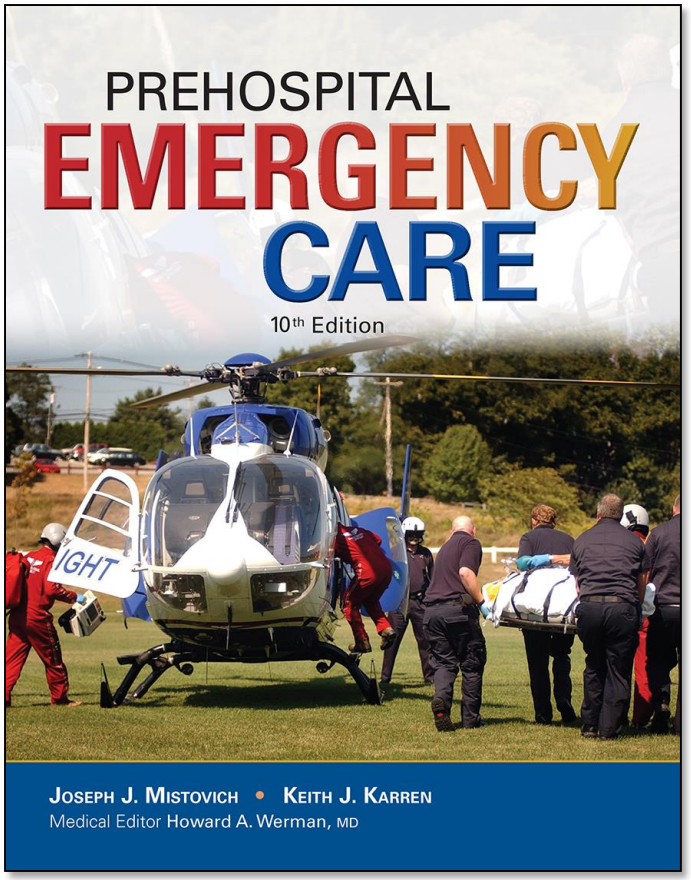
PREHOSPITAL EMERGENCY CARE

TENTH EDITION



CHAPTER 22

Part II Toxicologic Emergencies

Learning Readiness

- EMS Education Standards, text p. 605

Learning Readiness Objectives

- Please refer to page 605 of your text to view the objectives for this chapter.

Learning Readiness Key Terms

- Please refer to page 606 of your text to view the key terms for this chapter.

Setting the Stage

- Overview of Lesson Topics
  - Specific Types of Poisoning
  - Poison Control Centers

Case Study Introduction

Warren Meade is travelling on business, staying in a hotel, when he starts feeling ill. He becomes nauseated, followed shortly by the onset of vomiting and diarrhea. He has severe abdominal cramping, and is beginning to feel as if he has a fever.

"Oh, no," he thinks. "Maybe eating at that buffet last night wasn't such a great idea."

Case Study

- How is food poisoning similar to other types of poisoning?
- What are the particular concerns with this type of poisoning?
- What other signs and symptoms might you expect to see?

Introduction

- There are several common poisons that EMTs should be prepared to manage.

Food Poisoning

- Illness can result from bacteria in food, or from the toxins released by the bacteria.
- Food poisoning is increasing in incidence.
- A common source of food poisoning is seafood.

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Food Poisoning

- Common sources of food poisoning
  - Eggs
  - Chicken
  - Ready-to-eat foods
  - Untreated water, unpasteurized milk
  - Fish

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Food Poisoning

- Common types of food poisoning
  - Salmonella
  - Campylobacter
  - *Escherichia coli (E. coli)*
  - *Staphylococcus aureus*

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Food Poisoning

- Signs and symptoms begin hours to days after ingestion.
  - General signs and symptoms
    - Abdominal cramping
    - Nausea, vomiting, diarrhea
    - Loud or frequent bowel sounds

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Food Poisoning

- More severe signs and symptoms
  - Fever
  - Blood disorders
  - Muscle cramps or paralysis
  - Blood in the stool

