Chapter 21
Poisoning and Overdose Emergencies
U.S. DOT Objectives Directory

U.S. DOT Objectives are covered and/or supported by the PowerPoint™ Slide Program and Notes for Emergency Care, 11th Ed. Please see the Chapter 21 correlation below.

*KNOWLEDGE AND ATTITUDE*

- **4-6.1** List various ways that poisons enter the body. Slides 19-22
- **4-6.2** List signs and symptoms associated with poisoning. Slides 18, 23, 25
- **4-6.3** Discuss the emergency medical care for the patient with possible overdose. Slides 51, 62-63
- **4-6.4** Describe the steps in the emergency medical care for the patient with suspected poisoning. Slides 27-36, 40, 45
- **4-6.5** Establish the relationship between the patient suffering from poisoning or overdose and airway management. Slides 28, 36, 40, 51
- **4-6.6** State the generic and trade names, indications, contraindications, medication form, dose, administration, actions, side effects, and reassessment strategies for activated charcoal. Slides 29-35
- **4-6.7** Recognize the need for medical direction in caring for patient with poisoning or overdose. Slides 24, 62

(cont.)
*KNOWLEDGE AND ATTITUDE

- **4-6.8** Explain the rationale for administering activated charcoal. Slides 30-31, 36
- **4-6.9** Explain the rationale for contacting medical direction early in the prehospital management of the poisoning or overdose patient. Slide 24
*SKILLS

- **4-6.10** Demonstrate the steps in the emergency medical care for the patient with possible overdose.
- **4-6.11** Demonstrate the steps in the emergency medical care for the patient with suspected poisoning.
- **4-6.12** Perform the necessary steps required to provide a patient with activated charcoal.
- **4-6.13** Demonstrate the assessment and documentation of patient response.
- **4-6.14** Demonstrate proper disposal of equipment for the administration of activated charcoal.
- **4-6.15** Demonstrate completing a prehospital care report for patients with a poisoning or overdose emergency.
Poison
Poison

Any substance that can harm the body by altering cell structure or functions

(cont.)
Poison

- One million cases annually
- Murder or suicide attempts
- Accidental or intentional
A poisonous substance secreted by bacteria, plants, or animals
Toxin

Examples:

- Mushrooms
- Variety of house plants
- Bacterial contaminants in food
Common Ingested Poisons

- Acetaminophen
- Acids and alkalis
- Antihistamines
- Aspirin
- Food poisoning
- Insecticides
- Petroleum products
- Plants
Acetaminophen

- Nausea and vomiting
- Jaundice (delayed sign)
  OR
- No signs or symptoms
Acids and Alkalis

- Burns on or around the lips
- Burning in mouth, throat, and abdomen
- Vomiting
Antihistamines

- Hyperactivity or drowsiness
- Rapid pulse, flushed skin, and dilated pupils
Aspirin

- Delayed signs and symptoms
- Ringing in the ears
- Deep and rapid breathing
- Bruising
Food Poisoning

- Various types of signs and symptoms
- Abdominal pain
- Nausea and vomiting
- Diarrhea
- Fever
Insecticides

- Slow pulse
- Excessive salivation and sweating
- Nausea, vomiting, and diarrhea
- Breathing difficulties
- Constricted pupils
Petroleum Products

- Characteristic odor of breath, clothing, and vomitus
- If aspiration occurred—coughing and difficulty breathing
Plants

* Range of signs and symptoms

- None
- Nausea & Vomiting
- Cardiac Arrest
Routes of Poisoning

- Inhalation
- Absorption
- Injections
- Ingestion
Ingestion

Poisons that are swallowed:

- Household and industrial chemicals
- Medications
- Improperly prepared food
- Plant materials
- Petroleum products
- Agricultural products
Inhalation

Poisons that are breathed in:
- Gases: ammonia, chlorine
- Vapors: carbon monoxide
- Sprays: insecticides
- Volatile liquid chemicals: change easily from liquid to gas
Absorption

Poisons taken in through unbroken skin:

– Corrosives or irritants
– Through bloodstream
– Insecticides and chemicals
The Effects of Poison

Click [here](#) to view an animation on the effects of poison.
Scene Assessment

★ What substance was involved and how much?
  – Get exact spelling.
  – Bring container to hospital with patient.
  – If unknown—estimate the maximum possible amount.

