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Clinical Evaluation & Management of Syncope:UPDATE

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

Developed in Collaboration with the American College of Emergency Physicians and Society for Academic Emergency Medicine
Endorsed by the Pediatric and Congenital Electrophysiology Society
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Classification of Transient Loss of Consciousness (TLOC)

Real or Apparent TLOC

Syncope

- Neurally-mediated reflex syndromes
- Orthostatic hypotension
- Cardiac arrhythmias
- Structural cardiovascular disease

Disorders Mimicking Syncope

- With loss of consciousness, i.e., seizure disorders, concussion
- Without loss of consciousness, i.e., psychogenic "pseudo-syncope"

Brignole M, et al. *Europace*, 2004;6:467-537.

Syncope – A Symptom, Not a Diagnosis

Self-limited loss of consciousness and postural tone

Relatively rapid onset

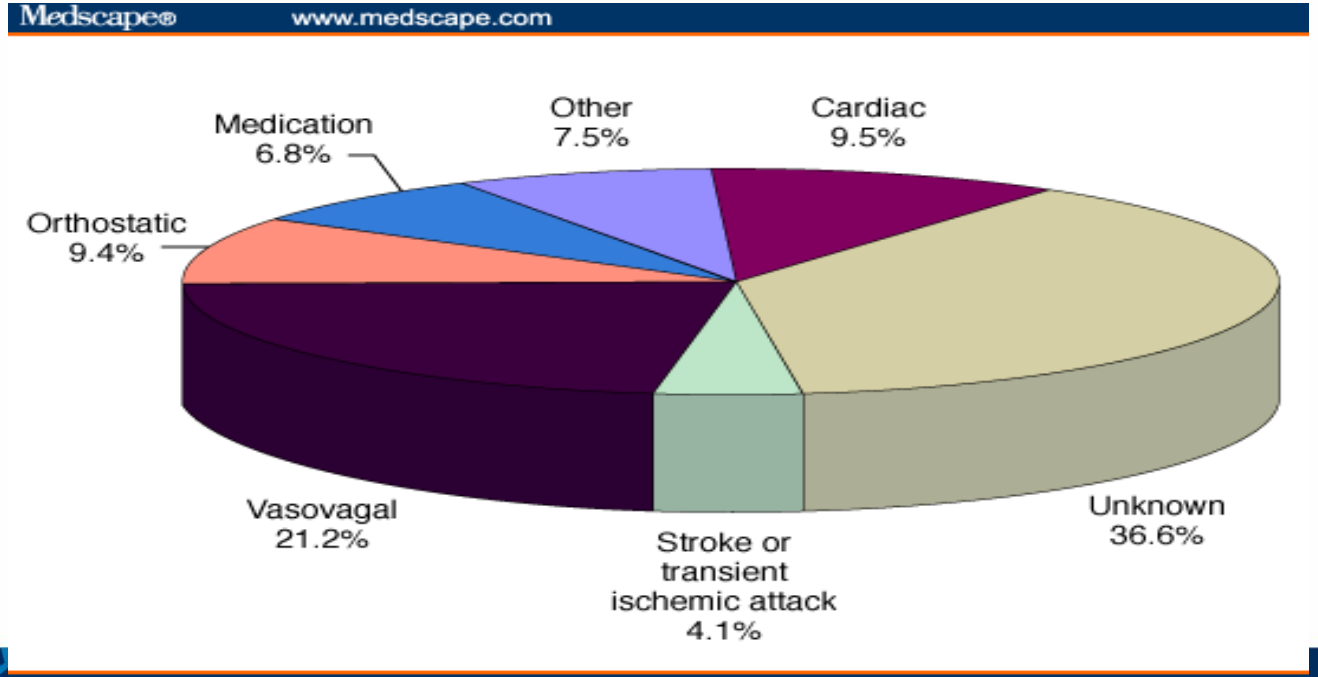
Variable warning symptoms

Spontaneous, complete, and usually prompt recovery without medical or surgical intervention

Underlying mechanism is
transient global cerebral hypoperfusion.

Brignole M, et al. *Europace*, 2004;6:467-537.

