfunction - Blurred vision, roving eye movements, hypersalivation, tongue fasciculations, dysphagia, dysphonia, problems with upper airway
- Somatic skeletal neuromuscular dysfunction - Restlessness, severe involuntary shaking or jerking of the extremities that may be mistaken for a seizure

Grade IV - Combined cranial nerve/autonomic dysfunction and somatic nerve dysfunction.

Hector Hospitalization Score
- Priapism: +3
- Vomiting: +2
- SBP >160: +2
- Corticosteroid PTA: +2
- Temperature >38ºC: +1

- Heart rate >100 bpm: +1
- Total ≥2 = Hospitalization

Although grading and scoring systems have been developed, they are limited due to species specificity and low-degree symptoms that would lead to hospitalization or therapy.

Local treatment

- A negative-pressure extraction device (ie, the extractor) may be useful, although the benefit is unproven. The extractor creates a negative pressure of 1 atm. Apply it to the sting site after incision. Oral extraction is contraindicated.
- Use ice bags to reduce pain and to slow the absorption of venom via vasoconstriction. This is most effective during the first 2 hours following the sting.
- Immobilize the affected part in a functional position below the level of the heart to delay venom absorption.
- Calm the patient to lower the heart rate and blood pressure, thus limiting the spread of the venom.
- For medical delay secondary to remoteness, consider applying a lymphatic-venous compression wrap 1 inch proximal to the sting site to reduce superficial venous and lymphatic flow of the venom but not to stop the arterial flow. Only remove this wrap when the provider is ready to administer systemic support. The drawback of this wrap is that it may intensify the local effects of the venom.
- Apply a topical or local anesthetic agent to the wound to decrease paresthesia; this tends to be more effective than opiates.
- Administer local wound care and topical antibiotic to the wound.
- Administer tetanus prophylaxis.
- Administer systemic antibiotics if signs of secondary infection occur.
- Administer muscle relaxants for severe muscle spasms (ie, benzodiazepines.)
- Systemic treatment is instituted by directing supportive care toward the organ specifically affected by the venom.
- Establish airway, breathing, and circulation (ie, ABCs) to provide adequate airway, ventilation, and perfusion.
- Monitor vital signs (eg, pulse oximetry; heart rate, blood pressure, and respiratory rate monitor).
- Use invasive monitoring for patients who are unstable and hemodynamic.
- Administer oxygen.
- Administer intravenous fluids to help prevent hypovolemia from vomiting, diarrhea, sweating, hypersalivation, and insensible water loss from a tropical environment.
- Perform intubation and institute mechanical ventilation with end-tidal carbon dioxide monitoring for patients in respiratory distress.
- For hyperdynamic cardiovascular changes, administration of a combination of beta-blockers with sympathetic alpha-blockers is most effective in reversing this venom-induced effect. Avoid using beta-blockers alone because this leads to an unopposed alpha-adrenergic effect. Also, nitrates can be used for hypertension and myocardial ischemia.
- For hypodynamic cardiac changes, a titrated monitored fluid infusion with afterload reduction helps reduce mortality. A diuretic may be used for pulmonary edema in the absence of hypovolemia, but an afterload reducer, such as prazosin, nifedipine, nitroprusside, hydralazine, or angiotensin-converting enzyme inhibitors, is better. Inotropic medications, such as digitalis, have little effect, while dopamine aggravates the myocardial damage through catecholaminelike actions. Dobutamine seems to be a better choice for the inotropic effect. Finally, a pressor such as norepinephrine can be used as a last resort to correct hypotension refractory to fluid therapy.
- Administer atropine to counter venom-induced parasympathomimetic effects.
- Insulin administration in scorpion envenomation animal experiments has helped the vital organs to use metabolic substrates more efficiently, thus preventing venom-induced multiorgan failure, especially cardiopulmonary failure. Unfortunately, no human studies have been conducted.
- Administer barbiturates and/or a benzodiazepine continuous infusion for severe excessive motor activity.
- The use of steroids to decrease shock and edema is of unproven benefit.
- Antivenom is the treatment of choice after stabilization and supportive care. Because of the heterogeneity of venom composition between different scorpion species, one specie's antivenom will have limited effect on another scorpion specie's venom. Thus, correct scorpion species identification is a prerequisite for proper antivenom treatment.
- For newer scorpion antivenom, the exact dosing has not been established as animal studies treatment amount does not translate into human studies treatment amount. In addition, the quantity to be used is determined by the patient's clinical severity, symptom evolution, and treatment response. Unfortunately, predicting the patient's response treatment is difficult, which makes exact antivenom dosing difficult. Furthermore, underdosing will result in limited or no effect, while overdosing increases the side effects and hypersensitivity reactions.
- The antivenom significantly decreases the level of circulating unbound venom within a few hours. The persistence of symptoms after the administration of antivenom is due to the inability of the antivenom to neutralize scorpion toxins already bound to their target receptors. Thus, symptomatic and supportive treatment is needed with immunotherapy.[16]
- General time guidelines for the disappearance of symptoms after antivenom administration are as follows:
- Centruroides antivenom: Severe neurologic symptoms reverse in 15-30 min. Mild-to-moderate neurologic symptoms reverse in 45-90 min.
- Non-Centruroides antivenom: In the first hour, local pain abates. In 6-12 hours, agitation, sweating, and hyperglycemia abate. In 6-24 hours, cardiorespiratory symptoms abate.
- While an anaphylaxis reaction to the antivenom is possible, the patient is at lower risk for this than with other antivenoms for other poisonous envenomations if there is a scorpion venom—induced large release of catecholamines.

