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Syncope

[Link to Syncope Flow Chart](#)

Aim

To provide an evidence based guide to management of patients with syncope.

Definition of terms

BHCG, Beta human chorionic gonadotropin; BP, Blood pressure; ECG, Electrocardiogram; EEG: Electroencephalogram; HR, Heart rate; LOC, Loss of consciousness; LVH, Left ventricular hypertrophy; POTS, Postural orthostatic tachycardia syndrome; Syncope, Loss of consciousness, collapse, faint

Target Patient Population

Patients under the age of 16 years, presenting with syncopal episode. This guideline does not apply to those with preexisting significant medical history such as neurological, cardiac, genetic or metabolic disease.

Target Users

Health-care professionals engaged in the care of children with possible syncope.

Assessment

Syncope is common with up to 35% of children experiencing at least one episode. The differential for syncope is broad and careful history taking is paramount. Unlike adults, the aetiology in children and adolescents is typically benign, with vasovagal syncope being the predominant cause. Other rare causes of paediatric syncope, such as arrhythmias, are associated with the potential for sudden death. In addition, it is important to consider variation in presentations of syncope.

History

The initial management must include a careful history and examination so as to allow identification of potential aetiology and planning of investigations.

- Consider the history in segments – prior to the event, the event itself and after the event.
- Consider patients own account and that of a collateral witness. Look for the following details:

Prior to the 'event'	The 'event' itself	After the 'event'
Activity at the time	Length of event	Level of alertness post event
Time of day	Abnormal movements	Length of time to recovery
Position	Associated cardiac symptoms – shortness of breath, palpitations, chest pain, incontinence	Reappearance of symptoms on standing up

Trigger	Other associated symptoms – nausea, lightheaded-ness, blurring of vision Feelings of pre-syncope (on this occasion or previously) – things moving away, falling away	
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- Syncope can be associated with jerking movements or incontinence
- Medical History
 - Previous similar events
 - Corrected or uncorrected congenital heart disease
 - Known arrhythmia
 - Diabetes mellitus and blood sugar control
 - Menstrual history including sexual activity
- Access to medications, alcohol or illicit drugs
- Family History
 - Frequent fainting in first degree relatives
 - Known cardiac disease in family, specifically cardiomyopathies and cardiac ion channelopathies (Long QT syndrome, Catecholaminergic Polymorphic VT)
 - Any history of early cardiac death or Sudden Adult Death Syndrome (unexpected sudden death under 40 years of age) – including accidental drowning, single vehicle unexplained road traffic accidents
 - Sudden Infant Death Syndrome (very rarely related)

Differential Diagnosis of Syncopal Disorder

- **Vasovagal syncope:** Commonest cause of syncope. Triggers include intercurrent illness, hot weather, missed meals, inadequate fluid intake and prolonged standing. Prodrome of awareness of feeling cold/hot, clammy and unwell, sounds becoming distant or vision greying out. If event not terminated in prodromal phase and child slumps or stiffens and falls to ground then may be associated with brief tonic or clonic movements or urinary incontinence.
- **Epileptic seizure:** Careful history taking should help differentiate this from vasovagal syncope with brief tonic /clonic movements.
- **Anoxic-epileptic seizures:** Status epilepticus induced by hypoxia of syncope- uncommon
- **Cardiac disease:** Syncope on exertion, associated concomitant palpitations immediately prior to syncope, unprovoked syncope (little or no prodrome).
- **Reflex anoxic seizures / reflex asystolic syncope:** Noxious stimulus e.g. sudden unexpected shock or pain or sight of blood or needles. May have limb stiffening or jerking. Refer severely affected children to Cardiology.
- **Blue (cyanotic) breath-holding attacks:** Hypoxic in origin due to disordered respiration. Toddler who becomes angry or frustrated and cries followed by prolonged end expiratory apnoea. Becomes blue, limp and may lose consciousness. May have limb jerking.
- **Self-induced reflex syncope:** Occasionally seen in patients with severe learning difficulties performing a Valsalva manoeuvre.

