Brief Resolved Unexplained Events
(Apparent Life Threatening Events)

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You will learn about...

1. Historical framework and epidemiology
2. ALTE vs BRUE
3. Event characterization: explained vs unexplained
4. Risk stratification and new recommendations
5. Tools to implement change in your practice
Historical Framework and Epidemiology
What was an Apparent Life Threatening Event?
Definition of ALTE

An episode in the first year of life that appears potentially life threatening to the observer and is characterized by some combination of:

- Color change
- Apnea
- Alteration in muscle tone
- Choking or gagging

Defined decades ago to better understand SIDS

National Institutes of Health
Consensus Development Conference Statement
September 29-October 1, 1986

This statement is more than five years old and is provided solely for historical purposes. Due to the cumulative nature of medical research, new knowledge has inevitably accumulated in this subject area in the time since the statement was initially prepared. Thus some of the material is likely to be out of date, and at worst simply wrong. For reliable, current information on this and other health topics, we recommend consulting the National Institutes of Health’s MedlinePlus http://www.nlm.nih.gov/medlineplus/.

This statement was originally published as: Infantile Apnea and Home Monitoring. NIH Consens Statement 1986 Sep 29-Oct 1;6(6):1-10.
Epidemiology

Conservatively

- 1 out of 250-400 children hospitalized for an ALTE

But scary events are very common

- 43% of healthy infants have had 20 sec apnea episode over 3 mo period
- 5% of parents recall seeing apnea event
- Normal in infants: choking, gagging, blue discoloration, tone changes, periodic and irregular breathing

ALTE discharge diagnosis

Most common
- Idiopathic (26-50%)
- GER (26-54%)
- Respiratory infection (8-11%)
- Seizure (9-11%)

Less common
- Child maltreatment (<1%)
- Pertussis (0.05-9%)
- Cardiac arrhythmias (<1%)
- Bacterial infection (0-8%)
- Metabolic Disorder (1.5%)

AN ALTE IS NOT A WARNING SIGN FOR SIDS!

- No causal relationship of preexisting apnea or ALTE and SIDs
- Interventions to reduce SIDs have not reduced ALTEs (e.g. back to sleep)
- SIDS and ALTEs have different risk factors

ALTE...a recipe for a testing/treatment cascade

- Broad differential diagnosis
- Anxiety provoking
- Common
- Low prevalence of disease
- Perceived reassurance from testing or hospitalization
- Poor understanding of true risk
- Use of nonspecific testing prone to false positive results

“Primum non nocere”

“An excellent specimen ... symbol of beauty, innocence, and fragile life ... hand me the jar of ether.”
High Resource Use and Variation

- Multicenter study of patients hospitalized with ALTE
- Mean LOS = 4.4 (SD 5.6) days
- Mean adjusted charges = $15,567 (SD $28,510)
- Readmission = 2.5% but variable

Resource Utilization Across Hospitals

Lab Tests
- RSV
- Pertussis
- CBC

Reflux Tests
- pH probe
- Upper GI Imaging

Other Tests
- CT
- Chest xray
- Sleep testing
- EKG
- EEG

Medications
- Antibiotics
- Anti-reflux

For infants that are well appearing upon presentation...

- Historical and PE features can identify risk
- Testing tailored to these risks of value
- True risk of a subsequent event or underlying disorder cannot be ascertained
  - A more precise definition of an ALTE is needed
- Further research is warranted
The Event
Formerly Known as ALTE
2

Brief Resolved Unexplained Events (Formerly Apparent Life-Threatening Events) and Evaluation of Lower-Risk Infants: Executive Summary

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EXECUTIVE SUMMARY

This clinical practice guideline has 2 primary objectives. First, it recommends the replacement of the term “apparent life-threatening event” (ALTE) with a new term, “brief resolved unexplained event” (BRUE). Second, it provides an approach to evaluation and management that is based on the risk that the infant will have a repeat event or has a serious underlying disorder.

Clinicians should use the term BRUE to describe an event occurring in an infant younger than 1 year at the observer reports a sudden, brief, and now resolved episode of 2 or more of the following: (1) cyanosis or pallor; (2) absent, decreased, or irregular breathing; (3) marked change in tone (hyper- or hypotonia); and (4) altered level of responsiveness. Moreover, clinicians should diagnose a BRUE only when there is no explanation for a qualifying event after conducting an appropriate history and physical examination (see Tables 2 and 3 in www.pediatrics.org/cgi/doi/10.1542/peds.2016-3590). Among infants who present for medical attention after a BRUE, the guideline identifies (1) lower-risk patients who are assessed with a history and physical examination, for whom evidence-based guidelines for evaluation and management are offered, and (2) higher-risk patients, whose history and physical examination suggest the need for further investigations, monitoring, and/or treatment, but for whom recommendations are not offered (because of insufficient evidence or the availability of guidance from other clinical practice guidelines specific to their presentation or diagnosis). Recommendations in this guideline apply only to lower-risk patients.

