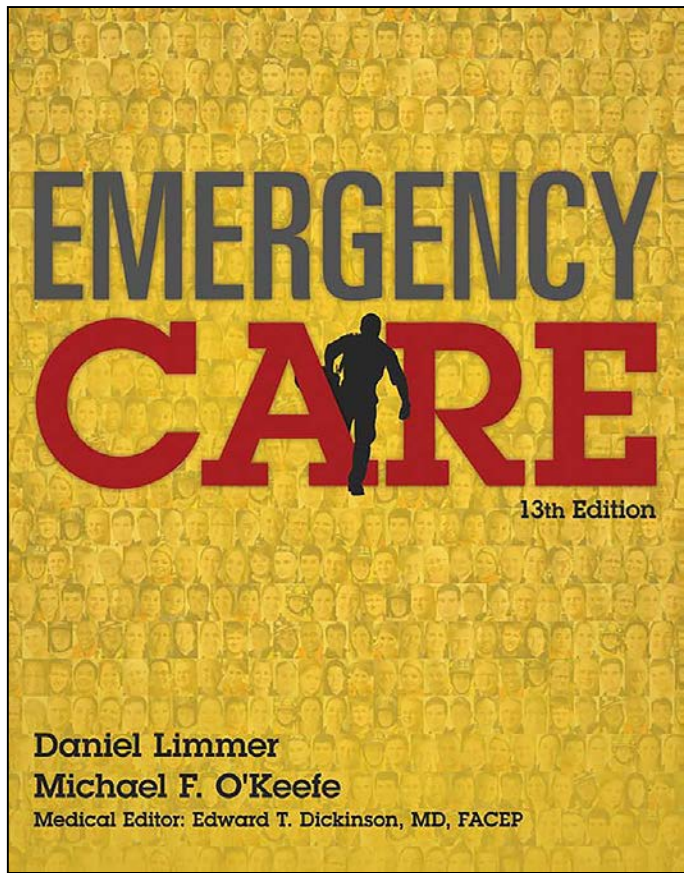


Emergency Care

THIRTEENTH EDITION



CHAPTER 21

Poisoning and Overdose Emergencies

Multimedia Directory

Slide 78 Activated Charcoal Use Animation

Topics

- Poisoning
- Alcohol and Substance Abuse

Poisoning

Poisoning

- A poison is any substance that can harm the body.
- The harm it can cause can result in a medical emergency.

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Poisoning

- Common poisonings
 - Medications
 - Petroleum products
 - Cosmetics
 - Pesticides
 - Plants
 - Food

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Poisoning

- Effects of a poison
 - Harm to body based on nature of poison, its concentration, route of entry, patient's age, weight, and health
 - Damage to skin and tissues from contact
 - Suffocation
 - Localized or systemic damage to body systems

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Poisoning

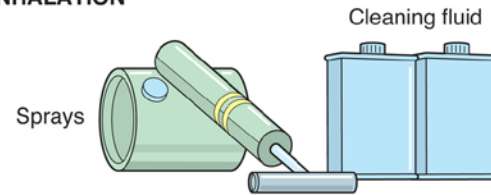
- Classified by route
 - Ingested (swallowed)
 - Inhaled (breathed in)
 - Absorbed (through unbroken skin)
 - Injected (inserted through skin)

Pediatric Note

- EMT's own home and squad building should be "childproofed" against poisoning.
- Share poisoning prevention information with members of the public during school visits and community outreach programs.

Classification of Poisons (By Routes of Entry)

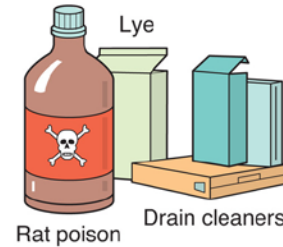
INHALATION



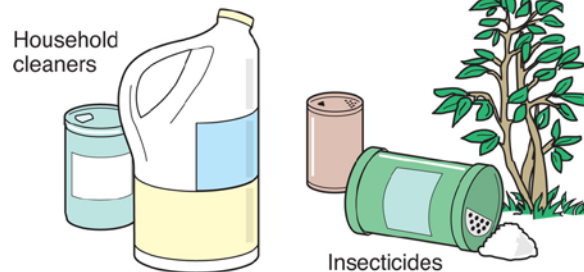
INJECTION



INGESTION



ABSORPTION



Poisons enter the body by way of ingestion, inhalation, absorption, and injection.

