Chapter 22

Toxicology

Unit Summary

After students complete this chapter and the related course work, they will be familiar with the classes of compounds involved in substance abuse and poisonings; the routes by which poisons enter the body; and the signs, symptoms, assessment, and treatment for various poisoning emergencies.

National EMS Education Standard Competencies

Medicine

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Toxicology

Recognition and management of

• Carbon monoxide poisoning (pp 826–827)

• Nerve agent poisoning (pp 842–843)

How and when to contact a poison control center (p 826)

Anatomy, physiology, pathophysiology, assessment, and management of

• Inhaled poisons (pp 826–827, 830–833)

• Ingested poisons (pp 828-829, 830–833)

• Injected poisons (pp 829–833)

• Absorbed poisons (pp 827–828, 830–833)

• Alcohol intoxication and withdrawal (pp 834–836)

Knowledge Objectives

1. Define toxicology, poison, toxin, and overdose. (p 822)

2. Identify the common signs and symptoms of poisoning or toxic exposure. (pp 823–824)

3. Describe how poisons and toxins can enter the body. (pp 824–830)

4. Describe the assessment and treatment of a patient with a suspected poisoning or toxic exposure. (pp 830–846)

5. Describe the assessment and treatment of the patient with a suspected overdose. (pp 830–843)

6. Discuss scene safety considerations for working at a scene with a potentially hazardous material or violent patient. (p 830)

7. Understand the role of airway management in the patient suffering from poisoning or overdose. (pp 830–845)

8. Explain the use of activated charcoal, including indications, contraindications, and the need to obtain approval from medical control before administration. (pp 829–834)

9. Identify the main types of toxins and poisons and their effects, including alcohol, opiates and opioids, sedative-hypnotic drugs, inhalants, hydrogen sulfide, sympathomimetics, synthetic cathinones, marijuana, hallucinogens, anticholinergic agents, and cholinergic agents. (pp 834–843)

10. Discuss how to manage a patient who has overdosed on an opioid or opiate and who has gone into cardiac or respiratory arrest. (pp 836–837)

11. Describe the assessment and treatment for the patient with suspected food poisoning. (pp 843–845)

12. Describe the assessment and treatment for the patient with suspected plant poisoning. (pp 846–847)

Skills Objectives

1. Demonstrate how to assess and treat a patient with a suspected poisoning. (pp 830–833)

2. Demonstrate how to assess and treat a patient with a suspected overdose. (pp 831–833)

3. Demonstrate how to administer activated charcoal. (p 833–834)

Readings and Preparation

Review all instructional materials including Emergency Care and Transportation of the Sick and Injured, Twelfth Edition, Chapter 22, and all related presentation support materials.

• Review local EMT treatment protocols for the emergency care of patients with poisoning and overdose. In particular, review local protocols for activated charcoal administration.

Support Materials

• Lecture PowerPoint presentation

• Case Study PowerPoint presentation

• Examples of various forms of unit doses of activated charcoal

Enhancements

• Direct students to visit Navigate.

• Contact a representative from the closest regional poison control center to provide literature and speak to the class about the services the center provides.

• Contact a narcotics officer from the local police department or a drug and alcohol counselor. These individuals can provide very current information on local “drugs of choice” and signs and symptoms.

• Content connections: Refer to the sections on BLS—suctioning and airway—and reference how mastery of the skills learned in these sections will be used in the treatment of toxicology patients. Students can apply the techniques they will learn in the Chapter 23, “Behavioral Health Emergencies,” for managing patients who become difficult or combative.

• Cultural considerations: Drug and alcohol abuse among teenagers is one of the most common problems in society today. Teens are encouraged to experiment through peer pressure. Remind students that when talking to adolescents about substance abuse, they should show concern for privacy and never use a judgmental tone.

Teaching Tips

• Review and present to students pertinent local protocols regarding activated charcoal administration, direct contact of poison control centers by EMTs, and any specific destination protocols.

• Contact the local emergency department, police department, or drug and alcohol center to obtain information on current illicit drugs “making the rounds.”

• Although there is no specific skill drill, be sure your students are able to verbalize the steps in the administration of activated charcoal.

Unit Activities

Writing assignments: Assign each student the name of a specific street drug to research and write a short essay about, including the category of the drug, the common effects, etc.

