



Clinical Practice Guideline: Apparent Life Threatening Event (ALTE)

Preface:

This guideline provides an evidence based framework for the assessment, investigation and management of children presenting at Princess Margaret Hospital with an Apparent Life Threatening Event.

Definition:

ALTE is a term used to describe "a sudden event, frightening to the observer and that is characterised by some combination of apnoea, colour change (cyanosis, redness, pallor, plethora), marked change in muscle tone (floppiness, rigidity), choking, gagging or coughing"⁽²⁾

Immediate Management:

- Rapid cardiorespiratory assessment to rule out the need for immediate life-sustaining interventions
- Decide if the episode was truly an ALTE or if the process was more benign
- Determine the likelihood of an aetiology that requires urgent or even emergency treatment.
- Most children will require admission and observation.

Evaluation of the event:

A detailed history and thorough physical examination are of utmost importance to the successful management of children presenting with an ALTE. The information gathered will determine whether or not the episode is significant. Diagnostic testing should stem from historical information and clinical findings.

History:

It is important to include the following information in your history:⁽³⁾

- Activity at the time of the event (awake or asleep). What attracted the caregiver's attention? eg: abnormal crying, noisy breathing
- Colour at the time of the event (and whether there was enough light to assess colour)

Date Issued: January 2009
Date Revised: January 2009
Review Date: October 2011
Authorised by: Medical Advisory Committee
Review Team: Paediatric and Adolescent Medicine

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- Degree of resuscitation required
- Presence of blood or bloody fluid at mouth or nose (pulmonary oedema)
- Tone - stiff, floppy or normal
- Abnormal movements, including abnormal eye movements
- Time of event
- Duration of event
- Sleep position- prone / supine / side, presence of sweating
- Environment: nature and type of sleeping arrangement, chair, lounge, crib, car seat, bed as well type of bedding and clothing
- History of vomiting (particularly more than 30 minutes after a feed)
Relationship of the event to feeding (timing post feed)
- History of coryza or other upper or lower respiratory tract symptoms
- Relevant past medical history (especially prematurity), immunisation status and family medical history (especially family history of Sudden Unexplained Death in infancy or later – up to young adult)
- Risk factors for Sudden Unexplained Death in Infancy – eg: pre term birth, tobacco smoke
- Social factors including drug use by caregiver &/or infant

A detailed physical examination is required, bearing in mind the possible causes.

Possible Causes^(1, 4)

- Infection : Pertussis, pneumonia, viral URTI & LRTI esp RSV, meningitis, septicaemia, urinary tract infection
- Airway obstruction: congenital abnormalities, infection, hypotonia
- Gastro-oesophageal reflux
- Metabolic problems: hypoglycaemia, hypocalcaemia, hypokalaemia, other inborn errors of metabolism
- Cardiac disease: congenital heart disease, arrhythmias, vascular ring, prolonged QT
- Toxin / Drugs,: accidental or non-accidental
- Neurological causes: head injury, seizures, infections, central hypoventilation syndrome, cerebral malformations etc
- Apnoea may be a manifestation of child abuse (shaken baby, drug overdose, Munchausen by proxy syndrome or intentional suffocation)⁽⁵⁾

Aetiology of ALTE⁽³⁾

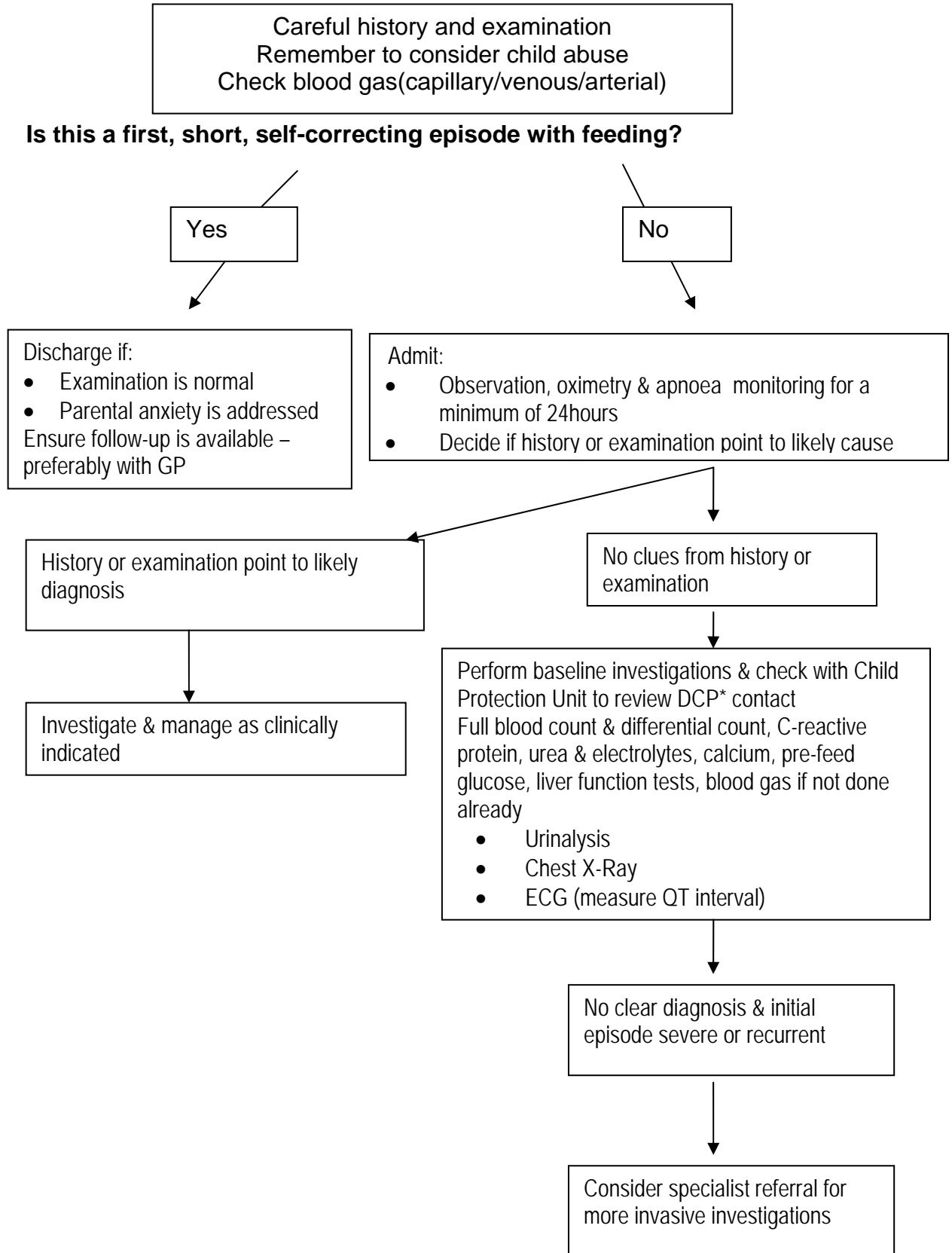
50% of all presenting cases are IDIOPATHIC