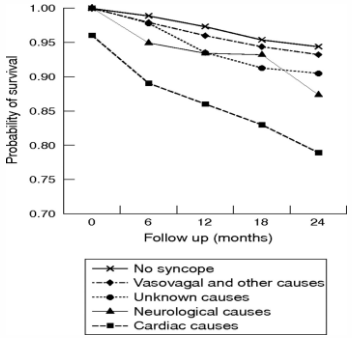
Causes of Syncope

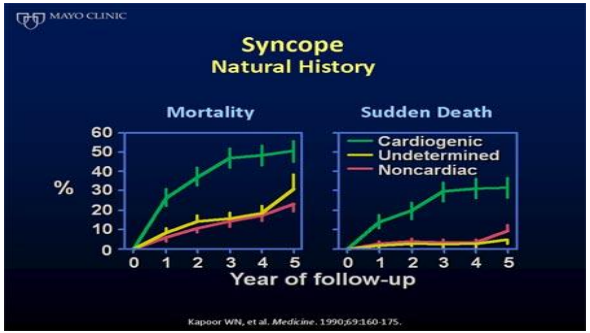


Source: Cardiosource © 2006 by the American College of Cardiology Foundation

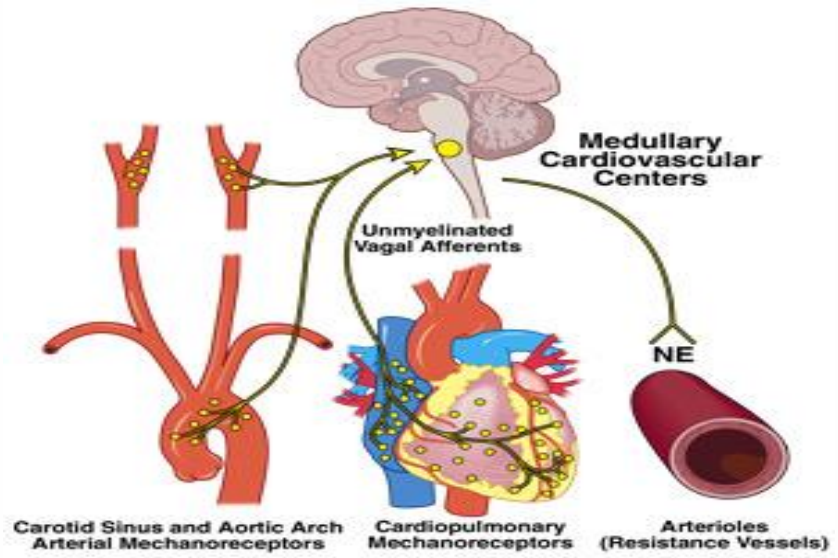
Morbidity and Mortality

- Most cases benign.
- Syncope of cardiac origin has the highest morbidity and mortality.
  1 year mortality of 18-33%
- Recurrence in the elderly population is 30%
- Syncope of unknown origin.
  1 year mortality of 6-12%.