- **Postural Orthostatic Tachycardia Syndrome:** Orthostatic tachycardia which may be accompanied by symptoms of cerebral hypoperfusion (light-headedness and dizziness) with sympathetic hyperactivity (palpitations and tremulousness) and relieved by recumbancy. If considered as a differential, check supine and 3-minute standing HR measurements (without obtaining blood pressure) A cut off of a 40 bpm increase and a standing HR of >115 to 120 at 3 minutes is helpful to distinguish a normal versus exaggerated response to orthostatic pulse.
- **Non-epileptic attack disorder:** More commonly seen in girls. Can have explosive onset. May be briefer and less stereotyped than true epileptic seizures. Lack of post ictal drowsiness. Confirm with video telemetry EEG.
- **Narcolepsy and cataplexy-** Cataplexy is sudden loss of muscle tone precipitated by laughter or startle with retention of awareness.
- **Alternating hemiplegia of childhood:** Attacks can be associated with severe apnoea
- **Anoxic seizures due to suffocation:** Rarely seen in *Munchausen syndrome by proxy*

Cardiac RED FLAGS	Vasovagal Pointers
<ul style="list-style-type: none"> • Event triggers – fright, auditory stimulus, extreme emotional stress without identifiable prodrome 	<ul style="list-style-type: none"> • More likely in morning
<ul style="list-style-type: none"> • Syncope during exertion, including swimming (long QT) 	<ul style="list-style-type: none"> • Prolonged standing at any time
<ul style="list-style-type: none"> • Palpitations or chest pain associated with syncope 	<ul style="list-style-type: none"> • Sight of blood/needles
<ul style="list-style-type: none"> • Family history of early cardiac death, known arrhythmia or familial cardiomyopathy 	<ul style="list-style-type: none"> • Clear typical prodrome preceding event which persists until recovery
<ul style="list-style-type: none"> • History of congenital heart disease 	<ul style="list-style-type: none"> • Prodrome of nausea
<ul style="list-style-type: none"> • On waking from sleep or coming on in lying position (Long QT) 	<ul style="list-style-type: none"> • History of same in parents
<ul style="list-style-type: none"> • No nausea 	<ul style="list-style-type: none"> • Frequency. Syncope or near syncope several times a week
<ul style="list-style-type: none"> • New unexplained nocturnal enuresis (due to seizure from arrhythmia overnight) 	<ul style="list-style-type: none"> • Associated postural symptoms on other occasions

In the presence of cardiac red flags, consider discussion with cardiology on call and at minimum referral to cardiology OPD is recommended, regardless of examination or ECG findings

Examination

- Full cardiac and neurological examination
- All vitals including SpO₂
- Single seated BP and HR is usually sufficient
- If POTS is suspected, perform lying HR and standing at three minute HR. BP is not necessary. (HR difference >40bpm after three minutes standing or HR >115 is suggestive of POTS)

Investigations

- 12 lead ECG with manual measurement of QTc in leads II or V5
- Glucose level - Finger prick testing is adequate unless abnormal
- BHCG - Post menstrual girls

Management

See [Syncope Flow Chart](#)

Special Considerations

Indications for Admission

- Signs of cardiovascular disease on examination such as non-innocent murmur, heaves, failure
- Abnormal ECG including delta waves (WPW), prolonged QTc >450 or more likely 470 msec (please discuss with cardiology as machine interpretation can over-estimate), T wave inversion (not appropriate for age) or LVH.
- Chest pain with syncope
- Syncope with cyanosis
- Apnoea or bradycardia requiring stimulation
- Abnormal neurologic findings
- Orthostatic hypotension that does not resolve with fluid therapy

Recurrent Events

Potentially vasovagal or psychogenic but rarely cardiogenic. Consider referral to a general paediatrician for overall review. Recurrent syncopal events can be problematic, for example potential injury from falls and associated psychological issues such as social isolation and low self-esteem.

Companion Documents

See [Syncope Parent Information Leaflet](#)

Links to useful websites

http://www.rch.org.au/clinicalguide/guideline_index/Syncope/

<http://www.uptodate.com/contents/emergent-evaluation-of-syncope-in-children-and-adolescents>

[Link to Reference list](#)

[Link to Literature Search Strategy](#)