

ALTE:

A Treacherous “Brew”

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CODE₃
CONFERENCE

 **Washington**
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Physicians

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Case Study

- * “Units responding; caller reports infant unconscious, possibly not breathing. P.D. requesting expedite.”



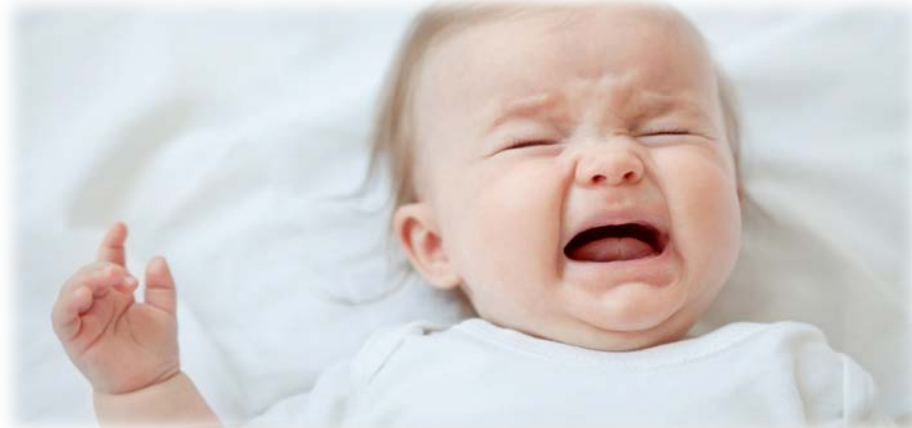
Case Study

- * On arrival, EMS crew finds a 3-month-old infant awake, seemingly alert
- * Airway is open, breathing is unlabored and normal, skin is warm and dry; normal color



Case Study

- * On arrival, EMS crew finds a 3-month-old infant awake, seemingly alert
- * Airway is open, breathing is unlabored and normal, skin is warm and dry; normal color
- * Infant begins to cry but is consoled by mother who states she was feeding the baby when baby seemed to sputter and turn blue and eyes rolled back
- * She is a first-time Mom and wonders if she overreacted



Objectives

- * Recognize the clinical entity formerly known as Apparent Life Threatening Event (ALTE) and its implications for the EMS provider
- * Discuss the new terms and epidemiology behind this potentially dangerous presentation
- * Appreciate the risk to EMS, Fire, and Police personnel for not recognizing this entity
- * List recommended evaluation and management steps for EMS when dealing with ALTE



ALTE – classic definition

"An apparent life-threatening event (ALTE) is defined as an episode that is frightening to the observer and is characterized by some combination of apnea (central or obstructive), color change (cyanotic, pallid, erythematous or plethoric) change in muscle tone (usually diminished), and choking or gagging. In some cases, the observer fears that the infant has died. Previously used terminology such as near-miss sudden infant death syndrome (SIDS) or aborted crib death should be abandoned because their use implies a possibly misleading close association between this type of spell and SIDS." This description was established by expert consensus in 1986.



National Institutes of Health



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BRUE – new terminology; 2016

* **B**rief **R**esolved **U**nexplained **E**vent

- ▶ Sudden, brief (<60 sec) and resolved incident in baby 12 months old or younger with at least one:
 - Breathing change: absent, decreased, irregular
 - Color change: cyanosis or pallor
 - Muscle tone change: hyper- or hypotonia
 - Altered responsiveness

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

ALTE?
No Longer Speak
of Such Things.

Let's Enjoy This
Tasty **BRUE**
Instead.



BRUE – epidemiology

***B**rief **R**esolved **U**nexplained **E**vent



BRUE – Differentials

***B**rief **R**esolved **U**nexplained **E**vent

- Sepsis
- Pneumonia
- Respiratory syncytial virus
- Hypothermia
- Anemia
- Botulism
- Dysrhythmias
- Acid/base disturbance
- Intracranial hemorrhage
- Meningitis/encephalitis
- Pertussis
- Hypoglycemia
- Seizures
- Gastroesophageal reflux
- Child abuse
- Inborn errors of metabolism
- Electrolyte abnormalities



Important Questions to Ask

* Who observed the infant and *what* exactly was seen

TABLE 2 Historical Features To Be Considered in the Evaluation of a Potential BRUE