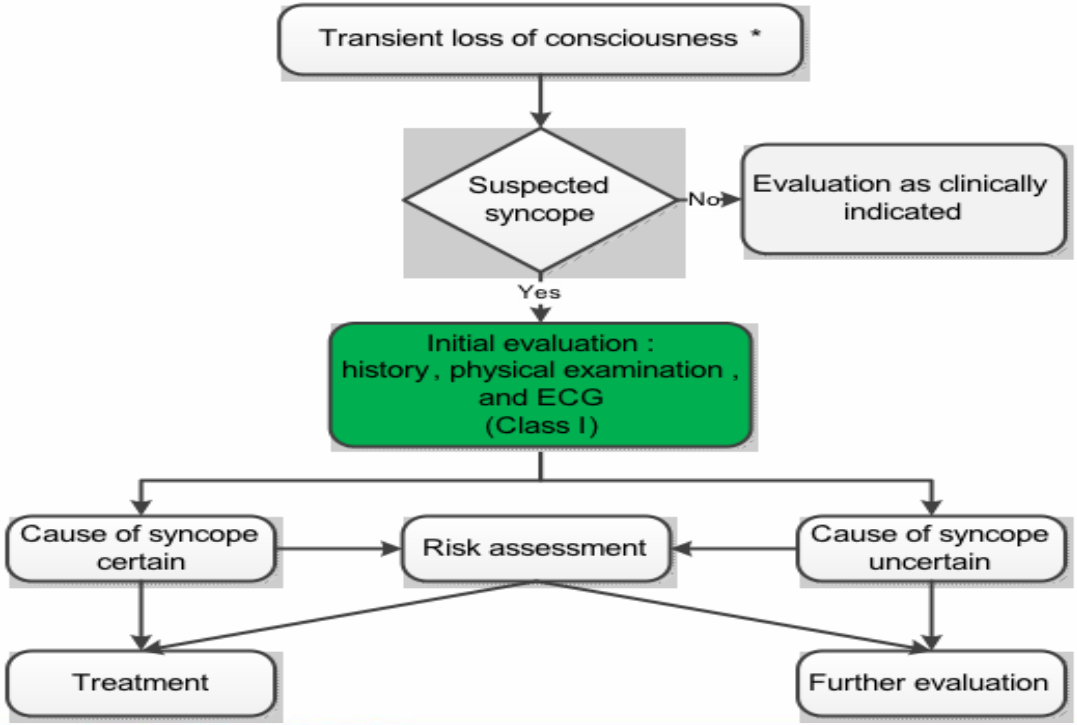
Syncope: Pathophysiology



- Decreased cerebral perfusion is common to all causes of syncope
- Cessation of cerebral perfusion for as little as 3-5 seconds can result in syncope
- Decreased cerebral perfusion may occur as a result of decreased cardiac output or decreased systemic vascular resistance.

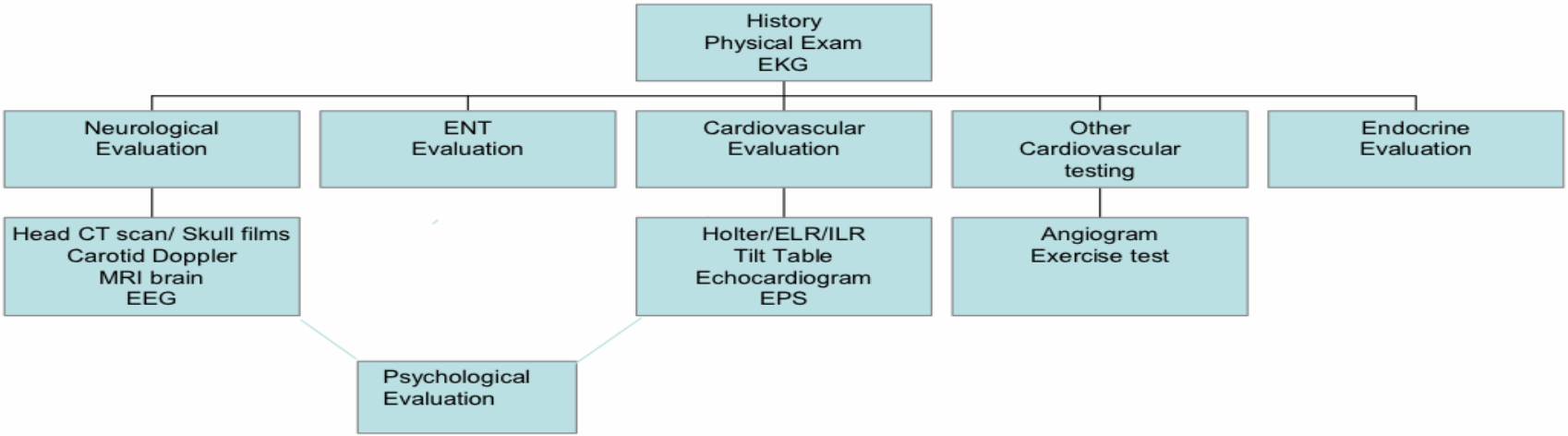
General Principles

Syncope Initial Evaluation



*See relevant terms and definitions in Table 3.
Colors correspond to Class of Recommendation in Table 1. This figure shows the general principles for initial evaluation of all patients after an episode of syncope.
ECG indicates electrocardiogram.

