Clinical Glidepath™ Tools

Syncope

	Robust Elderly Life expectancy greater than five years and functionally independent	**Frail** Life expectancy less than five years or significant functional impairment	**Moderately Demented** Life expectancy two to ten years	**End of Life** Life expectancy less than two years
	ALL GROUPS			
EVALUATION[1]	**SYMPTOMS**		**CAUSE**	
	a) warmth, nausea		a) vasovagal	
	b) postural symptoms		b) orthostasis	
	c) chest pain, dyspnea, post-exercise, dizziness, history of heart disease, palpitations, family history (prolonged QT)[2]		c) cardiac[2]	
	d) defecation, micturition, coughing, swallowing		d) situational	
	e) head turning or neck pressure		e) carotid sinus hypersensitivity	
	f) ictal symptoms, diplopia, headache, aura, hemiparesis		f) neurologic	
	g) occurs following meals		g) postprandial	
	h) heat exposure, poor fluid intake		h) dehydration	
	i) medication-related[3]		i) medications[3]	
	j) flushing, dermatographia, urticaria, dyspepsia		j) systemic mastocytosis	

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Recommendations:

Highest ↓ Lowest	
	Do
	Discuss
	Consider
	****

(see introduction for further explanation)

	Robust Elderly Life expectancy greater than five years and functionally independent	**Frail** Life expectancy less than five years or significant functional impairment	**Moderately Demented** Life expectancy two to ten years	**End of Life** Life expectancy less than two years
EVALUATION (continued) PHYSICAL EXAMINATION[1]	1. Focus on cardiac and neurologic examination. Auscultate for aortic stenosis and hypertrophic cardiomyopathy murmurs[2] 2. Orthostasis (measure up to 2 minutes) 3. Look for differences in blood pressure in each arm 4. Consider blood pressure before and 1/2 to 1 hour after a meal	1. Focus on cardiac and neurologic examination. Auscultate for aortic stenosis and hypertrophic cardiomyopathy murmurs[2] 2. Orthostasis (measure up to 2 minutes) 3. Look for differences in blood pressure in each arm 4. Consider blood pressure before and 1/2 to 1 hour after a meal	1. Focus on cardiac and neurologic examination. Auscultate for aortic stenosis and hypertrophic cardiomyopathy murmurs[2] 2. Orthostasis (measure up to 2 minutes) 3. Look for differences in blood pressure in each arm 4. Consider blood pressure before and 1/2 to 1 hour after a meal	1. Focus on cardiac and neurologic examination. Auscultate for aortic stenosis and hypertrophic cardiomyopathy murmurs[2] 2. Orthostasis (measure up to 2 minutes) 3. Look for differences in blood pressure in each arm 4. Consider blood pressure before and 1/2 to 1 hour after a meal
FURTHER EVALUATION	1. If acute cardiac or neurological event, send to ED. 2. ECG[1] 3. Hgb/Hct, BUN/Cr, electrolytes 4. Check driving status and discuss potential dangers. No driving for uncontrolled syncope 5. Consider monitored carotid sinus massage if history suggestive of carotid sinus disease and	1. If acute cardiac or neurological event, discuss sending to ED. 2. ECG[1] 3. Hgb/Hct, BUN/Cr, electrolytes 4. Check driving status and discuss potential dangers. No driving for uncontrolled syncope 5. Consider monitored carotid sinus massage if history suggestive of carotid sinus disease and	1. If acute cardiac or neurological event, discuss sending to ED. 2. ECG[1] 3. Hgb/Hct, BUN/Cr, electrolytes 4. Check driving status and discuss potential dangers. No driving for uncontrolled syncope 5. Consider monitored carotid sinus massage if history suggestive of carotid sinus disease and	1. If acute cardiac or neurological event, consider sending to ED. 2. Consider ECG[1] 3. Consider Hgb/Hct, BUN/Cr, electrolytes 4. Check driving status and discuss potential dangers. No driving for uncontrolled syncope 5. ****

