

Introduction

- Children are a unique population that requires special consideration and assessment.
- You must understand anatomical, physiological, and developmental changes.
- EMSC is a nationally recognized education organization that provides resources for dealing with the care of children.

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Anatomical and Physical Differences

 Although children have the same basic anatomy as adults, they are far from being "small adults"



Family-Centered Care

- One of the most dramatic changes in the prehospital environment is a focus on involving family members in the care of their children
 - You may choose to use this approach in your care of infants and children

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Family-Centered Care

- Another challenging aspect is allowing parents/caregivers to stay with their child during a resuscitation attempt
 - This may be important for the parents even though some providers may worry that the presence of family members increases the potential for legal problems if the outcome is not positive
 - Others believe that the care that providers give may be compromised because of the presence of families

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Family-Centered Care

- The third major aspect involves care of children with special healthcare needs
 - More children with special needs are being cared for at home, many with complicated medical conditions

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Assessment

- Requires special skills and knowledge
- Begin when you first receive information about the patient
- Formulating a course of action before you reach the scene saves time that may be critical for the patient's ultimate outcome

Assessment

- You may learn whether a parent or adult family member is with the child
 - If one is not present, consider issues of consent for treatment
 - Use your judgment to involve parents in your assessment and management of the infant/child

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Assessment

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- Become familiar with normal developmental characteristics to accurately assess infants and children
- Relate to children both physically and verbally at their level
 - > Never tower over them/talk down to them
 - Learn and use the patient's name, communicate directly with him, not just the caregiver, if age is appropriate

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Assessment



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Assessment

• Primary assessment

- General impression/responsiveness
 - Begin by forming a general impression as you approach
 Responsiveness should be immediately assessed using
 - AVPU tool Process for primary assessment is
 - Process for primary assessment is the same for a pediatric patient as for an adult

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Assessment

Primary assessment

Airway and breathing

- Children have a higher metabolic rate and therefore greater demand for O₂ than adults
 Also more sensitive to lack of O₂
- Controlling the airway providing adequate oxygenation and ventilation can mean the difference between life and death

Assessment

- Primary assessment
 - > Airway and breathing
 - Because of anatomical differences in a child's airway, be gentle when performing essentials of airway control
 - Proper airway positioning using the head-tilt/chin-lift or jaw-thrust method is a simple effective technique

Assessment

In school-aged or younger child, padding should be placed under the child to raise the body to an anatomical position



Oral Airways

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 Use of a tongue depressor will likely be necessary for children

Assessment

- Primary assessment
 - Airway and breathing
 - When the airway is open and clear, check quality of breathing
 - When hypoxia occurs in a child, the child's body compensates by increasing the respiratory rate and using additional muscles to breath

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Assessment

• Primary assessment

- Airway and breathing
 - Signs of respiratory distress include the
 - following:
 - Increased respiratory rate
 - Shallow breathing with minimal chest movement
 - Head bobbing with each breath
 - Gasping/grunting
 - Stridor/snoring
 - Retractions

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Assessment

Primary assessment

Circulation

- In the initial assessment check pediatric patient's pulse, skin signs, and symptoms for external bleeding
- Skin should be assessed for color, temperature, and condition
- A pediatric patient has less total blood volume than an adult

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Assessment

- Primary assessment
 - Disability
 - · Child's responsiveness can be rapidly assessed using AVPU tool

 - > The more detailed GCS score should be calculated if possible

Assessment

- Primary assessment
 - Priority
 - · Most pediatric patients will not have a lifethreatening illness/injury
 - Assessment should focus on the most significant complaints and their likely causes

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Assessment

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- Primary assessment
 - Priority
 - Common signs and symptoms that a pediatric patient is in crisis include:
 - > Unresponsiveness
 - Not breathing
 - Breathing that is noisy

 - > Flaring of the nostrils
 - > Bluish color or pale
 - No pulse
 - Excessive bleeding

> Pulses are too fast/too slow Altered mental status

- Change in muscle strength
- > Use of accessory muscles >> Uneven chest movement/expansion
 - > Failure to recognize parents
 - Body temperature too high/too low

Assessment

- Physical assessment
 - > Begin with child's feet rather than head
 - > First examine an area that is distant from where child tells you it hurts
 - > It is important throughout the physical examination to help maintain the child's temperature
 - Take vital signs

Assessment

History

Detailed history may be taken at the scene/during transport if patient is accompanied by parent/caregiver

 Communicating with the patient can be very challenging Infants and children may be unable/unwilling to communicate with you

Assessment

Reassessment

- > After gathering the history and performing a physical examination, give appropriate care
- Continue treatments and make reassessments/ongoing assessments

