# A General Approach to the Poisoned Patient.

Remember: "The Dose Alone Makes the Poison"

Obtaining a History

## A. History:

- Obtaining a good history is critical in order to provide sound advice.
- In attempting to obtain a thorough history on all inquiries, each of the following questions should be asked (when applicable) and answered to the patient's/historian's ability:

1. What was the reported exposure? (Drug, a chemical, etc)
2. What form was the product in? (Liquid, solid, etc)
3. By what route was the individual exposed to the product? (Inhalation, dermal, oral, etc)
4. When did the exposure occur?
5. Was there a single or were there multiple exposures?
6. Over what period of time did the exposure(s) occur?
7. If the exposure was by inhalation or skin, was the patient in an open or confined space?
8. To what quantity/concentration of product was the individual exposed?
9. How old was the individual exposed?
10. Does that person have any other underlying medical conditions such as:
   a. Asthma
   b. Diabetes
   c. Taking any medications? For what purpose?
11. How much does the patient weigh? (when applicable)
12. Is the patient experiencing any symptoms at this time?
13. What are those specific symptoms?
14. When did these symptoms start?
15. How long did those symptoms last?
16. In which order did the symptoms occur?
17. Was there more than one person exposed or involved?
18. Are their symptoms the same?
19. Was proper decontamination done?
20. If so what specific actions for decontamination were employed?
21. Were there any spills or environmental contamination?
22. Was the environment cleaned up properly?
23. If so, how was it cleaned up specifically?
24. Has there been any form of medical treatment implemented?
25. Has the patient seen a physician?
26. If so, what were the physician's recommendations and treatment?

## B. Evaluation

1. Toxicology Screens
   
   With few exceptions the treatment for a specific poisoned patient is governed by the history and physical assessment/symptoms and not on drug screens

   a. Limitations of screens
      - Long turnaround time
      - Limited scope (tests may not be available for measurement)
      - Limited sensitivity
      - Difficulty interpreting (e.g. cocaine and other drugs that show up positive in the urine for multiple days since use after clinical effects have abated)
b. Specific levels that are helpful in treatment
   ➢ Acetaminophen, carboxyhemoglobin

c. Specific levels that may be helpful in diagnosis/treatment
   ➢ Salicylates, iron, digoxin, phenobarbital, theophylline, organophosphates (measure RBC cholinesterase), AEDs

d. Drug levels that are unnecessary to obtain in most cases
   ➢ Cyclic antidepressants, neuroleptics, SSRIs

2. Radiographs
   ➢ Limited to only detecting radiopaque material which is only a fraction of substances typically ingested.
   ➢ Radiographs may be of use in illegal drug packet ingestions and iron tablets.

3. The DONT Cocktail
   These four treatments are used in initial management of the patient presenting with a depressed mental status
   D: Dextrose
   ➢ This involves the use of hypertonic glucose (usually an ampule of 50% dextrose) to treat suspected/actually hypoglycemia. Rapid ability to detect the presence of hypoglycemia would seem to limit the usefulness of arbitrary administration in every patient with depressed mental status. The dose is 50 grams IV
   O: Oxygen

   N: Naloxone
   ➢ This is a opioid antagonist used in the treatment of opioid intoxication. It rapidly reverses opioid induced CNS depression and respiratory depression. Care should be taken when administering to opiate dependent patients. (use will be further discussed during Drugs of Abuse lecture)
   T: Thiamine
   ➢ Thiamine functions as a cofactor which links glycolysis to the Kreb's cycle allowing aerobic metabolism to produce ATP. It also seems to be important in normal neuronal conduction. Alcoholics whose main source of caloric intake is ethanol are often deficient in thiamine because of poor diet and are therefore susceptible to Wernike's encephalopathy, a neurological state associated with thiamine deficiency and typically presents with oculomotor abnormalities, ataxia, and confusion/ altered mental status. Thiamine is given to these patients for treatment and prevention of Wernicke's. Glucose administration to these patients without administering thiamine can lead to exacerbation of symptoms or coma. The dose is typically 100mg/day IV.

