1 Chapter 26
Burns

2 Burns
- Burns account for about 3,400 deaths/year.
- Burns are the most serious and painful injuries.
- A burn occurs when the body receives more radiant energy than it can _______________________.
  – Sources of this energy include heat, toxic chemicals, and electricity.

3 Burns
- Remember to perform a complete assessment on burn patients for other injuries.
- Children, older patients, and patients with chronic illnesses are more likely to experience __________________ from burn injuries.

4 Pathophysiology of Burns
- Pathophysiology
  – Burns are soft-tissue injuries created by the transfer of radiation, thermal, or electrical energy.
  – Thermal burns occur when the skin is exposed to temperatures higher than _______________________.

5 Pathophysiology of Burns
- Pathophysiology (cont’d)
  – Severity of a thermal injury correlates directly with:
    - _______________________
    - Concentration
    - Amount of heat energy possessed by the object or substance
    - Duration of exposure

6 Pathophysiology of Burns
- Pathophysiology (cont’d)
  – The greater the heat energy, the ______________________ the wound.
  – Exposure time is an important factor.
– People reflexively limit heat energy and exposure time.

7 Complications of Burns
- When a person is burned, the skin that acts as a barrier is destroyed.
- Burns to the __________________________ are of significant importance.
- Circumferential burns of the chest can compromise breathing.
- Circumferential burns of the extremity can lead to_________________________ compromise and irreversible damage.

8 The Burn Victim is at Risk For:
- Infection: most deaths from burns are caused by i________________________, days or weeks later
- Hypothermia: the body is unable to maintain body temp; even in hot weather
- Hypovolemia: due fluid loss from blisters and swelling
- Shock: may be respiratory, hypovolemic, or ________________________

9 Determining Burn Severity
- What is the __________________________ of the burn?
- What is the extent of the burn?
- Are any critical areas involved?
  - Face, upper airway, __________________________, feet, genitalia
- Are there any preexisting medical conditions or other injuries?
- Is the patient younger than __________________________ years or older than 55 years of age?

10 Classifications of Burns
- Superficial (1st Degree)
  - __________________________ Thickness (2nd Degree)
  - Full Thickness (3rd Degree)

11 Superficial Burns
- 1st degree burns
  - Involve only __________________________ skin layer
  - Characterized by reddening of the skin

12 Partial Thickness Burns
- 2nd degree burns
  - Involve the epidermis and some portion of the __________________________
Full Thickness Burns
- 3rd degree burns
- Extend through ___________________ of the skin
- Characterized by charring
  - Black or dark brown and leathery

Extent of Burns
- Can be estimated using the rule of ___________________ or the rule of palm
- Include only partial-thickness and full-thickness in estimation of the extent of burn injury
- Proportions differ for infants, children, and adults

Extent of Burns (Rule of 9’s)
- Used to determine percent of body surface that is burned (TBS)

<table>
<thead>
<tr>
<th>Area</th>
<th>Adult</th>
<th>Child</th>
<th>Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>9%</td>
<td>12%</td>
<td>18%</td>
</tr>
<tr>
<td>Arms</td>
<td>9%</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Torso (front)</td>
<td>18%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>Torso (back)</td>
<td>18%</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>Genitalia</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Legs</td>
<td>18%</td>
<td>16.5</td>
<td>13.5%</td>
</tr>
</tbody>
</table>

Rule of Palm (Palmer Method)
- The size of the patient’s palm is roughly equal to ___________________ of Total Body Surface (TBS)
- Used when burns are scattered about the body

Critical Burns (1 of 2)
- Full-thickness burns involving ___________________ , feet, face, upper airway, genitalia, or circumferential burns of other areas
- Full-thickness burns covering more than ___________________ of total body surface area
- Partial-thickness burns covering more than 30% of total body surface area
● Burns associated with respiratory injury

19 □ Critical Burns (2 of 2)
● Burns complicated by ________________________
● Burns on patients younger than 5 years old or older than 55 years old that would be classified as moderate on young adults
● Burns involving complications, diabetes, or other injuries or illnesses.

20 □ Moderate Burns
● 3rd degree burns of 2 to ________________________ TBS excluding face, hands, feet, or genitalia.
● 2nd degree burns of 15 to 30 % TBS.
● 1st degree burns of 50 to ________________________ TBS.

