

C3 - Syncope

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** Drug doses are a guide only, always check second source and follow local practice guidelines*

Take Home Points

- **The majority of patients who present with syncope have a benign cause, such as a vasovagal (fainting) spell or orthostatic hypotension from dehydration or a change in medication**
- **Management and disposition are guided by the history and physical examination**
- **The ECG is the one test that should be obtained routinely - all other tests are tailored to the individual situation**

Introduction

Syncope, a sudden loss of consciousness accompanied by a loss in postural tone, is a common reason for people to present to the emergency department. It accounts for more than three-quarters of a million patient visits in the U.S. alone annually.

These patients are unique, because by definition, unless they sustained major injuries during a fall when they experienced their syncopal episode, they can look completely fine in the ED. If a patient who presents with syncope does look unwell, or has other significant presenting complaints, such as fever, those complaints often “trump” the syncope and lead us down a different pathway.

We are in the process of seeing a major change in the way that we approach syncope. The most common cause is benign, namely **vasovagal** (>50% of all syncope alone) **or orthostatic syncope**, a simple fainting spell brought on by an emotional event, exhaustion, dehydration or prolonged standing in otherwise healthy young patients. We have always felt comfortable sending these patients home after a brief evaluation in the ED.

However, where things have changed is with the older patients (>50 or 55), especially those with comorbid illness like a history of MI, hypertension and diabetes. In the past, we tended to admit all of these patients to monitored settings for at least 24 hours of

cardiac monitoring. Decades of research has now demonstrated that the vast majority of these patients also can go home if they look well and a ED based evaluation does not reveal a concerning cause for their syncopal event. These admissions generally did not reveal a cause for the syncope if nothing was uncovered in the ED.

Initial Approach

- **IV, O2, Monitor**

- **IV:** Well appearing patients who present with a history of syncope do not necessarily need an IV
- Because syncope may be the initial presentation of a hemorrhagic emergency, however, access with large bore IVs should be initiated when suspicion for a bleeding emergency (internal or external) exists
- **O2** is appropriate in patients with hypoxia (e.g. O2 sat <88-90%)
- **Cardiac monitoring** is an important part of the ED management, in those patients at highest risk for dysrhythmia, they may have another event while in the ED!
- Placement of **defibrillation paddles** for patients at highest risk for dysrhythmia

Syncope vs. Seizure

- The most prominent differential diagnosis of syncope is **seizure**, another common cause of sudden loss of consciousness

	Syncope	Seizure
BEFORE	No warning Tunnel/blackening vision	Aura Odd Behavior
DURING		Tongue biting Incontinence
AFTER	Immediate return to baseline	Drowsy Prolonged recovery May have transient focal findings

- Sometimes it seems that seizure and syncope co-exist - syncope may be accompanied by transient jerking movements
- Other entities sometimes confused with syncope:
 - Concussion
 - Hypoglycemia
- When in doubt, assume cardiac dysrhythmia is a possibility

Pre-Syncope vs. Syncope

- The patient who sustains severe trauma (signs of head injury, facial injury) may require additional work-up and treatment (head CT, X-rays, sutures)
- The presence of trauma can help confirm that loss of consciousness occurred
- However, from a point of view of the dangerous causes of syncope, the presence of actual loss of consciousness is not that important - **pre-syncope can be equally concerning**
 - e.g. an athlete that feels as though he will pass out during severe exertion worries me for a cardiac arrhythmia whether he hits the floor or not
 - <http://content.onlinejacc.org/article.aspx?articleid=1130157>

Emergency Medicine Differential Diagnosis (DDx):

- These are the diagnoses that we must make every effort to identify in the ED:
 - CARDIOVASCULAR
 - Myocardial infarction (MI)
 - Aortic stenosis (AS)
 - Hypertrophic cardiomyopathy (HOCM)
 - **Pulmonary embolus (PE)**
 - **Thoracic aortic dissection (TAD)**
 - Lethal dysrhythmia (VTACH)
 - NEUROVASCULAR
 - **Subarachnoid hemorrhage (SAH)**
 - TIA/Stroke
 - BLEEDING

- **Ruptured ectopic pregnancy**
- Gastrointestinal bleeding (GIB)
- **Ruptured abdominal aortic aneurysm (AAA)**

- OTHER / BENIGN
 - Everything else!
 - Usually ok for outpatient follow-up

History and Physical Examination:

