Syncope accounts for 1-3% of ED visits and affects 6 per 1000 people per year. Patients with neuro-cardiac (vaso-vagal) syncope have an excellent prognosis, whereas patients with a cardiac cause of syncope have a mortality rate of 10% at six months.

**Etiology**
40-50% can be diagnosed by history and physical alone. Make sure LOC is a syncopal episode as opposed to a similar condition. Similar conditions requiring different approach include:

- **Vertigo** – Sensation of movement predominates over presyncope, positional as opposed to exertional, persistent or recurrent episodes
- **Shock** – Abnormal vital signs
- **Metabolic** – Abnormal vital signs or EKG changes
- **EtOH/toxic ingestion/medication side effect**
- **Seizure** – Tongue biting, witnessed abnormal posturing (not just jerking), post-ictal period (e.g. 30 minutes). Urinary incontinence is not a discriminatory feature.
- **Psychogenic** – PMH depression/anxiety, frequent events, vague associated symptoms, secondary gain, rarely associated with injury, hyperventilation

**Syncope is defined by a brief loss of consciousness with an inability to maintain postural tone that spontaneously and completely resolves without medical intervention. Low risk syncope will have normal vital signs throughout a visit to the emergency department.**

**Approach to syncope in the emergency department**
1) Rule out the dangerous diagnoses (syncope plus...)
2) Rule in the most common cause(s) – neurally mediated or “reflex” syncope
3) Initial testing - EKG should be done in every case. CBC, BHCG may be appropriate in certain circumstances. Have a low threshold for DRE +/- hemoccult, accuchek. Imaging studies are only appropriate to rule out specific etiologies.
### Neurally mediated (reflex) syncope

<table>
<thead>
<tr>
<th>Type</th>
<th>Setting</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situational</td>
<td>Micturition, GI stimulation, Cough or sneeze, Prolonged standing, Needle/blood exposure</td>
<td>No Hx heart disease, +previous episodes, clear trigger</td>
</tr>
<tr>
<td>Vaso-vagal</td>
<td>Stress or hunger, Fear, Noxious stimulus/heat</td>
<td>Presyncopal symptoms – nausea, blurred vision, feeling hot. Recovery associated with diaphoresis, prolonged nausea, exhaustion</td>
</tr>
<tr>
<td>Carotid Sinus Stimulation</td>
<td>Carotid Sinus Stimulation</td>
<td>Head turning, shaving. Increased with age &gt;40</td>
</tr>
</tbody>
</table>

### Orthostatic

<table>
<thead>
<tr>
<th>Type</th>
<th>Mechanism</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomic System Dysfunction</td>
<td>Primary – e.g. Parkinson’s, MS, Lewy body dementia, Secondary- DM, uremia, spinal injury</td>
<td>Symptoms alone more reliable than Systolic drop 20mmHg, Diastolic drop 10mmHg, HR incr by 20 at 3 min after standing</td>
</tr>
<tr>
<td>Medication-Induced</td>
<td>Vasodilation, blunted orthostatic response</td>
<td>Polypharmacy increases risk</td>
</tr>
<tr>
<td>Hypovolemia</td>
<td>Decreased intake or increased losses</td>
<td>Increased risk when combined with age, other risk factors</td>
</tr>
</tbody>
</table>

### Dangerous causes of syncope to consider

<table>
<thead>
<tr>
<th>System</th>
<th>Diagnosis</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurologic</td>
<td>SAH, Vertebrobasilar TIA</td>
<td>Headache, residual neuro findings, risk factors</td>
</tr>
<tr>
<td>Cardiac</td>
<td>Ischemic Arrhythmia, Structural</td>
<td>Risk factors, exertional, family history sudden death</td>
</tr>
<tr>
<td>Hypovolemia (acute)</td>
<td>GI bleed, Ectopic AAA</td>
<td>Hx/PEx, BHCG or occult blood testing. Expected tachycardia may be masked by medications</td>
</tr>
<tr>
<td>Vascular</td>
<td>Pulmonary embolism, Aortic dissection</td>
<td>Risk factors, family history</td>
</tr>
</tbody>
</table>
**Decision rules**
San Francisco: High risk if any one of: Abnormal EKG, PMH of CHF, shortness of breath, persistent BP less than 90mm Hg, or hematocrit less than 30%
OESIL: Progressive risk with each of: Abnormal EKG, Age >65, PMH cardiovascular disease, no prodrome
ROSE: High risk for one month outcome for any one of the following: BNP >300ng/L, HR<50, Positive occult blood, Chest pain with syncope, Anemia (<90g/L), Q waves on EKG, or SaO2 less than 94%.
EGSYS: Abnormal EKG (+3) Preceding palpitations (+4 ) Exertional (+3) Supine (+2) Precipitating or predisposing factors (-1) Prodrome of nausea or vomiting (-1). Total score 3 or more increased risk cardiac syncope.

Common elements to decision rules for syncope:
- Abnormal ECG, whatever the definition may be
- History of structural or arrhythmic heart disease, often clinically represented by shortness of breath or other symptoms of heart failure
- Persistently abnormal vital signs in the ED
- Older age, especially in combination with any of the other criteria.

**EKG in Syncope:**
The most common abnormalities to be aware of are ischemic changes and/or conduction disturbances/arrhythmias. This includes paced rhythms.
LVH may be associated with Aortic stenosis on physical exam.
Less common diagnoses warranting further investigation include the following:
Cardiomyopathies such as HCM or Arrhythmogenic Right Ventricular Dysplasia
WPW Syndrome
Brugada Syndrome

Selected references:
ECG Features that suggest a potentially life-threatening arrhythmia as the cause for syncope J Electrocardiology 2013 46 561–568
Standardized Approaches to the Investigation of Syncope: Canadian Cardiovascular Society Position Paper Can J Cardiology 2011 27 246–253

Transient loss of consciousness: summary of NICE guidance Heart 2013 99 3

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