★ When did the exposure occur?
  – ED personnel need to know as closely as possible the time of ingestion.

★ Period of exposure
  – First time use or chronic user
  – If unknown—estimate the shortest and longest possible time.

(cont.)
Scene Assessment

★ What interventions have been done?
  – Traditional home remedies may be harmful.

★ Patient’s weight?
  – Critical in determining appropriate treatment

★ What effect is patient experiencing?
  – Nausea and vomiting are the two most common signs and symptoms.
FYI—Food Poisoning

★ What is it?
- Bacterial growth when exposed to conditions
- Raw meat, poultry, fish left at room temperature

★ Signs and symptoms:
- Nausea, vomiting, abdominal cramps, diarrhea, and fever

★ Prevention
- Wash hands, utensils, and cutting boards, and store/cook food at correct temperature.
Ingested Poisons

Take Standard Precautions.

Gather information.

Consult medical control.

If directed, administer charcoal.

Position patient and have suction available.

Ventilations via pocket-mask or BVM, if needed.
Patient Care—Ingested Poisons

- Remove from unsafe environment.
- Maintain airway and provide oxygen.
- Do focused history and physical exam (SAMPLE and vital signs).
- Transport.
- Do ongoing assessment.
Activated Charcoal

- **Generic name:** activated charcoal
- **Trade name:** SuperChar, InstaChar, Actidose, LiquiChar
Activated Charcoal

**Indications:**
- Poisoning by mouth

**Contraindications:**
- Altered mental status
- Ingestion of acids or alkalis
- Inability to swallow
- Ingestion of gasoline
Charcoal vs. Ipecac

**Ipecac**
- Causes vomiting
- Onset 15–20 minutes
- Additional doses required if no vomiting
- Potential for aspiration

**Charcoal**
- National standard for management of ingested poisons
Administration of Charcoal

1. Consult medical control.
2. Shake container thoroughly.
3. Provide covered container with a straw.
4. Delay in drinking — shake and stir again.
5. Record name, dose and time.
Charcoal

- **Medication form**
  - Pre-mixed in plastic bottle (12.5 grams)
  - Powdered form—avoid in field

- **Dosage**
  - Adults and children: 1 gram/kg
    - Adult dose: 25–50 grams
    - Pediatric dose: 12.5–25 grams

(cont.)
Activated Charcoal

- **Actions:**
  - Binds to certain poisons
  - Not an antidote
  - Reduces absorption

- **Side effects:**
  - Black stools
  - Vomiting
Reassessment Strategies

- Be prepared for vomiting.
- Repeat vital signs.
- Dilution:
  - Based on medical direction
Strategies

- Antidote—few and limited
- Prevent absorption (charcoal).
- Supportive care (airway management, oxygenation, treatment of shock)
- Kidney dialysis
Inhaled Poisons

- Carbon monoxide
- Chlorine gas
- Ammonia
- Agricultural chemicals and pesticides
- Carbon dioxide
Scene Assessment

- **What substance was involved, and how much?**
  - Get exact spelling.
  - Bring container to hospital with patient.
  - If unknown, estimate the maximum possible amount.

- **When did the exposure occur?**
  - ED personnel need to know as closely as possible the time of inhalation.

- **Period of exposure**
  - Estimate the shortest and longest possible time.

