

Assessment and Emergency Care of Pediatric Emergencies

Scene Size-up

Scene Safety	Take standard precautions. Note the position in which the pediatric patient is found. Look for any possible safety threats. Bring medications with you that could have been ingested by the pediatric patient. Perform an environmental assessment to obtain information on the chief complaint, number of patients, MOI or NOI, and ongoing health risks. Inspect the physical environment and watch the family-child and/or caregiver-child interactions.
Mechanism of Injury (MOI)/ Nature of Illness (NOI)	Determine the MOI/NOI. Observe the scene and look for indicators that will assist you with this. Gather information from the patient, parent, caregiver, or any bystanders. The nature of the problem may not be readily apparent until more information is gathered. Consider spinal immobilization at a traumatic scene in any pediatric patient with a significant MOI.

Primary Assessment

Form a General Impression	When assessing a pediatric patient, use the pediatric assessment triangle (PAT) to form a general impression.
PAT Triangle	Use the PAT to identify immediate threats to life. Decide if your patient is "sick" or "not sick." Perform a 15- to 30-second visual assessment of the patient. Evaluate the patient's appearance, work of breathing, and circulation to skin. Based on the findings of the PAT, determine if the patient is stable or requires urgent care.
Appearance	Note the pediatric patient's level of consciousness or interactiveness and muscle tone. This will provide information on the pediatric patient's cerebral perfusion and the overall function of the central nervous system. Use AVPU and TICLS.
Work of Breathing	Work of breathing increases as the body compensates for abnormalities in oxygenation and ventilation. Signs of increased work of breathing are tachypnea, grunting, wheezing, and retractions of the intercostal muscles or sternum.
Circulation to the Skin	Signs that indicate a sick pediatric patient include pallor of the skin and mucous membranes, mottling, and cyanosis.
Stay or Go	Assess the ABCs, treat any life threats, and transport immediately if the pediatric patient requires urgent care. Continue with the remainder of the pediatric patient assessment process if the patient is stable.
Hands-on ABCs	Perform a hands-on ABCs assessment. Assess and treat any life threats to the airway, breathing, and circulation and then assess the pediatric patient's central nervous system, and expose any injuries.
Airway	Ensure the airway is open, clear, and patent. Position the airway in a neutral sniffing position. You may have to place a small towel roll under the pediatric patient's shoulders to maintain the neutral airway. Unresponsive pediatric patients will need their airway opened and maintained using a jaw-thrust maneuver if spinal injury is suspected. Suction as needed.
Breathing	Assess breathing by using the look, listen, and feel technique. Note the degree of air movement at the nose and mouth and determine if the chest is rising adequately and symmetrically. Assess the respiratory rate and effort by placing both hands on the pediatric patient's chest to feel for the rise and fall of the chest wall. Listen for abnormal respiratory sounds. Note any signs of increased work of breathing, including accessory muscle use, retractions, head bobbing, nasal flaring, tachypnea. Bradypnea indicates impending respiratory arrest. Be prepared to begin ventilatory assistance.

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Circulation	Determine if the pediatric patient has a pulse, is bleeding, or is in shock. Pediatric patients decompensate rapidly and without many early warning signs. Assess and control active bleeding early. Palpate the brachial or femoral pulse in an infant. Palpate a carotid pulse in children older than 1 year. Absence of a central pulse requires CPR. Bradycardia often indicates impending cardiopulmonary arrest. Feel the skin for temperature and moisture. Assess capillary refill time.
Disability	Assess the level of consciousness with the AVPU scale or Pediatric Glasgow Coma Scale. Check the pupils' response to light. Check for symmetric movement of the extremities. Assess the pediatric patient's pain level.
Exposure	Remove the pediatric patient's clothing and observe the face, chest wall, and skin. Evaluate physiologic functions, anatomic abnormalities, and unsuspected injuries or rashes. Avoid heat loss by covering the pediatric patient as soon as possible.
Transport Decision	Consider the clinical problem, the benefits of field management, transport time, and your comfort level. If the patient has an airway or breathing problem or other life threats, manage them immediately and consider rapid transport, performing the secondary assessment en route to the hospital. If the patient weighs less than 40 lb and the condition allows, transport in a car seat secured to the stretcher or captain's chair. If the parent is not present and the caregiver is unable to accompany the pediatric patient to the hospital, obtain emergency contact information and bring it to the hospital with you.