6. Protocol for the Management of Snake bite poisoning based on EBM[4]

Poisonous Ingredient

The nature of the venom depends on the type of snake that inflicted the bite.

- Rattlesnakes
- Cottonmouth snakes
- Copperheads
- Coral snakes

Home Treatment

If within 40 minutes of an emergency room: Remove any restrictive clothing, rings, and watches. Have the patient rest. Keep the patient warm. Get the patient to the emergency room as soon as possible.

Treatment

Identification of snake is the most important thing before starting the treatment. A bite by a North American copperhead on the ankle is usually a moderate injury to a healthy adult, but a bite to a child's abdomen or face by the same snake may be fatal. The outcome of all snakebites depends on a multitude of factors: the size, physical condition, and temperature of the snake, the age and physical condition of the person, the area and tissue bitten (e.g., foot, torso, vein or muscle), the amount of venom injected, the time it takes for the person to find treatment, and finally the quality of that treatment.

Snake identification

Identification of the snake is important in planning treatment in certain areas of the world, but is not always possible. Ideally the dead snake would be brought in with the person, but in areas where snake bite is more common, local knowledge may be sufficient to recognize the snake. However, in regions where polyvalent antivenoms are available, such as North America, identification of snake is not a high priority item. Attempting to catch or kill the offending snake also puts one at risk for re-envenomation or creating a second person bitten, and generally is not recommended.

The three types of venomous snakes that cause the majority of major clinical problems are vipers, kraits, and cobras. Knowledge of what species are present locally can be crucial, as is knowledge of typical signs and symptoms of envenomation by each type of snake. A scoring system can be used to try to determine the biting snake based on clinical features, but these scoring systems are extremely specific to particular geographical areas.

First aid

- Snakebite first aid recommendations vary, in part because different snakes have different types of venom. Some have little local effect, but life-threatening systemic effects, in which case containing the venom in the region of the bite by pressure immobilization is desirable. Other venoms instigate localized tissue damage around the bitten area, and immobilization may increase the severity of the damage in this area, but also reduce the total area affected; whether this trade-off is desirable remains a point of controversy. Because snakes vary from one country to another, first aid methods also vary.
- However, most first aid guidelines agree on the following:
- Protect the person and others from further bites. While identifying the species is desirable in certain regions, risking further bites or delaying proper medical treatment by attempting to capture or kill the snake is not recommended.
- Keep the person calm. Acute stress reaction increases blood flow and endangers the person. Panic is infectious and compromises judgment.
- Call for help to arrange for transport to the nearest hospital emergency room, where antivenom for snakes common to the area will often be available.
- Make sure to keep the bitten limb in a functional position and below the person's heart level so as to minimize blood returning to the heart and other organs of the body.
- Do not give the person anything to eat or drink. This is especially important with consumable alcohol, a known vasodilator which will speed up the absorption of venom. Do not administerstimulants or pain medications, unless specifically directed to do so by a physician.
- Remove any items or clothing which may constrict the bitten limb if it swells (rings, bracelets, watches, footwear, etc.)
- Keep the person as still as possible.
- Do not incise the bitten site.
- Many organizations, including the American Medical Association and American Red Cross, recommend washing the bite with soap and water. Australian recommendations for snake bite treatment recommend against cleaning the wound. Traces of venom left on the skin/bandages from the strike can be used in combination with a snake bite identification kit to identify the species of snake. This speeds determination of which antivenom to administer in the emergency room.
- India developed a national snake-bite protocol in 2007 which includes advice to:
- Reassure the patient. 70% of all snakebites are from non- venomous species. Only 50% of bites by venomous species actually envenomate the patient
- Immobilise in the same way as a fractured limb. Use bandages or cloth to hold the splints, not to block the blood supply or apply pressure. Do not apply any compression in the form of tight ligatures, they don’t work and can be dangerous!
- Get to Hospital Immediately. Traditional remedies have **no** proven benefit in treating snakebite.
- Tell the doctor of any systemic symptoms, such as droopiness of a body part, that manifest on the way to hospital.

