Brief Resolved Unexplained Episodes (BRUES)

Reference: 279
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Purpose
To guide the management of brief resolved unexplained episodes (BRUES)

Intended Audience
All clinical staff involved in identifying and treating BRUES
1. Introduction

The definition BRUE (Brief Resolved Unexplained Episode) has superseded ALTE (Acute Life-Threatening Event). Many events considered ALTEs were not life-threatening in nature but benign manifestations of normal infant physiology. BRUE removes the ‘life threatening’ association of ALTE. Although a broad range of disorders could manifest as an ALTE (child abuse, metabolic conditions, congenital abnormalities, epilepsy, infections), the actual risk of an underlying disorder or recurrent event remained low. To use the phrase ‘life-threatening’ can be misunderstood that the event was more serious than it often was. The American Academy of Paediatrics has published a BRUE guideline. The aim of this is to help clinicians use evidence-based management recommendations in evaluating the risk of future similar events for ‘low risk’ patients where history and examination are normal. It does not extend to managing more complex ‘high risk’ patients where history and/or examination indicate a more severe pathology for which specific guidelines (local or National) exist. For example, choking or gagging events are not included in the BRUE definition because other causes of vomiting will need to be explored; such as reflux, infection or central nervous disease.

BRUES also have a strict age limit. Despite an appropriate history and physical examination, they remain unexplained. BRUE takes into account clinicians’ objective evaluation of events; however, still considering the caregivers’ perception.

2. Intended Audience

All clinical staff involved in identifying and treating BRUES
A. BACKGROUND

The definition BRUE (Brief Resolved Unexplained Episode) has superseded ALTE (Acute Life-Threatening Event). Many events considered ALTEs were not life-threatening in nature but benign manifestations of normal infant physiology. BRUE removes the ‘life threatening’ association of ALTE. Although a broad range of disorders could manifest as an ALTE (child abuse, metabolic conditions, congenital abnormalities, epilepsy, infections), the actual risk of an underlying disorder or recurrent event remained low. To use the phrase ‘life-threatening’ can be misunderstood that the event was more serious than it often was.

The American Academy of Paediatrics has published a BRUE guideline. The aim of this is to help clinicians use evidence-based management recommendations in evaluating the risk of future similar events for ‘low risk’ patients where history and examination are normal. It does not extend to managing more complex ‘high risk’ patients where history and/or examination indicate a more severe pathology for which specific guidelines (local or National) exist. For example, choking or gagging events are not included in the BRUE definition because other causes of vomiting will need to be explored; such as reflux, infection or central nervous disease.

BRUEs also have a strict age limit. Despite an appropriate history and physical examination, they remain unexplained. BRUE takes into account clinicians’ objective evaluation of events; however, still considering the caregivers’ perception. It is more specific in terms of addressing whether there had been cyanosis or pallor; not just ‘colour change’, absent or reduced breathing; not just ‘apnoea’, hypo or hypertonia; not just ‘change in tone’. Altered level of consciousness is now considered. The differential diagnoses to consider in BRUE remains broad and includes:

- Laryngospasm/gagging/inhaled foreign body
- Inflicted injury
- Infection
- Airway obstruction
- Abdominal pathology (intussusception/ herniae/ testicular torsion)
- Metabolic (hypoglycaemia/ calcaemia/ kalaemia, inborn errors of metabolism)
- Cardiac (congenital, arrhythmias, vascular ring/prolonged QT)
- Toxins/drugs
- Neurological – head injury/seizures/cerebral malformations

The new guideline makes identifying low risk from high risk patients in terms of recurrence easier.
A BRUE in an infant under 12 months old has been classified as an event which: ¹

- Lasts <1 minute duration (typically 20-30 seconds)
- Accompanied by a return to baseline state
- Not explained by medical conditions
- Characterised by ≥ 1 of the following event criteria*:
  - Central cyanosis/pallor
  - Absent/reduced or irregular breathing
  - Marked change in tone (hyper/hypotonia)
  - Altered level of consciousness

B. ASSESSMENT

Try to determine the cause of the event and assess for risk factors for recurrence.

Obtain a History: ¹, ²

Description of event-

- Choking/gagging
- Breathing- abnormal breathing patterns
- Colour- normal/cyanosis/pallor
- Conscious state- AVPU
- Movement- eye movements, purposeful movement/flaccid

Circumstances surrounding event-

- Position, awake/asleep, prone/supine/side
- History of vomiting/relation to feeds
- Who was with child at the time?
- Environment- sleeping arrangement, temperature/bedding
- Potential for accidental ingestion
- Illness in preceding days?

End of Event-

- Duration of event
- Cessation- self resolved/repositioned/CPR
- Recovery- gradual or rapid
- Residual symptoms

Other factors-

- Previous events?
Sick contacts
Family Hx sudden death/apnoea/cardiac problems
Birth hx- perinatal insults
Medication
Trauma

Examination should be thorough, bearing in mind the differential diagnosis. Look for bruises and petechiae, including in the mouth. Where NAI is suspected referral for a full child protection medical should be carried out after discussion with ED senior.

Flow diagram to aid diagnosis

Risk Stratification**

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Low risk BRUEs
- Occur in children >60 days of age
- Born ≥ 32/40 and corrected gestational age ≥ 45 weeks
- No CPR required (by a trained medical provider eg paramedic / GP)
- Last < 1 minute First event

C. INVESTIGATIONS
Investigations for a low risk BRUE should be kept to a minimum; mainly an ECG and blood sugar. Depending on clinical suspicion, an NPA, urinalysis and capillary blood gas could be considered.
Further investigations should not be performed on low risk patients. ¹

D. MANAGEMENT
Evidence based recommendations for management of low risk patients should include the education of caregivers about BRUEs. Infants being discharged and stratified as ‘low risk’ should have at least 2 normal observations; on triage and assessment. They should be discussed with a senior doctor before discharge and a BRUE information leaflet (no x) and safety netting advice given.
Infants who have a High Risk BRUE, or an event is more significant such that it doesn’t meet the BRUE definition, must be admitted for a period of continuous pulse-oximetry and investigations guided by the history and examination findings and relevant guidelines.

For admitted patients
1. For babies without co-morbidities,(ie not already known to a team) and an unexplained event where the parents’ anxiety cannot be allayed, referral to the CONI Plus scheme can still be an option for the admitting consultant. Contact Angela Phelps, Coni Coordinator 0114 271 4273
2. No baby should be issued with an apnoea monitor without referral to Coni Plus, which needs to be agreed by the admitting consultant. This will ensure that appropriate resuscitation training and CONI Plus Health Visitor support is arranged.

NB The Paediatric Liaison Nurse (PLN) needs enough time to enrol the family onto the scheme, give safe sleeping messages, teach resuscitation and train the family in the use of the apnoea monitor. Please give the PLN at least 24 hour notice of discharge. All telephone referrals to the PLN on ext 17312, messages can be left via 24hr Confidential
Voicemail.

References


2. Royal Melbourne Children’s Hospital clinical guideline
   
   www.rcg.org.au/clinicalguideline/guideline_index/Apparent_life_threatening_Event_ALTE

   Section 3.5 written by Dr F Blyth, Dr D Pallot and Dr J Gilchrist March 2018