Lesson Objectives

1. Explain the common causes of fires and burns and how to prevent them.
2. Describe what happens in the body with a burn.
Lesson Objectives continued

5. Describe first aid for smoke inhalation.
6. Describe first aid for chemical burns.
7. Describe first aid for electrical burns and shocks.
Fires and Burns

- About 2,400 deaths every year
- 393,000 injuries lead to emergency department visit
- Most occur in the home
- Most can be prevented
Functions of Skin

- Protection from pathogens
- Fluid retention
- Temperature regulation
- Sensation
Layers of Skin
Burn Damage

- Burns may damage any of layers of skin.
- Burns into dermis allow pathogens to enter skin.
- Burns cause fluid loss:
  - Severe burns cause shock.
- Severe burns can cause loss of body heat:
  - Increases risk of hypothermia
Burns continued

- Damage to nerve endings causes pain.
  - Pain may be missing when nerve endings destroyed.
- Deep burns may also damage tissues below skin.
Common Causes of Fires Resulting in Burns

- Smoking
- Heating
- Cooking
- Playing with fire
- Electrical wiring
- Open flames
- Appliances or other equipment
Preventing Fires

• Make your home and workplace safe.
• Prevent fires in kitchen.
• Prevent fires caused by electricity.
• Keep children from playing with fire.
• Protect children from burns caused by fire.
If a Fire Occurs

- Evacuate everyone first.
- Do not use elevator.
- Feel doors before opening them.
- Stay near floor if air is smoky.
- Do not throw water on electrical or grease fires.
- If you cannot escape, stuff door cracks and vents, call 9-1-1.
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Preventing Heat Burns

- Keep all heat-producing objects away from children.
- Never let children use fireworks.
- Prevent scalding burns from hot water.
- Take precautions when cooking.
- Keep children away from stoves, countertops, hot foods.
Preventing Heat Burns in the Elderly

- Ensure all exits are kept clear.
- Keep eyeglasses, telephone and walking aids next to bed.
- Wear short sleeves/tight garments when cooking.
- Use oven mitts.
- Avoid cooking when sleepy or taking medications.
Preventing Heat Burns in the Elderly continued

- Do not smoke near oxygen.
- Use timer to turn off electric heating pad or blankets.
- Be aware of hot objects.
- Understand limitations of physical impairments or cognitive deficits.
- Visit American Burn Association’s website (ameriburn.org) for more tips.
Preventing Sunburn

- Keep infants younger than 1 out of direct sunlight.
- Use sunscreen and lip balm.
- Wear wide-brimmed hat and protective clothing.
- Limit sun exposure between 10 am and 4 pm.
- Be aware of reflective surfaces (water, snow).
Heat Burns

- Caused by sun, flames, contact with steam or any hot object
- Severity depends on amount of damage to skin and other tissues
Put Out the Fire!

- Stop, drop and roll.
- Use water on any flames.
- Cool the burned area.
- Remove clothing and jewelry.
Assessing a Burn

• What type of burn?
  • First-, second-, third-degree?

• How extensive?
  • How much body area?

• What specific body areas burned?

• Any special circumstances?
Classification of Burns

- **First-degree**
  - Superficial burn
  - Damages only outer layer of skin

- **Second-degree**
  - Partial-thickness burn
  - Damages skin’s deeper layers

- **Third-degree**
  - Full-thickness burn
  - Damages all layers of skin
Assessing Burn Size and Severity

- Rule of Nines used to estimate the body surface area of a burn
When to Call 9-1-1 for a Burn

- Any third-degree burn larger than a 50 cent piece
- Any second-degree burn more than 10% of body in adult (5% in child or older adult)
- Second- or third-degree burn on face, genitals, hands or feet
- Circumferential burns
- Burns around nose and mouth
- Victims with chronic health disorders
First Aid for Heat Burns

- Stop the burning and cool the area.
- Protect the burned area from additional trauma and pathogens.
- Provide supportive care.
- Ensure medical attention.
First Aid: First-Degree Burns

1. Stop the burning by removing the heat source.
2. Cool burned area with cool or cold running water.
3. Remove constricting items.
4. Protect burn from friction or pressure.
First Aid: Second-Degree Burns

1. Stop the burning by removing the heat source.
2. Cool burned area with cool or cold running water.
3. Remove constricting items.
4. For large burns, call 9-1-1.
5. Apply loose non-stick dressing over area.
First Aid: Third-Degree Burns

