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GLOBAL EXPERTS, LOCAL LEARNING
Syncope Guidelines: What’s New?

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2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines, and the Heart Rhythm Society

Developed in Collaboration With the American College of Emergency Physicians and Society for Academic Emergency Medicine

Endorsed by the Pediatric and Congenital Electrophysiology Society

Shen W-K, et al.

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Causes of Syncope

• Reflex-mediated (Vasovagal, situational, Carotid sinus syndrome)
• Orthostatic hypotension
• Neurologic
• Cardiac
• POTs
• Psychogenic
Syncope Initial Evaluation

- Transient loss of consciousness*
  - Suspected syncope
    - Yes: Evaluation as clinically indicated
    - No: Further evaluation

Initial evaluation: history, physical examination, and ECG (Class I)

- Cause of syncope certain: Treatment
- Risk assessment
- Cause of syncope uncertain: Further evaluation
Key Features of History

• Prodromal symptoms
  • Nausea, diaphoresis, claustrophobia, palpitations

• Abruptness of onset, offset
  • Drop attack, History

• Associated incontinence, seizure activity
  • Post-ictal confusion, prostration
Key Features of Examination

• **Arterial pressure**
  - Supine, seated, upright, upright after 1-2 mins
  - Right and left arms

• **Neck and precordium**
  - Carotid compression
  - RV lift, palpable P2, thrills

• **Cardiac murmur**
  - Effects of valsalva maneuver, standing, squatting
  - Left decubitus position
### History and Physical Examination

<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>Recommendation</th>
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<tbody>
<tr>
<td>I</td>
<td>B-NR</td>
<td>A detailed history and physical examination should be performed in patients with syncope.</td>
</tr>
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</table>

### Electrocardiography

<table>
<thead>
<tr>
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<tr>
<td>I</td>
<td>B-NR</td>
<td>In the initial evaluation of patients with syncope, a resting 12-lead ECG is useful.</td>
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Transient loss of consciousness

Suspected syncope

Yes
Evaluation as clinically indicated

No

Risk assessment

Cause of syncope certain
Risk assessment
Treatment

Cause of syncope uncertain
Further evaluation

Initial evaluation:
history, physical examination, and ECG (Class I)
Risk Assessment

Cardiac High Risk
- Acute Coronary Syndrome,
- Severe Valvular Disease, Cardiomyopathy
- Previous Ventricular Arrhythmia
- Previous AMI or HF
- Long QT, Familiar Sudden Deaths
- LBBB or RBBB or Bradiarrhythmia
- AF and Nonsustained VT
- Pacemakers or ICD

Clinical High Risk
- Stroke
- Anemia / Active Bleeding
- Major Trauma
- Frequent and recurrents syncopes
- Seizures
- Mental alterations

Is “CARDIAC”? 
- Supine position
- During exercise
  - Palpitations
- Severe Cardiac Disease
- Abnormal ECG

Is “NEUROGENIC”? 
- Long standing
- with Nausea and vomiting
  - Post exercise
- Temporal relation with change medication’s doses
Patient Disposition After Initial Evaluation for Syncope

Syncope initial evaluation

Serious medical conditions present?

Yes
Inpatient evaluation (Class I)

No
Manage presumptive reflex-mediated syncope in outpatient setting (Class IIa)
Structured ED observation protocol for intermediate-risk pts (Class IIa)
Manage selected pts with suspected cardiac syncope in outpatient setting (Class IIb)
## Disposition After Initial Evaluation

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<tr>
<td>I</td>
<td>B-NR</td>
<td><strong>Hospital evaluation</strong> and treatment are recommended for patients presenting with syncope who have a serious medical condition potentially relevant to the cause of syncope identified during initial evaluation.</td>
</tr>
<tr>
<td>IIa</td>
<td>C-LD</td>
<td>It is reasonable to manage patients with presumptive reflex-mediated syncope in the <strong>outpatient setting</strong> in the absence of serious medical conditions.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-R</td>
<td>In intermediate-risk patients with an unclear cause of syncope, use of a structured <strong>ED observation</strong> protocol can be effective in reducing hospital admission.</td>
</tr>
<tr>
<td>IIb</td>
<td>C-LD</td>
<td>It may be reasonable to manage selected patients with suspected cardiac syncope in the <strong>outpatient</strong> setting in the absence of serious medical condition.</td>
</tr>
</tbody>
</table>