Ingested Poisons

- Child
 - May accidentally eat or drink a toxic substance
- Adult
 - Often an accidental or deliberate medication overdose

Patient Assessment

- What substance was involved?
 - Look for container; check labels.
 - Transport with patient to hospital.
- When did exposure occur?
 - Quick-acting poison requires faster treatment.
 - ER personnel need to know for appropriate testing and treatment.

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Patient Assessment

- How much was ingested?
 - Estimate missing pills by looking at prescription label.
- Over how long a time did the ingestion occur?
 - Treatments may vary.
 - Was medication taken for very first time?
 - Was medication being taken chronically?

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Patient Assessment

- What interventions have been taken?
 - Treatments indicated on label
 - Other home remedies (syrup of ipecac)
- What is patient's estimated weight?
 - Rate of onset of toxic effects is related to weight.

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Patient Assessment

- What effects has patient experienced?
 - Nausea, vomiting, altered mental status, abdominal pain, diarrhea, chemical burns around mouth, and unusual breath odors

Food Poisoning

- Can be caused by improperly handled or prepared food
- Symptoms
 - Nausea, vomiting, abdominal cramps, diarrhea, and fever
- May occur within hours of ingestion, or a day or two later

Activated Charcoal

- Works through adsorption, allowing substances to attach to its surface
- *Not an antidote*
 - Prevents or reduces amount of poison absorbed by body

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Activated Charcoal

- Many poisons but not all are absorbed by activated charcoal.
- Medical direction will determine whether the use of this substance is appropriate.

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Activated Charcoal

- Activated charcoal versus syrup of ipecac
 - Traditionally syrup of ipecac was preferred treatment for poisoning.
 - Induces vomiting in most people with one dose
 - However, has potential to make patient aspirate and only removes less than one-third of stomach contents