NOTE: The order of the steps in this section differs depending on whether the patient is conscious or unconscious. The following order is for a conscious patient. For an unconscious patient, perform a primary assessment, perform a full-body scan, obtain vital signs, and obtain the past medical history from a family member, bystander, or emergency medical identification device.

History Taking

Investigate Chief Complaint	Investigate the chief complaint and gather a history once you have identified and treated life threats. If the patient is an infant or toddler you will most likely need to get this information from the parent or caregiver. Note the patient's position and mannerism. Provide privacy for the patient, especially the adolescent patient when asking embarrassing questions such as sexual activity and the possibility of pregnancy. Identify associated symptoms and pertinent negatives. Ask SAMPLE questions, focusing on the events surrounding the incident and the MOI or NOI. SAMPLE can also be obtained from family, bystanders, and medical alert tags if the patient is not able to provide the information. Also ask about urine output, if the patient has diarrhea or vomiting, loss of appetite, fevers, or rashes. If the patient has a traumatic injury, try to determine what happened. If a fall occurred, determine the height of the fall and the surface the patient landed on.
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Secondary Assessment

Physical Examinations	Remove or loosen clothes to expose the injured area. Significant trauma requires a full-body scan using DCAP-BTLS. Focus the assessment on an isolated injury once all the systems have been examined. Perform a focused assessment on patients without life-threatening illness or injury. The focused assessment for younger children should begin at the feet, ending at the head. Assess the fontanelles of children up to 18 to 24 months of age. Ensure the nasal passages are clear, suction as needed with a bulb syringe. Note any unusual breath odors. Fever and a stiff neck (nuchal rigidity) may indicate meningitis. Assess the extremities for symmetry and range of motion.
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Vital Signs

Vital signs should include blood pressure by auscultation in children older than 3 years, pulse rate and quality, respiration rate and quality, pupils, and skin assessment for perfusion. Note patient's level of consciousness. Use pulse oximetry, if available, to assess the patient's perfusion status. Use appropriate sized equipment when assessing the vital signs to ensure accuracy; the use of a color-coded, length-based resuscitation tape (Broselow) can assist you in choosing the correct equipment.

Reassessment

Interventions

Reassess the chief complaint, repeat the primary assessment including vital signs, pain, and any interventions already performed. Vital signs and reassessment should be repeated every 5 minutes in the serious or unstable pediatric patient and every 15 minutes in the stable pediatric patient. Compare vital signs to those taken earlier. Continuously observe and reassess the pediatric patient during transport so worsening conditions can be managed. Pediatric patients decompensate quickly, patients may appear stable one minute and the next they are not. Whenever possible, include the parent or caregiver in the care of the pediatric patient; they can assist you with keeping the patient calm.

Communication and Documentation

Contact medical control/receiving hospital with a radio report including medical and anatomic terminology so appropriate staff and equipment will be ready when you arrive. Include a thorough description of the MOI/NOI and position the patient was found. Include treatments performed and pediatric patient response. Be sure to document the patient's chief complaint, parent or caregiver's description of the incident, physical findings, history, and any changes in patient status and the time. Document the scene observations on your arrival and be prepared to accurately describe the scene for the hospital staff. Follow local treatment protocols.

NOTE: Although the following steps are widely accepted, be sure to consult and follow your local protocols. Take appropriate standard precautions when treating all patients.

Pediatric Emergencies

General Management of Pediatric Emergencies

Managing life threats to the pediatric patient's ABCs are primary concerns with any emergency. Life-threatening illness or injury must be managed once discovered during the primary assessment. Remain calm. In all of the following specific situations, perform the following:

1. Ensure scene safety.
2. Determine the MOI/NOI.
3. Consider the need for spinal stabilization.
4. Determine the pediatric patient's level of consciousness and mental status using AEIOU-TIPPS.
5. Open, clear, and maintain the patient's airway.
6. Ensure adequate ventilation.
7. Administer high-concentration oxygen via a nonbreathing mask or bag-mask device as appropriate. Use caution to avoid gastric distention, which can decrease lung volume; also avoid overinflation of the lung, which may cause a pneumothorax.
8. Control bleeding and treat for shock. Remember that internal injuries may be present without obvious bleeding or external injury.
9. Place the patient in a position of comfort.
10. Transport to the appropriate treatment facility.

