35

Pediatric Emergencies
OBJECTIVES

35.1 Define key terms introduced in this chapter. Slides 19, 21, 54

35.2 Describe the anatomic and physiologic characteristics of infants and children compared to adults and the implications of each for assessment and care of the pediatric patient. Slides 19–26

continued
OBJECTIVES

35.3 Discuss the normal vital signs ranges for infants and children. Slide 19

35.4 Adapt history-taking and assessment techniques to patients in each pediatric age group. Slides 28–30
OBJECTIVES

35.5 Discuss special considerations in dealing with adolescent patients. Slide 31

35.6 Discuss the importance of involving caretakers in the assessment and emergency care of pediatric patients and anticipate reactions of parents and caregivers in response to an ill or injured child. Slides 34–35

continued
OBJECTIVES

35.7 Discuss the use of the pediatric assessment triangle in assessing pediatric patients. Slides 38–40

35.8 Explain special aspects of the steps of assessment for pediatric patients, including the scene size-up, primary assessment, secondary assessment with physical exam, and reassessment. Slides 42–58

continued
OBJECTIVES

35.9 Demonstrate adaptations to techniques and equipment to properly manage the airway, ventilation, and oxygenation of pediatric patients. Slides 60–69
OBJECTIVES

35.10 Compare and contrast the causes, presentation, and management of shock in pediatric and adult patients. Slides 70–72

35.11 Recognize the particular concern for preventing heat loss in pediatric patients. Slide 73

continued
35.12 Recognize the signs, symptoms, and history associated with common pediatric medical emergencies including: difficulty breathing, croup, epiglottitis, fever, meningitis, diarrhea and vomiting, seizures, altered mental status, poisoning, drowning, and sudden infant death syndrome (SIDS). Slides 76–91
35.13 Discuss injury patterns common in pediatric trauma patients. Slides 94–107
35.14 Discuss care for burns in pediatric patients. Slides 109–110

continued
35.15 Recognize indications of child abuse and neglect, and explain your ethical and legal responsibilities when you suspect child abuse or neglect. Slides 112–117
OBJECTIVES

35.16 Manage pediatric patients with special challenges, including those dependent on tracheostomy tubes, home artificial ventilators, central intravenous lines, gastrostomy tubes, and shunts. Slides 120–126
MULTIMEDIA

- Slide 32  Communicating With Toddlers Video
- Slide 36  Caring and Empathy Video
- Slide 92  Information About SIDS Video
CORE CONCEPTS

- Anatomic and physiologic characteristics of children
- Psychological and personality characteristics of children of different ages
- How to interact with pediatric patients and their supporters and caregivers
CORE CONCEPTS

- How to assess the pediatric patient
- How to identify and treat special concerns with the ABCs, shock, and potential hypothermia
- How to assess and care for various pediatric medical emergencies, especially respiratory disorders

continued
CORE CONCEPTS

• How to assess and care for various pediatric trauma emergencies
• How to deal with issues of child abuse and neglect and children with special needs
Topics

• Developmental Characteristics of Infants and Children
• Supporting the Parents or Other Care Providers
• Assessing the Pediatric Patient
• Special Concerns in Pediatric Care
• Pediatric Medical Emergencies
Topics

- Pediatric Trauma Emergencies
- Child Abuse and Neglect
- Infants and Children With Special Challenges
- The EMT and Pediatric Emergencies
Developmental Characteristics of Infants and Children
Pediatric Age Categories

• Newborns and infants: birth to 1 year
• Toddlers: 1–3 years
• Preschool: 3–6 years
• School age: 6–12 years
• Adolescent: 12–18 years
Anatomic and Physiologic Differences

• Infants and children differ from adults in psychology, anatomy, and physiology
• Understanding differences will help you assess and care for young patients
The Head
Airway and Respiratory System

Child has smaller nose and mouth.

In child, more space is taken up by tongue.

Child’s trachea is narrower.

Cricoid cartilage is less rigid and less developed.