- Airway obstructions
 - > FBAO are more common in pediatric patients,
 - especially toddlers, for the following reasons: • Smaller airway passages, easily obstructed by swelling or food
 - Narrowest aspect of airway is below vocal cords
 - Often eat while running, walking, or other active movement
 - Often place objects in their mouths to inspect

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• Peanuts, hot dogs, and grapes (common causes of airway obstruction) are commonly given to children

Common Pediatric Conditions

- Airway obstructions
 - > Partial airway obstruction
 - Eating while moving increases the risk of airway obstruction
 - If airway obstruction is partial/incomplete, child is often found sitting upright, acting alert, and appearing scared/anxious

Common Pediatric Conditions

Airway obstructions

- Partial airway obstruction
 - To treat an alert child, determine if obstruction can be removed by having child cough
 - If child can cough ask him to keep coughing
 - If child cannot cough, if coughing does not clear obstruction, or if removing obstruction does not clear airway, take additional measures
 - If infant, child, or adolescent become unconscious, immediately begin using methods to clear a complete obstruction
 - > This situation is a true life-threatening emergency

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Common Pediatric Conditions

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Airway obstruction

- Complete airway obstruction
 - For infants <1 year of age you can confirm complete airway obstruction by observing inadequate respirations or an inability to cry
 - For children 1 year of age to adolescence, confirm a complete airway obstruction by observing for inadequate respiration, an inability to cry, or ask older children if they can speak

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Common Pediatric Conditions

Respiratory emergencies

- Respiratory distress
 - Shortness of breath or a feeling of shortness of breath with labored breathing
 - Assume a patient is in respiratory distress any time the respiratory rate is too fast/too slow or if child appears to be working hard to breathe

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Common Pediatric Conditions

Respiratory emergencies

Common signs of respiratory distress include:

- Nasal flaring during inhalation
- Intercostal retractions (between ribs)
- Supraclavicular (around collarbone)
- Subcostal retractions (around diaphragm)
- Cyanosis
- Stridor
- Wheezing
- Grunting
- Changes in mental status

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- Respiratory emergencies
 - Respiratory failure and arrest
 - + Respiratory failure-inability to maintain adequate $\rm O_2$ and $\rm CO_2$ exchange
 - Patient may still be breathing, but tissues are not being oxygenated adequately
 - Respiratory arrest-breathing has completely stopped
 Patient in respiratory failure will progress into respiratory arrest unless life-saving treatments are started immediately

Common Pediatric Conditions

Respiratory emergencies

Respiratory failure and arrest

- Often follow respiratory distress
- Focus on initial assessment and do not progress to a physical examination/history if the infant/child is in respiratory failure or arrest
- Rate of <20 breaths/minute in an infant and <10 breaths/minute in a child may indicate respiratory failure if other signs and symptoms are present
- Children in respiratory failure may appear to be sleepy or even have a "death look" about them

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Common Pediatric Conditions

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Respiratory emergencies

Respiratory failure and arrest

- In your initial assessment you may find a slowed respiratory rate and heart rate
- Immediate treatment and transport are imperative
 Child in respiratory arrest must be ventilated to provide a
- chance for recovery
 - Cardiac arrest usually occurs in pediatric patients because of respiratory arrest

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Common Pediatric Conditions

• Respiratory emergencies

Asthma

- Common cause of respiratory distress and failure
- Affects >5 million children in the United States alone
- Most common chronic childhood illness
- Obstructive respiratory condition characterized by recurring attacks of difficulty breathing, coughing, and wheezing caused by constriction of the air passages in the lungs
- Attacks occur when the airway reacts to an allergen
- Ask patients/parents for information about their treatment and any medication they may be taking

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Common Pediatric Conditions

Respiratory emergencies

Croup

- Viral infection that usually affects infants and children 3 months to 3 years of age
- A patient with croup generally has had symptoms of a cold/upper respiratory tract infection that has progressed into upper airway obstruction and respiratory distress
- A child with croup has a characteristic "seal-like" bark or cough that is worse at night
- · More common in the fall and early winter months

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Common Pediatric Conditions

- Circulatory failure
 - Failure of cardiovascular system to supply body's cells with enough oxygenated blood to meet metabolic demands

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- Another name for circulatory failure is shock
- Most common cause of shock in children is hypovolemia from either loss of blood or dehydration _____

Common Pediatric Conditions

- Circulatory failure
 - In the initial assessment you may find the child has a heart rate that is either rapid/slowed, a respiratory rate that is altered/irregular, and a mismatch in quality of central and distal pulses
 - To treat a pediatric patient in shock, ensure an open, clear airway and provide oxygenation and assisted ventilations

