

# The Acutely Ill or Injured Child

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## SECTION 8

### Chapter 38

## ASSESSMENT AND RESUSCITATION

### INITIAL ASSESSMENT

Initial assessment (the **ABCs**—**airway, breathing, and circulation**) of an acutely ill or injured child includes rapid identification of physiologic derangements in **tissue perfusion and oxygenation**. Once identified, immediate resuscitation must be implemented before pursuing the usual information needed to develop a differential diagnosis. Initial resuscitation measures are directed at achieving and maintaining adequate tissue perfusion and oxygenation. **Oxygen delivery** depends on cardiac output, hemoglobin concentration, and hemoglobin-oxygen saturation. The last mentioned depends on air movement, alveolar gas exchange, pulmonary blood flow, and oxygen-hemoglobin binding characteristics.

### HISTORY

In the resuscitation phase, access to historical information may be limited. Characterization of the onset of symptoms, details of events, and a brief identification of underlying medical problems should be sought by members of the team not actively involved in the resuscitation. Attempts at identifying historical issues that affect the ABCs are useful but should not delay intervention if tissue oxygenation and perfusion are markedly impaired.

### PHYSICAL EXAMINATION

Initial examination must focus rapidly on the **ABCs** (Table 38-1) to address the issues of oxygen delivery to tissues systematically. Airway patency is the first to be addressed, including assessment of the neurologically injured child's ability to protect the airway. Protection of the cervical spine also should be initiated at this step in any child with traumatic injury or who presents with altered mental status of uncertain etiology. Assessment of breathing includes auscultation of air movement and application of a pulse oximeter (when available) to identify current oxygenation status. Circulatory status is assessed by palpation for distal and central pulses, focusing on

the presence and quality of the pulses. Bounding pulses and a wide pulse pressure are often the first sign of the vasodilatory phase of shock and require immediate resuscitation measures. Weak, thready, or absent pulses are indicators for fluid resuscitation, initiation of chest compressions, or both. When assessment of the **ABCs** is complete and measures have been taken to achieve an acceptable level of tissue oxygenation, a more complete physical examination is performed. The sequence of this examination depends on whether the situation involves an acute medical illness or trauma. In trauma patients, the examination follows the **ABCDE pathway**. **D** stands for disability and prompts assessment of the neurologic system and evaluation for major traumatic injuries. **E** stands for exposure; the child is disrobed and examined for evidence of any life-threatening or limb-threatening problems. For the acutely ill and the injured child, the subsequent physical examination should identify evidence of organ dysfunction, starting with areas suggested in the chief complaint and progressing to a thorough and systematic investigation of the entire patient.

### COMMON MANIFESTATIONS

The physiologic responses to acute illness and injury are mechanisms that attempt to correct inadequacies of tissue oxygenation and perfusion. When initial changes, such as increasing heart and respiratory rates, fail to meet the body's needs, other manifestations of impending cardiopulmonary failure occur (Table 38-2). **Respiratory failure**, the most common cause of acute deterioration in children, may result in inadequate tissue oxygenation and in respiratory acidosis. Signs and symptoms of respiratory failure (tachypnea, tachycardia, increased work of breathing, abnormal mentation) progress as tissue oxygenation becomes more inadequate. Inadequate perfusion (shock) leads to inadequate oxygen delivery and a resulting metabolic acidosis. **Shock** is characterized by signs of inadequate tissue perfusion (pallor, cool skin, poor pulses, delayed capillary refill, oliguria, and abnormal mentation). The presence of any of these symptoms demands careful assessment and intervention to correct the abnormality and to prevent further deterioration.

### INITIAL DIAGNOSTIC EVALUATION

#### Screening Tests

During the initial phase of resuscitation, monitoring vital signs and physiologic status is the key screening activity. Continuous monitoring with attention to changes may indicate response to