Group activities: Create a “game show,” such as Jeopardy, using questions and answers pertinent to the chapter. Divide the class into two teams for a friendly competition.

Medical terminology review: Create flash cards with pertinent terminology. Divide the class into groups of three or four and have the students quiz each other using the flash cards.

Visual thinking: Create blank charts titled “opioids,” “sedative-hypnotic drugs,” etc. Write the names of specific drugs on strips of paper turned facedown and mix them up. Have each student choose a strip of paper and attach it to the appropriately titled chart.

Pre-Lecture

### You are the Provider

“You are the Provider” is a progressive case study that encourages critical thinking skills.

### Instructor Directions

1. Direct students to read the “You are the Provider” scenario found throughout Chapter 22.

2. You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions and the Patient Care Report.

3. You may also use this as an individual activity and ask students to turn in their comments on a separate piece of paper.

Lecture

I. Introduction

A. Every day, we come into contact with things that are potentially poisonous.

B. Acute poisoning affects over 2 million people each year.

C. Chronic poisoning is more common.

D. Deaths caused by chronic poisoning in adults have been rising as a result of drug abuse.

II. Identifying the Patient and the Poison

A. Toxicology is the study of toxic or poisonous substances.

1. A poison is any substance whose chemical action can damage body structures or impair body function.

2. A toxin is a poisonous substance produced by bacteria, animals, or plants that acts by changing the normal metabolism of the cells or destroying them.

a. Toxins can have acute or chronic effects.

3. Substance abuse is the misuse of any substance to produce a desired effect.

a. A common complication of substance abuse is overdose, when a patient takes a toxic dose of a substance.

B. Your primary responsibility to the patient who has been poisoned is to recognize that a poisoning has occurred.

1. You could also become exposed to the same substance.

2. Very small amounts of some poisons can cause considerable damage or death.

3. If you suspect that ingestion or exposure to a toxic substance has occurred, notify medical control and begin emergency treatment at once.

C. The signs and symptoms of poisoning vary according to the specific agent.

1. If possible, while obtaining the SAMPLE history, ask the patient:

a. What substance did you take?

b. When did you take it (or become exposed to it)?

c. How much did you ingest?

d. Did you have anything to eat or drink before or after you took it?

e. Has anyone given you an antidote or any substance orally since you ingested it?

f. How much do you weigh?

D. Try to determine the nature of the poison.

1. Look around the immediate area for an overturned bottle, a needle or syringe, scattered pills, chemicals, remains of food or drink items, or even an overturned or damaged plant.

2. Take any suspicious material with you to the ED.

3. Containers at the scene can provide critical information, such as:

a. Name and concentration of the drug

b. Ingredients

c. Number of pills originally in the bottle

d. Name of the manufacturer

e. Prescribed dose

4. If the patient vomits, examine the contents for pill fragments.

5. Note and document anything unusual that you see.

III. How Poisons Enter the Body

A. How you provide treatment depends on how the poison got into the patient’s body.

1. The four routes to consider are:

a. Inhalation

b. Absorption (surface contact)

c. Ingestion

d. Injection

2. All four routes of poisoning can lead to life-threatening conditions.

B. Inhaled poisons

1. Move the patient into fresh air immediately.

2. The patient may require supplemental oxygen.

3. If you suspect the presence of a toxic gas, call for specialized resources such as the hazmat team.

4. Some patients may need decontamination by the hazmat team after removal from the toxic environment.

5. All patients who have inhaled poison require immediate transport to an emergency department.

a. Be prepared to use supplemental oxygen via a nonrebreathing mask and/or ventilatory support with a bag-mask device, if necessary.

b. Make sure a suctioning unit is available in case the patient vomits.

6. Some patients use inhaled poisons to commit suicide in a vehicle.

a. Leaving a car engine running in an enclosed garage can cause carbon monoxide poisoning.

C. Absorbed and surface contact poisons

1. Can affect the patient in many ways.

a. Skin, mucous membrane, or eye damage

b. Chemical burns

c. Rashes or lesions

d. Systemic effects

2. It is important to distinguish between contact burns and contact absorption.

3. Signs and symptoms of absorbed poisoning include:

a. A history of exposure

b. Liquid or powder on a patient’s skin

c. Burns

d. Itching

e. Irritation

f. Redness of the skin

g. Typical odors of the substance

4. Emergency treatment for a typical contact poisoning includes:

a. Avoid contaminating yourself or others.

b. While protecting yourself, remove the substance from the patient as rapidly as possible.

c. Remove all contaminated clothing.