Airway structures are more easily obstructed.
Chest and Abdomen

- Less developed, more elastic in young patients
- Infants and children: abdominal breathers
- Abdominal organs less protected than in adults
Body Surface

- Larger than adult’s in proportion to body mass
- More prone to heat loss through skin
- More vulnerable to hypothermia
Blood Volume

9-pound newborn: Blood volume equals less than a 12-oz (335 mL) can of a soft drink

60-pound child: Blood volume equals about a 2-liter bottle of a soft drink

125-pound adult: Blood volume equals about two 2-liter bottles of a soft drink
Psychological and Personality Characteristics
Think About It

• What techniques would you utilize when attempting to assess a crying infant?
Interacting with the Pediatric Patient

continued
Interacting with the Pediatric Patient

- Identify yourself
- Let child know that someone has called or will call parents
- If no life threats, continue at a calm pace during the evaluation process
- Let child have a nearby toy
- Kneel at child’s eye level

continued
Interacting with the Pediatric Patient

- Smile
- Touch or hold child’s hand or foot
- Do not use equipment without first explaining what you will do with it
- Let child see your face
- Stop occasionally to find out if child understands
- Never lie to child
The Adolescent Patient
Communicating With Toddlers Video

Click [here](#) to view a video on the subject of communicating with toddlers.
Supporting the Parents or Other Care Providers
Supporting the Parents or Other Care Providers

- Possible reactions to child’s illness/injury: denial, shock, crying, screaming, anger, self-blame, guilt
- May interfere with care of child
- Ask to help by holding/comforting child and giving medical history
Caring and Empathy Video

Click here to view a video on the subject of caring and empathy for patient and family.
Assessing the Pediatric Patient
Scene Size-Up and Safety—Pediatric
Primary Assessment: Pediatric Care

- Rapidly identifies critical patient
- Essential component of pediatric assessment
Forming a General Impression
Assessing Mental Status

- Alert
- Verbal
- Painful
- Gently tap unresponsive infant or child
Assessing Airway
Assessing Breathing

- Altered mental status
- Flared nostrils
- Pale or bluish lips or mouth
- Stridor, grunting
- Breathing rate greater than 60
- Retraction of muscles
- Wheezing, working hard at breathing or struggling to breathe
- Decreased muscle tone
- Poor peripheral perfusion
- Use of abdominal muscles
Assessing Circulation
Identifying Priority Patients
Secondary Assessment: Pediatric
Physical Exam: Pediatric

- Start with toes/trunk and work way toward head.
- If no injuries, patient should be held in parent’s lap
- Protect child’s modesty
- Explain why each piece of clothing must be removed
Physical Exam: Head

- Do not apply pressure to soft spots
- Meningitis and head trauma can cause bulging of fontanelle
- Sunken fontanelle may be due to dehydration
Physical Exam: Nose and Ears
Physical Exam: Neck

- Vulnerable to spinal cord injuries
- Children have proportionately larger and heavier heads
- Muscles and bone structures are less developed
- May be sore, stiff, or swollen
Physical Exam: Airway
Physical Exam: Chest

- Be alert for wheezes and other noises
- Check for symmetry
- Check for bruising
- Check for paradoxical motion and retraction
Physical Exam: Abdomen and Pelvis

• Abdomen
  – Note if rigid
  – Check for distension or discoloration
  – Abdominal injury may impede movement of the diaphragm

• Pelvis
  – Check for stability of pelvic girdle
Physical Exam: Extremities

- Capillary refill
- Distal pulse
- Pulses
- Motor
- Sensory
Reassessment: Pediatric

- Mental status
- Maintain open airway
- Monitor breathing
- Reassess pulse

continued
Reassessment: Pediatric

- Monitor skin color, temperature, and moisture
- Reassess vital signs
- Ensure all appropriate care and treatment are being given
Special Concerns in Pediatric Care
Maintaining an Open Airway

- Align and open airway
- Use head-tilt, chin-lift if no trauma; jaw-thrust with spinal immobilization if trauma is suspected
- Suction
- Check blockage of airway by tongue
Oropharyngoeal Airway
Nasopharyngeal Airway
Clearing an Airway Obstruction

- Identify type: partial or complete
- Partial obstruction
  - Place patient in position of comfort
  - Offer high-flow oxygen
  - Transport
- Complete obstruction
  - Perform airway clearance techniques
Clearing an Airway Obstruction

continued
Clearing an Airway Obstruction
Providing Supplemental Oxygen and Ventilations

continued
Providing Supplemental Oxygen and Ventilations

continued
Providing Supplemental Oxygen and Ventilations

continued
Providing Supplemental Oxygen and Ventilations
Common Causes of Shock in Pediatric Patients

- Diarrhea and/or vomiting
- Infection
- Trauma (especially abdominal injuries)
- Blood loss
- Allergic reactions
- Poisoning
- Cardiac events (rare)
Signs and Symptoms of Shock in Pediatric Patients

- Apathy or lack of vitality.
- Rapid respiratory rate.
- Rapid or weak and thready pulse.
- Altered mental status.
- Pale, cool, clammy skin.
- Absence of tears when crying.
- Falling blood pressure.
- Delayed capillary refill.
Caring for Shock in Pediatric Patients

Head is large for body size. Collisions often produce head injuries. “Soft spots” in infants.