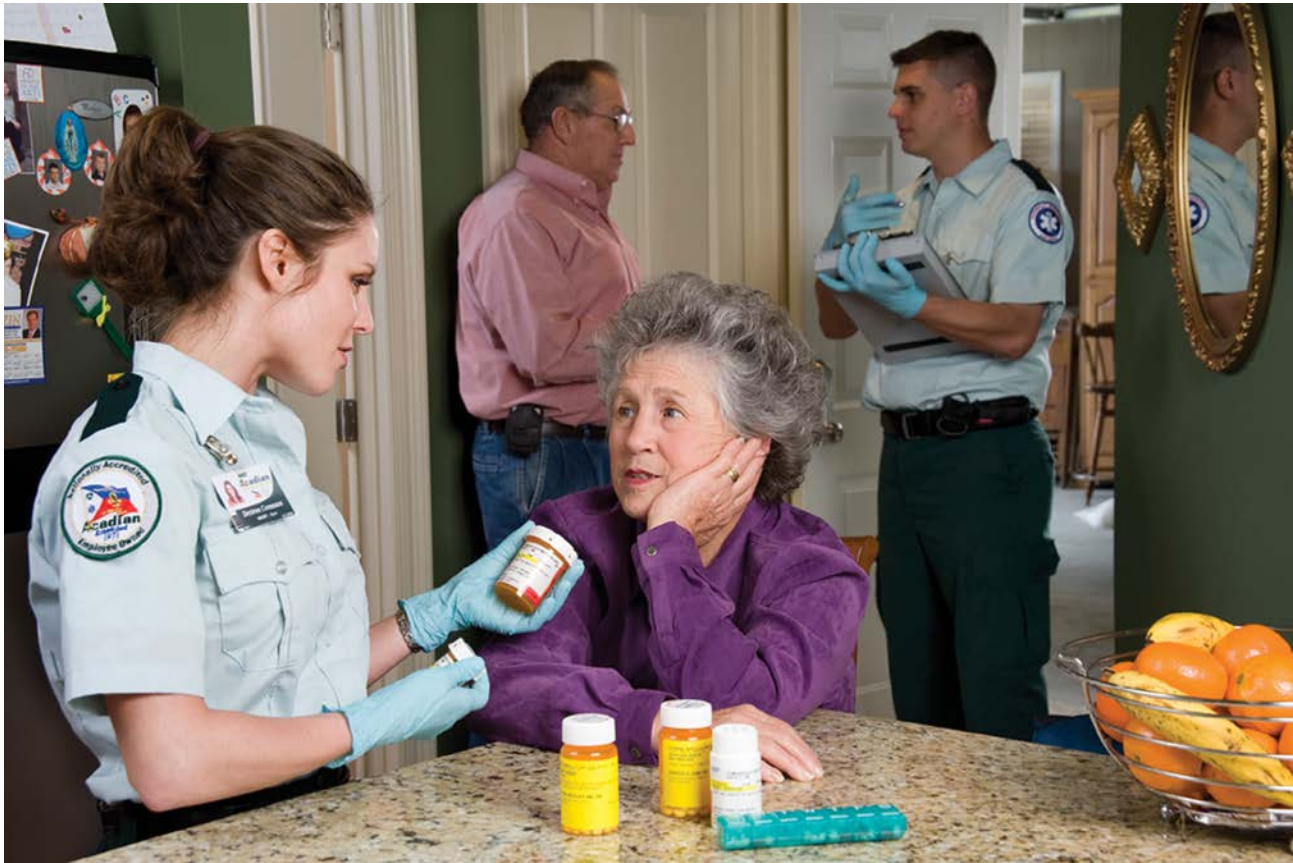
Dilution

- Adult patient should drink one to two glasses of water or milk.
- Children should drink one-half to one full glass of water or milk.
- Water may slow absorption, but milk may soothe stomach upset.
- Frequently advised for patients who, as determined by medical direction, do not need transport

Antidotes

- Thought of as substance that will neutralize the poison or its effects
 - Very few genuine antidotes exist.
- Naloxone directly reverses narcotics' depressant effects on level of consciousness and respiratory drive.

Ingested Poisons



First Take Standard Precautions. 1. Quickly gather information. **Note:** *When a patient has ingested a poison, it provides another reason to avoid mouth-to-mouth contact. Provide ventilations through a pocket face mask or other barrier device.*

Ingested Poisons



2. Call medical direction on the scene or en route to the hospital.

Ingested Poisons



3. If directed, administer activated charcoal. You may wish to administer the medication in an opaque cup that has a lid with a hole for a straw.

Ingested Poisons



4. Position the patient for vomiting and save all vomitus. Have suction equipment ready.

Think About It

- Think about your own home. Is it safe for a small child?
- Are there potential poisons within three feet of the floor, or behind unlocked doors?
- Are there household cleaners that look like juices and drinks familiar to children?

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Think About It

- Can flavored children's medications be mistaken for candy?
- What sense does a small child typically use to identify things?

Inhaled Poisons

- Common types
 - Carbon monoxide
 - Ammonia
 - Chlorine gas
 - Agricultural chemicals and pesticides
 - Carbon dioxide

continued on next slide

Inhaled Poisons

- Scene safety
 - Approach scene with caution.
 - Protective clothing and self-contained breathing apparatus may be required.
 - If not trained or equipped, call for additional resources.

Scene Safety



Remove the patient from the source of the poison.

Note: *In the presence of hazardous fumes or gases, wear protective clothing and self-contained breathing apparatus or wait for those who are properly trained and equipped to enter the scene and bring the patient out.*

Inhaled Poisons

- Signs and symptoms
 - Difficulty breathing
 - Chest pain
 - Coughing
 - Hoarseness
 - Dizziness
 - Headache, confusion, or altered mental status
 - Seizures

Patient Assessment

- What substance was involved (exact name)?
- When did exposure occur?
- Over how long did exposure occur?
- What interventions has anyone taken?
 - Did someone remove patient?
 - Did someone ventilate the area?
- What effects is patient experiencing?

Patient Care

- Move patient from unsafe environment using trained and equipped personnel.
- Detect and treat immediately life-threatening problems in primary assessment.
- Perform secondary assessment, obtain vital signs.

continued on next slide

Patient Care

- Administer high-concentration oxygen
- Transport with all containers, bottles, and labels
- Perform reassessment en route

Carbon Monoxide

- Colorless, odorless, tasteless gas created by combustion
- Can be caused by improper venting of fireplaces, portable heaters, generators
- Common cause of death during winter and power outages

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Carbon Monoxide

- Signs and symptoms of poisoning
 - Headache, especially "a band around head"
 - Dizziness
 - Breathing difficulty
 - Nausea
 - Cyanosis
 - Altered mental status
 - In severe cases, unconsciousness

CO Monitor



Special monitors are needed to detect the presence of carbon monoxide in the environment.