5. Flush and wash the skin.

a. If dry powder has been spilled, brush off the powder, then flood the area with water for 15 to 20 minutes, then wash skin with soap and water.

b. If liquid has been spilled onto the skin, flood for 15 to 20 minutes.

c. If a chemical agent is introduced to the eyes, irrigate them quickly and thoroughly.

6. Many chemical burns occur in an industrial setting.

a. Safety showers and specific protocols for handling surface burns may be available.

b. A hazmat team should be available to assist you.

c. Ensure you, your team members, and the exposed patient are thoroughly decontaminated.

d. Obtain material safety data sheets.

D. Ingested poisons

1. About 80% of poisoning is by mouth.

2. Ingested poisoning is usually accidental in children and deliberate in adults.

3. Signs and symptoms vary greatly with the:

a. Type of poison

b. Age of the patient

c. Time that has passed since the ingestion

4. Signs and symptoms include burns around the mouth, gastrointestinal pain, vomiting, cardiac dysrhythmias, and seizures.

5. Treat signs and symptoms and notify the poison center and medical control of the patient’s condition.

a. If patient has altered mental status, protect the patient from aspirating on vomit.

6. Consider whether there is unabsorbed poison remaining in the gastrointestinal tract and whether you can safely and effectively prevent its absorption.

7. Some EMS systems allow EMTs to administer activated charcoal.

8. You should always immediately assess the ABCs of every patient who has been poisoned.

E. Injected poisons

1. Exposure by injection includes intravenous drug abuse and envenomation by insects, arachnids, and reptiles.

a. Injected poisons are usually absorbed quickly into the body.

b. They cannot be diluted or removed from the body in the field.

2. Signs and symptoms include:

a. Weakness

b. Dizziness

c. Fever

d. Chills

e. Unresponsiveness

f. Excitability

3. Monitor the airway, provide high-flow oxygen, and be alert for nausea and vomiting.

4. Remove rings, watches, and bracelets from areas around the injection site if swelling occurs.

5. Take all containers, bottles, and labels with the patient to the ED.

IV. Patient Assessment

A. Scene size-up

1. Take standard precautions and look for clues that might indicate the substance involved.

a. Is there an odor in the room? If so, is the scene safe?

b. Are there medication bottles lying around the patient and the scene? If so, is there medication missing that might indicate an overdose?

c. Are there alcoholic beverage containers present?

d. Are there syringes or other drug paraphernalia on the scene?

e. Is there a suspicious odor that may indicate the presence of a drug laboratory?

2. Keep a constant eye on the surroundings and keep an open mind when questioning the patient or bystanders to avoid mistaken conclusions.

B. Primary assessment

1. Determine the severity of the patient’s condition.

a. Obtain a general impression of the patient.

b. Assess his or her level of consciousness.

c. Determine any life threats.

d. Do not assume a conscious, alert, and oriented patient is in stable condition.

2. Airway and breathing

a. Quickly ensure that the patient has an open airway and adequate ventilation.

b. If the patient has any dif­ficulty breathing, begin oxygen therapy.

c. Consider inserting an airway adjunct in unresponsive patients.

d. Have suction available; these patients are susceptible to vomiting.

3. Circulation

a. Assess the pulse and skin condition.

b. You will find variations depending on the substance involved.

4. Transport decision

a. Consider prompt transport for patients with obvious alterations in the XABCs or for patients you have determined have a poor general impression.

b. Everyone who is exposed to the hazardous material must be thoroughly decontaminated by the hazmat team before leaving the scene.

C. History taking

1. Investigate the chief complaint.

a. If your patient is responsive, begin with an evaluation of the exposure and the SAMPLE history.

b. If the patient is unresponsive, attempt to obtain the history from other sources.

2. SAMPLE history

a. In addition to the SAMPLE history, ask the following questions:

i. What is the substance involved?

ii. When did the patient ingest or become exposed to the substance?

iii. How much did the patient ingest or what was the level of exposure?

iv. Over what period did the patient take or was the patient exposed to the substance?

v. Has the patient or a bystander performed any intervention? Has the intervention helped?

vi. How much does the patient weigh?

