National EMS Education Standard Competencies (1 of 3)

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

National EMS Education Standard Competencies (2 of 3)

Toxicology
• Recognition and management of
  – Carbon monoxide poisoning
  – Nerve agent poisoning
• How and when to contact a poison control center

National EMS Education Standard Competencies (3 of 3)

• Anatomy, physiology, pathophysiology, assessment, and management of
  – Inhaled poisons
  – Ingested poisons
  – Injected poisons
  – Absorbed poisons
  – Alcohol intoxication and withdrawal

Introduction (1 of 2)
• Every day, we come into contact with potentially poisonous things.
• Acute poisoning affects 2 million people each year.
• Chronic poisoning is more common.

Introduction (2 of 2)
• Deaths caused by poisoning are fairly rare.
  – Poisoning in children has decreased steadily since the 1960s due to child-resistant caps.
  – Deaths caused by chronic poisoning in adults have been rising as a result of drug abuse.

Identifying the Patient and the Poison (1 of 7)
• Toxicology is the study of toxic or poisonous substances.
  – Poison: any substance whose chemical action can damage body structures or impair body function
  – Toxin: a poisonous substance produced by bacteria, animals, or plants
  – Substance abuse: the misuse of any substance to produce a desired effect.
  – Overdose: a toxic dose of a drug.

Identifying the Patient and the Poison (2 of 7)
• Your primary responsibility to the patient is to recognize that a poisoning has occurred.
  – Pay attention to your surroundings or you could also become exposed to the same substance.
  – Very small amounts of some poisons can cause considerable damage or death.
  – If you suspect exposure to a toxic substance, notify medical control and begin emergency treatment.

Identifying the Patient and the Poison (3 of 7)
• The signs and symptoms of poisoning vary according to the specific agent.
  – Presence of injuries at the patient’s mouth suggests the ingestion of a poison
Identifying the Patient and the Poison (4 of 7)

• If possible, ask the patient:
  – What substance did you take?
  – When did you take it (or become exposed to it)?
  – How much did you ingest?
  – Did you have anything to eat or drink before or after you took it?
  – Has anyone given you an antidote or any substance orally since you ingested it?
  – How much do you weigh?

Identifying the Patient and the Poison (5 of 7)

• Try to determine the nature of the poison.
  – Look around the immediate area for clues.
  – Place any suspicious material in a plastic bag and take it with you.
  – Containers at the scene can provide critical information.

Identifying the Patient and the Poison (6 of 7)

• If the patient vomits, examine the contents for pill fragments.
• Wear proper personal protective equipment.
• Note and document anything unusual that you see.

How Poisons Enter the Body (1 of 4)

• Emergency care for a patient may range from reassuring an anxious parent to performing CPR.
  – Most often, you will not be administering an antidote.
  – Definitive treatment can only be provided at the ED, so transport promptly.
  – The most important treatment you can perform is diluting or physically removing the poisonous agent.

How Poisons Enter the Body (2 of 4)

• How you provide treatment depends on how the poison got into the patient’s body in the first place.
• Four routes to consider:
  – Inhalation
  – Absorption
  – Ingestion
  – Injection

How Poisons Enter the Body (3 of 4)

How Poisons Enter the Body (4 of 4)

• All four routes of poisoning can lead to serious and possibly life-threatening conditions.
• If you are uncertain how to treat a patient, find the container, if possible, and contact medical control or the poison control center.

Inhaled Poisons (1 of 3)

• Move the patient into fresh air immediately.
• The patient may require supplemental oxygen.
• If you suspect the presence of a toxic gas, call for specialized resources such as the HazMat team.
• Use self-contained breathing apparatus to protect yourself from poisonous fumes.

19 Inhaled Poisons (2 of 3)
• Some patients may need decontamination by the HazMat team after removal from the toxic environment.
• All patients who have inhaled poison require immediate transport.
  – Be prepared to use supplemental oxygen.
  – Make sure a suctioning unit is available.

20 Inhaled Poisons (3 of 3)
• Some patients use inhaled poisons to commit suicide in a vehicle.
  – Exhaust fumes contain high levels of carbon monoxide.
  – Chemicals or detergent in a tightly sealed vehicle create a type of gas chamber.
  – When you open the door, you may be overcome as well.
  – Contact HazMat responders and have them remove the victim.

21 Absorbed and Surface Contact Poisons (1 of 6)
• Can affect the patient in many ways:
  – Skin, mucous membrane, or eye damage
  – Chemical burns
  – Rashes or lesions
  – Systemic effects
• It is important to distinguish between contact burns and contact absorption.