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ALTE vs BRUE

ALTE
• An episode in the first year of life that appears potentially life threatening to the observer and is characterized by some combination of...

BRUE
▪ Event occurring in an infant < 1 year where the observer reports a sudden, brief period of one or more of the following...
▪ No explanation for event after appropriate history and PE
ALTE vs BRUE

ALTE
- Color change
- Apnea
- Alteration in muscle tone
- Choking or gagging

BRUE
- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered level of responsiveness
ALTE vs BRUE

**ALTE**
- Both chief complaint and diagnosis
- Not always life-threatening
- Can have ongoing symptoms (e.g., fever, URI)
- Can have a diagnosis (e.g., meningitis, bronchiolitis)

**BRUE**
- Diagnosis of exclusion
- Excludes patients with an explanation or diagnosis (e.g., GER)
- Excludes symptomatic infants (i.e., just an event)
Event characterization
Explained vs Unexplained
3
BRUE Diagnosis

Patient presents for initial medical assessment after a brief, resolved event that was observed by caregiver in a child <1 year of age.

- Patient is well-appearing
- Patient has additional symptoms or abnormal vital signs (e.g., cough, respiratory difficulties, or fever)

Clinician characterizes the event as a sudden, brief, and now resolved episode of one or more of the following:
- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered responsiveness

Event criteria present

Perform appropriate history and PE*

No explanation for event identified

Diagnosis of Brief Resolved Unexplained Event is made

Use event characteristics, rather than the term "ALTE," to describe the event.

Not a BRUE

Explanation for event identified (e.g., GER, feeding difficulties, or airway abnormality)

Out of guideline scope; manage accordingly

*PE: Physical Examination
**SUPPLEMENTAL TABLE 6** Differential Diagnosis of an Infant Presenting With a Lower- or Higher-Risk BRUE

<table>
<thead>
<tr>
<th>Otolaryngologic</th>
<th>Pulmonary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary hypoplasia</td>
<td>Aspiration</td>
</tr>
<tr>
<td>Micrognathia</td>
<td>Asthma</td>
</tr>
<tr>
<td>Macrognathia</td>
<td>Foreign body</td>
</tr>
<tr>
<td>Choanal atresia</td>
<td>Congenital airway anomalies/malacia</td>
</tr>
<tr>
<td>Pyriform aperture stenosis</td>
<td>Infection</td>
</tr>
<tr>
<td>Laryngomalacia/anomalies</td>
<td>Hemorrhage</td>
</tr>
<tr>
<td>Subglottic stenosis</td>
<td>Upper and lower respiratory tract infection</td>
</tr>
<tr>
<td>Tracheomalacia/anomalies</td>
<td>Infectious</td>
</tr>
<tr>
<td>Adenotonsilar hypertrophy</td>
<td>Bronchiolitis</td>
</tr>
<tr>
<td>OSA</td>
<td>Pneumonia</td>
</tr>
<tr>
<td>Vaso-vagal response</td>
<td>Group</td>
</tr>
<tr>
<td>Unintentional suffocation</td>
<td>Upper respiratory infection</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>UTI</td>
</tr>
<tr>
<td>GER</td>
<td>Sepsis</td>
</tr>
<tr>
<td>Dysphagia/choking</td>
<td>Meningitis</td>
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<tr>
<td>Esophageal dysmotility</td>
<td>Gastroenteritis</td>
</tr>
<tr>
<td>Laryngeal chemoreflex</td>
<td>Viral syndrome</td>
</tr>
<tr>
<td>Bowel obstruction</td>
<td>Specific organisms (pertussis, RSV, and other respiratory viruses)</td>
</tr>
<tr>
<td>Gastroenteritis</td>
<td>Genetic/metabolic</td>
</tr>
<tr>
<td>Tracheoesophageal fistulas</td>
<td>IEMs (fatty acid oxidations disorders, urea cycle disorders)</td>
</tr>
<tr>
<td>Esophageal foreign body</td>
<td>Mitochondrial disorders</td>
</tr>
<tr>
<td>Intussusception</td>
<td>Electrolyte disturbance</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Hypocalcemia</td>
</tr>
<tr>
<td>Channelopathies (prolonged QT syndromes, Brugada syndrome, short QT syndrome)</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Congenital heart disease</td>
<td>Child maltreatment</td>
</tr>
<tr>
<td>Cardiomyopathy/myocarditis</td>
<td>Abusive head trauma</td>
</tr>
<tr>
<td>Vascular ring/sling/compression</td>
<td>Caregiver-fabricated illness (also known as Münchausen by proxy and medical child abuse)</td>
</tr>
<tr>
<td>Ventricular pre-excitation (Wolff-Parkinson-White syndrome)</td>
<td>Intentional suffocation</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>Poisoning</td>
</tr>
<tr>
<td>Sepsis</td>
<td>Medical neglect</td>
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<tr>
<td>Syncope</td>
<td>Toxin exposure</td>
</tr>
<tr>
<td>Neurologic</td>
<td>Medication adverse effect</td>
</tr>
<tr>
<td>Seizures</td>
<td>Substance exposure via human milk</td>
</tr>
<tr>
<td>Stroke</td>
<td>Environmental exposure</td>
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<tr>
<td>Intracranial mass lesion</td>
<td>Vaccine reaction</td>
</tr>
<tr>
<td>Intracranial structural or vascular abnormality</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Intracranial hemorrhage</td>
<td>Acrocyanosis</td>
</tr>
<tr>
<td>Hydrocephalus</td>
<td>Hypothermia</td>
</tr>
<tr>
<td>Neuromuscular disorder</td>
<td>Breath-holding spell</td>
</tr>
<tr>
<td>Congenital central hypoventilation syndrome</td>
<td>Idiopathic</td>
</tr>
<tr>
<td>Apnea of prematurity</td>
<td>Demyelinating disorder (transverse myelitis, multiple sclerosis, acute disseminated encephalomyelitis)</td>
</tr>
</tbody>
</table>
Color