Common Pediatric Conditions

Seizures

- Including seizures caused by fever, should be considered potentially life threatening
- > Are a sudden, involuntary contraction of muscles as a result of an electrical discharge in the brain
- Many people are familiar with grand mal seizures or convulsions, but there are many other types
- An estimated 5% of children will have at least one seizure by the age of 6 years

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Common Pediatric Conditions

Seizures

- In children, seizures are often caused by:
 - Trauma
 - Lack of O₂ (hypoxia)
 - Low blood sugar (hypoglycemia)Fever (febrile state)
 - Cortain di
 - Certain diseases
- Febrile seizures, caused by a rapidly rising body temperature, are the most common form of seizures in children

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Common Pediatric Conditions

Seizures

- After the seizure, conduct an initial assessment, gather history, and perform a physical examination and ongoing assessments
- Any child who has had a seizure needs to be evaluated by a physician
 - Ensure transporting agency is on the way

Altered mental status

- Any state of awareness that differs from what is usual for the child
 - Best way to interpret whether a child's behavior is usual is to accept what the parent says about how the child is acting

Common Pediatric Conditions

Altered mental status

- Main causes in children:
 - Trauma, such as head injury/blood loss
 - Hypoxia resulting from an obstructed airway/chemical exposure
 - Ingestion/absorption of a known/unknown chemical or medication (poisoning/overdose)

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- Drug/alcohol use
- Hypoglycemia (diabetes)
- Seizure
- Severe infection
- Heat exhaustion/dehydration

Common Pediatric Conditions

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- SIDS
 - Sudden and unexpected death of an apparently normal, healthy infant
 - Typically during first year of life
 - Death usually occurs during sleep with no physical or autopsy evidence of disease

Common Pediatric Conditions

SIDS

- Typically results in a call to a home in which a child is found "not breathing"
- Ensure scene is safe
- Comfort, calm, reassure parents while waiting for arrival of additional EMS personnel
- Attempt to resuscitate unless infant is obviously stiff
- Be careful not to make any comments that might suggest the parents are to blame
- Perform an initial assessment

Common Pediatric Conditions

SIDS

- An infant still in the crib may have bruised areas on parts of the body in contact with the bed
- > Blood-tinged fluids may be present about the mouth and nose
- If infant has been dead for <30 minutes, body may be cold to the touch and have rigor mortis/stiffening of the muscles
- If infant has been found soon after the heart stopped, follow full resuscitation procedures and perform CPR
 - Only chance for survival is prompt resuscitation Mostly items and derived items © 2010 by Mostly, Inc., an affiliate of Elsevier Inc.

Common Pediatric Conditions

Trauma

- Leading cause of death in all pediatric age groups
- Your responsibility is to treat life-threatening injuries first, care for non-life-threatening injuries, and ensure that your actions cause no further harm
- Specific types of trauma have typical patterns of injury

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- Trauma
 - Infants and toddlers are very susceptible to head injuries
 - Neck injuries from falls are common in adolescents
 - Young children and infants have soft, pliable ribs, little soft tissue, and are more susceptible to internal organ damage caused by blunt trauma

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Common Pediatric Conditions

Trauma

- Abdominal wall in younger children is poorly developed and easily transmits forces to internal organs
- According to the American Academy of Pediatrics (AAP) fires and burns are the fourth most common cause of unintentional injury-related deaths

Child Abuse and Neglect

- Defined as a situation in which a caregiver intentionally causes a child physical, mental, or emotional harm and the child's condition is impaired or endangered
- About 650,000 cases are confirmed each year and many more cases are unreported

Child Abuse and Neglect

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- As an EFR, you will likely encounter child abuse
 - > There are four types:
 - Physical abuse
 - Physical neglect (including medical neglect)
 - Emotional abuse
 - Sexual abuse
 - Sometime the abuse is obvious and other times it is not

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Child Abuse and Neglect

- If assessment finds the child is medically stable
 - Gather a history and perform a physical examination
 - Conduct an ongoing assessment
 - During the examination, you should observe the child's skin for any signs of abuse or neglect such as:
 - > Burns
 - Scalding
 - > Whip marks
 - > Bruises at different stages of healing
 - Cigarette burns
 - Bite marks
 - Severe diaper rash

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Child Abuse & Neglect



Child Abuse and Neglect

- Shaken baby syndrome
 - Specific type of abuse in infants and children <2 years of age</p>
 - Occurs when violent shaking of an infant leads to severe head injuries
 - Damage to nerve tissue deep within the brain
 - Tearing of the veins between the brain and skull liningRupture of retinal blood vessels