22 Absorbed and Surface Contact Poisons (2 of 6)
• Signs and symptoms include:
  – A history of exposure
  – Liquid or powder on a patient’s skin
  – Burns
  – Itching
  – Irritation
  – Redness of skin
  – Typical odors of the substance

23 Absorbed and Surface Contact Poisons (3 of 6)
• Emergency treatment:
  – Avoid contaminating yourself or others.
  – Remove the substance from patient as rapidly as possible.
• Remove all contaminated clothing.
• Flush and wash the skin.

24 Absorbed and Surface Contact Poisons (4 of 6)
• If dry powder has been spilled, brush off the powder, flood the area with water for 15 to 20 minutes, then wash skin with soap and water.
• If liquid has been spilled onto the skin, flood for 15 to 20 minutes.

25 Absorbed and Surface Contact Poisons (5 of 6)
• If a chemical agent is introduced to the eyes, irrigate them quickly and thoroughly.
Absorbed and Surface Contact Poisons (6 of 6)
- Many chemical burns occur in an industrial setting.
  - Safety showers and specific protocols for handling surface burns may be available.
  - HazMat team should be available to assist you.
  - Ensure that you, your team and the patient are thoroughly decontaminated.
  - After decontamination, promptly transport to the ED for definitive care.
  - Obtain material safety data sheets.

Ingested Poisons (1 of 4)
- About 80% of poisoning is by mouth.
  - Liquids
  - Household cleaners
  - Contaminated food
  - Plants
  - Drugs

Ingested Poisons (2 of 4)
- Usually accidental in children and deliberate in adults
- Signs and symptoms vary with:
  - Type of poison
  - Age of the patient
  - Time that has passed since ingestion
- Signs and symptoms include burns around the mouth, gastrointestinal pain, vomiting, cardiac dysrhythmias, and seizures.

Ingested Poisons (3 of 4)
- Treat signs and symptoms and notify the poison center and medical control of the patient’s condition.
- Consider whether there is unabsorbed poison remaining in the gastrointestinal tract and whether you can safely and effectively prevent its absorption.

Ingested Poisons (4 of 4)
- Some EMS systems allow EMTs to administer activated charcoal.
- Always immediately assess the ABCs of every patient who has been poisoned.

Injected Poisons (1 of 2)
- Exposure by injection includes intravenous drug abuse and envenomation by insects, arachnids, and reptiles.
- Usually absorbed quickly into the body or cause intense local tissue destruction
- Cannot be diluted or removed from the body in the field

Injected Poisons (2 of 2)
- Signs and symptoms may include weakness, dizziness, fever/chills, unresponsiveness, and excitability.
- Monitor the airway, provide high-flow oxygen, and be alert for nausea and vomiting.
- Remove rings, watches, and bracelets from areas around the injection site if swelling occurs.

•
**Scene Size-up (1 of 2)**
- A well-trained dispatcher can obtain information on a poisoning call, including:
  - Proper protection needed
  - Information pertaining to the MOI/NOI
  - Number of patients involved
  - If additional resources are needed
  - Whether trauma is involved
- Take standard precautions and look for clues that indicate the substance involved.

**Scene Size-up (2 of 2)**
- Ask yourself the following questions:
  - Is there an odor in the room? Is the scene safe?
  - Are there medication bottles lying around? Is there medication missing that might indicate an overdose?
  - Are alcoholic beverage containers present?
  - Are there syringes or other drug paraphernalia on the scene?
  - Is there a suspicious odor that may indicate the presence of a drug laboratory?

**Primary Assessment (1 of 3)**
- Determine the severity of the patient’s condition.
  - Obtain a general impression.
  - Assess the level of consciousness.
  - Determine any life threats.
  - Do not assume a conscious, alert, and orientated patient is in stable condition.

**Primary Assessment (2 of 3)**
- Airway and breathing
  - Ensure that the patient has an open airway and adequate ventilation.
  - If patient has difficulty breathing or an inhalation injury, begin oxygen therapy.
  - Have suction available; these patients are susceptible to vomiting.
- Circulation
  - Assess the pulse and skin condition.

**Primary Assessment (3 of 3)**
- Transport decision
  - Consider prompt transport for patients with obvious alterations in the ABCs or for patients you have determined have a poor general impression.
  - Everyone who is exposed to the hazardous material must be thoroughly decontaminated by the HazMat team before leaving the scene.

**History Taking (1 of 3)**
- Investigate the chief complaint.
  - If your patient is responsive, begin with an evaluation of the exposure and the SAMPLE history.
  - If your patient is unresponsive, obtain the history from coworkers, bystanders, friends, family members, medical jewelry, or wallet cards.

**History Taking (2 of 3)**
- SAMPLE history
  - Guides you in what to focus on as you continue to assess the patient’s complaints
  - Ask the following questions:
– What is the substance involved?
– When did the patient become exposed to it?
– How much did the patient ingest or what was the level of exposure?