Carbon Monoxide

- Treatment
 - Patient may begin to feel shortly after being removed from dangerous environment.
 - Administer 100 percent oxygen.
 - Transport to hospital.
 - Takes time to "wash out" CO from bloodstream

Smoke Inhalation

- Smoke from burning materials can contain poisonous and toxic substances, including CO, ammonia, chlorine, cyanide.
- Substances can irritate skin and eyes, damage lungs, and progress to respiratory or cardiac arrest.

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Smoke Inhalation

- Signs and symptoms
 - Difficulty breathing
 - Coughing
 - "Smoky" or chemical smell on breath
 - Black (carbon) residue in mouth, nose or sputum
 - Singed nasal or facial hair

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Smoke Inhalation

- Treatment
 - Move patient to safe area.
 - Assess patient.
 - Maintain airway.
 - Provide high-concentration oxygen.
 - Monitor patient closely.
 - Airway burns may lead to swelling of airway.

"Detergent Suicides"

- Method of suicide started in Japan and is becoming more common in the United States.
- Mix of two easily obtained chemicals to release toxic hydrogen sulfide gas
- Commonly released inside enclosed space such as a car

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"Detergent Suicides"

- Scene safety
 - Exposure to fumes may injure EMS personnel.
 - Warning note may be left on vehicle, but this is not assured.
 - May need to treat first as a hazmat scene

Absorbed Poisons

- Can be absorbed through skin
- May or may not cause damage to skin
- Patient may require decontamination prior to treatment

Patient Assessment

- What substance was involved?
- When did the exposure occur?
- How much of the substance was the patient exposed to?
- Over how long a period did the exposure occur?
- What interventions has anyone taken?
- What effects is the patient experiencing?

Patient Care

- Assess for immediate life-threatening problems in primary assessment.
- Perform secondary assessment, obtain vital signs.
- Remove powder by:
 - Brushing off powder
 - Irrigating with clean water for at least 20 minutes and during transport

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Patient Care

- Transport with all containers, bottles, SDSs, and labels from substance.
- Perform reassessment en route.

Injected Poisons

- Most common are:
 - Illicit drugs injected with a needle
 - Venom of snakes and insects

Poison Control Centers

- Excellent resource
- Information on poisons, signs and symptoms, and treatments
- Follow local protocol for contact procedures.

Alcohol and Substance Abuse

Alcohol and Substance Abuse

- Many patients whose conditions are caused either directly or indirectly by alcohol or substance abuse
- Abuse of alcohol and other drugs crosses all geographic and economic boundaries.

Alcohol Abuse

- Potent drug affects central nervous system.
- Can be addictive
- Emergencies may result from recent consumption or years of abuse.
- Treat patients as any others.
- Abuse can lead to or worsen other medical conditions.

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Alcohol Abuse

- Alcohol often consumed with other drugs, which can result in a serious medical emergency.
- Impaired patients can be uncooperative or combative.
- Contact law enforcement if safety concern.

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Alcohol Abuse

- Signs and symptoms
 - Alcohol odor on breath or clothing
 - Swaying or unsteady on feet
 - Slurred, rambling speech
 - Flushed, complaining of being warm
 - Nausea/vomiting
 - Poor coordination
 - Slowed reaction time

continued on next slide

Alcohol Abuse

- Signs and symptoms
 - Blurred vision
 - Confusion
 - Hallucinations, visual or auditory
 - Lack of memory (blackout)
 - Altered mental status

continued on next slide

Alcohol Abuse

- Alcohol withdrawal
 - Abrupt cessation of drinking may cause some alcoholics to suffer from delirium tremens (DTs).
 - Can be serious, resulting in tremors, hallucinations, and seizures

continued on next slide

Alcohol Abuse

- Alcohol withdrawal
 - Signs and symptoms
 - Confusion and restlessness
 - Unusual behavior
 - Hallucinations
 - Gross tremor of hands

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Alcohol Abuse

- Alcohol withdrawal
 - Signs and symptoms
 - Profuse sweating
 - Seizures
 - Hypertension
 - Tachycardia

Patient Assessment

- Many medical conditions mimic alcohol intoxication.
- Intoxicated patients may also have medical problems.
- All patients receive full assessment regardless of suspicion of intoxication.