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Initial evaluation: history, physical exam, ECG (Class I)

- Initial evaluation clear
  - No additional evaluation needed*

- Initial evaluation unclear
  - Targeted blood testing (Class IIa)†
  - Initial evaluation suggests neurogenic OH
    - Referral for autonomic evaluation (Class IIa)†
  - Initial evaluation suggests reflex syncope
    - Tilt-table testing (Class IIa)†
  - Initial evaluation suggests CV abnormalities
    - Cardiac monitor selected based on frequency and nature (Class I)
      - Implantable cardiac monitor (Class IIa)†
      - Ambulatory external cardiac monitor (Class IIa)†

Additional Evaluation and Diagnosis

- Stress testing (Class IIa)†
- TTE (Class IIa)†
- EPS (Class IIa)†
- MRI or CT (Class IIb)†

Options

*No additional evaluation needed

†Class IIa: Indication for this test is supported by Level B evidence from at least one RCT or multiple well-conducted nonrandomized studies or multiple expert consensus opinions.

Class IIb: Indication for this test is supported by Level C evidence (e.g., uncontrolled studies or expert consensus opinion).

Class I: Indication for this test is supported by Level A evidence (e.g., well-conducted randomized trials) or by evidence from multiple expert consensus opinions.

EPS: Event programing study
### Cardiac Imaging

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<tbody>
<tr>
<td>IIa</td>
<td>B-NR</td>
<td><strong>Transthoracic echocardiography can be useful</strong> in selected patients presenting with syncope if structural heart disease is suspected.</td>
</tr>
<tr>
<td>IIb</td>
<td>B-NR</td>
<td><strong>CT or MRI may be useful</strong> in selected patients presenting with syncope of suspected cardiac etiology.</td>
</tr>
<tr>
<td>III: No Benefit</td>
<td>B-R</td>
<td><strong>Routine cardiac imaging is not useful</strong> in the evaluation of patients with syncope unless cardiac etiology is suspected on the basis of an initial evaluation, including history, physical examination, or ECG.</td>
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### Stress Testing

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<tr>
<td>IIa</td>
<td>C-LD</td>
<td><strong>Exercise stress testing can be useful</strong> to establish the cause of syncope in selected patients who experience syncope or presyncope during exertion.</td>
</tr>
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### In-Hospital Telemetry

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<tr>
<td>I</td>
<td>B-NR</td>
<td><strong>Continuous ECG monitoring is useful</strong> for hospitalized patients admitted for syncope evaluation with suspected cardiac etiology.</td>
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### Electrophysiological Study

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<tbody>
<tr>
<td>IIa</td>
<td>B-NR</td>
<td><strong>EPS can be useful</strong> for evaluation of selected patients with syncope of suspected arrhythmic etiology.</td>
</tr>
<tr>
<td>III: No Benefit</td>
<td>B-NR</td>
<td>EPS is <strong>not recommended</strong> for syncope evaluation in patients with a normal ECG and normal cardiac structure and function, unless an arrhythmic etiology is suspected.</td>
</tr>
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## Tilt-Table Testing