**History Taking (3 of 3)**
- Questions (cont’d):
  – Over what period did the patient take or was exposed to the substance?
  – Has the patient or a bystander performed any intervention?
  – How much does the patient weigh?

**Secondary Assessment**
- Physical examinations
  – Focus on the area of the body involved with the poisoning or the route of exposure.
  – A general review of all body systems may help to identify systemic problems.
- A complete set of baseline vital signs is important.
  – Look for alterations in the LOC, pulse, respirations, blood pressure, and skin.

**Reassessment (1 of 3)**
- Reassess the adequacy of the ABCs.
- Repeat vital signs; compare them with the baseline set.
- Evaluate your interventions.
  – Every 15 minutes for a stable patient
  – Every 5 minutes, or constantly, for a patient who has consumed a harmful or lethal dose

**Reassessment (2 of 3)**
- Treatment
  – Supporting the ABCs is your most important task.
  – Contact medical control or a poison center to discuss treatment options.
  – Dilute airborne exposures with oxygen.
  – Remove contact exposures with water.
  – Consider activated charcoal for ingestions.

**Reassessment (3 of 3)**
- Communication and documentation
  – Report as much information as you have about the poison or chemical to the hospital.
  – Bring, or have the company fax, the material data sheet to the hospital if the poisoning occurred in a work setting.

**Emergency Medical Care (1 of 6)**
- Ensure scene safety.
  – Follow standard precautions.
  – Perform external decontamination.
- Remove tablets or fragments from the patient’s mouth.
- Wash or brush the poison from the patient’s skin.

**Emergency Medical Care (2 of 6)**
- Assess and maintain the patient’s ABCs.
- Provide oxygen and perform assisted ventilations if necessary.
- Treat for shock and transport the patient promptly to the nearest hospital.
- Some EMS systems allow EMTs to give activated charcoal by mouth.
Emergency Medical Care (3 of 6)
- Activated charcoal binds to specific toxins, which are then carried out of the body in the stool.
- Activated charcoal is not indicated for patients:
  - Who have ingested alkali poisons, cyanide, ethanol, iron, lithium, methanol, mineral acids, or organic solvents
  - Who have a decreased LOC and cannot protect their airway

Emergency Medical Care (4 of 6)
- If local protocol permits, you will likely carry plastic bottles of premixed suspension, each containing up to 50 g of activated charcoal.
  - Insta-Char, Actidose, Liqui-Char
  - The usual dose for an adult or child is 1 g per kilogram of body weight.

Emergency Medical Care (5 of 6)
- Before you give a patient charcoal, obtain approval from medical control.
  - Shake the bottle vigorously.
  - You may need to convince the patient to drink it, but never force it.
  - Record the time when you administered activated charcoal.
  - If the patient refuses activated charcoal, document the refusal and transport the patient for further evaluation.

Emergency Medical Care (6 of 6)
- Side effects are constipation and black stools.
- If the patient has ingested a poison that causes nausea, he or she may vomit after taking charcoal.
  - The dose will have to be repeated.

Specific Poisons (1 of 2)
- Over time, a person who routinely misuses a substance may need increasing amounts of it to achieve the same result.
  - This is called developing a tolerance.
  - A person with an addiction has an overwhelming need to continue using the substance, at whatever cost.
  - Almost any substance can be abused.

Specific Poisons (2 of 2)
- The importance of safety awareness and standard precautions cannot be overemphasized.
  - Known drug abusers have a fairly high incidence of serious and undiagnosed infections, including HIV and hepatitis.
  - Always wear the appropriate PPE.
  - Expect the unexpected.

Alcohol (1 of 5)
- Many calls for service have a connection to alcohol use.
  - 1 in 10 deaths among working-age adults in the United States can be attributed to excessive alcohol use.

Alcohol (2 of 5)
- Alcohol can damage the liver, whether thorough chronic overuse or occasional heavy use (binge drinking).
• Binge use can be more damaging than chronic use, depending on the frequency of the binging and the surrounding circumstances.

**Alcohol (3 of 5)**
• Alcohol is a powerful CNS depressant.
  – Decreases activity and excitement
  – Induces sleep
  – Dulls the sense of awareness, slows reflexes, and reduces reaction time
  – May cause aggressive and inappropriate behavior and lack of coordination
  – Alcohol increases the effects of other drugs and is commonly taken with other substances.

**Alcohol (4 of 5)**
• If a patient exhibits signs of serious CNS depression, you must provide respiratory support.
  – May cause vomiting
  – Internal bleeding should be considered if patient appears to be in shock
• Patients may experience frightening hallucinations, or delirium tremens (DTs).