Patient Care

- Vomiting common
 - Standard precautions are essential.
- Keep suction ready.
- Stay alert for airway and respiratory problems.
- Be alert for changes in mental status.

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Patient Care

- Monitor vital signs.
- Treat for shock.
- Gather history from patient, bystanders.
- Stay alert for seizures.
- Transport the patient to a medical facility.

Substance Abuse

- Any chemical substance taken for other than therapeutic (medical) reasons
- Includes uppers, downers, narcotics, hallucinogens, and volatile chemicals

Substance Abuse



These substances are often abused.

Substance Abuse

- Uppers
 - Stimulants that affect the nervous system
 - Cocaine
 - Amphetamines
 - May be snorted, smoked, or injected

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Substance Abuse

- Uppers
 - Signs and symptoms
 - Excitement, restlessness
 - Increased pulse and breathing rates
 - Sweating
 - Hyperthermia
 - No sleep for a long time, possibly days

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Substance Abuse

- Downers
 - Central nervous system depressants
 - Barbiturates
 - Rohypnol (roofies)
 - GHB (gamma hydroxybutyrate)
 - Signs and symptoms
 - Sluggishness, poor coordination
 - Decreased pulse and respirations

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Substance Abuse

- Narcotics
 - Used to relieve pain or help with sleep
 - Opiates
 - Heroin, codeine, morphine
 - OxyContin (oxycodone)

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Substance Abuse

- Narcotics
 - Signs and symptoms
 - Reduced rate of pulse and rate and depth of breathing
 - Lethargy (being very sleepy)
 - Pinpoint pupils
 - Profuse sweating
 - Coma

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Substance Abuse

- Hallucinogens
 - Create intense state of excitement and distorted perception
 - LSD, PCP, XTC
 - Signs and symptoms
 - Rapid pulse
 - Dilated pupils
 - Flushed face
 - Seeing or hearing things

continued on next slide

Substance Abuse

- Volatile chemicals
 - Produce vapors that are inhaled
 - Initial "rush" can act as central nervous system depressant.

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Substance Abuse

- Volatile chemicals
 - Signs and symptoms
 - Dazed/disoriented
 - May develop a coma
 - Swollen membranes in nose or mouth
 - "Funny numb feeling" or "tingling" inside head
 - Changes in heart rhythm

Volatile Chemicals



Volatile chemicals produce vapors that can be inhaled. Methods of inhaling substances include “huffing” (breathing fumes directly or from a substance-impregnated fabric) and “bagging” (breathing fumes from a substance sprayed into a bag).

Patient Assessment

- May be difficult
 - Patient's level of consciousness
 - Patient may have taken more than one type of drug.
- Patient may be uncooperative or combative.
- Be aware of a possibility of contaminated needles and the presence of chemicals.

Patient Care

- Be aware of possible airway problems and respiratory distress.
- Provide oxygen and assist respirations as needed.
- Treat for shock.
- Talk to patient to keep them calm and cooperative.

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Patient Care

- Perform physical exam.
- Look for evidence of injection sites ("track marks").

