SYNCOPE

From the AMERICAN GERIATRICS SOCIETY

Geriatrics Evaluation & Management Tools

AGS Geriatrics Evaluation and Management Tools (Geriatrics E&M Tools) support clinicians and systems that are caring for older adults with common geriatric conditions.

BACKGROUND

- Definition: a symptom complex composed of a sudden and transient loss of consciousness resulting from a temporary interruption of global cerebral perfusion
- Primary reason to investigate syncope is to evaluate for sudden cardiac death and to avoid future injuries.
- Incidence doubles at age 70.
- In older adults, the cause of syncope is often multifactorial.
- In 10%–20% of cases, the cause is not determined.

SCREENING

Most diagnostic procedures are of low yield unless findings from the history and physical examination suggest a particular cause.

DIFFERENTIAL DIAGNOSIS

Epileptic seizure is not a cause of syncope. It can cause transient loss of consciousness but is not due to global cerebral hypoperfusion.

Common Causes of Syncope in Older Adults

<table>
<thead>
<tr>
<th>Reduced cardiac output</th>
<th>Altered peripheral vascular resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac (bradycardia is the #1 cause of cardiac-associated syncope):</td>
<td>Functional autonomic reflexes:</td>
</tr>
<tr>
<td>Rhythm disturbances</td>
<td>Vasovagal</td>
</tr>
<tr>
<td>Structural heart diseases (eg, aortic stenosis)</td>
<td>Carotid sinus syndrome</td>
</tr>
<tr>
<td>Coronary artery disease/myocardial infarction</td>
<td>Situational: swallowing, micturition, defecation, postprandial hypotension</td>
</tr>
</tbody>
</table>

Reduced intravascular volume:
Bleeding, dehydration

Pulmonary:
Massive pulmonary embolism

Drugs causing reduced cardiac output or altered peripheral resistance

HISTORY

- Increased age and male sex as coronary artery disease risk factors
- Focused history of events before, during, and after loss of consciousness—important to obtain history from witness if available
- Especially important to elicit:
  - Symptoms of chest pain*, shortness of breath*, palpitations*, GI bleeding*
  - Syncope during exercise*, while lying or sitting; more than one episode within 6 months*
  - Past medical history of cardiac disease*, arrhythmia*, or neurologic disease
  - Family history of first-degree relative with sudden death*, hypertrophic cardiomyopathy*, Brugada syndrome*, long QT syndrome*
  - Depression screening: syncope is more common in depression
  - Medications, recent medication changes, timing of medication administration

Distinguishing Characteristics of Syncope Due to Arrhythmia and Vasovagal Syncope

<table>
<thead>
<tr>
<th>Sign/Symptom</th>
<th>Syncope Due to Arrhythmia</th>
<th>Reflex-Mediated Syncope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position</td>
<td>Any</td>
<td>Upright; aborted by lying flat</td>
</tr>
<tr>
<td>Warning/prodrome</td>
<td>&lt;5 seconds</td>
<td>Seconds to minutes</td>
</tr>
<tr>
<td>Precipitant</td>
<td>Absent</td>
<td>Present</td>
</tr>
<tr>
<td>Palpitations</td>
<td>Sometimes</td>
<td>Absent</td>
</tr>
<tr>
<td>Nausea/diaphoresis</td>
<td>Absent</td>
<td>Common</td>
</tr>
<tr>
<td>Visual changes</td>
<td>None</td>
<td>Common</td>
</tr>
<tr>
<td>During</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone</td>
<td>Flaccid</td>
<td>Flaccid</td>
</tr>
<tr>
<td>Pulse</td>
<td>Absent or faint</td>
<td>Variable</td>
</tr>
<tr>
<td>Color</td>
<td>Blue, ashen</td>
<td>Pale</td>
</tr>
<tr>
<td>Incontinence</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Automatisms</td>
<td>Absent</td>
<td>Absent</td>
</tr>
<tr>
<td>After</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of recovery</td>
<td>Rapid, complete</td>
<td>Fatigue common</td>
</tr>
<tr>
<td>Nausea/diaphoresis</td>
<td>Absent</td>
<td>Present</td>
</tr>
<tr>
<td>Focal neurologic findings</td>
<td>Absent</td>
<td>Absent</td>
</tr>
<tr>
<td>Mortality</td>
<td>Increased</td>
<td>Unchanged</td>
</tr>
</tbody>
</table>