Features To Be Considered
Considerations for possible child abuse: Multiple or changing versions of the history/circumstances History/circumstances inconsistent with child's developmental stage History of unexplained bruising Incongruence between caregiver expectations and child's developmental stage, including assigning negative attributes to the child
History of the event General description Who reported the event? Witness of the event? Parent(s), other children, other adults? Reliability of historian(s) State immediately before the event Where did it occur (home/elsewhere, room, crib/floor, etc)? Awake or asleep? Position: supine, prone, upright, sitting, moving? Feeding? Anything in the mouth? Availability of item to choke on? Vomiting or spitting up? Objects nearby that could smother or choke?
State during the event Choking or gagging noise? Active/moving or quiet/flaccid? Conscious? Able to see you or respond to voice? Muscle tone increased or decreased? Repetitive movements? Appeared distressed or alarmed? Breathing: yes/no, struggling to breathe? Skin color: normal, pale, red, or blue? Bleeding from nose or mouth? Color of lips: normal, pale, or blue?
End of event Approximate duration of the event? How did it stop: with no intervention, picking up, positioning, rubbing or clapping back, mouth-to-mouth, chest compressions, etc? End abruptly or gradually? Treatment provided by parent/caregiver (eg, glucose-containing drink or food)? 911 called by caregiver?
State after event Back to normal immediately/gradually/still not there? Before back to normal, was quiet, dazed, fussy, irritable, crying?

Recent history

Illness in preceding day(s)?

If yes, detail signs/symptoms (fussiness, decreased activity, fever, congestion, rhinorrhea, cough, vomiting, diarrhea, decreased intake, poor sleep)

Injuries, falls, previous unexplained bruising?

Past medical history

Pre-/perinatal history

Gestational age

Newborn screen normal (for IEMs, congenital heart disease)?

Previous episodes/BRUE?

Reflux? If yes, obtain details, including management

Breathing problems? Noisy ever? Snoring?

Growth patterns normal?

Development normal? Assess a few major milestones across categories, any concerns about development or behavior?

Illnesses, injuries, emergencies?

Previous hospitalization, surgery?

Recent immunization?

Use of over-the-counter medications?

Family history

Sudden unexplained death (including unexplained car accident or drowning) in first- or second-degree family members before age 35, and particularly as an infant?

Apparent life-threatening event in sibling?

Long QT syndrome?

Arrhythmia?



BRUE – consequences

* Brief Resolved Unexplained Event

Physical Examination

General appearance

- Craniofacial abnormalities (mandible, maxilla, nasal)
- Age-appropriate responsiveness to environment

Growth variables

- Length, weight, occipitofrontal circumference

Vital signs

- Temperature, pulse, respiratory rate, blood pressure, oxygen saturation

Skin

- Color, perfusion, evidence of injury (eg, bruising or erythema)

Head

- Shape, fontanelles, bruising or other injury

Eyes

- General, extraocular movement, pupillary response
- Conjunctival hemorrhage
- Retinal examination, if indicated by other findings

Ears

- Tympanic membranes

Nose and mouth

- Congestion/coryza
- Blood in nares or oropharynx
- Evidence of trauma or obstruction
- Torn frenulum

Neck

- Mobility

Chest

- Auscultation, palpation for rib tenderness, crepitus, irregularities

Heart

- Rhythm, rate, auscultation

Abdomen

- Organomegaly, masses, distention
- Tenderness

Genitalia

- Any abnormalities

Extremities

- Muscle tone, injuries, limb deformities consistent with fracture

Neurologic

Alertness, responsiveness

Response to sound and visual stimuli

General tone

Pupillary constriction in response to light

Presence of symmetrical reflexes

Symmetry of movement/tone/strength

Apparent Life Threatening
Events in Babies:
Trouble BRUEing



BRUE – consequences

- * Insert tragic headlines here perhaps of EMS misses



Average Medical Malpractice Lifespan

- * Insert facts here
- * Tens of thousands of dollars
- * Hundreds of hours committed to chart review, attorney discussions, depositions, trial



Average Medical Malpractice Lifespan

- * You are not saving yourself *anything* with a refusal on these calls



* Things for EMS to consider:

- ▶ If the baby still exhibits any one of the below when you arrive on scene, it **CANNOT** be BRUE (unless you have 60-second response times or faster)
 - Breathing change: absent, decreased, irregular
 - Color change: cyanosis or pallor
 - Muscle tone change: hyper- or hypotonia
 - Altered responsiveness

ALTE?

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Summary

- * EMS providers absolutely *cannot* miss this diagnosis in the field
- * When identified, BRUE should be managed with supportive care, caregiver reassurance, and *transport* for hospital evaluation
- * By appropriately handling patients with BRUE, tragic consequences can be avoided