**ALTE**
- Color change
- Apnea
- Alteration in muscle tone
- Choking or gagging

**BRUE**
- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered level of responsiveness
Color change-red, white, and blue
Normal explanations of turning blue briefly

**Peripheral cyanosis**
- increased O2 extraction by peripheral tissue or vasoconstriction (e.g. shock)

**Acrocyanosis**
- vasomotor instability

http://newborns.stanford.edu/PhotoGallery/PerioralCyanosis1.html
Blue episode can indicate something serious

Central cyanosis
  • bluish discoloration of oral mucous membranes
What about red and white episodes?

- **Plethora**: red is a normal in infants.

- **Pallor**: White or ashen can be normal or a sign of decreased perfusion

- **Skin color**: difficult to determine in different skin tones and lighting
Apnea or changes to breathing

**ALTE**
- Color change
- Apnea
- Alteration in muscle tone
- Choking or gagging

**BRUE**
- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered level of responsiveness
Normal explanations for episodic change in breathing

• Periodic breathing
  – Typically developing infants have periods of cyclic breathing with pauses
  – Occurs in nearly all pre-term infants and most term infants
  – Decreases dramatically after 2 months of age
  – Not a precursor for SIDS

• Irregular respirations
  – Hallmark of active sleep (REM or dream sleep)
  – Present at all ages

• Breath holding spell

• Acute decreases in oxygen saturation >10% from baseline are observed in most infants briefly during sleep
Concerning change in breathing

• Cessation of airflow x 20-30 sec
• Central
  ▪ absence of respiratory effort from central respiratory center
• Obstructive
  ▪ paradoxical inverse movements of the chest wall and abdomen with decreased saturation
• Apnea of prematurity
  ▪ <37 weeks post-conceptional age
  ▪ may persist in infants < 28 wk
Muscle tone change

**ALTE**
- Color change
- Apnea
- Alteration in muscle tone
- Choking or gagging

**BRUE**
- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered level of responsiveness
Normal explanations for episodic changes in tone

- Stimulation (i.e., laryngospasm) from coughing, gagging, choking, crying
- Startle and fencing reflex
- LOC from Breath holding spell
Concerning causes for episodic change in tone

Seizure:
- Rhythmic and not extinguishable
- Eye deviation
- Limp
- Rigid
- Post-ictal
- Generalized/Altered mental status
- Infantile spasm
Apnea or changes to breathing