* = Findings of concern
### Physical Examination
- Vital signs
  - Systolic blood pressure <90 mmHg* or >160 mmHg*
  - Blood pressure in both arms
  - Orthostatic vital signs
  - Tachypnea*
  - Hypoxia*
  - Sinus heart rate <50 bpm or >100 bpm*
- Neurologic examination
  - Focal neurologic deficits*
- Cardiac examination
  - Heart murmur*
  - Signs of volume depletion*
  - Carotid pulse evaluation (upstroke, bruit)
- Musculoskeletal examination
  - Gait evaluation (gait unsteadiness indicates increased risk of falls; failure of heart rate to increase indicates chronotropic incompetence)
  - Deformities or signs of injury

### Diagnostic Tests
- Not every test is required; a thorough history and physical examination, especially focused on the cardiovascular and neurologic systems, should be used to determine appropriate testing.
- In all patients, perform orthostatic vital signs, gait evaluation, laboratory tests, and ECG.
- Laboratory testing
  - Hyper/hypoglycemia, electrolyte disturbance
  - Increased creatinine
  - Anemia (hematocrit <30%*)
  - Occult blood in feces*
  - Abnormal troponin I*
- Resting ECG
  - Q waves*, ischemic ST segment or T wave changes*, ventricular or supraventricular arrhythmias including rapid atrial fibrillation*, second- or third-degree AV block*, prolonged QTc (>500 msec)*, bifascicular block indicate increased likelihood of cardiac causes of syncope.
- Echocardiogram: if history, physical examination, or ECG are suggestive of heart disease
- Ambulatory (24-hour) blood pressure monitor: can identify diurnal variation in blood pressure, supine hypertension, postprandial hypotension
- Ambulatory ECG monitoring (Holter, 30-day event, implantable loop recorder)
  - If history and physical examination indicates arrhythmia
  - Choose the type of monitor based on frequency of events.
- Head-up tilt table testing can reproduce vasovagal syncope.
- Carotid sinus massage: perform only in the presence of continuous ECG monitoring and resuscitation equipment
- Electrophysiologic study: used rarely to identify inducible ventricular tachyarrhythmias

### Management Strategies
- Patients with cardiac syncope require immediate hospitalization on telemetry.
- Strongly consider hospital admission for patients with syncope due to neurologic or unknown causes, particularly if concurrent heart disease.
- Patients with syncope due to vasovagal, orthostatic, medication-induced, or other causes can usually be managed as outpatients, particularly if there is no history of heart disease.
- Treatment of syncope is correction of underlying cause.

### Treatments for Selected Causes of Syncope
#### Reflex syncope and postural hypotension
- Counter-pressure maneuvers such as leg crossing, arm tensing, hand grip, and buttock clenching
- Compression stockings and abdominal binders
- Liberalize diet (added salt)—caution if patient has significant hypertension
- Postprandial hypotension: smaller and frequent meals; meals with fewer carbohydrates
- Pharmacologic treatment
  - Sympathomimetics: midodrine, etileferine
  - Acetylcholinesterase inhibitor: pyridostigmine (may be helpful if supine hypertension and orthostatic hypotension).
  - Sodium retention/volume expansion: fludrocortisone

#### Sinus node dysfunction or high-grade AV block
- Pacemaker placement
- Patients with transient asystole and carotid sinus syncope may benefit from pacemaker placement.

### Prognosis
- There are many tools for risk stratification, such as the EGDSYS and San Francisco Syncope Rule.
- 1-year mortality: 18%–33% if cardiac cause; 6% if noncardiac cause

### Choosing Wisely
- Do not perform imaging of the carotid arteries for simple syncope without other neurologic symptoms.
- In the evaluation of simple syncope and a normal neurologic examination, do not obtain brain imaging studies (CT or MRI).

*Indicates risk factors for adverse prognosis in syncope. Patients with none of these factors can likely be safely dismissed from the emergency department without hospitalization.