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Pediatric Emergencies

Respiratory Emergencies

Combattiveness, restlessness, anxiety, nasal flaring, grunting, wheezing, stridor, accessory muscle use, retractions, and tripod positioning are all signs or symptoms of respiratory distress. Recognize and manage respiratory emergencies early and determine the cause.

Airway Obstruction

Determine the cause of the obstruction and whether it is involving the upper or lower airway. Upper airway obstructions may be from blood or vomit, a foreign body, croup, or epiglottitis. Fluid of any sort obstructing the airway must be suctioned as soon as possible. Conscious infants with a foreign body obstructing the airway should be managed with back slaps and chest thrusts. Conscious children with a foreign body obstructing the airway should have abdominal thrusts performed in an attempt to dislodge the object. All patients that become unconscious with a foreign body airway obstruction should be managed using cardiopulmonary resuscitation. Patients with croup should receive humidified oxygen and transport to the hospital. Patients with fever, lethargy, and drooling should be suspected of having epiglottitis. Do not agitate the patient because it may cause the airway to become completely obstructed. Allow the patient to stay with a parent or caregiver in the back of the ambulance and provide blow-by oxygen. Oxygen can be administered using a nonbreathing mask or a paper cup and oxygen tubing taped through the bottom with the parent holding it near the child's face. A calm, rapid transport is required. Notify the hospital you are bringing a patient with suspected epiglottitis.

Asthma

Asthma may cause a lower airway obstruction and is characterized by the presence of wheezing and the pediatric patient sitting in a tripod position. Administer high-concentration oxygen with a nonbreathing mask or blow-by oxygen as tolerated. If local protocol allows, assist with the pediatric patient's metered dose inhaler (MDI) or nebulized albuterol. Assist ventilations as required, using slow gentle breaths. Prolonged asthma attacks (status asthmaticus) require advanced life support intervention.

Shock (Hypoperfusion)

Common causes of shock include trauma with blood loss, burns, dehydration, infection, neurologic injury, severe allergic reaction, heart failure, and pneumothorax. Signs and symptoms may include tachycardia, tachypnea, delayed capillary refill, altered mental status, and pale or cyanotic skin. Treat for shock early, even if the pediatric patient is compensating; pediatric patients decompensate very quickly. Treatment for shock includes the administration of oxygen, placing the patient in a supine position with the legs elevated 6" to 12", and maintaining body temperature. Pediatric patients in cardiogenic or anaphylactic shock may not want to be placed supine if they have an accompanying respiratory problem.

Anaphylaxis/Anaphylactic Shock

If you suspect the pediatric patient is having a severe allergic reaction (anaphylaxis) and the pediatric patient has hives, stridor, or wheezing, provide high-concentration oxygen, determine if the pediatric patient has a prescribed epinephrine auto-injector, and prepare for rapid transport. Request ALS assistance. Anaphylactic shock can develop rapidly. If you are authorized to assist or administer the epinephrine auto-injector, you should do so.

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Pediatric Emergencies

Altered Mental Status

Use the AEIOU-TIPPS mnemonic to help you determine the cause of the pediatric patient's altered mental status. Manage any problems found with airway, breathing, and circulation immediately.

Seizures

If seizure is the cause of the altered mental status, look further into the cause. The pediatric patient is in status epilepticus if he or she has continuous seizures or seizures lasting more than 30 minutes without regaining consciousness. This is a life threat. Request ALS so medication can be administered to stop the seizure. Treatment for seizures consists of protecting the pediatric patient from injury, maintaining an open airway, suctioning as necessary, and administration of 100% oxygen via nonbreathing or bag-mask device as required. Do not attempt to place anything in the pediatric patient's mouth. Transport to the appropriate facility. Place the pediatric patient in the recovery position once the seizure stops.