21 □ Minor Burns
● Full-thickness burns involving less than 2% of the total body surface area
● Partial-thickness burns covering less than 15% of the total body surface area
● Superficial burns covering less than ________________________ of the total body surface area

22 □ Thermal Burns
● Caused by heat
● Most commonly, caused by scalds or an open ________________________
● Coming in contact with hot objects produces a contact burn.
● A steam burn can produce a topical (scald) burn.
● A flash burn is produced by an explosion.

23 □ Chemical Burns
● Occur whenever a ________________________ substance contacts the body
● Eyes are particularly vulnerable.
● Fumes can cause burns.
● The severity of the burn is directly related to the:
  – Type of chemical
  – Concentration of the chemical
To prevent exposure, wear appropriate gloves and eye protection.

### Care for Chemical Burns

- Remove the chemical from the patient.
- If it is a powder chemical, brush off first.
- Remove all contaminated areas.
- Flush burned area with large amounts of water for about 15 to 20 minutes.
- Transport quickly.

### Electrical Burns (1 of 2)

- The human body is a good conductor.
- The type of electric current, magnitude of current, and voltage have effects on the seriousness of the burn.
- Make sure the power is off before touching the patient.
- There will be wounds (an entrance and an exit wound) to bandage.
- Transport the patient and be prepared to administer CPR.

### Electrical Burns (2 of 2)

### Taser Injuries

- In recent years, law enforcement has increased its use of Tasers.
  - Potential complications for patients with disorders.
  - Use of a Taser has been associated with dysrhythmias and sudden cardiac arrest.
  - Make sure you have access to an AED when responding to patients who have been exposed to Taser shots.

### Inhalation Burns (1 of 2)

- Can occur when burning takes place in enclosed spaces without ventilation
- Upper airway damage is often associated with the inhalation of gases.
- Lower airway damage is more often associated with the inhalation of
inhalation of chemicals and particulate matter.

30 Inhalation Burns (2 of 2)
- You may encounter severe upper airway ______________________ , requiring intervention immediately.
  – Consider requesting ALS backup.
- The combustion process produces a variety of toxic gases.
- Carbon monoxide intoxication should be considered whenever a group of people in the same place all report a headache or nausea.

31 Radiation Burns
- Potential threats include:
  – Incidents related to the use and transportation of radioactive ______________________
  – Intentionally released radioactivity in terrorist attacks
- You must determine if there has been a radiation exposure and then whether ongoing exposure continues to exist.

32 3 Types of Ionizing Radiation
- ______________________ : Little penetrating energy, easily stopped by the skin or a single piece of paper
- Beta: Greater penetrating power, but blocked by simple protective clothing
- Gamma: Very penetrating, easily passes through the body and solid materials
  – Most ionizing radiation accidents involve gamma radiation, or x-rays

33 Management of Radiation Burns (1 of 2)
- Protect yourself
- Patients with a radioactive source on their body must be initially cared for by a ______________________ responder.
- Irrigate open wounds.
● Irrigate open wounds.

● Notify the emergency department.

34 Management of Radiation Burns (2 of 2)
● Identify the radioactive source and the length of the patient’s exposure to it.
● Limit your __________________________ of exposure.
● Increase your distance from the source.
● Attempt to place shielding between yourself and the sources of gamma radiation.

35 Emergency Care for Burns (1 of 2)
● Follow proper BSI precautions.
● Move the patient away from the burning area.
● __________________________ the burning process.
● Dry, sterile, loose dressing and bandaging.
● Give oxygen if the patient has a critical burn.
● Protect from __________________________; regardless of the ambient temperature.

36 Emergency Care for Burns (2 of 2)
● Always look in mouth for soot or blisters.
● Prevent body heat loss.
● Rapidly estimate the burn’s severity.
● Check for traumatic injuries.
● Treat the patient for __________________________.
● Provide prompt transport.
● Transport to a burn center if critical.

37 Treatment Tips for Burns
● Use no types of gels or other ointments unless authorized by medical control or protocols.
● Do not use __________________________ bandages due to swelling.
● Sterile sheets (burn sheets) work well for large burn areas.
● ALWAYS examine the mouth and throat.

38 Functions of Dressing and Bandaging for Burns
● Control bleeding.
● Protect the wound
● Prevent contamination

39  Pediatric Needs
● Burns to children are considered more ___________________________
  than burns to adults.
● Children have more surface area relative to body mass than adults.
● Many burns result from abuse.
● Report all suspect cases of abuse to the authorities.