**Alcohol (5 of 5)**
• DTs are characterized by:
  – Agitation and restlessness
  – Fever
  – Sweating
  – Tremors
  – Confusion/disorientation
  – Delusions/hallucinations
  – Seizures

**Opioids (1 of 7)**
• An opioid is a type of narcotic medication used to relieve pain.
• An opiate is a subset of the opioid family, and refers to natural, nonsynthetic opioids.
• Named for the opium in poppy seeds, from which codeine and morphine are derived.

**Opioids (2 of 7)**
• Synthetic opioids include meperidine, hydromorphone, oxycodone, hydrocodone, and methadone.

**Opioids (3 of 7)**
• Prescription opioid drugs are among the most commonly abused drugs in the United States.
• Some people become physically dependent on opioids after taking an appropriate medical prescription.
• The death rate from heroin overdoses tripled between 2010 and 2013.

**Opioids (4 of 7)**
• These agents are CNS depressants and can cause severe respiratory depression and then cardiac arrest if not treated promptly.
  – Tolerance develops quickly.
  – Some users may require massive doses to experience the same high.
  – Often cause nausea and vomiting
  – May lead to hypotension
62 **Opioids (5 of 7)**
- Although seizures are uncommon, they can occur.
- Patients typically appear sedated or unconscious and cyanotic with pinpoint pupils.

63 **Opioids (6 of 7)**
- Naloxone is an antidote that reverses the effects of opiate or opioid overdose.
  - Can be given intravenously, intramuscularly, or intranasally
  - In many EMS systems, EMTs administer naloxone by the intranasal route.
  - Should only be used when the patient has agonal respirations or is apneic

64 **Opioids (7 of 7)**
- Naloxone (cont’d)
  - Place an oropharyngeal airway and ventilate the patient using a BVM prior to administering naloxone.
  - In some areas, lay people are permitted to administer naloxone.
  - Find out from bystanders if the patient was given naloxone.

65 **Sedative-Hypnotic Drugs (1 of 2)**
- Barbiturates and benzodiazepines are easy to obtain and relatively cheap.
  - CNS depressants can alter the level of consciousness.
  - Patient may appear drowsy, peaceful, or intoxicated.

66 **Sedative-Hypnotic Drugs (2 of 2)**
- These agents are generally taken by mouth.
  - Occasionally, the capsules are suspended or dissolved in water and injected.
  - IV sedative-hypnotic drugs quickly induce tolerance.
  - These drugs may be given to people as a “knock-out” drink.
  - Your treatment is to ensure airway is patent, assist ventilation, and provide prompt transport.

67 **Abused Inhalants (1 of 2)**
- These agents are inhaled instead of ingested or injected.
  - Acetone, toluene, xylene, hexane
  - Found in glues, cleaning compounds, paint thinners, and lacquers
  - Gasoline and halogenated hydrocarbons are also abused.
  - Commonly abused by teenagers

68 **Abused Inhalants (2 of 2)**
- Always use special care.
  - Halogenated hydrocarbon solvents can make the heart hypersensitive to the patient’s own adrenaline.
  - Even the action of walking may cause a fatal ventricular dysrhythmia.
  - Use a stretcher to move the patient, give oxygen, and transport to the hospital.

69 **Hydrogen Sulfide (1 of 2)**
- Hydrogen sulfide
  - A highly toxic, colorless, and flammable gas with a distinctive rotten-egg odor
  - Poisoning usually occurs by inhalation.
  - Hydrogen sulfide affects all organs, but it has the most impact on the lungs and CNS.
  - Used to commit suicide
– If you suspect the presence of a toxic gas, wait for a HazMat team to tell you the scene is safe.

**Hydrogen Sulfide (2 of 2)**
- Signs and symptoms:
  - Nausea and vomiting, confusion, dyspnea, and a loss of consciousness, seizures, shock, coma, and cardiopulmonary arrest
- Once the patient has been decontaminated, management is largely supportive.
  - Monitor and assist the patient’s respiratory and cardiovascular functions.
  - Provide rapid transport.

**Sympathomimetics (1 of 4)**
- CNS stimulants that mimic the effects of the sympathetic (fight-or-flight) nervous system

**Sympathomimetics (2 of 4)**
- A stimulant is an agent that produces an excited state.
  - Frequently cause hypertension, tachycardia, and dilated pupils
  - Includes amphetamines, methamphetamines, phentermine hydrochloride, and Benzedrine
  - Designer drugs, such as MDMA, are also frequently abused.
  - Commonly taken by mouth; also injected by drug abusers

**Sympathomimetics (3 of 4)**
- Cocaine may be taken in a number of different ways.
  - Can be absorbed through all mucous membranes and even across the skin
  - Immediate effects include excitement and euphoria and last less than an hour
  - Smoked crack is the most potent.

