Syncope Clinical Guideline

**Definition:** Syncope is the term used to describe a temporary loss of consciousness (LOC) due to the sudden decline of blood flow to the brain. Often referred to as fainting or “passing out,” syncope is most often a transient and benign condition, and the event will have no long-term significance. In some cases, syncope is a sign that a dangerous or even life-threatening underlying medical condition may be present. LOC associated with increased muscle tone is a neurologic (or sometimes psychiatric) event, not a cardiac one.

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**ROSE Clinical Decision Rule (BRACES)**

Patients with one or more should be considered for admission.

- **B**—BNP >300
- **R**—Rectal exam, positive for fecal occult blood
- **A**—Anemia (Hgb <9 g/dl)
- **C**—Chest pain associated with syncope
- **E**—ECG, Q wave (not lead III)
- **S**—SpO₂ <94% on room air

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**Evaluation**

Determine if the event is “true” syncope: transient LOC with loss of muscle tone and followed by a return to baseline neurologic function.

Perform focused history and physical exam; focus on vital signs, cardiovascular, and neurologic systems:
- prodrome?
- exertional or post-exertional?
- while lying, sitting vs. standing?
- taking meds that increase QT interval?

PMHx:
- CAD/CHF?
- ventricular arrhythmia?
- history of epilepsy/migraines headaches?

Family History:
- sudden cardiac death?

**Treatment**

Evaluate with ECG and orthostatic BP (see Table One)
- Evaluate SpO₂
- Obtain focused lab, e.g., CBC (hgb), BMP, BNP
- Apply ROSE clinical decision rule (see box on right)

**Hospitalize to observation or inpatient with telemetry monitor**

**Order echocardiogram**

**Consult specialty service as appropriate (see Table Two)**

**Non-life threatening causes of syncope that typically do not require hospitalization:**
- Neurocardiogenic/vasovagal
- Vasomotor syncope
- Situational syncope
- Medication-related
- Orthostatic hypotension
- Hypoglycemia or toxins

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**Risk stratification**

- **High:**
  - CVA/Stroke
  - Pre-syncope
  - Lightheadedness
  - Unresponsiveness
  - Seizure
  - Trauma

- **Low:**
  - Low-risk: ECG normal and patient asymptomatic with explainable cause

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**Admission for evaluation and cardiac monitoring:**
- Significantly abnormal ECG in appropriate clinical setting
- Sustained v fib and v tach
- Hematocrit less than 30
- Shortness of breath
- SBP less than 90 mmHg
- Recurrent acute seizures difficult to control
- Family history of sudden cardiac death before age 40-50
- Advanced age (70 or frail appearing)

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No

**Potentially serious cause?**

Yes

**Hospitalize to observation or inpatient with telemetry monitor**

**Order echocardiogram**

**Consult specialty service as appropriate (see Table Two)**

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**Discharge or close interval follow-up with PCP or cardiologist in 1-2 weeks**

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Evaluation

Syncope is a common presenting complaint in a primary care setting, and at least 90% of the time reflects either neurocardiogenic syncope (NCS) or orthostatic hypotension (OH). More malignant etiologies are significantly less likely, although possible. The goal of the initial evaluation is to evaluate the patient for the common etiologies and exclude high risk features.

The patient’s history and a physical examination are the most specific and sensitive ways to evaluate syncope. In up to 85% of patients, the determination of what caused the syncopal episode can be achieved with a thorough history and physical exam, including orthostatic blood pressures. Attention should be paid to both the description of syncope and to questioning about symptoms of either ischemic disease or heart failure.

A detailed account of the event must be obtained from the patient and/or witnesses of the event. This account should include the circumstances surrounding the episode, such as the precipitant factors, the activity in which the patient was involved prior to the event, and the patient’s posture when it occurred. Activity prior to the event may give clues to the etiology of symptoms. Syncope may occur at rest, with a change of posture, during exertion, after exertion, or with specific activities such as shaving, coughing, voiding, or prolonged standing. Assess whether a patient was standing, sitting, or lying when the syncope occurred. Syncope while seated or lying down is more likely to be cardiac.