An Approach to Syncope



HISTORY

- HISTORY alone identifies the cause up to 85% of the time
- POINTS
  - Previous episodes
  - Character of the events, witnesses
  - Events preceding the syncope
  - Events during and after the episode
- RAPID ASSESSMENT
  - Identify Life-Threatening causes
    - Dysrhythmias
    - cardiac ischemia
    - Critical aortic stenosis
    - Aortic dissection
    - Pulmonary embolus
    - CVA
    - SAH
    - Toxic-metabolic derangement

- **Events preceding the syncope**
  - Prolonged standing (vasovagal)
  - Immediately upon standing (orthostatic)
  - With exertion (cardiac)
  - Sudden without warning or palpitations (cardiac)
  - Aggressive dieting
  - Heat exposure
  - Emotional stress

- **Events during and after the episode**
  - Trauma (implication important)
  - Chest pain (CAD, PE)
  - Seizure (incontinence, confusion, tongue laceration, postictal behavior)
  - Cerebrovascular syndrome (diplopia, dysarthia, hemiparesis)
  - Associated with n/v/sweating (vasovagal)

- **Associated symptoms**
  - Chest pain, SOB, lightheadedness, incontinence
- **Past medical history**
  - Identifying risk factors
  - Morbidity and mortality increases with organic causes
    - Parkinsons (orthostatic)
    - Epilepsy (seizure)
    - DM (cardiac, autonomic dysfunction, glucose)
    - Cardiac disease

- **Medications**
  - Antihypertensives, diuretics (orthostatic)
  - Antiarrthymics (cardiac syncope)
  - TCA, Amiodarone (cardiac/prolonged QT)
- **Family history**
  - Sudden death (cardiac syncope/prolonged QT or Brugada)

PHYSICAL EXAM

- **Vital signs**
  - **Orthostatics—most important**
    - **Drop in BP and fixed HR ->dysautonomia**
    - **Drop in BP and increase HR -> volume depletion/ vasodilatation**
    - **Insignificant drop in BP and marked increase in HR -> POTS**
  - **Temperature**
    - **Hypo/hyperthermia (sepsis, toxic-metabolic, exposure)**
  - Heart rate
    - Tachy/brady, dysrhythmia
  - Respiratory rate
    - Tachypnea (pe, hypoxia, anxiety)
    - Bradypnea (cns, toxicmetabolic)
  - Blood pressure
    - High (cns, toxic/metabolic)
    - Low (hypovolemia, cardiogenic shock, sepsis)

- HEART
  - Murmur (valves, dissection)
  - Rub (pericarditis, tamponade)
- LUNGS
  - Sounds may help distinguish chf, infection, pneumothorax

History and Physical Examination

COR	LOE	Recommendation
I	B-NR	A detailed history and physical examination should be performed in patients with syncope.

Electrocardiography

COR	LOE	Recommendation
I	B-NR	In the initial evaluation of patients with syncope, a resting 12-lead ECG is useful.

COR	LOE	Recommendations
I	B-NR	Evaluation of the cause and assessment for the short- and long-term morbidity and mortality risk of syncope are recommended.
IIb	B-NR	Use of risk stratification scores may be reasonable in the management of patients with syncope.

- ***HEENT***
  - ***Tenderness/deformity (trauma)***
  - ***Papilledema (increased icp, head injury)***
  - ***Breath (alcohol, dka)***
- ***NECK***
  - ***Bruits***
  - ***JVD (chf, mi, pe, tamponade)***

- **ABDOMEN**
  - **Pulsatile mass; AAA**
  - **Tenderness**
  - **Occult blood loss**
- **PELVIS**
  - **Bleeding, hypovolemia**
  - **Tenderness (PID, ectopic, torsion, sepsis)**

- SKIN
  - Signs of trauma, hypoperfusion
- EXTREMITES
  - Paralysis (CNS)
  - Pulses unequal (dissection, embolus, steal)

•NEUROLOGIC

Mental status; toxic metabolic; organic disease; seizure; hypoxia.

