Syncope is a transient, self-limited loss of consciousness associated with an inability to maintain postural tone that spontaneously resolves. Syncope is distinct from seizures, coma, shock, and other states of altered consciousness.

The most common possible cause of syncope is a transient fall of systemic arterial pressure to a level below the minimum needed to sustain cerebral blood flow.

### Table 1. Determining Patient’s Risk Level

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Intermediate Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk Factors</strong></td>
<td><strong>Risk Factors</strong></td>
<td><strong>Risk Factors</strong></td>
</tr>
<tr>
<td>All of the following must be present:</td>
<td>Age &gt; 40 Y/O</td>
<td>Any one of the following must be present:</td>
</tr>
<tr>
<td>• Age &lt; 40 Y/O</td>
<td>History of CAD, CHF</td>
<td>• Bradycardia &lt; 40 bpm</td>
</tr>
<tr>
<td>• No cardiac history / findings</td>
<td>Old LBBB, stable Q waves</td>
<td>• Sinus pauses ≥ 3 sec.</td>
</tr>
<tr>
<td>• Symptoms consistent with vasovagal event</td>
<td>Family history of premature (&lt; 50 Y/O) sudden death</td>
<td>• Atrial fibrillation / flutter</td>
</tr>
<tr>
<td>• No evidence of injury</td>
<td>Pacer / defibrillator functioning</td>
<td>• Nonsustained ventricular tachycardia without symptoms</td>
</tr>
<tr>
<td>• Syncope did not occur during exercise</td>
<td>Symptoms <strong>not</strong> consistent with vasovagal event</td>
<td>• EKG ST abnormal, QT ↑ (prolongation)</td>
</tr>
<tr>
<td>• <strong>Normal EKG results</strong></td>
<td>Postural BP &gt; 15 mmHg</td>
<td>• Dysfunctional pacer / defibrillator</td>
</tr>
<tr>
<td></td>
<td>Persistent systolic BP &lt; 100 mmHg</td>
<td>• Signs / symptoms of acute CHF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Signs / symptoms of stroke</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ischemic chest pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Severe valvular disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evidence of GI blood loss:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Occult stool positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o Hgb &lt; 9 g/dL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bifascicular block</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Evidence of injury</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Syncope occurred during exertion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anemia</td>
</tr>
</tbody>
</table>

### History and Physical Evaluation

- Cardiovascular evaluation:
  - Previous cardiac disease
  - Cardiac device
  - Family history of:
    - Sudden cardiac death
    - Congenital arrhythmogenic heart disease
    - Fainting
- Age
- Neurological history e.g.:
  - Parkinsonism
  - Epilepsy
  - Narcolepsy
- Metabolic disorders (e.g., diabetes)
- Medications or other drugs (e.g., antihypertensives, antianginals, antidepressants, antiarrhythmics, diuretics, QT-prolonging agents and contraceptives)
- Alcohol or illicit drug use
- Orthostatic BP, recumbent / upright
- Susception of pregnancy
- Previous history of cancer
- **Pulmonary Embolism (PE) risk factors**
- Anticoagulation or risk of GI bleed:
  - Rectal exam
  - Occult stool

### Questions to Aid in Risk Stratification

**Note:** The questions below are meant to aid in patient risk stratification. This is not an exhaustive list and is not intended to replace clinical judgment.

- Circumstances of the event
- Number of times patient has had syncope
  - Patient is less likely to require hospital admission if syncope is a recurring theme
- Posture immediately before loss of consciousness
  - Loss of postural tone
- Prodromal symptoms such as sweating or feeling warm / hot
- Sudden severe headache prior to syncope
- Back pain
- Level of exertion -- exercise induced
- Appearance during the event e.g.: eyes open or shut and color pallor
- Presence or absence of movement during event (e.g., limb-jerking and its duration)
- Any tongue-biting (record where tongue was bitten) or loss of continence
- Injury occurring during event (record site and severity)
- Duration of event (onset to regaining consciousness)
  - Complete loss of consciousness
  - Transient loss of consciousness with rapid onset and short duration
- Presence or absence of confusion during recovery period and other residues
- Spontaneous and complete recovery without sequelae
- Weakness down one side during recovery period
Diagnostic Evaluation

**Mandatory Tests**

- Pregnancy test
- Orthostatic vital signs with pulse oximetry
- EKG -- abnormalities may include:
  - Cardiac ischemic changes (previous or acute)
  - LVH or RVH
  - Low voltage in limbs suggesting pericardial effusion
  - Bradyarrhythmias or tachycarrhythmias
  - Long QT interval
  - Wolff-Parkinson-White (WPW) or Brugada syndrome (partial RBBB with elevated ST segments in leads V1-3 and down-sloping of the elevated ST-segments, plus inverted T waves in those leads)

**Tests that are HIGHLY recommended:**

- Electrolytes
- Troponin-I peak time
  - If chest pain, high index of suspicion
- CBC
- Glucose
- Toxicology
- D-dimer
- BNP

**Tests that COULD be helpful:**

- **CT Pulmonary Embolism (PE) Study:**
  - PE should be considered in the differential diagnosis of patients presenting with syncope, hypoxia, unexplained dyspnea, tachypnea, tachycardia, and RVH.
  - EKG showing right heart strain is suggestive of PE but is not a sensitive indicator.
  - Pretest probability using a validated score such as the Wells score can be useful.