A medication history must be obtained in all patients with syncope, with special emphasis placed on cardiac and antihypertensive medications. Drugs commonly implicated in syncope include the following:

- agents that reduce blood pressure (e.g., antihypertensives, diuretics, nitrates)
- agents that affect cardiac output (e.g., beta blockers, digitalis, antiarrhythmics)
- agents that prolong the cardiac output (QT) interval (e.g., tricyclic antidepressants, phenothiazines, quinidine, amiodarone)
- agents that alter sensorium (including alcohol and analgesics with sedative properties)
- agents that alter serum electrolytes (especially diuretics)

Inquiry must be made into any personal or familial past medical history of cardiac disease. Patients with a history of myocardial infarction (MI), arrhythmia, structural cardiac defects, cardiomyopathies, or congestive heart failure (CHF) have a uniformly worse prognosis than other patient groups.

The following tests can be done to help determine the etiology of the syncope event:

- 12-lead ECG (electrocardiogram) testing
- Echocardiogram
- Oxygen saturation levels via pulse oximetry
- Basic metabolic panel (BMP) blood testing
- B-type natriuretic peptide (BNP) blood testing
- Complete blood count (CBC) blood testing

Basic labs including CBC and BMP are not necessary, if the presentation is of a single event with obvious etiology in a young and apparently healthy patient.

If the evaluation is characteristic of either neurocardiogenic syncope or orthostatic hypotension, the ECG is normal, and the patient does not have other high risk features such as exertional angina or signs and symptoms of heart failure, then no further testing is indicated. A diagnosis should be made of either NCS or OH (or both) and the patient treated accordingly.

If the ECG is abnormal, an echocardiogram should be obtained to exclude significant structural heart disease. If exertional angina is present, stress testing should be considered.

A patient with a normal ECG, near normal BNP, and no signs of ischemia or heart failure has an extremely low risk of ventricular fibrillation.

Quick Guide to Syncope

- Syncope is most often benign and self-limited
- The distribution of causes for syncope are as follows:
  - reflex (including neurally mediated and vasovagal): 58%
  - cardiac disease: 23%
  - neurologic or psychiatric disease: 1%
  - unexplained syncope: 18%
- Up to 40% of the population will experience at least one episode of TLOC (transient loss of consciousness) in their lifetime
- Patients age 70 and older are at a greater risk for syncope

Syncope is thought be responsible for approximately 3% of emergency room visits and 2-6% of inpatient admissions each year.
Any patient presenting with syncope, pre-syncope, heart failure, atrial fibrillation, or a need for surgery with a pacemaker or ICD in situ who is being admitted and any patient with a pacemaker or ICD in situ who is being sent home, unless the etiology is obvious (orthostatic hypotension, hypoglycemia, etc.), should have the device interrogated. For patients with Medtronic or Boston Scientific devices, this should be done prior to leaving the ED via the Carelink Express or Latitude Consult system. For St. Jude or Biotronik Devices, have the vendor rep or device staff do it the next day.

Patients with one or more should be considered for admission (Rose Clinical Decision Rule – BRACES):
- **B** — BNP >300  Bradycardia <50 bpm  
- **R** — Rectal exam, positive for fecal occult blood  
- **A** — Anemia (Hgb <9 g/dl)  
- **C** — Chest pain associated with syncope  
- **E** — ECG, Q wave (not lead III)  
- **S** — SpO₂<94% on room air

If signs or symptoms of heart failure are present, both echocardiography and an evaluation for ischemia (e.g., stress testing) should be considered.

If the clinical presentation is atypical for NCS/OH (for example, with minimal or no prodrome, occurrence while seated or supine, occurrence during exercise, or associated with significant injuries), or if the patient has a family history of early sudden death, or if the patient does not respond to appropriate initial therapy, echocardiography and ambulatory ECG should be considered. Note that 24-hour Holter monitoring has a very low yield and is not generally recommended for this indication; if ambulatory ECG is pursued, it should be with a 10- to 14-day patch monitor, 30-day looping event recorder, or implantable loop recorder, depending on the frequency of clinical events. Tilt testing can be considered, but has poor sensitivity and specificity and should not generally be a first line test.