Pressure immobilization

A Russell's viper is being "milked". Laboratories use extracted snake venom to produce antivenom, which is often the only effective treatment for potentially fatal snakebites.

As of 2008, clinical evidence for pressure immobilization via the use of an elastic bandage is limited. It is recommended for snakebite that have occurred in Australia (Due to elapids which are neurotoxic). It is not recommended for bites from non-neurotoxic snakes such as

found in North America and other regions of the world. The British military recommends pressure immobilization in all cases where the type of snake is unknown.

The object of pressure immobilization is to contain venom within a bitten limb and prevent it from moving through the lymphatic system to the vital organs. This therapy has two components: pressure to prevent lymphatic drainage, and immobilization of the bitten limb to prevent the pumping action of the skeletal muscles.

Antivenom

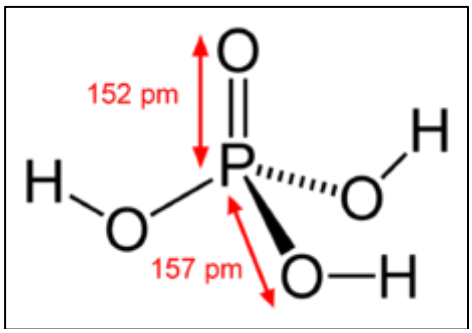
Until the advent of antivenom, bites from some species of snake were almost universally fatal. Despite huge advances in emergency therapy, antivenom is often still the only effective treatment for envenomation. The first antivenom was developed in 1895 by French physician Albert Calmette for the treatment of Indian cobra bites. Antivenom is made by injecting a small amount of venom into an animal (usually a horse or sheep) to initiate an immune system response. The resulting antibodies are then harvested from the animal's blood.

Antivenom is injected into the person intravenously, and works by binding to and neutralizing venom enzymes. It cannot undo damage already caused by venom, so antivenom treatment should be sought as soon as possible. Modern antivenoms are usually polyvalent, making them effective against the venom of numerous snake species. Pharmaceutical companies which produce antivenom target their products against the species native to a particular area. Although some people may develop serious adverse reactions to antivenom, such as anaphylaxis, in emergency situations this is usually treatable and hence the benefit outweighs the potential consequences of not using antivenom.

Outmoded

- Old style snake bite kit that should not be used.
- The following treatments while once recommended are considered of no use or harmful including: tourniquets, incisions, suction, application of cold, and application of electricity. Cases in which these treatments appear to work may be the result of dry bites.
- Application of a tourniquet to the bitten limb is generally not recommended. There is no convincing evidence that it is an effective first aid tool as ordinarily applied. Tourniquets have been found to be completely ineffective in the treatment of Crotalusdurissus bites, but some positive results have been seen with properly applied tourniquets for cobra venom in the Philippines. Uninformed tourniquet use is dangerous, since reducing or cutting off circulation can lead to gangrene, which can be fatal. The use of a compression bandage is generally as effective, and much safer.
- Cutting open the bitten area, an action often taken prior to suction, is not recommended since it causes further damage and increases the risk of infection.
- Sucking out venom, either by mouth or with a pump, does not work and may harm the affected area directly. Suction started after 3 minutes removes a clinically insignificant quantity—less than one thousandth of the venom injected—as shown in a human study. In a study with pigs, suction not only caused no improvement but led to necrosis in the suctioned area. Suctioning by mouth presents a risk of further poisoning through the mouth's mucous tissues. The well-meaning family member or friend may also release bacteria into the persons wound, leading to infection.
- Immersion in warm water or sour milk, followed by the application of snake-stones (also known as la Pierre Noire), which are believed to draw off the poison in much the way a sponge soaks up water.
- Application of potassium permanganate.
- Use of electroshock therapy in animal tests has shown this treatment to be useless and potentially dangerous.
- In extreme cases, in remote areas, all of these misguided attempts at treatment have resulted in injuries far worse than an otherwise mild to moderate snakebite. In worst case scenarios, thoroughly constricting tourniquets have been applied to bitten limbs, completely shutting off blood flow to the area. By the time the person finally reached appropriate medical facilities their limbs had to be amputated.