Febrile Seizures

Fever is a common reason for EMS response. Children ages 6 months to 6 years commonly have seizures related to fever. They usually are of short duration. Ensure there are no concerns with the ABCs and cool the child by placing towels moistened with tepid water on the chest and back. Transport the child for further evaluation. The concern is not the fever itself, but the cause of the fever. If meningitis is suspected, don an N-95 mask and inform the receiving hospital of your suspicions. The pediatric patient with meningitis may have a stiff neck, and might refuse to move the neck, lift the legs, or curl into a "C" position because of the pain. Infants may present with bulging fontanelles. Provide oxygen and airway support as required.

Gastrointestinal Emergencies

Abdominal discomfort, nausea, vomiting, and diarrhea are common complaints in the pediatric population. Often of minor concern, these complaints can be the byproduct of serious illness. Pediatric patients with nausea, fever, and right lower quadrant pain may have appendicitis. Dehydration and constipation with abdominal discomfort may be signs of a bowel obstruction. Both of these conditions require immediate transport to the hospital.

Poisoning

During your scene size-up, you should have scanned the area for household cleaning products, medicines, and other chemicals that may be the reason for EMS response. Perform a primary assessment and manage any life threats. Look for chemical burns in the mouth. If poisoning is suspected, in addition to the SAMPLE questions, ask about the substance, how much was on hand and how much was ingested, the time the event occurred, and any interventions taken prior to EMS arrival, such as inducing vomiting or administration of milk or water. Manage the ABCs. If the pediatric patient is conscious and able to swallow, medical control may ask that activated charcoal be administered. Transport to the appropriate hospital.

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Pediatric Emergencies

Dehydration

Pediatric patients have less fluid volume than adults, so what may seem to be a simple case of vomiting or diarrhea is in fact a possible life threat. If your assessment reveals dry mucous membranes, decreased secretions, sunken eyes or fontanelles, loose skin (tenting), or the parent or caregiver states that there were less than normal the amount of diaper changes, suspect dehydration. Manage the ABCs and request ALS. Continuously monitor the vital signs and transport to the hospital for further evaluation.

Drowning Emergencies

Ensure personal and crew safety. Do not attempt a water rescue unless trained and authorized to do so. Attempt to determine the length of time the pediatric patient was submerged, the temperature of the water, and if a diving injury occurred. Shallow water diving may have caused a spinal injury that needs to be managed; always assume the child has neck and head injuries. Maintain the airway, taking spinal precautions, and manage any breathing or circulation issues. If trauma is suspected, immobilize the pediatric patient to a long backboard and pad under the back/shoulders to maintain a neutral airway. Consider requesting ALS. If cardiopulmonary resuscitation is required, ensure the pediatric patient is dry before attempting to use an automated external defibrillator. Cold water drowning victims should be treated aggressively no matter how long they were submerged.

Trauma Emergencies

Trauma is the number one killer of pediatric patients in the United States. Because of anatomic differences, a pediatric trauma victim may display differing injury patterns than an adult with a similar MOI. The pliable bones of a pediatric patient make internal injuries increasingly possible without the obvious outward signs. Investigate the MOI thoroughly. Head injuries are common; look for signs and symptoms of a head injury such as nausea and vomiting. Pediatric patients with head injuries need to be immobilized. Blunt chest trauma can cause significant internal injuries. Breathing needs to be monitored and assisted if necessary. Abdominal injuries may not be apparent early, but consider the possibility of internal bleeding and treat early for shock (hypoperfusion). Burns cause hypothermia and shock. Determine the extent of area burned using the rule of nines chart, the type of burn, and the depth. Inhalation burns need aggressive airway management; contact ALS to assist with airway management. Chemical burns as the result of ingestion may also affect the pediatric patient's ability to breathe adequately. Extremity fractures should be splinted using the appropriate size equipment. Elevation and ice may be used to assist with pain management. If child abuse is suspected, remember that the patient is the priority; treat and transport the patient and do not confront the abuser. On arrival at the hospital, inform the hospital staff of your suspicions and complete the mandatory child abuse report form.