**Sympathomimetics (4 of 4)**
- Acute overdose is a genuine emergency.
  - Patients have a high risk of seizures, cardiac dysrhythmias, and stroke.
  - Patients may experience hallucinations or paranoia.
  - Do not leave the patient unattended.
  - Provide prompt transport.

**Synthetic Cathinones (Bath Salts) (1 of 2)**
- An emerging class of drugs similar to MDMA.
  - Sold as bath salts to escape the legal restrictions imposed on illicit drugs
  - Cathinones produce euphoria, increased mental clarity, and sexual arousal.
  - Most users of this drug snort or insufflate the powder nasally.
  - Effects reportedly last as long as 48 hours.

**Synthetic Cathinones (Bath Salts) (2 of 2)**
- Adverse effects include:
  - Teeth grinding, appetite loss, muscle twitches, lip-smacking, confusion, gastrointestinal conditions, paranoia, headache, elevated heart rate, and hallucinations
- Keep the patient calm and transport.
- Consider ALS assistance
  - Some of these patients may require chemical restraint to facilitate safe transport.
Marijuana (1 of 4)
- Marijuana is abused throughout the world.
  - Nearly half of Americans have tried marijuana.
  - THC is the chemical in the marijuana plant that produces its high.
  - Produces euphoria, relaxation, and drowsiness
  - Impairs short-term memory and the capacity to do complex thinking
  - Could progress to depression and confusion

Marijuana (2 of 4)
- With very high doses, patients may experience hallucinations or become very anxious or paranoid.
  - Reassure the patient and transport with a minimum amount of excitement.
  - Marijuana is often used as a vehicle to get other drugs into the body.

Marijuana (3 of 4)
- Several states have legalized the recreational use of marijuana, and others allow for the medical use of marijuana and products that contain THC.
  - "Edibles" infused with marijuana
  - Ingestion of marijuana can lead to cannabinoid hyperemesis syndrome

Marijuana (4 of 4)
- Synthetic marijuana or "Spice"
  - Refers to a variety of herbal incense or smoking blends that resemble THC and produce a similar high
  - Powerful and unpredictable effects may result, ranging from simple euphoria to complete loss of consciousness.

Hallucinogens (1 of 3)
- Hallucinogens alter a person’s sensory perceptions.
  - Classic example is LSD

Hallucinogens (2 of 3)
- These agents:
  - Cause visual hallucinations
  - Intensify vision and hearing
  - Generally separate the user from reality
  - Patients experiencing a "bad trip" have hypertension, tachycardia, anxiety, and paranoia.

Hallucinogens (3 of 3)
- Use a calm, professional manner.
- Provide emotional support.
- Do not use restraints unless you or the patient is in danger of injury.
- Watch the patient carefully throughout transport and do not leave unattended.
- Request ALS assistance when appropriate.

Anticholinergic Agents (1 of 2)
- These medications have properties that block the parasympathetic nerve.
  - "Hot as a hare, blind as a bat, dry as a bone, red as a beet, and mad as a hatter."
  - Common drugs include atropine, Benadryl, jimsonweed, and amitriptyline.

Anticholinergic Agents (2 of 2)
- Some tricyclic antidepressants have significant anticholinergic effects.
• Death from these agents can be rapid.
  – The patient can go from “normal” to seizure and death within 30 minutes.
  – Transport immediately.
  – Seizures and dysrhythmias are best treated in the hospital.
  – Consider ALS backup.

86 Cholinergic Agents (1 of 6)
• These agents overstimulate normal body functions that are controlled by the parasympathetic nerves.
  – Include “nerve gases” designed for chemical warfare and organophosphate insecticides

87 Cholinergic Agents (2 of 6)
• Poisoning results in:
  – Excessive salivation
  – Mucus oversecretion
  – Runny nose
  – Urination
  – Diarrhea
  – Tearing of the eyes
  – An abnormal heart rate

88 Cholinergic Agents (3 of 6)
• Use the mnemonic DUMBELS to remember the signs and symptoms:
  – Diarrhea
  – Urination
  – Miosis
  – Bradycardia, bronchospasm, bronchorrhea
  – Emesis
  – Lacrimation
  – Seizures, salivation, sweating

89 Cholinergic Agents (4 of 6)
• Or, you can use SLUDGEM:
  – Salivation, sweating
  – Lacrimation
  – Urination
  – Defecation, drooling, diarrhea
  – Gastric upset and cramps
  – Emesis
  – Muscle twitching/miosis

90 Cholinergic Agents (5 of 6)
• The most important consideration is to avoid exposure yourself.
  – Decontamination may take priority over immediate transport.
  – HazMat team will provide decontamination and contain the exposure chemical.
  – After decontamination:
    • Decrease the secretions in the mouth and trachea.
    • Provide airway support.