Focal findings (hemorrhagic/ischemic stroke, trauma, tumor, or other primary neurologic disease

- Cranial nerves
- Cerebellar testing

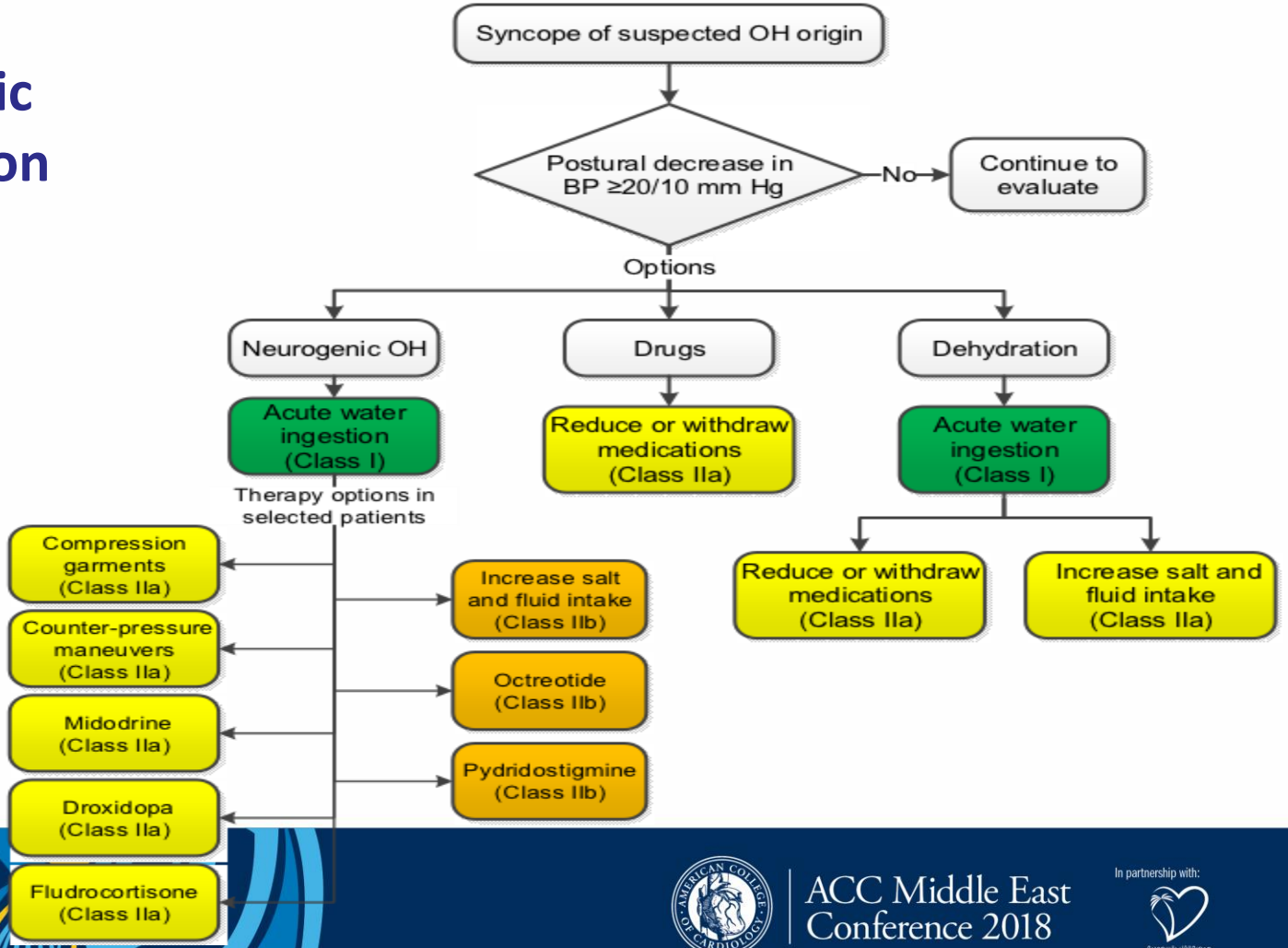
•SEIZURE

Frothing at mouth
Tongue biting
Disorientation/ postictal
Age < 45 year
LOC over 5 minutes