If the clinical presentation is compatible with seizure (focal neurological signs, auras, tongue-biting, loss of bowel or bladder function, witnessed convulsions, prolonged postictal phase), then evaluation for seizure should occur as well. However, note that convulsions are not uncommon during genuine syncope; furthermore, true syncope and true seizure can co-exist in the same patient.

**Treatment**
Treatment is based upon the underlying cause of syncope and is directed at preventing recurrence and/or, in some cases, death. Medication and simple lifestyle modifications can often prevent reflex-related syncope events. If a cardiovascular or neurological cause is to blame, the provider should consider a referral to a specialist (see Table Two) to diagnose and treat the suspected condition.

**Follow Up**
If a patient is not considered high risk, discharge and close interval follow up with a PCP or specialist is recommended.

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**Table One: All patients with syncope require an ECG evaluation to look for signs of the following:**

<table>
<thead>
<tr>
<th>Ischemia or MI</th>
<th>Aortic stenosis</th>
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<tbody>
<tr>
<td>Arrhythmias</td>
<td>Left ventricular hypertrophy; hypertrophic cardiomyopathy</td>
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<tr>
<td>Prolonged QT</td>
<td>Wolff-Parkinson-White syndrome</td>
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<tr>
<td>Pre-excitation syndrome</td>
<td>Brugada syndrome (RBBB, ST elevation in V1-V3)</td>
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<tr>
<td>Pulmonary embolus</td>
<td>Pericarditis; diffuse ST elevation or electrical alternans with pericardial tamponade; low voltage QRS complexes</td>
</tr>
</tbody>
</table>
- tachycardia    |
- right strain or RBBB |
- T wave inversion in V1-V4 |
- S1Q3T3
<table>
<thead>
<tr>
<th>Type of Consult</th>
<th>Indications</th>
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| Cardiology                  | • Abnormal echo (LVEF <50% or more than trivial pericardial effusion, moderate to severe valvular disease  
                              • Carotid sinus hypersensitivity  
                              • Sinus rate less than 50 while awake  
                              • Pauses greater than 3 seconds  
                              • Second or third degree AV block  
                              • LBBB or bifascicular block  
                              • Ventricular fibrillation or nonsustained V-tach (syncope is abrupt and unexplained)  
                              • Family history of sudden cardiac arrest  
                              • Pre-excitation, long QT, or Brugada syndrome  
                              • Syncope occurs while supine or during exertion  
                              • Readmission for syncope  
                              • Implantable cardiac device                                                                 |
| Neurology                   | • Focal neurologic findings  
                              • CVA vs transient ischemic attack  
                              • Orthostatic hypotension unresponsive to volume/meds  
                              • Neurogenic syncope                                                                 |
| Pulmonologist/Critical Care Physician | • Pulmonary embolism                                                          |
| Cardiothoracic              | • Subclavian steal syndrome  
                              • Atrial myxoma                                                               |
| Neurosurgical               | • Intracranial hemorrhage                                                   |
| Surgery                     | • Significant hemorrhage  
                              • Associated trauma  
                              • Ruptured spleen  
                              • Ruptured ovarian cyst                                                      |
| Gastroenterologist          | • GI bleed                                                                   |

**Table Three: ICD-10 Diagnosis Codes**

<table>
<thead>
<tr>
<th>ICD 10 Codes</th>
<th>Description</th>
</tr>
</thead>
</table>
| R55          | Syncope and collapse, unspecific  
               -vasovagal  
               -blackout                                        |
| R40.20       | Syncope, unconscious unspecific                  |
| G90.01       | Carotid sinus syncope                            |
| T67.1XXA     | Heat syncope, initial encounter                   |
| T67.1XXD     | Heat syncope, subsequent encounter                |
| T67.1xxx     | Heat syncope, sequela                             |
| I95.1        | Orthostatic hypotension                          |
References

2. UpToDate. Evaluation of Syncope in Adults. 2015.