- **Echocardiogram:**
  - Indicated if underlying heart disease is suspected
  - Indicated in young patients presenting with syncope with suspicion for hypertrophic cardiomyopathy or anomalous coronary artery (e.g., patients with exertional syncope)

- **Exercise Stress Testing:**
  - Indicated in persons at risk for CAD or with a history of CAD to rule out ischemia as a cause for the syncope
  - Such patients may give a history of chest pain suggestive of ischemic heart disease
  - Indicated in patients with exercise-related and unexplained syncope
    - These patients may give a history of syncope that occurred during or shortly after exertion
  - Can be used to screen for catecholaminergic polymorphic VT

- **Holter Monitor, External Loop Recorder (ELR), Implantable Loop Recorder (ILR):**
  - Generally placed in consultation with EP physician
  - Type of monitor depends on frequency of syncope
    - Short-term monitoring with Holter or ELR might not be useful if syncopal events occur infrequently
  - Indicated if the history is suggestive of syncope that is due to a cardiac arrhythmia or unexplained syncope
  - Consider if there are risk factors for cardiac arrhythmia such as family history or structural heart disease

- **Electrophysiologist (EP) Testing:**
  - Coordinated in consultation with EP physician
  - Indicated in patients with previous MI, nondiagnostic sinus bradycardia, bundle branch block, or other abnormal EKG in which there is a suspected conduction system cause
  - Other potential indications include:
    - History of sudden brief episodes of palpitations or angina-like chest pain that preceded the syncopal event
    - Syncope occurring during exertion or supine position
    - Structural heart disease
    - Family history of sudden cardiac death

- **Tilt Table Test:**
  - Useful in persons with syncope who have no structural heart disease
  - Coordinated in consultation EP physician
  - Indications, based on European Society of Cardiology (ESC) guidelines, include:
    - Recurrent syncope or single syncopal episode in a high-risk patient, whether or not the medical history is suggestive of neutrally medicated (vasovagal) origin, and (1) no evidence of structural cardiovascular disease -- normal EKG, echocardiogram; (2) structural cardiovascular disease is present but other causes of syncope have been excluded by appropriate testing
    - Further evaluation of patients in whom an apparent cause has been established (e.g., asystole, atrio-ventricular block), but in whom demonstration of susceptibility to neutrally mediated syncope would affect treatment plan
    - Unexplained single syncopal episode in high-risk setting in which occurrence or potential risk for physical injury or occupational hazard exists
• Evaluating patients, especially the elderly, with recurrent unexplained falls
• Clinical value to demonstrate susceptibility to reflex syncope to the patient
• May also be useful to differentiate between reflex syncope and orthostatic hypotension
• Reflex syncope is defined as neutrally mediated syncope and includes vasovagal syncope, situational syncope, carotid sinus syncope, and atypical forms of syncope
  o Other possible indications, based on ESC guidelines include:
    • To differentiate between syncope with jerking movements from epilepsy
    • To evaluate patient with frequent episodes of syncope and psychiatric disease
    • Assessing recurrent severe presyncopal symptoms

- Telemetry and Cardiac Monitoring:
  o Useful in patients stratified as high risk or who have suspected arrhythmias based on history and physical findings
  o Duration of monitoring as defined by frequency of syncopal episodes and the presence of high risk cardiac findings such as bifascicular or greater block, tachycardia or bradycardia arrhythmias or other EKG findings.

Tests that are ALMOST NEVER helpful:

- Pacemaker Interrogation
  o May be indicated for patients with arrhythmias and no recent (one month) documented testing

- CT Head
  o Rarely indicated in evaluation of syncope
  o May be indicated if:
    ▪ History concerning for a seizure episode
    ▪ Abnormal neurological findings on physical exam
    ▪ Patient experienced severe “thunder-clap headache” immediately prior to syncope
    ▪ Patient has a colloid cyst of 3rd ventricle
    ▪ Evidence of acute hydrocephalus
  o Consider in syncope episodes associated with head trauma, particularly in patients on chronic anticoagulation or antiplatelet therapy, due to concern for subdural hematoma

- Carotid Duplex Study (Carotid Artery Ultrasound):
  o Rarely indicated in evaluation of syncope
    ▪ Structural vascular disease is almost never the cause of syncope
  o May be considered in patient with history suggestive of stroke or TIA or in patients with abnormal neurological findings on physical exam

The San Francisco Syncope Rule (SFSR) to Predict Serious Outcomes

- The San Francisco Rule to Predict Serious Outcomes defines high-risk criteria for patients with syncope
- If any of the following are present, a patient is considered to be at high risk for serious outcomes:
  o History of congestive heart failure
  o Hematocrit < 30%
  o Abnormal ECG
  o History of shortness of breath
  o SPB < 90 mmHg at triage
- The SFSR has 96% sensitivity and 62% specificity for serious outcomes*
- Negative predictive value: 98.2%; positive predictive value 24.8%

*NOTE: Serious outcomes include death, myocardial infarction, arrhythmia, pulmonary embolism, stroke, subarachnoid hemorrhage, significant hemorrhage, or any condition causing a return ED visit and hospitalization for a related event.