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Food Poisoning

- Emergency care
  - General care for ingested poisoning
  - Nothing by mouth

Carbon Monoxide Poisoning

- Carbon monoxide (CO) is formed by incomplete combustion of certain fuels.
  - Leading cause of death from fires
  - Sources include furnaces, wood-burning fireplaces, heaters, automobile exhaust, barbeque grills
  - Odorless, tasteless, colorless, nonirritating

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Carbon Monoxide Poisoning

- CO reduces the amount of oxygen in the bloodstream.
  - Displaces oxygen in the atmosphere
  - Inhibits body's ability to use oxygen

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Carbon Monoxide Poisoning

- Signs and symptoms
  - Headache
  - Tachypnea
  - Nausea, vomiting
  - Altered mental status
  - High pulse oximeter reading

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Carbon Monoxide Poisoning

- Emergency medical care
  - Evacuate patients from the area of the source.
  - Transport immediately.
  - Administer oxygen by nonrebreather mask at 15 lpm; do not rely on pulse oximetery.

Cyanide

- Found in many forms, and can enter the body in a variety of ways
- Found in items such as rodent poisons, silver polish, and fruit pits
- Is a by-product of burning plastics, silks, and synthetic materials
- Interferes with use of oxygen at the cellular level

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Cyanide

- Early signs and symptoms
  - Headache
  - Confusion
  - Agitation, combativeness
  - Burning in the mouth or throat

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Cyanide

- Early signs and symptoms
  - Dyspnea
  - Hypertension
  - Bradycardia or tachycardia
  - Smell of bitter almonds

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Cyanide

- Late signs and symptoms
  - Seizures
  - Coma
  - Hypotension
  - Pulmonary edema
  - Cardiac dysrhythmias
  - Acidosis

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Cyanide

- Emergency medical care
  - Scene safety; remove the patient from the source.
  - Remove contaminated clothing and decontaminate the patient.
  - Open and maintain an airway.

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Cyanide

- Emergency medical care
  - Positive pressure ventilation for inadequate breathing
  - Administer 15 lpm of oxygen, regardless of SpO_2 reading.
  - Consider requesting ALS.
  - Rapid transport

Click on the statement that is true regarding carbon monoxide poisoning.

A. Carbon monoxide is found in many household products, as well as fruit pits.

B. Carbon monoxide poisoning is asymptomatic.

C. Pulse oximetery is unreliable in carbon monoxide poisoning.

D. Carbon monoxide has an odor like bitter almonds.

Acids and Alkalis

- Caustics are found in many household products.
- Acids burn on contact; if ingested bleeding and perforation of the stomach can occur.
- Acid continues to burn the tissue for 1 to 2 minutes.

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Acids and Alkalis

- Alkalis burn on contact, but burning sensation is delayed.
- Alkalis burn deeper than acids; may burn for minutes to hours.
- If ingested, can cause bleeding and stomach perforation.

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Acids and Alkalis

- Signs and symptoms
  - Burns of the mouth, lips, face
  - Dysphagia
  - Pain of the lips, mouth, throat
  - Abdominal pain

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Acids and Alkalis

- Signs and symptoms
  - Hoarseness
  - Stridor
  - Dyspnea
  - Signs of shock

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Acids and Alkalis

- Emergency medical care
  - Ensure safety of rescuers.
  - Remove contaminated clothing and decontaminate the patient; irrigate with water.
  - Maintain the airway; ALS may be required.

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Acids and Alkalis

- Emergency medical care
  - Positive pressure ventilation for inadequate breathing, maintain oxygenation
  - Rapid transport

Hydrocarbons

- Substances found in kerosene, lighter fluid, glue, cleaning agents, propellants, and other products
- The toxicity varies, and there is a risk of aspiration.
- Poisoning may occur by ingestion, inhalation, or absorption.

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Hydrocarbons

- Signs and symptoms
  - Coughing, choking, crying
  - Burns to mouth or contact area
  - Stridor
  - Dyspnea
  - Wheezing
  - Tachypnea

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Hydrocarbons

- Signs and symptoms
  - Cyanosis
  - Abdominal pain
  - Nausea, vomiting
  - Belching
  - Fever
  - Seizures

continued on next slide

Hydrocarbons

- Signs and symptoms
  - Coma
  - Altered mental status
  - Headache, dizziness, dulled reflexes
  - Slurred speech
  - Cardiac dysrhythmia

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Hydrocarbons

- Emergency medical care
  - Remove the patient from the environment.
  - Remove contaminated clothing and decontaminate the patient.
  - Open and maintain the airway.