***tongue biting found only in seizure (99% specificity); absence did not exclude the possibility of a seizure (24% sensitivity)**

- NOT A SEIZURE
  - Sweating prior to episode
  - Nausea prior to episode
  - Oriented after event
  - Age > 45 years

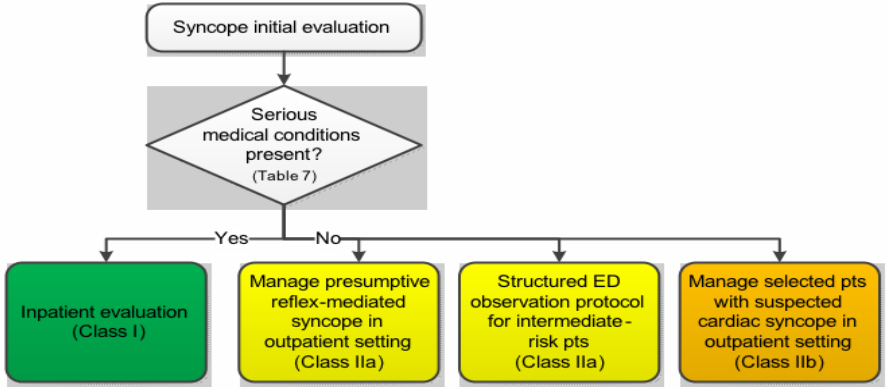
Orthostatic Hypotension



Colors correspond to Class of Recommendation in Table 1.
BP indicates blood pressure; OH, orthostatic hypotension.

Disposition After Initial Evaluation

COR	LOE	Recommendations
I	B-NR	Hospital evaluation 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.
IIa	C-LD	It is reasonable to manage patients with presumptive reflex-mediated syncope in the outpatient setting in the absence of serious medical conditions.
IIa	B-R	In intermediate-risk patients with an unclear cause of syncope, use of a structured ED observation protocol can be effective in reducing hospital admission.
IIb	C-LD	It may be reasonable to manage selected patients with suspected cardiac syncope in the outpatient setting in the absence of serious medical condition.



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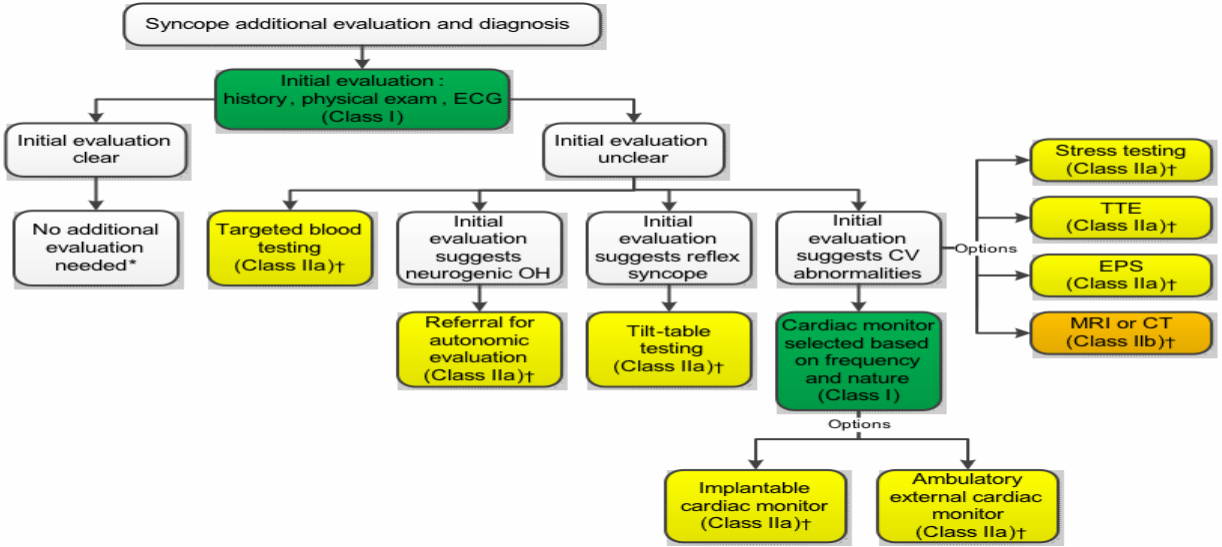
Additional Evaluation and Diagnosis