7. Protocol for the Management of Organophosphorous Poisoning based on EBM



Phosphoric acid

Treatment

Current antidotes for OP poisoning consist of a pretreatment with carbamates to protect AChE from inhibition by OP compounds and post-exposure treatments with anti-cholinergic drugs. Anti-cholinergic drugs work to counteract the effects of excess acetylcholine and reactivate AChE. Atropine is a muscarinic antagonist, and thus blocks the action of acetylcholine peripherally. These antidotes are effective at preventing lethality from OP poisoning, but current treatment lack the ability to prevent post-exposure incapacitation, performance deficits, or permanent brain damage. Atropine can be used as an antidote in conjunction with pralidoxime or other pyridinium oximes (such as trimedoxime or obidoxime), though the use of "-oximes" has been found to be of no benefit, or possibly harmful, in at least two meta-analyses.

Enzyme bioscavengers are being developed as a pretreatment to sequester highly toxic OPs before they can reach their physiological targets and prevent the toxic effects from occurring. Significant advances with cholinesterases (ChEs), specifically human serum BChE (HuBChE) have been made. HuBChe can offer a broad range of protection for nerve agents including soman, sarin, tabun, and VX. HuBChE also possess a very long retention time in the human circulation system and because it is from a human source it will not produce any

antagonistic immunological responses. HuBChE is currently being assessed for inclusion into the protective regimen against OP nerve agent poisoning [27]. Currently there is potential for PON1 to be used to treat sarin exposure, but recombinant PON1 variants would need to first be generated to increase its catalytic efficiency.

One other agent that is being researched is the Class III anti-arrhythmic agents. Hyperkalemia of the tissue is one of the symptoms associated with OP poisoning. While the cellular processes leading to cardiac toxicity are not well understood, the potassium current channels are believed to be involved. Class II anti-arrhythmic agents block the potassium membrane currents in cardiac cells, which makes them a candidate for become a therapeutic of OP poisoning.

Medical Care

Airway control and adequate oxygenation are paramount in organophosphate (OP) poisonings. Intubation may be necessary in cases of respiratory distress due to laryngospasm, bronchospasm, bronchorrhea, or seizures. Immediate aggressive use of atropine may eliminate the need for intubation. Succinylcholine should be avoided because it is degraded by acetylcholinesterase (AChE) and may result in prolonged paralysis.

Continuous cardiac monitoring and pulse oximetry should be established; an ECG should be performed. Torsades de Pointes should be treated in the standard manner. The use of intravenous magnesium sulfate has been reported as beneficial for organophosphate toxicity. The mechanism of action may involve acetylcholine antagonism or ventricular membrane stabilization.

Remove all clothing and gently cleanse patients suspected of organophosphate exposure with soap and water because organophosphates are hydrolyzed readily in aqueous solutions with a high pH. Consider clothing as hazardous waste and discard accordingly.

Use personal protective equipment, such as neoprene gloves and gowns, when decontaminating patients because hydrocarbons can penetrate nonpolar substances such as latex and vinyl. Use charcoal cartridge masks for respiratory protection when decontaminating patients who are significantly contaminated.