ALTE
- Color change
- Apnea
- Alteration in muscle tone
- Choking or gagging

BRUE
- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered level of responsiveness
Normal explanation for episode of altered responsiveness

- Immature nervous system
- Somnolence
- LOC with Breath holding spell
Concerning explanation for episode of altered responsiveness

- Seizure
- LOC
- Hypoxemia
- Hypoglycemia
BRUE Diagnosis

Patient presents for initial medical assessment after a brief, resolved event that was observed by caregiver in a child <1 year of age

Patient is well-appearing

Patient has additional symptoms or abnormal vital signs (e.g., cough, respiratory difficulty or fever)

Clinician characterizes the event as a sudden, brief, and now resolved episode of one or more of the following:
- cyanosis or pallor
- absent, decreased, or irregular breathing
- marked change in tone (hyper- or hypotonia)
- altered responsiveness

Event criteria present

Perform appropriate history and PE*

No explanation for event identified

Diagnosis of Brief Resolved Unexplained Event is made

Event criteria absent

Explanation for event identified (e.g., GER, feeding difficulties, or airway abnormality)

Out of guideline scope; manage accordingly

Use event characteristics, rather than the term “ALTE,” to describe the event
History and PE are critical to diagnose BRUE!

[Image: Study of BRUE symptoms]

https://www.studyblue.com/notes/n/review-for-test-2-family-assessment/deck/8041126

https://www.bda.org/childprotection/Recognising/Pages/Physical.aspx
Risk Stratification and Recommendations for Lower-Risk 4
Perform appropriate history and PE*  

No explanation for event identified  

Diagnosis of Brief Resolved Unexplained Event is made  

Out of guideline scope; manage accordingly  

BRUE Risk Classification  

No concerns identified from history and PE*  

Concerns identified from history or PE (eg, FH of sudden cardiac death or subtle, non-diagnostic social, feeding or respiratory problems)  

Apply risk stratification  

- Age >60 days  
- Born ≥32 wks gestation and corrected gestational age ≥45wks  
- No CPR by trained medical provider  
- Event lasted <1 minute  
- First event  

Higher Risk Patient  

Lower Risk Patient
Lower-Risk Criteria

Age >60 days
Prematurity: gestational age ≥32 weeks and postconceptional age ≥45 weeks
First BRUE (no prior BRUE ever and not occurring in clusters)
Duration of event <1 minute
No CPR required by trained medical provider
No concerning historical features
No concerning physical examination findings
AAP and strength of recommendations

Management Recommendations for Lower Risk Patients **

Should
- Educate caregivers about BRUEs and engage in shared decision-making to guide evaluation, disposition, and follow-up.
- Offer resources for CPR training to caregiver.

May
- Obtain pertussis testing and 12-lead ECG.
- Briefly monitor patients with continuous pulse oximetry and serial observations.

Should Not
- Obtain WBC count, blood culture, or CSF analysis or culture, serum sodium, potassium, chloride, blood urea nitrogen, creatinine, calcium, ammonia, blood gases, urine organic acids, plasma amino acids or acylcarnitines, chest radiograph, echocardiogram, EEG, studies for GER.
- Initiate home cardio-respiratory monitoring.
- Prescribe acid suppression therapy or anti-epileptic medications.

Need Not
- Obtain viral respiratory test, urinalysis, blood glucose, serum bicarbonate, serum lactic acid, laboratory evaluation for anemia, or neuroimaging.
- Admit the patient to the hospital solely for cardiorespiratory monitoring.
Table 1. Summary of Key Action Statements for Lower-Risk BRUEs

When managing an infant who is >60 days and <1 year of age and who, on the basis of a thorough history and physical examination, meets criteria for having experienced a lower-risk BRUE, clinicians...

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Evidence Quality; Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Need not admit infants to the hospital <em>solely</em> for cardiorespiratory monitoring.</td>
<td>B; Weak</td>
</tr>
<tr>
<td>1B</td>
<td>May briefly monitor patients with continuous pulse oximetry and serial observations.</td>
<td>D; Weak</td>
</tr>
<tr>
<td>1C</td>
<td>Should not obtain chest radiography.</td>
<td>B; Moderate</td>
</tr>
<tr>
<td>1D</td>
<td>Should not obtain a measurement of venous or arterial blood gas.</td>
<td>B; Moderate</td>
</tr>
<tr>
<td>1E</td>
<td>Should not obtain overnight polysomnography.</td>
<td>B; Moderate</td>
</tr>
<tr>
<td>1F</td>
<td>May obtain a 12-lead electrocardiography.</td>
<td>C; Weak</td>
</tr>
<tr>
<td>1G</td>
<td>Should not obtain an echocardiography.</td>
<td>C; Moderate</td>
</tr>
<tr>
<td>1H</td>
<td>Should not initiate home cardiorespiratory monitoring.</td>
<td>B; Moderate</td>
</tr>
</tbody>
</table>