Mouth. Foreign objects obstructing airway.

Listen for sounds of breathing, be alert for wheezing.

Pelvis. Check for instability in trauma.

Nose and ears. Blood, clear fluids—or both—indicate possible skull fracture.

Neck. Cervical-spine injuries since head is so heavy.

Chest. Check closely for even expansion.

Abdomen. Rigid or tender areas, distention.
Protecting Against Hypothermia

- Cover patient’s head and body
- Keep patient compartment warm
- Avoid rough handling
- Consult medical control about active rewarming of patient
Think About It

• How do you balance the need to examine a hypothermic patient with the need to keep the patient covered to maintain warmth?
Pediatric Medical Emergencies
Respiratory Disorders

• Likeliest cause of cardiac arrest in a child, other than trauma
• Distinguish whether probable cause is upper or lower airway problem
• Care for upper airway obstruction not indicated for lower airway disorder
• Critical to be alert for early signs of respiratory failure
Signs of Breathing Difficulty

- Nasal flaring
- Retractions
- Use of abdominal muscles
- Stridor (high-pitched, harsh sound)
- Audible wheeze
- Grunting
- More than 60 breaths/min

continued
Signs of Breathing Difficulty

- Altered mental status
- Slowing or irregular respiratory rate
- Cyanosis
- Decreased muscle tone
- Poor peripheral perfusion
- Decreased heart rate
Differentiating Upper and Lower Airway Disorders

• Upper airway disorder
  – Affects mouth, throat, larynx
  – Foreign body obstructions, trauma, swelling from burns and infections
  – Commonly identified by difficulty breathing, stridor, or difficulty speaking
Differentiating Upper and Lower Airway Disorders

• Lower airway disorder
  – Affects large and small bronchiole tubes, alveoli
  – Asthma, pneumonia, other respiratory infections
  – Commonly identified by difficulty breathing, wheezing lung sounds
Croup

- Mild fever and some soreness (daytime)
- Loud seal-bark cough
- Difficulty breathing
- Restlessness
- Paleness with cyanosis
Epiglottitis

- Sudden onset of high fever
- Painful swallowing (child often drools)
- Tripod position
- Patient sits very still
- Appears more ill than with croup
Fever

• Remove child’s clothing
• Cover in towel soaked in tepid water
• Monitor for shivering
• Follow protocols for water or ice chips
• Don’t submerge in cold water
Meningitis

- Monitor ABCs, vital signs
- Provide high-concentration oxygen by nonrebreather mask
- Ventilate with BVM or pocket mask if necessary
- Provide CPR
- Be alert for seizures
- Transport immediately
Diarrhea and Vomiting

- Maintain open airway
- Provide oxygen
- Contact medical control if signs of shock are present
- Immediate transport
Seizures

- Maintain open airway (*not* oral airway)
- Position on side if no spinal injury
- Be alert for vomiting
- Provide oxygen
- Transport
Altered Mental Status

- Be alert for MOI
- Be alert for signs of shock
- Look for evidence of poisoning
- Attempt to get history of diabetes and seizure disorder
Poisoning

• Contact poison control center
• Consider activated charcoal
• Provide oxygen
• Transport
• Continue to monitor responsiveness
Care for Unresponsive Poisoning Patient

- Ensure open airway
- Provide oxygen
- Be prepared to provide artificial ventilation
- Transport
- Rule out trauma
Drowning

• Provide artificial ventilation or CPR
• Protect airway
• Consider spinal immobilization
• Protect against hypothermia
• Treat any trauma
• Transport
Sudden Infant Death Syndrome

- No accepted reason why these babies die
- Treat as any patient in cardiac or respiratory arrest
- Resuscitate unless there is rigor mortis
- Give emotional support for parents
Information About SIDS Video

Click [here](#) to view a video on the subject of Sudden Infant Death Syndrome (SIDS).
Pediatric Trauma Emergencies
Pediatric Injury Patterns

• During motor vehicle collisions
  – Unrestrained: head and neck
  – Restrained: abdominal, lower spinal

• When struck by vehicle
  – Head
  – Abdominal, possible internal bleeding
  – Lower extremity, possible fractured femur
Pediatric Injury Patterns
Examine Head
Examine Eyes
Examine Neck
Examine Chest
Auscultate for Breath Sounds
Examine Abdomen
Examine Pelvis
Examine Legs
Examine Back and Spine
Immobilizing Child With KED
Burns