D. Secondary assessment

1. You may not have time to conduct a secondary assessment.

2. Physical examinations

a. Focus on the area of the body involved with the poisoning or the route of exposure.

b. A general review of all body systems may help to identify systemic problems.

3. A complete set of baseline vital signs is important.

a. Alterations in the level of consciousness, pulse, respirations, blood pressure, and skin are the more sensitive indicators that something serious is wrong.

E. Reassessment

1. Continually reassess the adequacy of the patient’s XABCs.

2. Repeat vital signs; compare them with the baseline set.

3. Evaluate the effectiveness of interventions you have provided.

a. Every 15 minutes for a stable patient

b. Every 5 minutes, or constantly, for a patient who has consumed a harmful or lethal dose

4. Treatment

a. Supporting the XABCs is your most important task.

b. Contact medical control or a poison center to discuss treatment options.

c. Manage airborne exposures with oxygen.

d. Remove contact exposures with copious amounts of water unless contraindicated.

e. Consider activated charcoal for ingested poisons.

5. Communication and documentation

a. Report as much information as you have about the poison or chemical to the hospital.

b. If the poisoning or exposure occurred in a work setting, bring the material data sheet to the hospital.

V. Emergency Medical Care

A. Ensure scene safety.

1. Follow standard precautions.

2. Perform external decontamination.

B. Remove tablets or fragments from the patient’s mouth and wash or brush the poison from the patient’s skin.

C. Treatment focuses on support.

1. Assess and maintain the patient’s XABCs.

2. Treat for shock, if necessary, and transport the patient promptly to the nearest appropriate hospital.

D. Some EMS systems allow EMTs to give activated charcoal by mouth.

1. Activated charcoal binds to specific toxins and prevents their absorption by the body; the toxins are then carried out of the body in the stool.

2. Activated charcoal is not indicated for patients:

a. Who have ingested alkali poisons, cyanide, ethanol, iron, lithium, methanol, mineral acids, or organic solvents

b. Who have a decreased level of consciousness and cannot protect their airway

3. If local protocol permits, you will likely carry plastic bottles of premixed suspension, each containing up to 50 g of activated charcoal.

a. The usual dose for an adult or child is 1 g of activated charcoal per kilogram of body weight.

4. Before you give a patient charcoal, obtain approval from medical control.

a. Shake the bottle vigorously to mix the suspension.

b. You may need to convince the patient to drink it, but never force it.

c. Record the time when you administered activated charcoal.

d. If the patient refuses activated charcoal, document the refusal and your attempts to counsel the patient, and transport the patient for further evaluation.

5. Side effects of ingesting activated charcoal are constipation and black stools.

6. If the patient has ingested a poison that causes nausea, he or she may vomit after taking activated charcoal and the dose will have to be repeated.

VI. Specific Poisons

A. Over time, a person who routinely misuses a substance may need increasing amounts of it to achieve the same result.

1. This is called developing a tolerance to the substance.

B. The importance of safety awareness and standard precautions in caring for victims of drug abuse cannot be overemphasized.

1. Known drug abusers have a fairly high incidence of serious and undiagnosed infections, including HIV and hepatitis.

a. Expect the unexpected and remember: the drug user, not the drug, can pose the greatest threat.

C. Alcohol

1. Many calls for service have a connection to alcohol use.

a. Alcohol can damage the liver, whether thorough chronic overuse or occasional heavy use (binge drinking).

b. Binge use can be more damaging than chronic use, depending on the frequency of the binging and the surrounding circumstances.

2. Alcohol is a powerful CNS depressant.

a. It is a sedative and a hypnotic.

b. In general, alcohol dulls the sense of awareness, slows reflexes, and reduces reaction time.

c. It may also cause aggressive and inappropriate behavior and lack of coordination.

d. A person who appears intoxicated may have other medical problems as well.

i. Look for signs of head trauma, mental illness, toxic reactions, or uncontrolled diabetes.

ii. Severe acute alcohol ingestion may cause hypoglycemia.

3. Alcohol increases the effects of many other drugs and is commonly taken with other substances.

4. If a patient exhibits signs of serious CNS depression, provide respiratory support.

a. Depression of the respiratory system can also cause emesis, or vomiting.