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<tbody>
<tr>
<td>IIa</td>
<td>B-R</td>
<td>If the diagnosis is unclear after initial evaluation, tilt-table testing <em>can be useful for patients with suspected VVS</em>.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-NR</td>
<td>Tilt-table testing can be useful for patients with syncope and suspected delayed OH when initial evaluation is not diagnostic.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-NR</td>
<td>Tilt-table testing is reasonable to distinguish convulsive syncope from epilepsy in selected patients.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-NR</td>
<td>Tilt-table testing is reasonable to establish a diagnosis of pseudosyncope.</td>
</tr>
<tr>
<td>III: No Benefit</td>
<td>B-R</td>
<td>Tilt-table testing <em>is not recommended to predict a response</em> to medical treatments for VVS.</td>
</tr>
</tbody>
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<tbody>
<tr>
<td></td>
<td></td>
<td><strong>IIa</strong> C-LD Simultaneous monitoring of an EEG and hemodynamic parameters during tilt-table testing can be useful to distinguish among syncope, pseudosyncope, and epilepsy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>III: No Benefit</strong> MRI and CT of the head are not recommended in the routine evaluation of patients with syncope in the absence of focal neurological findings or head injury that support further evaluation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>III: No Benefit</strong> Carotid artery imaging is not recommended in the routine evaluation of patients with syncope in the absence of focal neurological findings that support further evaluation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>III: No Benefit</strong> Routine recording of an EEG is not recommended in the evaluation of patients with syncope in the absence of specific neurological features suggestive of a seizure.</td>
</tr>
</tbody>
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KEY MESSAGES

1. History and physical examination
2. ECG
3. Cause and Short and long term risk evaluation
4. Hospital evaluation and Treatments
5. Vasovagal is the most common cause of syncope.
6. Syncope (OH) can be neurogenic, dehydration, or drugs
### Vasovagal Syncope

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<tbody>
<tr>
<td>I</td>
<td>C-EO</td>
<td><strong>Patient education</strong> on the diagnosis and prognosis of VVS is recommended.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-R</td>
<td><strong>Physical counter-pressure maneuvers</strong> can be useful in patients with VVS who have a sufficiently long prodromal period.</td>
</tr>
<tr>
<td>IIa</td>
<td>B-R</td>
<td><strong>Midodrine</strong> is reasonable in patients with recurrent VVS with no history of hypertension, HF, or urinary retention.</td>
</tr>
<tr>
<td>IIb</td>
<td>B-R</td>
<td>The usefulness of orthostatic training is uncertain in patients with frequent VVS.</td>
</tr>
<tr>
<td>IIb</td>
<td>B-R</td>
<td><strong>Fludrocortisone</strong> might be reasonable for patients with recurrent VVS and inadequate response to salt and fluid intake, unless contraindicated.</td>
</tr>
</tbody>
</table>

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Vasovagal Syncope

- Education on diagnosis and prognosis (Class I)
- Counter pressure maneuvers (Class IIa)
- Salt and fluid intake (Class IIb)
- VVS recurs
- Options
  - Midodrine (Class IIa)
  - Fludrocortisone (Class IIb)
  - Beta blocker (in patients ≥42 y) (Class IIb)
  - Orthostatic training (Class IIb)
  - Selected serotonin reuptake inhibitors (Class IIb)
  - Dual-chamber pacemaker therapy (Class IIb)
Orthostatic Hypotension

- Syncope of suspected OH origin
  - Postural decrease in BP ≥20/10 mm Hg
    - No: Continue to evaluate

Options:

1. Neurogenic OH
   - Acute water ingestion (Class I)

2. Drugs
   - Reduce or withdraw medications (Class IIa)
   - Midodrine (Class IIa)
   - Droxidopa (Class IIa)
   - Fludrocortisone (Class IIa)
   - Fludrocortisone (Class IIa)
   - Octreotide (Class IIb)
   - Pyridostigmine (Class IIb)

3. Dehydration
   - Acute water ingestion (Class I)
   - Reduce or withdraw medications (Class IIa)
   - Increase salt and fluid intake (Class IIa)

Therapy options in selected patients

- Compression garments (Class IIa)
- Counter-pressure maneuvers (Class IIa)
- Midodrine (Class IIa)
Conclusions

• Risk stratification is critical
  • History, physical examination and simple screening tests
  • for structural heart disease

• Medical therapy for vasovagal syncope is largely empiric
  • Beta antagonists, alpha agonists, volume expansion
  • Role of pacing unclear

• Tilt-testing is useful if it reproduces clinical symptoms
  • Premature use of tilt test in syncope algorithm is misleading

• Neurological testing is of little value unless suggested by history and examination
Muchas gracias

Drs. Samuel Asirvatham & Miguel Gonzalez