Examples of Appropriate Documentation Justifying Inpatient Level of Care

Patients who have been risk-stratified and the physician have determined the patient to be at high risk for an adverse event or sudden death because:

- Patient has an abnormal ECG and/or significant cardiac history; or patient has a family history of sudden cardiac death
- Initial assessment reveals that the patient may have dysrhythmia, pulmonary embolism, aortic dissection, subarachnoid hemorrhage, or acute coronary symptoms that warrant intensive investigation
- The patient’s age, presence of co-morbidities, or other special circumstances warrant intensive monitoring and care at the acute-care level due to increased safety risk
- The patient exhibited “red flag symptoms” (exertional onset, chest pain, dyspnea, low back pain, palpitations, severe headache, focal neurologic deficits, diplopia, ataxia, or dysarthria) prior to the syncopal event
- Patient’s symptoms and description of syncopal episode is consistent with cardiac syncope because the patient has associated chest pain, dyspnea, cardiac murmur, or signs of CHF
- The patient has failed a period of observation care due to deteriorating condition or event

NOTE: See Appendix 1 on page 5 for considerations in determining patient’s appropriate level of care.

References


• MS-DRG Code 780.2 Syncope and Collapse, Regulatory Audits Desk Reference, Chapter 2, Medical Necessity Complex Reviews.


Quality Measures

- Percent of patients who received an EKG
  - Inpatient
  - Observation
  - Emergency

- Percent of patients who received a head CT
  - Inpatient
  - Observation
  - Emergency

- Hospital length of stay

Order Sets

- OSU IP ED: Syncope triage protocol
- OSU IP ED: CDU/ OBS syncope
- OSU IP HRT: Admission syncope

Guideline Authors

- Jayne Barr, MD
- Rebekah Richards, MD
- John Hummel, MD
Appendix 1. Considerations in Determining Patient's Appropriate Level of Care

<table>
<thead>
<tr>
<th>Outpatient</th>
<th>Observation</th>
<th>Admission</th>
</tr>
</thead>
</table>
| • Consider discharge for outpatient follow-up in low-risk patients with absence of any intermediate or high-risk features or other reason for higher level of care. | **Emergency Department Observation** is generally appropriate for a patient with consideration of cardiology consultation and with ≥ 1 of the following:  
  • Complaint of dyspnea  
  • History of:  
    o Chronic heart failure without acute exacerbation  
    o Coronary artery disease without acute ischemia  
    o **Non-Acute** structural heart disease  
      e.g.:  
        • Non-critical aortic stenosis  
        • Reduced EF without acute CHF  
        • Congenital heart disease  
        • Rheumatic heart disease  
  • Transient symptoms / signs suggesting focal neurologic disorder  
  • Palpitations preceding syncope  
  • Syncope sudden and without prodrome  
  • Syncope while supine | Admission may be indicated for syncope if a patient has ≥ 1 of the following:  
  • Presence of any high-risk factors outlined in Table 1 on page 1  
  • Suspicion of imminently dangerous cause (e.g., rare causes such as pericardial tamponade, pulmonary embolism)  
  • Syncope causing severe injury requiring hospitalization  
  • Persistent focal neurological deficit  
  • Severe aortic stenosis (AS)  
  • Low ejection fraction (EF) without AICD  
  • Known conduction disease without PPM  |
| | **In Hospital Observation** is generally appropriate for a patient with consideration of cardiology consultation and with ≥ 1 of the following:  
  • Systolic BP < 100 mmHg  
  • Abnormal EKG as indicated by ≥ 1 of the following:  
    o New pathologic changes on EKG  
    o Cardiac rhythm other than normal sinus  
    o Significant conduction abnormalities  
  • Hematocrit < 30% (0.30)  
  • Arrhythmias other than those dangerous arrhythmias suspected as cause, as indicated by ≥ 1 of the following:  
    o History of dangerous arrhythmia  
    o Use of medication known to cause dangerous arrhythmia  
    o Family history of sudden death | **Admit – Inpatient**  
  • Admission should be based on patient’s specific risks, with high-risk patients requiring admission  
  • Other symptoms, medical problems, and social factors should also be considered when deciding whether hospital admission is appropriate  
  • Additional testing, consultation, or anticipated therapy may also warrant admission |

**It is important to document rationale for inpatient admission, including dysrhythmia and/or sudden death.**