91 Cholinergic Agents (6 of 6)
• Antidote kit may be available.
– DuoDote Auto-Injector
– The kit consists of a single auto-injector containing atropine and pralidoxime.
– If a known exposure to nerve agents with manifestation of signs and symptoms has occurred, use the antidote kit on yourself.

**Miscellaneous Drugs (1 of 5)**
- Accidental or intentional overdose with cardiac medications has become common.
  – Children
  – Older patients

**Miscellaneous Drugs (2 of 5)**
- Signs and symptoms depend on the medication ingested.
- Contact the poison center as soon as possible.
  – You may be ordered to administer activated charcoal.

**Miscellaneous Drugs (3 of 5)**
- Aspirin poisoning remains a potentially lethal condition.
- Ingesting too many aspirin may result in:
  – Nausea
  – Vomiting
  – Hyperventilation
  – Ringing in the ears

**Miscellaneous Drugs (4 of 5)**
- Patients with this problem have:
  – Anxiety
  – Confusion
  – Tachypnea
  – Hyperthermia
  – Danger of having seizures

**Miscellaneous Drugs (5 of 5)**
- Overdosing with acetaminophen is also very common.
  – Overdose, unintentional or intentional, must be treated promptly and aggressively.
- Some alcohols, including methyl alcohol and ethylene glycol, are even more toxic than ethyl alcohol (drinking alcohol).
  – Will cause severe tachypnea, blindness, renal failure, and eventually death

**Food Poisoning (1 of 6)**
- Almost always caused by eating food contaminated by bacteria
- Two main types:
  – Organism itself may cause disease
  – Organism may produce toxins that cause disease

**Food Poisoning (2 of 6)**
- One organism that produces direct effects of food poisoning is the *Salmonella* bacterium.

**Food Poisoning (3 of 6)**
- Causes salmonellosis
  – Characterized by severe GI symptoms within 72 hours of ingestion, including nausea, vomiting, abdominal pain, and diarrhea
  – Proper cooking kills bacteria, and proper cleanliness in the kitchen prevents the
contamination of uncooked foods.

**Food Poisoning (4 of 6)**
- The more common cause of food poisoning is the ingestion of powerful toxins produced by bacteria, often in leftovers.
  - The bacterium *Staphylococcus* is quick to grow and produce toxins in food.
  - Foods left unrefrigerated are a common vehicle.
  - Symptoms usually within start 2 to 3 hours or as long as 8 to 12 hours after ingestion.

**Food Poisoning (5 of 6)**
- The most severe form of toxin ingestion is botulism.
  - Can result from eating improperly canned food
  - Symptoms are neurologic:
    - Blurring of vision
    - Weakness
    - Difficulty in speaking and breathing

**Food Poisoning (6 of 6)**
- Do not try to determine the specific cause of acute GI problems.
  - Gather as much history as possible from the patient.
  - Transport him or her promptly to the hospital.
  - When two or more persons have the same illness, take along the suspected food.

**Plant Poisoning (1 of 5)**
- There are tens of thousands of cases of plant poisoning annually.
  - Many household plants are poisonous if ingested.

**Plant Poisoning (2 of 5)**
- It is impossible to memorize every plant or poison, let alone their effects.
  - Assess the patient’s airway and vital signs.
  - Notify the regional poison center.
  - Take the plant to the emergency department.
  - Provide prompt transport.

**Plant Poisoning (3 of 5)**

**Plant Poisoning (4 of 5)**

**Plant Poisoning (5 of 5)**
- Irritation of the skin or mucous membranes is a problem with the common houseplant called dieffenbachia.
  - Maintain an open airway.
  - Give oxygen.
  - Transport the patient promptly to the hospital for respiratory support.

**Review**
1. Which of the following questions is of LEAST pertinence for the EMT to ask a patient who intentionally overdosed on a medication?
   A. “How much do you weigh?”
   B. “How much did you ingest?”
   C. “What substance did you take?”
   D. “Why did you take the medication?”
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Review
Answer: D
Rationale: Determining what the patient ingested, how much was ingested, and the patient’s weight are all pertinent and have a direct impact on the care that is provided during the acute phase. Why the patient ingested the medication does not have a direct impact on acute care; therefore, it is the least pertinent question to ask.

Review (1 of 2)
1. Which of the following questions is of LEAST pertinence for the EMT to ask a patient who intentionally overdosed on a medication?
   A. “How much do you weigh?”
      Rationale: This is a very pertinent question and can impact treatment.
   B. “How much did you ingest?”
      Rationale: This is a very pertinent question and can impact treatment.