1. Stop the burning by removing the heat source.

2. Cool surrounding areas with cool or cold water (but not more than 20% of the body or 10% for child).

3. Remove constricting items.


5. Prevent shock.

6. Apply non-stick dressing to area.
Smoke Inhalation

- Any victim in a fire could have airway or lung injuries from smoke inhalation.
- Airway may swell and make breathing difficult.
- Damage to alveoli may affect ability to receive oxygen.
- Symptoms may not be obvious for up to 48 hours after exposure.
First Aid: Smoke Inhalation

1. Get victim to fresh air.
2. Call 9-1-1.
3. Help victim into position for easy breathing.
Chemical Burns

- Strong chemicals can burn skin on contact.
- Sometimes burns develop slowly.
- Acids, alkalis, liquids and solids can cause burns.
- Flush substance off skin with water as soon as possible.
Preventing Chemical Burns

- Read directions before using household products.
- Keep all products in original containers.
- Protect hands with heavy rubber gloves and cover other body areas.
- Ensure adequate ventilation with dangerous fumes.
First Aid: Chemical Burns

1. Send someone to check the Safety Data Sheet for the chemical.
2. Move victim to avoid fumes.
3. Brush off dry chemical from skin.
First Aid: Chemical Burns continued

4. Remove clothing and jewelry from burn area while flushing with water.

5. Flush entire area quickly with large amounts of running water until EMS personnel arrive.

6. Call 9-1-1.
Chemical in the Eyes

- Flush eye continuously with water for at least 15 minutes or until EMS personnel arrive.
- Have victim remove contact lens.
- Tilt victim’s head so water runs away from other eye.
- Call the Poison Control Center for responsive victim or 9-1-1 for unresponsive victim.
Electrical Burns and Shocks

- Occur when body contacts electricity
- Occur with faulty appliances or power cords or appliance in contact with water
Preventing Electrical Burns and Shocks

• Use outlet caps.
• Do not use nightlights that look like toys.
• Never use electrical appliances near water or when hands are wet.
• Inspect electrical cords for frayed insulation.
• Do not touch wire prongs when inserting or removing plugs.
Preventing Electrical Burns and Shocks continued

- Install ground fault circuit interrupter.
- Keep away from downed power lines.
- Do not let children play near electrical poles.
- Do not fly kites near electrical wires.
Preventing Lightning Strikes

• Seek shelter if you hear thunder within 30 seconds of seeing lightning strike.
• Get out of water immediately or off boat.
• Try not to be tallest object around.
• Stay away from metal objects.
• Stay in a closed motor vehicle (safer than being in the open).
Preventing Lightning Strikes continued

- If caught in open, crouch or squat with feet together, stay 15 feet away from others.

- Indoors:
  - Stay away from doors and windows.
  - Do not use electrical appliances.
  - Keep away from telephone lines and plumbing fixtures.
Injuries from Electricity

- External injuries may include entrance and exit wounds.
- Internal injuries caused by electricity flowing through body:
  - Heart rhythm irregularities
  - Cardiac arrest
1. Do not touch victim until it is safe. Unplug or turn off the power.
2. Call 9-1-1.
3. Give BLS to unresponsive victim.
4. Care for burn.
5. Treat for shock.
CHAPTER 11

Learning Checkpoint 4
Chapter – Opening Scenario

While visiting your aunt at her home, you join her in the kitchen as she cooks pasta for dinner. On the stove front burner is a large pot of boiling water. She is telling you about something that happened earlier that day and is not paying close attention to her cooking. Before you can react to stop her, you see her reach across the boiling water for the kettle on the back burner. She yelps as the steam burns her forearm, and jerks her arm back.

What should you do immediately?

What additional care should you give for this burn?
CHAPTER 11

Critical Thinking
Challenge Questions
Scenario 1

A welder just completed welding a broken piece of wrought iron fence. Before anyone can stop her, the daughter of an employee, playing in the area, runs by, trips and falls against the hot iron. The skin on her palm is instantly charred black.

Describe the immediate actions you should take.
Scenario 2

In the employee break room, someone emptied an ashtray into a trashcan, which then caught on fire and ignited the window curtains nearby. After evacuating everyone, you put the fire out with a fire extinguisher. Your throat feels a little raw, but otherwise you feel fine. The next morning, however, you are hoarse and coughing.

Is this just “normal” or do you need medical attention?
Scenario 3

A coworker ignores a “Wet Floor” sign, and while walking fast down a wet hallway slips and falls. Without thinking, he rubs his bruised face. Immediately his eye hurts with a burning sensation, and you see his hand is wet from the liquid that was on the floor.

How should you care for him?
You are helping a friend install an electric sump pump in his wet basement. When he thinks everything is ready, he plugs it in – and you hear a hiss as he jolts and falls to the floor, and lies unresponsive in a puddle of water. You are standing in the dry part of the basement.

What do you do?
CHAPTER 11

Discussion and Questions

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