Colors correspond to Class of Recommendation in Table 1.
*Applies to patients after a normal initial evaluation without significant injury or cardiovascular morbidities; patients followed up by primary care physician as needed.
†In selected patients (see Section 1.4).
CV indicates computed tomography; CV, cardiovascular; ECG, electrocardiogram; EPS, electrophysiological study; MRI, magnetic resonance imaging; OH, orthostatic hypotension; and TTE, transthoracic echocardiography.

Blood Testing

COR	LOE	Recommendations
IIa	B-NR	Targeted blood tests are reasonable in the evaluation of selected patients with syncope identified on the basis of clinical assessment from history, physical examination, and ECG.
IIb	C-LD	Usefulness of brain natriuretic peptide and high-sensitivity troponin measurement is uncertain in patients for whom a cardiac cause of syncope is suspected.
III: No Benefit	B-R	Routine and comprehensive laboratory testing is not useful in the evaluation of patients with syncope.

Cardiovascular Testing

COR	LOE	Recommendations
IIa	B-NR	Transthoracic echocardiography can be useful in selected patients presenting with syncope if structural heart disease is suspected.
IIb	B-NR	CT or MRI may be useful in selected patients presenting with syncope of suspected cardiac etiology.
III: No Benefit	B-R	Routine cardiac imaging is not useful 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.

Stress Testing

COR	LOE	Recommendation
IIa	C-LD	Exercise stress testing can be useful to establish the cause of syncope in selected patients who experience syncope or presyncope during exertion.

Cardiac Monitoring

COR	LOE	Recommendations
I	C-EO	The choice of a specific cardiac monitor should be determined on the basis of the frequency and nature of syncope events.
IIa	B-NR	To evaluate selected ambulatory patients with syncope of suspected arrhythmic etiology, the following external cardiac monitoring approaches can be useful: 1. Holter monitor 2. Transtelephonic monitor 3. External loop recorder 4. Patch recorder 5. Mobile cardiac outpatient telemetry.
IIa	B-R	To evaluate selected ambulatory patients with syncope of suspected arrhythmic etiology, an ICM can be useful.

In-Hospital Telemetry

COR	LOE	Recommendation
I	B-NR	Continuous ECG monitoring is useful for hospitalized patients admitted for syncope evaluation with suspected cardiac etiology.

Electrophysiological Study

COR	LOE	Recommendations
IIa	B-NR	EPS can be useful for evaluation of selected patients with syncope of suspected arrhythmic etiology.
III: No Benefit	B-NR	EPS is not recommended for syncope evaluation in patients with a normal ECG and normal cardiac structure and function, unless an arrhythmic etiology is suspected.

Tilt-Table Testing

COR	LOE	Recommendations
IIa	B-R	If the diagnosis is unclear after initial evaluation, tilt-table testing can be useful for patients with suspected VVS.
IIa	B-NR	Tilt-table testing can be useful for patients with syncope and suspected delayed OH when initial evaluation is not diagnostic.
IIa	B-NR	Tilt-table testing is reasonable to distinguish convulsive syncope from epilepsy in selected patients.
IIa	B-NR	Tilt-table testing is reasonable to establish a diagnosis of pseudosyncope.
III: No Benefit	B-R	Tilt-table testing is not recommended to predict a response to medical treatments for VVS.

Autonomic Evaluation

COR	LOE	Recommendation
IIa	C-LD	Referral for autonomic evaluation can be useful to improve diagnostic and prognostic accuracy in selected patients with syncope and known or suspected neurodegenerative disease.

Neurological and Imaging Diagnostics

COR	LOE	Recommendations
IIa	C-LD	Simultaneous monitoring of an EEG and hemodynamic parameters during tilt-table testing can be useful to distinguish among syncope, pseudosyncope, and epilepsy.
III: No Benefit	B-NR	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.
III: No Benefit	B-NR	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.
III: No Benefit	B-NR	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.

THANK YOU FOR YOUR ATTENTION……