Review (2 of 2)
1. Which of the following questions is of LEAST pertinence for the EMT to ask a patient who intentionally overdosed on a medication?
   C. “What substance did you take?”
      Rationale: This is a very pertinent question and can impact treatment.
   D. “Why did you take the medication?”
      Rationale: Correct answer

Review
2. A 30-year-old male, who ingested an unknown substance, begins to vomit. You should:
   A. collect the vomitus and bring it to the hospital.
   B. apply a bag-valve mask.
   C. analyze the vomitus and try to identify the poison.
   D. suction his oropharynx for no longer than 30 seconds.

Review
Answer: A
Rationale: If the patient vomits, examine the contents for pill fragments. Ensure that you are wearing proper personal protective equipment for this activity. Note and document anything unusual that you see. You should try to collect the vomitus in a separate plastic bag so that it can be analyzed at the hospital.

Review (1 of 2)
2. A 30-year-old male, who ingested an unknown substance, begins to vomit. You should:
   You should:
   A. collect the vomitus and bring it to the hospital.
      Rationale: Correct answer
   B. apply a bag-valve mask.
      Rationale: This will not help get rid of the vomitus.

Review (2 of 2)
2. A 30-year-old male, who ingested an unknown substance, begins to vomit. You should:
   C. analyze the vomitus and try to identify the poison.
      Rationale: This should be left for the hospital to do.
   D. suction his oropharynx for no longer than 30 seconds.
Rationale: You should suction for no longer than 15 seconds.

**Review**
3. When caring for a patient with a surface contact poisoning, it is important to remember to:
   A. prevent contamination of the patient.
   B. avoid contaminating yourself or others.
   C. let the hospital remove the surface poison.
   D. immediately flush dry chemicals with water.

**Review**
Answer: B
Response: Emergency care for a patient with a surface contact poisoning includes avoiding contaminating yourself and others and removing the irritating or corrosive substance from the patient as rapidly as possible. Dry chemicals must be brushed from the body prior to flushing with water.

**Review (1 of 2)**
3. When caring for a patient with a contact poisoning, it is important to remember to:
   A. prevent contamination of the patient.
      Rationale: The patient is already contaminated and you must try to minimize further contamination.
   B. avoid contaminating yourself or others.
      Rationale: Correct answer

**Review (2 of 2)**
3. When caring for a patient with a contact poisoning, it is important to remember to:
   C. let the hospital remove the surface poison.
      Rationale: Remove irritating or corrosive substances as rapidly as possible.
   D. immediately flush dry chemicals with water.
      Rationale: You must brush off dry chemicals first before washing.

**Review**
4. Most poisonings occur via the ________ route.
   A. injection
   B. ingestion
   C. inhalation
   D. absorption

**Review**
Answer: B
Rationale: Approximately 80% of all poisonings occur by ingestion.

**Review (1 of 2)**
4. Most poisonings occur via the ________ route.
   A. injection
      Rationale: Less than 20% of poisonings occur via injection.
   B. ingestion
      Rationale: Correct answer

**Review (2 of 2)**
4. Most poisonings occur via the ________ route.
   C. inhalation
Rationale: Less than 20% of poisonings occur via inhalation.
D. absorption
  Rationale: Less than 20% of poisonings occur via absorption.

124 Review
5. How much activated charcoal should you administer to a 55-pound child who swallowed a bottle of aspirin?
   A. 12.5 g
   B. 25 g
   C. 2 g/kg
   D. 50 g

Review
Answer: B
Rationale: The usual dose of activated charcoal for adults and children is 1 g of charcoal per kg of body weight. To convert a patient’s weight from pounds to kilograms, simply divide the weight in pounds by 2.2. Therefore, a 55-pound child should receive 25 g of activated charcoal (55 [pounds] ÷ 2.2 = 25 [kg]). The average pediatric dosing range for activated charcoal is 12.5 to 25 g.

126 Review (1 of 2)
5. How much activated charcoal should you administer to a 55-pound child who swallowed a bottle of aspirin?
   A. 12.5 g
      Rationale: 12.5 g at 1 g/kg dose would be given to a 27-lb child.
   B. 25 g
      Rationale: Correct answer

Review (2 of 2)
5. How much activated charcoal should you administer to a 55-pound child who swallowed a bottle of aspirin?
   C. 2 g/kg
      Rationale: The standard dose is 1 g/kg.
   D. 50 g
      Rationale: 50 g at 1 g/kg dose would be given to a patient weighing 110 lbs.