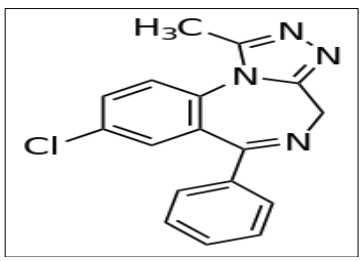
Irrigate the eyes of patients who have had ocular exposure using isotonic sodium chloride solution or lactated Ringer's solution. Morgan lenses can be used for eye irrigation.

Surgical Care

Patients with trauma or blast injury should be treated according to standard advanced trauma life support (ATLS) protocol. Patient decontamination should always be considered to prevent medical personnel poisoning.

8. Protocol for the Management of AlprazolamPoisioning based on EBM [5]

Structure



IUPAC Name: 8-chloro-1-methyl-6-phenyl-4H- [1, 2, 4]triazolo[4, 3-a][1, 4]benzodiazepine
Routes : Oral, Sublingual
Formula : C17H13ClN4
Mol. Mass : 308.765

Treatment

Prehospital Care

- Cardiac monitoring
- Supplemental oxygen and airway support
- Intravenous (IV) access
- Rapid glucose determination (finger stick) and administration of D50 if necessary
- Naloxone can be administered at a very low dose (0.05 mg with a gradual increase if needed), if the diagnosis is unclear and an opiate co-ingestion is suspected (eg, if the patient has severe respiratory depression).
- An important caveat is that although the administration of 0.4 mg of naloxone will reverse respiratory depression in most patients with opioid overdoses, it will also cause severe withdrawal symptoms (nausea, vomiting) in those who are opioid dependent. This can result in aspiration of gastric contents in patients who are unable to protect their airway because of sedation from the Alprazolam.
- Patients who have overdosed on Alprazolam should receive supportive care and monitoring (eg, cardiac monitoring, oximetry, vital signs). Single-dose activated charcoal is recommended for gastrointestinal (GI) decontamination in patients with a protected airway who present within 4 hours of ingestion.
- It is important to remember that isolated Alprazolam overdose is relatively benign, manifesting principally as prolonged sedation, whereas aspiration of activated charcoal can significantly worsen clinical outcome, sometimes resulting even in death.
- Gastric lavage is not recommended. However, it may be considered if the presence of a lethal co-ingestant is suspected and the patient presents within 1 hour of ingestion.
- Flumazenil is a competitive Alprazolam receptor antagonist and is the only available specific antidote for Alprazolam. It should be used cautiously because it has potential to precipitate withdrawal in long-term Alprazolam users, resulting in seizures. The ideal indication for flumazenil use is isolated Alprazolam overdose in Alprazolam-naive patients, particularly if the overdose is iatrogenic (eg, during conscious sedation on Alprazolam-naive patient).
- Flumazenil must also be used with care in patients who have been taking a Alprazolam for treatment of a potentially life-threatening condition (eg, seizure disorder). In such cases, administration of antagonists may result in exacerbation of the condition.
- Additionally, co-ingestion commonly occurs with agents that lower the seizure threshold (eg, cyclic antidepressants) and reversal may result in seizure or status epilepticus; therefore, antagonists are not recommended for use by prehospital personnel or for indiscriminate use before a complete evaluation.
- Ipecac syrup is contraindicated for prehospital or hospital use because of the risk for CNS depression and subsequent aspiration with emesis. Studies have not

shown benefit from cathartics, and, while most drugs and toxins are absorbed within 30-90 minutes, laxatives take hours to work. Dangerous fluid and electrolyte shifts have occurred when cathartics are used in small children. Patients may be discharged if they remain asymptomatic at least 6 hours post ingestion. Those with mild toxicity may be observed in the emergency department until they recover.

- Patients with intentional overdoses require psychiatric evaluation before discharge. Admit patients with hemodynamic instability, coma, or respiratory depression to the intensive care unit (ICU). Respiratory depression may be treated with assisted ventilation[6, 7].

Conclusion

EBM seeks to evaluate the strength of the evidence of risks and benefits of treatments and diagnostic tests.Evidence quality can be assessed based on the source type (from meta-analyses and systematic reviews of triple-blind randomized clinical trials with concealment of allocation and no attrition at the top end, down to conventional wisdom at the bottom), as well as other factors including statistical validity, clinical relevance, currency, and peer-review acceptance.Application of EBM data therefore depends on patient circumstances and preferences, and medical treatment remains subject to input from personal, political, philosophical, religious, ethical, economic, and aesthetic values.

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