(cont.)
Scene Assessment

- What interventions have been done?
  - Was the area ventilated?
  - Did someone remove the patient or did the patient remove themselves?
- Patient’s weight?
  - Critical in determining appropriate treatment
- What effect is patient experiencing?
  - Nausea and vomiting are the two most common signs and symptoms.
Patient Care—Inhaled Poisons

1. Remove from source of poison.
2. Establish airway and provide high-concentration oxygen with a nonrebreather.
3. Expose chest for auscultation.
4. Do focused history and physical exam (SAMPLE & vital signs).
5. Transport.
6. Consult medical control.
7. Perform on-going assessment.
Carbon Monoxide

- Fire suppression and motor vehicle exhaust
- Colorless, odorless, and tasteless gas
- Prevents oxygen binding with red blood cells
Absorbed Poisons

- Irritate or damage skin
- Sometimes little or no damage
- Decontamination may be necessary.
Scene Assessment

- What substance was involved, and how much?
  - Get exact name.

- How much of the substance was the patient exposed to?
  - How large an area of skin was the substance on?

- Period of exposure
  - If unknown—estimate the shortest and longest possible time.

(cont.)
Scene Assessment

- **What interventions have been done?**
  - Was the area washed, and with what?
  - Was a chemical used to “neutralize” the substance

- **Patient’s weight?**
  - Critical in determining appropriate treatment

- **What effect is the patient experiencing?**
  - Burning, itching, irritation, and redness
Patient Care—Absorption

1. Detect and treat life threats.

2. Do focused history and physical exam (SAMPLE & vital signs).

3. Remove the poison.
   - Powders—brush powder off.
   - Liquids—irrigate with water for at least 20 min.

4. Transport with containers, bottles, and labels if safe.

5. Perform on-going assessment.
Alcohol and Substance Abuse
Alcohol and Substance Abuse

- Alcohol is a drug with potent effects on the CNS.
- Recent consumption versus cumulative effects
- Treat patients with dignity and respect.
Alcohol Abuse

- Conduct a complete assessment.
- Identify any medical emergencies.
  - Diabetes
  - Epilepsy
  - Head injuries
  - High fevers
  - Hypoxia
- Obtain SAMPLE history and vital signs (may be difficult).
Signs and Symptoms

- Altered mental status
- Swaying and unsteady gait
- Slurred speech
- Odor of alcohol on breath or clothing
- Flushed appearance
- Nausea or vomiting
- Poor coordination
- Slowed reaction time
- Blurred vision
- Confusion
- Hallucinations
- Lack of memory
Signs of Alcohol Withdrawal

- Confusion and restlessness
- Unusual behavior
- Hallucinations
- Gross tremor
- Sweating
- Seizures (common and often serious)
  - **ALL** patients with seizures or tremors **MUST** be transported.
Patient Care—Alcohol Abuse

- Airway management
- Observe mental status.
- Monitor vital signs.
- Treat for shock.
- Protect from self-injury.
- Stay alert for seizures, and transport.
Substance Abuse

- Chemical substance being taken for other than therapeutic (medical) reasons
- Classified as uppers, downers, narcotics, hallucinogens, and volatile chemicals
Definitions

* Uppers
  - Stimulate the central nervous system
    - Caffeine, amphetamines, cocaine

* Downers
  - Depress the CNS
    - Sleeping pills, barbiturates, Rohypnol “roofies,” GHB

* Narcotics
  - Often used to relieve pain
    - OxyContin, codeine, heroin

(cont.)
Definitions

**Hallucinogens**
- Produce an intense state of excitement or distortion of perceptions
  - LSD, PCP, certain mushrooms, XTC

**Volatile chemicals**
- Give an initial rush, then act as a depressant on the CNS
  - Cleaning fluid, glue, model cement, etc.
Signs and Symptoms—Uppers

- Excitement
- Increased pulse and breathing rates
- Rapid speech, dry mouth
- Dilated pupils, sweating
Signs and Symptoms—Downers

- Sluggish, sleepy patient
- Pulse and breathing rates slow
- True emergency
Signs and Symptoms—Narcotics