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Hydrocarbons

- Emergency medical care
  - Positive pressure ventilation for inadequate ventilations
  - Maintain oxygenation.
  - Rapid transport

Methanol

- Found in gasoline, antifreeze, canned fuels, and other sources
- Differs from ethanol; but may be drunk deliberately by alcoholics
- Ingestion results in acidosis.

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Methanol

- Signs and symptoms
  - Altered mental status
  - Seizures
  - Nausea, vomiting
  - Abdominal pain
  - Blurred vision

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Methanol

- Signs and symptoms
  - Dilated, sluggish pupils
  - Changes in vision, blindness
  - Dyspnea
  - Tachypnea

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Methanol

- Emergency medical care
  - Open and maintain the airway.
  - Positive pressure ventilation for inadequate breathing; maintain oxygenation
  - Rapid transport

Isopropanol

- Found in rubbing alcohol and household products
- May intentionally ingested by alcoholics
- More toxic than ethanol

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Isopropanol

- Signs and symptoms
  - Respiratory depression
  - Altered mental status
  - Abdominal pain
  - Bloody vomitus
  - Signs of shock

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Isopropanol

- Emergency medical care
  - Open and maintain the airway.
  - Positive pressure ventilation for inadequate breathing
  - Maintain oxygenation.
  - Rapid transport

Ethylene Glycol

- Found in deicers and detergents; has a sweet taste
- May be ingested accidentally or intentionally
- Has harmful metabolites that affect the CNS, lungs, heart, blood vessels, and kidneys

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Ethylene Glycol

- Signs and symptoms
  - First stage – neurological
    - Uncoordinated movements
    - Slurred speech
    - Altered mental status
    - Nausea and vomiting
    - Seizures
    - Hallucinations

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Ethylene Glycol

- Signs and symptoms
  - Second stage – cardiopulmonary
    - Tachypnea
    - Pulmonary edema, crackles
    - Cyanosis
    - Dyspnea, respiratory distress
    - Heart failure

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Ethylene Glycol

- Signs and symptoms
  - Third stage – renal
    - Little to no urine production
    - Bloody urine
    - Pain in the flanks

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Ethylene Glycol

- Emergency medical care
  - Open and maintain the airway.
  - Positive pressure ventilation for inadequate breathing
  - Maintain adequate oxygenation.
  - Rapid transport

Poisonous Plants

- Includes poison ivy, poison sumac, poison oak; as well as other plants that can cause contact dermatitis
- Decontaminate the patient.
- Deter the patient from scratching.

Suicide Bags

- Inhalation of helium or nitrogen concentrated in a bag over the head to cause suffocation
- Can create a low-oxygen atmosphere for rescuers
- Scene safety is critical, evacuate the room and contact the fire department.
- Treat for toxic inhalation.

Poison Control Centers

- Staffed by experts, available 24 hours a day by toll-free call
- Staff can help advise on a treatment plan.
- Provide the patient's age, weight, condition, and the specifics of the poisoning.
- Verify advice with medical direction.

Case Study Conclusion

After several hours of vomiting and diarrhea, Warren feels weak and lightheaded. Being from out of town, and having no one to drive him, he calls an ambulance.

Although Warren's vital signs appear to be within normal limits, an orthostatic tilt test is positive, indicating that he is dehydrated and has lost vascular volume.

The EMTs transport Warren to the emergency department, where he receives medication for his nausea and vomiting, along with IV fluids.

Lesson Summary

- Poisons can enter the body through ingestion, inhalation, injection, or absorption.
- Ingestion is the most common route of poisoning.
- There are few antidotes for specific poisons.

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Lesson Summary

- Care of the poisoned patient is largely supportive.
- Be aware of scene safety.
- Identify the substance and, if possible, transport it with the patient.