2. Child Abuse Evaluation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Evidence Quality; Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A</td>
<td>Need not obtain neuroimaging (CT, MRI, or ultrasonography) to detect child abuse.</td>
<td>C; Weak</td>
</tr>
<tr>
<td>2B</td>
<td>Should obtain an assessment of social risk factors to detect child abuse.</td>
<td>C; Moderate</td>
</tr>
</tbody>
</table>

3. Neurologic Evaluation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Evidence Quality; Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A</td>
<td>Should not obtain neuroimaging (CT, MRI, or ultrasonography) to detect neurologic disorders</td>
<td>C; Moderate</td>
</tr>
<tr>
<td>3B</td>
<td>Should not obtain electroencephalogram to detect neurologic disorders.</td>
<td>C; Moderate</td>
</tr>
<tr>
<td>3C</td>
<td>Should not prescribe antiepileptic medications.</td>
<td>C; Moderate</td>
</tr>
</tbody>
</table>

4. Infectious Disease Evaluation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Evidence Quality; Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4A</td>
<td>Should not obtain a white blood cell (WBC) count, blood culture, or cerebrospinal fluid analysis or culture to detect an occult bacterial source.</td>
<td>B; Strong</td>
</tr>
</tbody>
</table>
• **Need not** admit the patient to the hospital *solely* for cardiorespiratory monitoring (B, Weak)
• **May** briefly monitor patients with continuous pulse oximetry and serial observations (D, Weak)
• **Should not** obtain a chest radiograph (B, Mod)
• **Should not** obtain measurement of blood gases (B, Mod)
• **Should not** initiate home cardio-respiratory monitoring (B, Mod)
• **Should not** obtain overnight polysomnography (B, Mod)
Cardiology

- **May** obtain a 12-lead electrocardiogram. (C, Weak)
- **Should not** obtain echocardiography (C, Moderate)
Child abuse

• **Need not** obtain neuroimaging (CT, MRI, US) to detect child abuse (C, Weak)

• **Should** obtain an assessment of social risk factors to detect child abuse (C, Weak)
Neurology

• **Should not** obtain neuroimaging (CT, MRI, US) to detect neurologic disorders (C, Mod)

• **Should not** obtain an EEG (electroencephalography) (C, Mod)

• **Should not** prescribe anti-epileptic medications
Infectious Disease

• **Should not** obtain a WBC, blood culture, or CSF analysis or culture to identify an occult bacterial infection (B, Strong)
• **Should not** obtain a chest radiograph to assess for pulmonary infection (B, Mod)
• **Need not** obtain a UA (C, Weak)
• **Need not** obtain respiratory viral testing in infants (C, Weak)
• **May** obtain test for pertussis (B, Weak)
Gastroenterology

Have a seat Kermit. What I'm about to tell you might come as big shock...

[Image of a doctor showing an X-ray to Kermit, who looks concerned.]
Gastroenterology

• **Should not** obtain investigations for GER (C, Mod)

• **Should not** prescribe acid suppression therapy (C, Mod)
Inborn Error of Metabolism

- **Need not** obtain blood glucose (C, Weak)
- **Need not** obtain serum lactic acid or bicarbonate (C, Weak)
- **Should not** obtain serum sodium, potassium, chloride, BUN, creatinine, calcium, or ammonia (C, Mod)
- **Should not** obtain venous or arterial blood gas (C, Mod)
- **Should not** obtain urine organic acids, plasma amino acids or plasma acylcarnitines (C, Mod)
Anemia

• **Should not** obtain laboratory evaluations for anemia (C. Mod)
Patient- and Family-Centered Care

• **Should** offer resources for CPR training to caregiver (C, Mod)

• **Should** educate caregivers about BRUEs (D, Weak)

• **Should** use shared decision making (C, Mod)
Implementation and Improvement
5
Implementation & Improvement: AAP.org

- **Education**
  - AAP, AAFP, ACEP, ABP, SHM news and conference outlets
  - Caregiver handout
  - Webinar

- **Work flow integration**
  - Crowdsourcing of orderset, H&P templates, algorithm