- In the well-appearing patient with a recent syncopal episode, the history and physical examination, not tests, are of primary importance
- Highlights of the history and physical:
 - **Vital signs** should generally be normal or near normal
 - **Cardiac** symptoms or signs
 - e.g. Chest pain, dyspnea, palpitations or *exertional syncope*
 - Lead to concern for CARDIOVASCULAR event
 - **Neurologic** symptoms or signs
 - e.g. New onset headache or any other finding
 - Lead to concern for NEUROVASCULAR event
 - **Bleeding** symptoms and signs
 - Pelvic/Rectal exam (GIB)
 - The critical role of point-of-care ultrasound (U/S) as extension of exam
 - Free intraperitoneal / intrathoracic fluid (Ruptured ectopic, occult trauma, spontaneously bleeding tumor)
 - Abdominal aorta (AAA)
 - U/S is also helpful in the cardiovascular event diagnoses (HOCM, AS, PE, TAD)

Tests:

- The only test that is recommended in all cases of syncope by the American College of Emergency Physicians (2007 guidelines) is a resting ECG

- In the setting of syncope or pre-syncope, the following **ECG findings** point to a cardiac cause and generally warrant further evaluation **and/or** admission to hospital **and/or** specialist consultation
 - Dysrhythmia
 - Ventricular tachydysrhythmias
 - Fast supraventricular tachycardias
 - Bradycardias
 - Ischemic changes
 - These include ST segment depression, new T wave changes, new Q waves
 - May need workup for acute coronary syndrome, cardiology consultation
 - Prolonged QT Interval
 - When QRS-T duration is greater than R-R interval
 - Can lead to Torsades de Pointes, a lethal dysrhythmia
 - Associated with medications, congenital syndromes
 - Delta wave
 - A slurred upstroke of the QRS in WPW, a pre-excitation syndrome
 - Associated with various tachydysrhythmias
 - Usually get ablation therapy by cardiac electrophysiologists (in cath lab)
 - Brugada pattern
 - A right bundle branch block pattern (RSR') with downsloping ST depression in leads V1 and V2
 - Associated with a congenital sodium channel defect and ventricular fibrillation
 - Requires an IACD (implantable defibrillator)
 - Epsilon wave
 - An additional terminal wave following the QRS
 - Associated with arrhythmogenic right ventricular dysplasia (ARVD), a congenital condition that also results in ventricular fibrillation
 - Requires an IACD

- Signs of right heart strain
 - These include an acute right axis deviation, S1Q3T3 pattern, acute right bundle branch block (RBBB) pattern, deep symmetric T wave inversions in V1-V4
 - Associated with PE
 - Signs of left ventricular hypertrophy (LVH)
 - There are many different criteria. They include high voltages in the limb leads (lead I: R>14mm, lead avL: R>11mm) and S wave depth in V1 + tallest R wave height in V5-V6 > 35 mm
 - Although LVH is common in some practice settings (e.g. from poorly controlled hypertension) it should increase concern for structural heart disease (AS or HOCM)
 - Listen for a murmur and consider an echocardiogram
- For well appearing/hemodynamically stable patients :
 - Further selective testing only as guided by history, physical examination and ECG
 - In many cases, not much more required beyond point of care **hemoglobin**
 - A point-of-care **pregnancy test** should be performed in all females of childbearing age

Management:

- Management should be dictated by the results of the evaluation as described above
 - Examples:
 - CT Pulmonary angiogram and possible anticoagulation in suspected PE
 - Troponin testing, ASA and cardiology consultation in suspected cardiac ischemia

Disposition:

- Disposition should be dictated by risk of adverse event:
- {Discuss SF Syncope rule - CHES and others}
- More contemporary risk stratification scheme is as follows:

- **Low Risk → DC Home**
 - Low risk patients include the young and healthy with likely vasovagal cause

- **Intermediate Risk → DC Home with Shared Decision Making/ Protocolled Observation / Home Cardiac Monitor**
 - Intermediate risk patients include those with no low risk and no high risk features

- **High Risk → Admit to Monitored Setting**
 - High risk patients include:
 - Exertional syncope
 - Concern for acute coronary syndrome (ACS)
 - Findings of valve disease (AS)
 - History of ventricular arrhythmia
 - Implantable cardiac device
 - Known CHF (ejection fraction <40%)
 - Concerning ECG Findings

too high and patients are admitted to a monitored setting for further evaluation. The C3 team discuss a practical step-by-step approach to the patient with syncope.

Reference: Probst MA, Sun BC. How can we improve management of syncope in the Emergency Department? *Cardiol J* 2014; 21, 6: 643–650.