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	Robust Elderly Life expectancy greater than five years and functionally independent	Frail Life expectancy less than five years or significant functional impairment	Moderately Demented Life expectancy two to ten years	End of Life Life expectancy less than two years
FURTHER EVALUATION	no carotid bruits, recent myocardial infarction, recent stroke, or history of ventricular arrhythmia[4]	no carotid bruits, recent myocardial infarction, recent stroke, or history of ventricular arrhythmia[4]	no carotid bruits, recent myocardial infarction, recent stroke, or history of ventricular arrhythmia[4]	
	6. If history/physical suggestive of cardiac etiology and *not* hospitalized a. Cardiac enzymes b. Echocardiogram[5] c. Consider stress test	6. If history/physical suggestive of cardiac etiology and *not* hospitalized a. Cardiac enzymes b. Echocardiogram[5] c. Consider stress test	6. If history/physical suggestive of cardiac etiology and *not* hospitalized a. Cardiac enzymes b. Echocardiogram[5] c. ****	6. ****
	7. For recurrent unexplained syncope, consider long term ambulatory loop electrocardiography[6] or consider 24-hour ambulatory monitor	7. For recurrent unexplained syncope, consider long term ambulatory loop electrocardiography[6] or consider 24-hour ambulatory monitor	7. ****	7. ****
	8. For recurrent unexplained syncope, discuss referral to cardiology[7]	8. For recurrent unexplained syncope, discuss referral to cardiology[7]	8. ****	8. ****
	9. If focal neurologic signs, do computed tomography (CT) of brain[8]	9. If focal neurologic signs, do computed tomography (CT) of brain[8]	9. If focal neurologic signs, do computed tomography (CT) of brain[8]	9. ****
	10. Consider depression (Geriatric Depression Scale) and hyperventilation maneuver in whom there is no cause found and possible psychogenic symptoms	10. Consider depression (Geriatric Depression Scale) and hyperventilation maneuver in whom there is no cause found and possible psychogenic symptoms	10. ****	10. ****

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REFERENCES

1. The history, physical examination and ECG are the core of the syncope workup, giving a combined diagnostic yield up to 50%. Linzer M, *et al*, in a 2-part series, have reviewed English language studies between 1980-1995. The studies were randomized trials, observational studies, cohort studies or case series of >10 patients. In addition, footnotes 2,5, and 7 (below) are based on these papers.

   Linzer M, Yang EH, Estes M 3rd, Wang, P, *et al.* Diagnosing Syncope Part 1: Value of history, physical examination, and electrocardiography. *Ann Intern Med* 1997; 126: 989-96.

   Linzer M, Yang EH, Estes M 3rd, Wang, P, *et al.* Diagnosing Syncope Part 2: Unexplained syncope. *Ann Intern Med* 1997; 127:76-86.

2. Patients in whom heart disease is known or suspected or those with exertional syncope are at higher risk for adverse outcome.

3. Many drugs can cause syncope and near-syncope. However, in one multicenter case-controlled study of over 2300 patients, the following drugs were significantly associated with an excess risk of syncope: fluoxetine, haloperidol and L-dopa.

   Cherin P, Colvez A, Deville de Periere G, Sereni D: Risk of syncope in the elderly and consumption of drugs: A case-control study. *J Clin Epidemiol* 1997; 50: 313-20.

4. Five referral studies of carotid sinus message in syncope show that its greatest utility may be in older patients (mean age in studies 60-81). The test appears to be safe if done in the office in patients who do not have carotid bruits, recent myocardial infarction, recent stroke or history of ventricular tachycardia (incidence of neurologic complications <0.2%). Patients who have cardioinhibitory hypersensitivity of the carotid sinus (asystole lasting ≥3 seconds) were effectively treated by the implantation of an artificial pacemaker. Yield of these studies was high (46%) likely because of referral-based population.

   McIntosh SJ, et al. *Am J Med* 1993; 95: 203-8.

   McIntosh SJ, et al. *Age Ageing* 1993; 22: 53-8.

   Kenny RA, *et al. Age Ageing* 1991; 20: 449-54.

   Brignole M, *et al. Am Heart J* 1991; 122: 1644-51.

   Brignole M, *et al. Am J Cardiol* 1991; 68:1032-6.

5. No studies have been specifically designed to assess the usefulness of echocardiography. Echocardiogram is about 7 times more expensive than ECG and helpful in less than 5% of patients without clinical or EKG signs of heart disease.
6. Loop electrocardiography is a type of event monitor which can be activated after syncope by pressing a button that freezes in memory the previous 2-5 minutes and the subsequent 60 seconds of heart rhythm. Diagnostic yield in 3

REFERENCES

referral studies varied from 24% to 47%. The highest yield was seen in patients with palpitations.

Cucumee SR, *et al. Southern Med J* 1990; 83: 39-43.

Linzer M, *et al. Am J Cardiol* 1990; 66: 214-9.

Brown AP, *et al. Br Heart J* 1987; 58: 251-3.

7. Referral studies of upright tilt-table testing in elderly patients with syncope (mean age >60 years) showed positive response rate to tilt (# of positive tests/ total # of patients tested) of 54% (range 26% to 90%). For elderly controls (without syncope), the positive response rate was 11%.

Kapoor WN, *et al.* Upright tilt testing in evaluating syncope: a comprehensive literature review. *Am J Med* 1994; 97: 78-88.

8. Diagnostic yield 2% if no clinical evidence of neurologic invasive testing.