The following figures apply to those for whom a diagnosis is found:

Gastrointestinal, eg reflux	50%
Neurological	25%
Respiratory	20%
Cardiac	Up to 5%
Metabolic Abnormalities	Less than 5%
Child Abuse	Less than 5%



Suggested initial investigation plan for an ALTE in a previously healthy infant ⁽⁶⁾



*DCP – Department for Child Protection

Adapted from McGovern et al - Figure 1, Suggested initial investigation plan for an ALTE in a previously healthy infant; p.1047



Investigations

These will be dictated by the clinical presentation, but will often include:^(7,8)

- Full blood count and differential count, C-reactive protein
- Blood gas (capillary/venous/arterial) including ionised calcium
- Urea & electrolytes, fasting (pre-feed) blood glucose, liver function tests
- Nasopharyngeal aspirate for viruses. Consider pertussis and chlamydia
- Chest X-ray
- ECG (measure QT interval)
- Urinalysis (MC&S and urine metabolic screen)

If febrile, blood and urine cultures (consider lumbar puncture)

In selected cases, the following investigations may be appropriate:

- Metabolic: lactate, ammonia, acylcarnitine profile
- Barium swallow, pH monitoring
- ENT consultation (with antero posterior and lateral neck x – ray)
- EEG
- CT head (history or signs of head trauma, altered level of consciousness)
- ECG monitoring
- Overnight oximetry with printout
- Urine toxicology

Polysomnography is not indicated for routine evaluation of infants with an uncomplicated ALTE but consider this if upper airway obstruction or hypoventilation is suspected.

Management

Approach in a systematic manner based on the history and physical examination. All children require close monitoring following admission. In addition to an apnoea monitor, overnight oximetry should be performed. The parents must be taught how to resuscitate an infant. This can be done by the registered nurses on the ward when the infant is an inpatient, or by RN in the Monitoring Clinic.

Criteria for home monitoring include^(9,10):

- Presence of ALTE from history, and after excluding treatable causes
- Apnoea of prematurity persisting past 35 weeks
- Children with chronic lung disease going home on oxygen (such children should also be discussed with the respiratory team)
- Pierre Robin syndrome and other similar abnormalities
- Infants with a tracheostomy.
- Possibly a sibling of a child who has died of SIDS.



PLEASE NOTE:

There is no evidence that a monitor has saved a child's life⁽¹⁰⁾.
Monitors are warning devices, the caregiver has to respond to any alarms.
Infants have been known to die with a properly functioning monitor in situ.

Although ALTE is not predictive of or a precursor of SIDS⁽¹¹⁾, it is important to emphasize practices that have been shown to lower the incidence of SIDS⁽¹²⁾, namely: avoid exposing the child to tobacco smoke, sleep the child in a safe environment, on their back with face uncovered. Bed sharing should be discouraged if the parents smoke, drink alcohol or take sedating drugs.

Links:

Information sheet for parents using [Home Monitoring](#)
Sids and Kids [Safe Sleeping](#) information
[References](#)

Abbreviations/terms used:

CT – Computerised Tomography
ECG – Electro Cardiogram
EEG – Electro Encephalogram
LRTI – Lower Respiratory Tract Infection
RN – Registered Nurse
RSV – Respiratory Syncytial Virus
URTI – Upper Respiratory Tract Infection

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