- Pulse and breathing rate slow
- Skin temperature lowered
- Pupils constricted (pinpoint)
- Muscles relaxed
- Profuse sweating
- Coma is common.
- Respiratory or cardiac arrest is possible.
Signs and Symptoms—Hallucinogens

- Fast pulse rate
- Dilated pupils with flushed face
- Little concept of time
- Aggressive or timid behavior
□ Dazed or showing temporary loss of contact with reality
□ May develop a coma
□ Swollen membranes
□ Changes in heart rhythm
Warning

- Indications of drug abuse are similar to other medical emergencies.
- Be alert for emergencies, injuries, and combination of drug abuse problems and other emergencies.
Signs and Symptoms—Withdrawal

- Shakiness
- Anxiety
- Nausea
- Confusion and irritability
- Hallucinations
- Profuse sweating
- Increased pulse and breathing rates
Patient Care—Substance Abuse

* Perform an initial assessment.
* Provide oxygen and assist ventilations, if needed.
* Treat for shock.
* Perform rapid trauma assessment.
* Identify and treat life-threatening problems.

(cont.)
Patient Care—Substance Abuse

- Do focused history and physical exam.
- Assess baseline vital signs.
- Consult Medical Direction.
- Transport with all containers, bottles, and labels.
- Perform ongoing assessment.
- Document all information.
Review Questions

1. What are four ways in which a poison can be taken into the body?

2. What is the sequence of assessment steps in cases of poisoning?

3. What information must you gather in a case of poisoning before contacting medical direction?

(cont.)
Review Questions

4. What are the emergency care steps for ingested poisoning?

5. What are the emergency care steps for inhaled poisoning? For absorbed poisoning?
Street Scenes

- What questions would you ask the patient’s mother next?
- What signs or symptoms should you inquire about?
- What treatments would you initiate?
- Should you contact someone for advice? If yes, then who?
**Sample Documentation**

<table>
<thead>
<tr>
<th>PATIENT NAME:</th>
<th>Maria Prince</th>
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<tbody>
<tr>
<td>CHIEF COMPLAINT</td>
<td>Coughing, possible ingested poisoning</td>
</tr>
<tr>
<td>PAST MEDICAL HISTORY</td>
<td>None</td>
</tr>
<tr>
<td>Recent fever with mild cough</td>
<td></td>
</tr>
<tr>
<td>Current Medications (List)</td>
<td>Children’s Tylenol</td>
</tr>
<tr>
<td>PATIENT AGE:</td>
<td>8 months</td>
</tr>
<tr>
<td>TIME</td>
<td>RESP</td>
</tr>
<tr>
<td>20:51</td>
<td>Rate: 36</td>
</tr>
<tr>
<td>20:56</td>
<td>Rate: 32</td>
</tr>
</tbody>
</table>

**VITAL SIGNS**
- **SKIN**
  - Normal: Cool, Pale
  - Dilated: Warm, Cyanotic
  - Constricted: Moist, Flushed
  - Sluggish: Dry, Jaundiced

**NARRATIVE**
Responded to a possible poisoning. Upon arrival, we found an 8-month-old female in the arms of her mother. Mother stated that she "was doing the dishes when I turned around and saw Maria with an oil candle in her hands. I do not know how much she drank or how much she spilled."

Mother reports child's weight as 20 pounds. Time of exposure was approximately 3-4 minutes before 9-1-1 activation. Patient received some water, which she vomited back up, prior to our arrival. Approximate amount of lamp oil ingested may have been as much as 50 cc.

Assessment revealed a crying and coughing infant, who appeared alert and responding to her mother. Upper airway was clear. Skin was warm and dry. Mucous membranes were moist and pink.

Pupils were equal and reactive to light. Vitals above.

Treatment consisted of blow-by O2 at 10 liters per minute. During transport, patient was kept with her mother to reduce anxiety. Lamp oil also transported for identification purposes. Poison control and medical direction contacted; both recommended only airway support and continued assessment. Upon arrival at ED, patient ceased her crying, but her cough was still present.

No other changes during transport.