- **QI, research, billing**
  - ICD-9/10 codes, MOC collaborative with QuIIN/VIP/PEMCRC
  - Proposed quality measures
  - Key Driver Diagram
Key Driver Diagram: AAP.org

Brief Resolved Unexplained Event Key Driver Diagram

Primary Aim

Providers understand that asymptomatic patients previously classified as ALTE with GERD symptoms, unresolved symptoms, only rubor, fever, respiratory symptoms, vomiting, >12 months old, etc. are not classified as BRUE

Providers know and utilize BRUE lower-risk factors:
- Age >60 days
- GSA >32 wks & PCA≥45wks
- Negative H+P
- First BRUE, no BRUE clusters
- Event duration <1 minute
- No CPR by trained provider

Providers know and utilize limited work-ups for lower risk BRUE:
- Offer CPR training
- Use shared decision making
- May Obtain Pertussis testing, EKG, and brief continuous pulse ox
- No: viral testing, UA, glucose, bicarb, lactic acid, CBC, neuroimaging, admit solely for cardiorespiratory monitoring

Secondary Drivers

Educational Materials, powerpoint slide decks and webinars on new BRUE definition, lower-risk factors and appropriate work-ups

EQIPP Modules, PREP modules, presentations at national conferences

Cross disciplinary training to allow nurse-physician “flattened hierarchy” discussion of test requirements for patients with BRUE

Admission and Neuroimaging hard stops for when provider lists reason as “ALTE”

BRUE Note Templates

BRUE order sets

Shared Decision making toolkit and family engagement in safety teams

BRUE Definition: Clinicians should use the term brief resolved unexplained event (BRUE) to describe an event occurring in an infant <1 year of age when the observer reports a sudden, brief, and now resolved episode of 1 or more of the following:
- cyanosis or pallor
- absent, decreased, or irregular breathing
- marked change in tone (hyper- or hypotonia)
- altered level of responsiveness

Moreover, clinicians should diagnose a BRUE only when there is no explanation for a qualifying event after conducting an appropriate H&P and exam

>90% of infants <12 months old with Brief Resolved Unexplained Events (BRUE) will 1) be appropriately diagnosed, 2) have risk factors documented, 3) be appropriately categorized into the correct higher vs. lower risk stratification, and 4) utilize limited work-ups for lower risk patients
Caregiver Handouts: AAP.org

Evento breve inexplicable resuelto:
Lo que los padres y cuidadores deben saber

(Brief Resolved Unexplained Event)

¿Qué es un evento breve inexplicable resuelto?
Un evento breve inexplicable resuelto (brief resolved unexplained event, BRUE por sus siglas en Inglés) se produce repentinamente y puede ser aterrador para los padres y cuidadores. Un evento breve inexplicable resuelto es un diagnóstico realizado después de que el pediatra o el profesional de

P: ¿Al tener un evento breve inexplicable resuelto, aumenta el riesgo de que mi bebé sufra el síndrome de muerte súbita del lactante (sudden infant death syndrome, SIDS)?
R: No, si bien no se conocen las causas del SIDS, los eventos como estos no aumentan el riesgo de tal síndrome. Para todos los bebés, es importante crear un

Brief Resolved Unexplained Event:
What Parents and Caregivers Need to Know

What is a brief resolved unexplained event?
A brief resolved unexplained event (or BRUE for short) occurs suddenly and can be scary for parents and caregivers. A brief resolved unexplained event is a diagnosis made after your baby’s doctor or health care professional has environments. Visit www.HealthyChildren.org/safesleep to learn more about how to create a safe sleeping environment for your baby.

Q: What should I do if it happens again?
Future Directions

• Guidance on Higher-Risk BRUEs
• Better identification of child abuse
• Understand epidemiology and risk
• Understand patient- and family-centered outcomes
• Empiric GER treatment
Take home points

• ALTEs are very different from SIDS
• Can you explain the event with careful history and physical exam?
• Remember child abuse can present as an ALTE/BRUE
• Is the patient asymptomatic and well-appearing?
• Is the patient in the lower-risk group?
• Perform diagnostic tests based on true, rather than perceived risk
• Use shared decision making and inform caregivers of potential harm to testing/hospitalization
• Goodbye ALTE...Hello BRUE
A special thanks to...

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...and 40+ guideline reviewers
Questions and Discussion
12. Tieder JS, et al. Brief Resolved Unexplained Events (Formerly Apparent Life-Threatening Events) and Evaluation of Lower-Risk Infants: Executive Summary