128 Review
6. After taking Vicodin for 2 years for chronic pain, a 40-year-old woman finds that her usual dosage is no longer effective and goes to the doctor to request a higher dosage. This is an example of:
   A. addiction.
   B. dependence.
   C. tolerance.
   D. drug abuse.

Review
Answer: C
Rationale: A person who takes a medication for a prolonged period of time often finds that higher doses of the medication are required to achieve the same effect. This is called tolerance.

130 Review (1 of 2)
6. After taking Vicodin for 2 years for chronic pain, a 40-year-old woman finds that her usual
dosage is no longer effective and goes to the doctor to request a higher dosage. This is an example of:
A. addiction.
   Rationale: This is a physiological or psychological dependence on a potentially harmful drug.
B. dependence.
   Rationale: This is a physical or psychological need to use a drug.

6. After taking Vicodin for 2 years for chronic pain, a 40-year-old woman finds that her usual dosage is no longer effective and goes to the doctor to request a higher dosage. This is an example of:
C. tolerance.
   Rationale: Correct answer
D. drug abuse.
   Rationale: This is the deliberate use of an illegal drug or too much of a prescribed drug.

7. Which of the following effects does drinking alcohol NOT produce?
   A. Induction of sleep
   B. Slowing of reflexes
   C. Inappropriate behavior
   D. Increased sense of awareness

Answer: D
Rationale: Drinking alcohol (ethyl alcohol) is both a sedative (decreases activity and excitement) and a hypnotic (induces sleep). It dulls the sense of awareness, slows reflexes, and reduces reaction time. It may also cause aggressive or inappropriate behavior and lack of coordination.

8. A 21-year-old male was found unconscious in an alley. Your initial assessment reveals that his respirations are slow and shallow, and his pulse is slow and weak. Further assessment reveals that his pupils are bilaterally constricted. His presentation is MOST consistent with an overdose of:
A. cocaine.
B. an opioid.
C. a stimulant drug.
D. methamphetamine.

**Review**

**Answer:** B

**Rationale:** Opioids are central nervous system depressant drugs; when taken in excess, they cause respiratory depression, bradycardia, and hypotension. Another common sign is miosis (constricted [pinpoint]) pupils. Cocaine, stimulant drugs (uppers), and methamphetamine have the opposite effect; they stimulate the central nervous system and cause tachycardia and hypertension.

**Review (1 of 2)**

8. A 21-year-old male was found unconscious in an alley. Your initial assessment reveals that his respirations are slow and shallow, and his pulse is slow and weak. Further assessment reveals that his pupils are bilaterally constricted. His presentation is MOST consistent with an overdose of:
   A. cocaine.
   Rationale: This increases the vitals, heart rate, pulse, and breathing.
   B. an opioid.
   Rationale: Correct answer

**Review (2 of 2)**

8. A 21-year-old male was found unconscious in an alley. Your initial assessment reveals that his respirations are slow and shallow, and his pulse is slow and weak. Further assessment reveals that his pupils are bilaterally constricted. His presentation is MOST consistent with an overdose of:
   C. a stimulant drug.
   Rationale: This increases the vitals, heart rate, pulse, and breathing.
   D. methamphetamine.
   Rationale: This increases the vitals, heart rate, pulse, and breathing.

**Review**

9. The mnemonic DUMBELS can be used to recall the signs and symptoms of a cholinergic drug poisoning. The “E” in DUMBELS stands for:
   A. emesis.
   B. erythema.
   C. ecchymosis.
   D. elevated blood pressure.

**Review**

**Answer:** A

**Rationale:** The mnemonic “DUMBELS,” which can help you recall the signs and symptoms of cholinergic drug poisoning (ie, organophosphates), stands for excessive defecation, urination, miosis (pupillary constriction), bronchorrhea, emesis, lacrimation, and salivation.

**Review (1 of 2)**

9. The mnemonic DUMBELS can be used to recall the signs and symptoms of a cholinergic drug poisoning. The “E” in DUMBELS stands for:
   A. emesis.
   Rationale: Correct answer
   B. erythema.
   Rationale: Erythema is a redness of the skin usually caused by fever or inflammation.
9. The mnemonic DUMBELS can be used to recall the signs and symptoms of a cholinergic drug poisoning. The “E” in DUMBELS stands for:
   C. ecchymosis.
   Rationale: Ecchymosis is bleeding from broken blood vessels into surrounding tissue.
   D. elevated blood pressure.
   Rationale: Elevated blood pressure usually causes bradycardia.

10. Food poisoning is almost always caused by eating food that contains:
    A. fungi.
    B. viruses.
    C. bacteria.
    D. protozoa.

Answer: C
Rationale: Food poisoning is almost always caused by eating food that contains bacteria. *Salmonella* poisoning and botulism—two common forms of food poisoning—are both caused by bacteria.