5. Patients in alcohol withdrawal may experience frightening hallucinations or delirium tremens (DTs).

a. Characterized by:

i. Agitation and restlessness

ii. Fever

iii. Sweating

iv. Tremors

v. Confusion and/or disorientation

vi. Delusions and/or hallucinations

vii. Seizures

b. These conditions may develop after a person stops drinking or when alcohol consumption levels are decreased suddenly.

c. Provide prompt transport.

d. Reassure the patient and provide necessary care and emotional support.

D. Opioids

1. A narcotic is a drug that produces sleep or altered mental consciousness.

2. An opioid is a type of narcotic medication used to relieve pain.

a. An opiate is a subset of the opioid family, and refers to natural, nonsynthetic opioids.

b. Prescription opioid drugs are among the most commonly abused drugs in the United States.

c. Some people become physically dependent on opioids after taking an appropriate medical prescription.

3. These agents are CNS depressants and can cause severe respiratory depression and then cardiac arrest if not treated promptly.

a. Tolerance develops quickly, so some users may require massive doses to experience the same high.

b. These drugs often cause nausea and vomiting and may lead to the development of hypotension.

c. Although seizures are uncommon, they can occur.

d. Patients typically appear sedated or unconscious and cyanotic with pinpoint pupils.

4. Naloxone (Narcan) reverses the effects of opiate or opioid overdose.

a. Can be given by the intravenously, intramuscularly, or intranasally.

b. EMTs are permitted to administer prefilled naloxone by the intramuscular or intranasal route.

i. Should only be used when the patient has agonal respirations or is apneic

c. In some areas, lay people are permitted to administer naloxone; find out from bystanders if the patient was given naloxone.

E. Sedative-hypnotic drugs

1. Barbiturates and benzodiazepines are easy to obtain and relatively cheap.

a. These drugs are CNS depressants and alter the level of consciousness.

b. The patient may appear drowsy, peaceful, or intoxicated.

2. In general, these agents are taken by mouth.

a. Occasionally, the capsules are suspended or dissolved in water and injected.

b. IV sedative-hypnotic drugs quickly induce tolerance, so the person requires increasingly larger doses.

3. These drugs may be given to people as a “knock-out” drink, or “Mickey Finn” to incapacitate them without their knowledge.

4. Generally, your treatment is to ensure airway is patent, assist ventilations, and provide prompt transport.

F. Abused inhalants

1. These agents are inhaled instead of ingested or injected.

a. Some of the more common agents include acetone, toluene, xylene, and hexane.

b. Found in glues, cleaning compound, paint thinners, and lacquers

2. Gasoline and various halogenated hydrocarbons such as Freon, used as propellants in aerosol sprays, are also abused as inhalants.

a. These are commonly abused by teenagers.

3. Effects of inhalants range from mild drowsiness to coma, and often cause seizures.

4. Halogenated hydrocarbon solvents can make the heart hypersensitive to the patient’s own adrenaline.

a. Try to keep such patients from struggling with you or exerting themselves.

b. Use a stretcher to move the patient, give oxygen, and transport the patient to the hospital.

G. Hydrogen sulfide

1. A highly toxic, colorless, and flammable gas with a distinctive rotten-egg odor.

2. Hydrogen sulfide affects all organs, but it has the most impact on the lungs and CNS.

3. Used to commit suicide; referred to as chemical or detergent suicide

a. If you approach an enclosed vehicle with an unconscious patient inside, be alert for warning signs, as well as containers, buckets, or pots.

b. If you suspect the presence of a toxic gas, wait for a hazmat team to tell you the scene is safe.

4. Signs and symptoms include nausea and vomiting, confusion, dyspnea, a loss of consciousness, seizures, shock, coma, and cardiopulmonary arrest.

5. Once the patient has been decontaminated, management is largely supportive.

a. Monitor and assist the patient’s respiratory and cardiovascular functions.

b. Provide rapid transport.

H. Sympathomimetics

1. CNS stimulants that mimic the effects of the sympathetic nervous system.

a. Frequently cause hypertension, tachycardia, and dilated pupils.

b. A stimulant is an agent that produces an excited state.