C. First Aid for Specific Conditions:

1. ABC’s
   Any individual who intends on providing First Aid advice must be familiar with the ABC’s of First Aid. The ABC’s should be addressed first in this order whenever handling a medical situation.
   A: Airway
   ➢ Is the patient choking or coughing? Is their airway obstructed?
   ➢ If any of these situations are occurring, immediately obtain the telephone number and address where the caller is located, in case the call is disconnected. Emergency Medical Services should be called and the caller should be transferred to a toxicologist for basic life support instructions until paramedics arrive.
   B: Breathing
   ➢ Is the patient obtaining both adequate ventilation? Are the lips and nailbeds pink?
   ➢ If in doubt, Emergency Medical Services should be called and the caller should be transferred immediately to a toxicologist for basic life support instructions until paramedics arrive.
   ➢ If possible, the name, address (including city, state, and zip code), and telephone number should be obtained BEFORE the call is transferred, so that EMS can be called by IPC if the connection is lost.
C: Circulation

- Does the patient have a pulse?
- If any of the following symptoms occur, the caller should be immediately transferred to a toxicologist.
  - An Abnormally fast or slow pulse.
  - An irregular pulse
  - An abnormal blood pressure
  - Dizziness
  - Chest pain
  - Shortness of breath
  - Numbness, loss of feeling or coldness in the extremities

2. Allergic/Anaphylactic Reactions

Allergic reactions can occur in any individual and may range from mild to severe in their symptoms.

- Minor symptoms such as dryness, itching, redness or rash for which the caller believes no medical treatment at this time. Advice should consist of washing the affected areas with a mild soap and rinsing the areas with water. The patient should discontinue use of the product reported to be causing the reaction and seek medical care.

- Moderate symptoms may consist of prolonged symptoms or a progression of the minor symptoms.

- Severe symptoms may include life threatening reactions such as anaphylaxis, shock and hypotension.

3. Injuries to the Eye

Ocular Decontamination/Treatment

- In the instance in which a product has come into contact with the eye, the eye should be flushed for at least 15 minutes with room temperature water. (If the patient is wearing contacts, the contacts should be removed first, if this can be done quickly and without further injury, and then the eyes should be flushed. The contacts should not be used again unless the patient’s eye specialist, in consultation with a toxicologist, tells the patient it is safe to do so.

- Room Temperature water is less irritating to the eye than cold or warm water.

- A steady gentle stream of water is desirable. High water pressure applied directly to the eye may result in further ocular damage.

- Do not use any eye drops in the eyes after an ocular exposure to an agent. Eye drops (Such as Visine, Murine, etc) eliminate redness by decreasing blood flow to the eye. In the case where irritation, burns or damage has been done to the eye, good blood flow to the eye is required to facilitate healing.

- In the case of non corrosive agents, the patient should give the eye an hour to heal. If redness, irritation or blurred vision persist after this time period, the patient should consult a physician

- In the case in which a corrosive product (e.g. alkalis, high concentration cationic detergents) comes into contact with the eye, the eye should be rinsed for 20 minutes before doing anything else. After rinsing, the patient should be seen be seen in a health care facility for an eye exam.

- Typically irrigation is done at the health care facility until the conjunctival pH is as close to 7 as it will go. This may take several irrigations.

- Treatment for corneal burns includes antibiotics/steroids

- All injuries which disrupt the tissues of the eye may lead to tetanus.
4. **Nose**

- Irritation to the nose may occur after exposure to an irritant or products with a strong odor.
- Treatment consists of moving the patient to fresh air and blowing the nose once or twice if needed to expel foreign particles or odors.
- In the case of nose bleeds, the head should be tilted slightly forward, not backwards, and mild pressure should be applied to the nose. Tilting the head back will only result in the blood running down into the throat and the patient swallowing the blood. This in turn could result in nausea and vomiting. If bleeding does not stop within 20 minutes, the individual should be seen by a physician.

5. **Mouth/Throat**

- Irritation to the mouth and throat may occur from exposure to particular chemicals.
- Symptoms may be reduced by instructing the patient to drink cool fluids such as water or milk.
- Any minor scratches to the mouth may be treated at home. However, if pain upon swallowing occurs, or bleeding is any more than minor amounts a physician should be consulted.
- Any burns to the mouth due to ingestion of a corrosive product needs to be addressed by a physician.

