

## AAP Releases Guideline on Brief Resolved Unexplained Events (BRUEs) and Evaluation of Lower-Risk Infants

### Key Points for Practice

- BRUEs occur in infants younger than one year and last less than one minute, usually less than 20 to 30 seconds.
- A BRUE includes one or more of the following: cyanosis or pallor; absent, decreased, or irregular breathing; marked hypertonia or hypotonia; and altered level of responsiveness.
- If a cause for the event can be determined based on the history or examination, then it is not a BRUE.
- A white blood cell count, blood culture, and cerebrospinal fluid analysis or culture should not be performed to identify an occult bacterial infection in lower-risk patients with BRUE.

*From the AFP Editors*

Coverage of guidelines from other organizations does not imply endorsement by AFP or the AAFP.

This series is coordinated by Sumi Sexton, MD, Associate Deputy Editor.

A collection of Practice Guidelines published in AFP is available at <http://www.aafp.org/afp/practguide>.

**CME** This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 288.

Author disclosure: No relevant financial affiliations.

This guideline from the American Academy of Pediatrics (AAP) addresses apparent life-threatening events (ALTEs), a term recommended to be replaced by brief resolved unexplained events (BRUEs). Based on the results of a history and physical examination, infants who present with a BRUE can be considered lower risk or higher risk, the latter of which should have additional assessment and treatment. This guideline discusses patient evaluation, and, for infants at lower risk, provides management recommendations.

### Terminology

The definition of ALTE is inexact, resulting in difficulties in treatment, as well as performing research. With this definition, infants often have no symptoms when presenting to the office, and the treatment and evaluation of those infants need to be distinct from those with symptoms. Additionally, symptoms listed in the current ALTE definition are not inherently life-threatening, nor are they necessarily a sign of a more serious condition. With a more clear-cut definition, physicians could make their decisions based on events identified as abnormal on history and examination (e.g., symptoms of central apnea need to be differentiated from

gastroesophageal reflux, which is more common and of less concern).

Physicians and caregivers may be concerned by the possibility of the event happening again or it being a sign of a serious problem. This can prompt testing or hospital admission, creating stress and additional risk to the patient, as well as possibly not providing a diagnosis or preventing recurrence. A clearer definition would allow physicians to differentiate infants with a lower risk from those with a higher risk, preventing overuse of interventions.

The AAP recommends using the term BRUE because it clarifies the brevity and absence of a clear reason for the event. Additionally, the “life-threatening” concept is no longer attached. BRUEs occur in infants younger than one year and last less than one minute, usually less than 20 to 30 seconds (i.e., “brief”). The episode includes one or more of the following: cyanosis or pallor; absent, decreased, or irregular breathing; marked hypertonia or hypotonia; and altered level of responsiveness. After the event, the infant’s health is back to where it started (i.e., “resolved”), with no concerns based on history, examination, and vital signs. The cause of the event cannot be provided, even after history and examination (i.e., “unexplained”).

### Diagnosis

When a child younger than one year presents for evaluation after a concerning brief event that has resolved, the physician should first determine if he or she has symptoms, such as fever, or abnormal vital signs. If either is present, the event is not a BRUE and is outside the scope of this guideline. If the infant has no symptoms and vital signs are healthy, and if the event can be characterized by one or more clinical features listed above,

a history should be obtained and physical examination performed. If a cause for the event can be determined based on the history or examination, such as vomiting and gastrointestinal reflux, then it is not a BRUE. If no cause can be determined, BRUE can be diagnosed. It should be noted that the event characteristics, not the term ALTE, should be used when discussing the event.

### Classification

If there are concerns based on the history or examination, such as feeding or respiratory problems, the infant is considered higher risk, which is outside the scope of this guideline. If there are no concerns, the infant should be risk stratified. These criteria include age older than 60 days; birth at 32 weeks or more of gestation and corrected gestational age of at least 45 weeks; no cardiopulmonary resuscitation performed by a health care professional, as well as that the event was the first for the infant and it lasted less than one minute. If these criteria are met, the infant is considered lower risk. If the criteria are not met, the infant is considered higher risk.

### Management

The definitions for evidence and strength of recommendation can be found in the full AAP guideline. All guidance refers to infants older than 60 days, but younger than one year, with a history and examination indicating a lower risk BRUE as previously outlined.

#### STRONG RECOMMENDATION

A white blood cell count, blood culture, and cerebrospinal fluid analysis or culture should not be performed to identify an occult bacterial infection.

#### MODERATE RECOMMENDATION

Chest radiography, overnight polysomnography, and echocardiography should not be performed; venous and arterial blood gas should not be measured; and home cardiorespiratory monitoring should not be started. Neuroimaging (i.e., computed tomography, magnetic resonance imaging, or ultrasonography) and electroencephalography should

not be performed to identify neurologic disorders, and antiepileptics should not be prescribed in infants with possible neurologic disorders. Investigations for gastrointestinal reflux (e.g., pH probe, endoscopy) should not be performed, nor should acid suppression be prescribed. Serum sodium, potassium, chloride, blood urea nitrogen, creatinine, calcium, ammonia, urine organic acids, plasma amino acids, plasma acylcarnitines, and venous or arterial blood gas should not be measured to identify inborn errors of metabolism. Laboratory evaluation for anemia should not be performed.

Social risk factors should be assessed to identify child abuse, and physicians should offer the family cardiopulmonary resuscitation training resources, provide education about BRUEs, and use shared decision making.

#### WEAK RECOMMENDATION

Infants do not need to be admitted to the hospital for the sole purpose of starting cardiorespiratory monitoring; however, brief monitoring with continuous pulse oximetry and observation may be an option. Twelve-lead electrocardiography may also be performed. Testing for pertussis may be appropriate, because it can be associated with gasping, color changes, and a respiratory pause for days before manifesting with fever and cough or other respiratory symptoms. Neuroimaging to identify child abuse, and urinalysis and respiratory viral testing to detect an infectious disease are not needed. Serum lactic acid, bicarbonate, and glucose measurements also are not needed.

**Guideline source:** American Academy of Pediatrics

**Evidence rating system used?** Yes

**Literature search described?** Yes

**Guideline developed by participants without relevant financial ties to industry?** Yes

**Published source:** *Pediatrics*. May 2016;137(5):e20160590

**Available at:** [http://pediatrics.aappublications.org/content/137/5/e20160590?utm\\_source=highwire&utm\\_medium=email&utm\\_campaign=Pediatrics\\_etoc](http://pediatrics.aappublications.org/content/137/5/e20160590?utm_source=highwire&utm_medium=email&utm_campaign=Pediatrics_etoc)

LISA HAUKE, *AFP* Senior Associate Editor ■