2. Examples include amphetamines, methamphetamines, phentermine hydrochloride, amphetamine sulfate (Benzedrine), and designer drugs, such as MDMA (ecstasy).

3. Cocaine may be taken in a number of different ways.

a. It can be absorbed through all mucous membranes and even across the skin.

b. Immediate effects include excitement and euphoria and last less than an hour.

c. Smoked crack produces the most rapid means of absorption and, therefore, the most potent effect.

4. Acute overdose is a genuine emergency.

a. Patients have a high risk of seizures, cardiac dysrhythmias, and stroke.

b. Patients may be experiencing hallucinations or paranoia, placing you at risk.

c. Law enforcement officers should restrain the patient if necessary.

d. Do not leave the patient unattended during transport.

5. Patients need prompt transport to the ED. Give supplemental oxygen and be ready to provide suctioning.

I. Synthetic cathinones (bath salts)

1. An emerging class of drugs similar to MDMA.

2. Sold as bath salts to escape the legal restrictions imposed on illicit drugs.

3. Produce euphoria, increased mental clarity, and sexual arousal.

a. Most users of this drug snort or insufflate the powder nasally.

b. Effects reportedly last as long as 48 hours.

4. Adverse effects include teeth grinding, appetite loss, muscle twitching, lip smacking, confusion, gastrointestinal conditions, paranoia, headache, elevated heart rate, and hallucinations.

5. Keep the patient calm and transport.

6. Consider ALS assistance; some of these patients may require chemical restraint to facilitate safe transport.

J. Marijuana

1. Marijuana is abused throughout the world.

a. Tetrahydrocannabinol, or THC, is the chemical in the marijuana plant that produces its high.

b. Inhaling marijuana smoke produces euphoria, relaxation, and drowsiness.

c. Impairs short-term memory and the capacity to do complex thinking and work.

d. The euphoria could progress to depression and confusion.

2. With very high doses, patients may experience hallucinations or become very anxious or paranoid.

3. Marijuana may be used as a vehicle to get other drugs into the body.

4. Several states have legalized the recreational use of marijuana, and others allow for the medical use of marijuana and products that contain THC.

a. “Edibles” or baked goods, candies, and other food additives that have been infused with marijuana

b. Ingestion can lead to cannabinoid hyperemesis syndrome, characterized by chronic marijuana use and extreme nausea and vomiting that is relieved only by a hot shower or bath.

5. Synthetic marijuana or “Spice” refers to a variety of herbal incense or smoking blends that resemble THC and produce a similar high.

a. Powerful and unpredictable effects may result, ranging from simple euphoria to complete loss of consciousness.

K. Hallucinogens

1. Hallucinogens alter a person’s sensory perceptions.

a. The classic hallucinogen is lysergic acid diethylamide (LSD).

2. These agents:

a. Cause visual hallucinations

b. Intensify vision and hearing

c. Generally separate the user from reality

3. Patients experiencing a “bad trip” have:

a. Hypertension

b. Tachycardia

c. Anxiety

d. Paranoia

4. Care is the same as that for a patient who has taken a sympathomimetic.

a. Use a calm, professional manner.

b. Provide emotional support.

c. Do not use restraints unless you or the patient is in danger of injury.

d. Watch the patient carefully throughout transport, and do not leave unattended.

e. Request ALS assistance when appropriate.

L. Anticholinergic agents

1. Medications that have properties that block the parasympathetic nerve

2. The classic picture of a person who has taken too much of an anticholinergic medication is “hot as a hare, blind as a bat, dry as a bone, red as a beet, and mad as a hatter.”

3. Common drugs include atropine, Benadryl, jimsonweed, and amitriptyline (Elavil).

a. With the exception of jimsonweed, these medications usually are not abused drugs.

4. It is often difficult to distinguish between an anticholinergic overdose and a sympathomimetic overdose.

5. Some tricyclic antidepressants have significant anticholinergic effects.

a. Death from these agents can be rapid—the patient can go from appearing “normal” to seizure and death within 30 minutes.