6. **Respiratory Tract**

- Patients who have experienced any respiratory irritation due to a substance, should be moved to an area of fresh air.
- Cool fluids may be given to decrease irritation.
- Steam from a warm shower may open up airways and decrease coughing and shortness of breath.
- If the patient complains of shortness of breath or if symptoms persist for longer than 30 minutes after implementation of the previous recommendations or if the patient has an underlying lung condition such as asthma, emphysema or COPD, a physician should be consulted.
- Any ingestion of a hydrocarbon product resulting in coughing or possible aspiration needs to be evaluated by a physician.

7. **Abdomen**

- Vomiting, stomach cramping and diarrhea are common non-specific symptoms that are seen not only in serious poisonings (organophosphates, digoxin) but may also be related to viral syndromes, food poisoning, and other short-lived illnesses.
- If no significant chemical exposure can be documented and the vomiting and diarrhea are mild, the patient may be instructed to consume plenty of fluids to avoid dehydration. Any worsening of symptoms or persistence beyond two to three days should prompt medical evaluation.
- If the patient is a small child or infant, the caller should be advised to contact their pediatrician or other medical practitioner.
- Adults may consume Gatorade to replenish minerals and electrolytes.
- In general, for minimal symptoms Pedialyte or other pediatric electrolyte rich solutions may be used for replacement in children.
If symptoms persist for more than 2 days or if the patient is not taking in adequate fluids and is starting to become dehydrated, they should be referred to a physician.

- Any patient with a compromised immune system, such as individuals with HIV/AIDS, transplant patients or patients undergoing chemotherapy, should be referred to a physician for further recommendations.

- If botulism or specific *E.Coli* strains are of concern, these cases should be referred to a physician for further assistance.

### 8. Skin

One of the most important first aid procedures that can be implemented to prevent further damage or risk is decontamination. This involves removing the possibly hazardous product from the area of exposure.

#### a. Dermal Decontamination:

- Requires removal of any and all clothing that may have come into contact with the substance.

- All areas exposed to the product should be washed with a mild soap and flushed with copious amounts of water. This procedure should be repeated at least a second time to ensure removal of the product.

- Make sure the patient does not re-apply his/her contaminated clothing.

- If any sign of bleeding, trauma, burns, cuts, systemic affects or rashes occur, the case should be transferred to a toxicologist for assessment and determination of whether or not the patient needs to be evaluated by a physician.

- Certain chemicals are readily absorbed by the skin without immediate symptoms, but may result in life-threatening symptoms hours later. If a product with the potential for serious toxicity comes in contact with the skin, a physician should be consulted.

#### b. Rashes

- The area of the rash should be washed well with a mild soap and water and the patient should discontinue use of the product reportedly causing the rash.

- Typically rashes can be treated with topical steroid preparations as well as oral antihistamine.

- If symptoms persist or worsen then a physician should be consulted.

#### c. Bites and Stings

- Bites and stings from bees, ants and spiders which involve only local pain and minimal swelling, may be handled at home as long as an anaphylactic reaction or poisonous insect such as the brown recluse is not suspected. Always inquire as to whether to patient has a known allergy to bee stings.

- The bite or sting area should be washed well with a mild soap and water.

- If the stinger remains in the skin after a bee sting, it may be gently removed by placing the blade of a table knife (not a steak knife or kitchen knife), under the sticker and lifting it off.

- If the caller inquires about medications for inflammation or for pain, the usual antiinflammatories may be prescribed after a thorough medical history has been obtained.

#### d. Burns

- Mild sunburns may be treated at home by applying aloe vera gel or a burn cream to the sun burn.
The patient should not further expose themselves to the sun, until the sunburn has resolved.

Second or third degree burns will be transferred immediately to a toxicologist.

Burns from corrosive products such as acids or bases should immediately flushed for 20 minutes and follow the dermal decontamination instructions. Calls involving exposures to corrosive agents should be transferred immediately to a toxicologist.

References
1. Smilkstein MJ. Emergency Medicine 1993