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## Better Evaluation of Syncope

Syncope is experienced by 1/5 of the population at some time in their lives. This *Heartbeat* will discuss a more effective and efficient way to evaluate and treat syncope. The most expensive tests for evaluating it are usually unrewarding, and the least expensive and most useful tests are underused.

Hospitalization for syncope is common and frustrating, especially in the elderly. Loss of consciousness is caused by a wide range of conditions, many benign but some life-threatening. In a recent study, medical records of 1920 patients aged  $\geq 65$  who presented to the emergency department with it were reviewed. The investigators recorded how often various diagnostic tests were performed, calculated the cost of the tests, and determined how frequently the results affected diagnosis or management.<sup>1</sup>

Electrocardiography, cardiac biomarker studies, and telemetry monitoring were each performed in at least 95% of patients during hospitalization. CAT scans of the head were performed in 63%, and echocardiography was performed in 39%; electroencephalography (EEG), carotid ultrasound, and cardiac stress testing were performed less frequently. Postural vital signs were recorded in only 38% of patients. Carotid Doppler shouldn't be performed at all because *almost* everyone knows syncope isn't a presenting symptom for carotid vascular disease.

Abnormalities, including minor ones, were found most commonly on echocardiograms (63% yielded abnormal findings). The cause of syncope was undetermined in 47% of the patients. No diagnostic test except postural B.P. measurement helped determine the etiology in  $> 5\%$  of cases in which they were obtained. Orthostatic hypotension abnormalities (drops in systolic B.P. of  $\geq 10$  mm Hg or to  $\leq 90$  mm Hg upon sitting or standing) helped identify the etiology in 21% of cases in which the test was used, affected diagnosis in 26%, and affected management in 30%.

Postural B.P. measurement was by far the least expensive test (\$17 per test affecting diagnosis or management, vs. \$710 for telemetry and \$32,973 for EEG). *All the tests had higher yields in patients who met the San Francisco Syncope Rule* (a prospectively validated score for identifying patients at higher risk for serious causes of syncope) than in patients who did not.

### San Francisco Syncope Rule (SFSR)

The mnemonic for the rule is **CHES**:

- **C** - History of **congestive** heart failure
- **H** - **Hematocrit**  $< 30\%$
- **E** - Abnormal **ECG**
- **S** - **Shortness** of breath
- **S** - Triage **Systolic** blood pressure  $< 90$

Patients with any of the above measures are considered at higher-risk for a serious outcome

(death, MI, arrhythmia, PE, stroke, SAH, need for transfusion or return to the ER within 30 days) and should be admitted.

SFSR has a sensitivity of 74-98% and specificity of 56%.<sup>2 3</sup> This means that 74-98% of patients who had a serious outcome had a positive test. This makes the test good for ruling out hospital admissions for patients with syncope.

Syncope accounts for 1-2% of ER visits. Half are hospitalized and of these, 50% have unclear diagnosis and 85% will be simply monitored. Given these statistics, the SFSR will help reduce inefficient admissions.

### **Water to Prevent Syncope**

Syncope is experienced by 1/5 of the population at some time in their lives, frequently more than once, and the most common types are vasovagal (neurally mediated) and orthostasis (occurring after prolonged standing, alcohol or caffeine use or emotional stress). The simple act of drinking 16 oz. of water can significantly improve tolerance of orthostatic stress, according to a recent study.<sup>4</sup>

Autonomic dysfunction (which is commonly associated with orthostatic hypotension) is more common in diabetics, those with Parkinson's disease and the elderly. The treatment for Parkinson's disease further aggravates orthostasis. Superimposed on this is the fact that most of these patients are on diuretics or anti-hypertensive medications for co-existing conditions. Many times these patients drink caffeinated beverages instead of water, making the situation worse—and most people do not drink enough water. The potential clinical implications of drinking water are obvious, especially in those with a higher-risk for vasovagal syncope and/or orthostasis, in settings where risk is high and the syncope is of undetermined origin. Further study of water intervention's clinical efficacy could be invaluable, and in the meantime, there is little downside risk in pushing water, since most

people don't take in enough fluids or drink the wrong kind (caffeinated).

### **Conclusions:**

Evaluation of syncope in the office or ER varies widely and often includes tests with minimal diagnostic yield, incurring considerable expense. Although the optimal approach for evaluating syncope remains unknown, **we recommend using the SFSR and checking for orthostatic hypotension in all patients with syncope.**

More-expensive tests should be used judiciously and, possibly, limited to those patients at higher risk for serious etiologies (positive SFSR). Even after extensive testing, the etiology of syncope in elders often cannot be determined.

In our experience, recommending drinking two glasses of water and cutting back on caffeine significantly decreases recurrent syncope. Additionally we've had great success using florienef in refractory situations where patients didn't have co-existing heart failure or hypertension which would be a contraindication.

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<sup>1</sup> Mendu ML et al. Yield of diagnostic tests in evaluating syncopal episodes in older patients. *Arch Intern Med* Jul 27 2009; 169:1299.

<sup>2</sup> McDermott QJ et al. Prospective validation of the San Francisco Syncope Rule to predict patients with serious outcomes. *Ann Emerg Med* May 2006; 47: 448-54.

<sup>3</sup> Birnbaum A et al. Failure to Validate the San Francisco Syncope Rule in an Independent Emergency Department Population. *Ann Emerg Med* February 2007; 52: 151-159.

<sup>4</sup> Lu CC, et al. Water ingestion as prophylaxis against syncope. *Circulation* November 25 2003; 108: 2660-2665.