Treatment: Substance Abuse



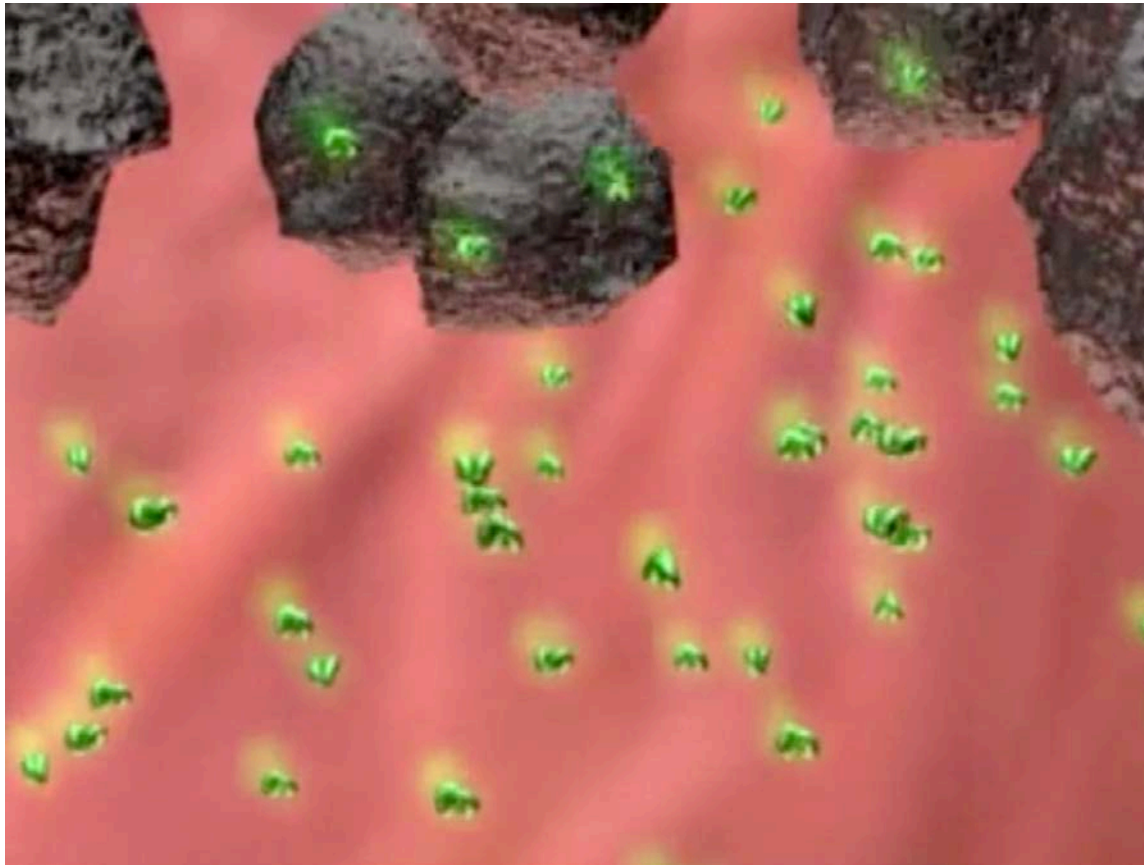
Needle tracks on a patient's arm indicate a history of injected drug use.

© Edward T. Dickinson, MD

Patient Care

- Transport as soon as possible.
- Consult with medical control according to local protocols.
- Perform reassessment with monitoring vital signs.
- Continue to reassure patient throughout all phases of care.

Activated Charcoal Use Animation



Click the screenshot to view an animation illustrating the use of activated charcoal.

[Back to Directory](#)

Chapter Review

Chapter Review

- In a poisoned patient, perform a primary assessment and immediately treat life-threatening problems. Ensure an open airway. Administer high-concentration oxygen if the poison was inhaled or injected.

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Chapter Review

- Next perform a secondary assessment, including baseline vital signs. Find out if the poison was ingested, inhaled, absorbed, or injected; what substance was involved; how much poison was taken in, when, and over how long a period; what interventions others have already done; and what effects the patient experienced.

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Chapter Review

- Consult medical direction. As directed, administer activated charcoal, water, or milk for ingested poisons.
- Remove the patient who has inhaled a poison from the environment, and administer high-concentration oxygen. Remove poisons from the skin by brushing off or diluting them.

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Chapter Review

- Transport the patient with all containers, bottles, and labels from the substance.
- Reassess patient en route.
- Carefully document all information about poisoning, interventions, and patient's responses.

Remember

- Safety is always the first concern when dealing with a poisoning or substance-abuse patient.
- Poisonings are generally classified by route of exposure. Effects vary greatly, depending upon type of poison and method of entrance into body.

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Remember

- EMTs must use thorough assessment, including scene clues, to help identify the nature and severity of poisoning.
- Poison control centers offer a wealth of resources to assist in assessment and treatment of poisoning patient.

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Remember

- Alcohol is a common underlying issue with patients. In some patients, it may be the most significant problem.
- The effects of substance abuse can vary greatly, based on the type of substance. Determining the type of drug ingested can shed light on effects to come.

Questions to Consider

- What are potential risks to the responder on a poisoning or overdose call?
- What are the routes of entry into the body?
- What are some things EMS can do to prevent poisonings, especially in children?

Critical Thinking

- A farmer calls 911 because one of his farm hands has tried to clean up spilled pesticide powder with his hands. On arrival, you find that the patient insists he has brushed all the powder off, feels fine, and doesn't need to go to the hospital.

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Critical Thinking

- As he talks, he continues to make brushing motions at his jeans on which you can see the marks of a powdery residue. How do you manage the situation?