M. Cholinergic agents

1. Overstimulate normal body functions that are controlled by the parasympathetic nerves.

2. Includes “nerve gases” designed for chemical warfare and organophosphate insecticides.

3. Use the mnemonic DUMBELS to remember the signs and symptoms of cholinergic drug poisoning:

a. Diarrhea

b. Urination

c. Miosis (constriction of the pupils)

d. Bradycardia, bronchospasm, bronchorrhea (discharge of mucus from the lungs)

e. Emesis (vomiting)

f. Lacrimation (tearing)

g. Seizures, salivation, sweating

4. Alternatively, you can use the mnemonic SLUDGEM:

a. Salivation, sweating

b. Lacrimation

c. Urination

d. Defecation, drooling, diarrhea

e. Gastric upset and cramps

f. Emesis

g. **M**uscle twitching/miosis

5. The most important consideration is to avoid exposure yourself.

a. Decontamination may take priority over immediate transport.

i. In many jurisdictions, the hazmat team will provide decontamination and contain the exposure chemical.

b. Your priorities after decontamination are to decrease the secretions in the mouth and trachea and provide airway support.

6. Antidote kits may be available.

a. Most common is the DuoDote Auto-Injector.

b. The kit consists of a single auto-injector containing atropine and pralidoxime.

c. If a known exposure to nerve agents or organophosphates with manifestation of signs and symptoms has occurred, use the antidote kit on yourself.

N. Miscellaneous drugs

1. Accidental or intentional overdose with cardiac medications has become common.

a. Children may ingest them thinking they are candy.

b. Older patients may forget and take a second dose of their medication.

c. Signs and symptoms depend on the medication ingested.

d. Contact the poison center as soon as possible.

2. Aspirin poisoning remains a potentially lethal condition.

a. Ingesting too many may result in:

i. Nausea, vomiting

ii. Hyperventilation

iii. Ringing in the ears (tinnitus)

b. Patients with this problem frequently have:

i. Anxiety

ii. Confusion

iii. Tachypnea

iv. Hyperthermia

v. Danger of having seizures

3. Overdosing with acetaminophen and medications that contain acetaminophen is also common.

a. Overdose, unintentional or intentional, must be treated promptly and aggressively.

b. Accidental acetaminophen overdose is as serious as intentional overdose.

4. Some alcohols, including methyl alcohol and ethylene glycol, are even more toxic than ethyl alcohol (drinking alcohol).

a. Both will cause severe tachypnea, blindness, renal failure, and eventually death.

VII. Food Poisoning

A. Food poisoning is almost always caused by eating food contaminated by bacteria.

1. The organism itself may cause disease.

2. The organism may produce toxins that cause disease.

B. One organism that produces direct effects of food poisoning is the **Salmonella** bacterium.

1. Salmonellosis is characterized by severe gastrointestinal symptoms within 72 hours of ingestion, including nausea, vomiting, abdominal pain, and diarrhea.

2. Proper cooking kills bacteria, and proper cleanliness in the kitchen prevents the contamination of uncooked foods.

C. The more common cause of food poisoning is the ingestion of powerful toxins produced by bacteria, often in leftovers.

1. The bacterium Staphylococcus is quick to grow and produce toxins in food.

2. Foods left unrefrigerated are a common vehicle.

3. Results in sudden GI symptoms, including nausea, vomiting, and diarrhea within 2 to 3 hours after ingestion or as long as 8 to 12 hours after ingestion.

D. The most severe form of toxin ingestion is botulism.

1. Can result from eating improperly canned food

a. The spores of Clostridium bacteria grow and produce a toxin.

2. The symptoms are neurologic.

a. Blurring of vision

b. Weakness

c. Difficulty in speaking and breathing

3. Often fatal, symptoms may develop within 1–4 days after ingestion.

E. Do not try to determine the specific cause of acute gastrointestinal problems.

1. Gather as much history as possible from the patient and transport promptly.

2. If two or more persons have the same illness, you should take along some of the suspected food.

VIII. Plant Poisoning

A. There are tens of thousands of cases of plant poisoning annually.

1. Many household plants are poisonous if ingested.

2. Some cause local skin irritation.

3. Some can affect the circulatory system, the gastrointestinal tract, or the CNS.

B. It is impossible to memorize every plant and poison, let alone their effects.

1. Assess the patient’s airway and vital signs.

2. Notify the regional poison center for assistance in identifying the plant.

3. Take the plant to the emergency department.

Post-Lecture

## Assessment in Action

A. Assessment in Action is available in the Navigate course.