• Identify candidates for burn centers
• Cover burn with nonadherent sterile dressing
• Ensure open airway
• Suction as needed
• Immobilize spine
• Transport immediately

continued
Burns

Note: Each arm totals 9% (front of arm 4 1/2 %, back of arm 4 1/2 %)

Front 18%
Back 18%
Child Abuse and Neglect
Signs of Possible Physical and Sexual Abuse

- Slap marks, bruises, abrasions, lacerations, incisions
- Broken bones
- Head injuries
- Abdominal injuries
- Bite marks
- Burn marks
Possible Indicators That Adult Is Abuser

- Inappropriate concern about child
- Trouble controlling anger
- Appears to be in deep depression
- Indications of alcohol or drug abuse
- Suicidal thoughts
Care for Abuse Patients

- Dress and provide other appropriate care
- Preserve evidence
- Transport
Role of EMT in Cases of Suspected Abuse or Neglect

• Gather information from adults without judgment
• Talk with child separately
• Plainly and clearly report to medical staff any finding or suspicion regarding physical or sexual abuse

continued
Role of EMT in Cases of Suspected Abuse or Neglect

- Use terms *suspected* and *possible* even when talking to partner, hospital staff, police, and superiors
- Contact state child abuse reporting hotline
Think About It

- What should be your concern if a parent in a possible child abuse case reveals suicidal ideas?
Infants and Children With Special Challenges
Common Special Challenges

- Premature infants with lung disease
- Infants and children with heart disease
- Infants and children with neurological disease
- Children with chronic disease or altered function from birth
Tracheostomy Tubes

• Potential complications
  – Obstruction
  – Bleeding from or around tube
  – Air leaking around tube
  – Infection
  – Dislodged tube

continued
Tracheostomy Tubes
Home Artificial Ventilators
Central Intravenous Lines
Care for Patients With Gastrostomy Tubes

• Be alert for altered mental status
• Ensure open airway
• Suction airway as needed
• Provide oxygen if needed
• Transport sitting or on right side
Care for Patients With Shunts

- Maintain open airway
- Ventilate with pocket mask or BVM and high-concentration oxygen
- Transport patient
The EMT and Pediatric Emergencies
Psychiatric Effects on EMT

- Pediatric calls are among the most stressful
- May identify patient with own children
- May be anxious about dealing with children
- Most serious stresses over very sick, injured, or abused child, or child who dies during or after emergency care
Dealing With Stress

- Communicating with and treating children can be learned
- Care mostly consists of applying knowledge of adult patients and adjusting for children
- Talk with other EMTs
- Talk with your service’s counselor
Chapter Review

- Assessment and treatment of children is often different than for adults.
- Children often differ from adults both anatomically and psychosocially.

continued
Chapter Review

• Assessment and treatment procedures must take into account these specific differences.

• As an EMT, you must learn these differences to enable you to better serve this special population.
Remember

• Pediatric patients present unique anatomy and psychosocial development. EMTs must develop an understanding of core differences to best establish assessment baselines and expectations.

continued
Remember

• Caregiver interaction sets the tone for scene management. Be professional with a calm demeanor.

• Pediatric assessment triangle allows rapid assessment of severity of injury or illness by reviewing appearance, work of breathing, and skin.
Remember

• Proper pediatric assessment takes into account differences in anatomy and psychosocial development.
• Airway and breathing maintenance, shock care, and prevention of hypothermia are universal points of importance in pediatric care.

continued
Remember

• Shock is subtle in children. Learn to recognize the signs of compensation.

• Recognize respiratory failure in children, and differentiate upper and lower airway disorders.
Remember

• Different anatomy leads to slightly different patterns of traumatic injury in pediatric patients. Use your knowledge of pediatric A&P to enhance assessment and treatment.

• Be alert for findings of potential abuse. Treat medical issues first, then document and report.

continued
Remember

• Many children have special health care needs. Most caregivers are trained to handle emergencies and can be important resources for assessment. Be prepared for unusual circumstances.

• Critical incident stress management is essential to an EMT’s well-being plan.
Questions to Consider

• How do you plan to approach your first pediatric call?
• How do you determine appropriate mental status for a child?
• Given certain situations, how would you involve the parent or caregiver in treatment?
Critical Thinking

• You are called to a home for a 3-year-old child who has been running a low-grade fever all day and now is drooling. As you enter the child’s bedroom, you hear what you think is a seal-like bark.
Critical Thinking

• What do you suspect is wrong with this patient? How will you and your partner treat this patient and handle the situation?
Please visit Resource Central on [www.bradybooks.com](http://www.bradybooks.com) to view additional resources for this text.