

Evaluation of Orthostatic Hypotension

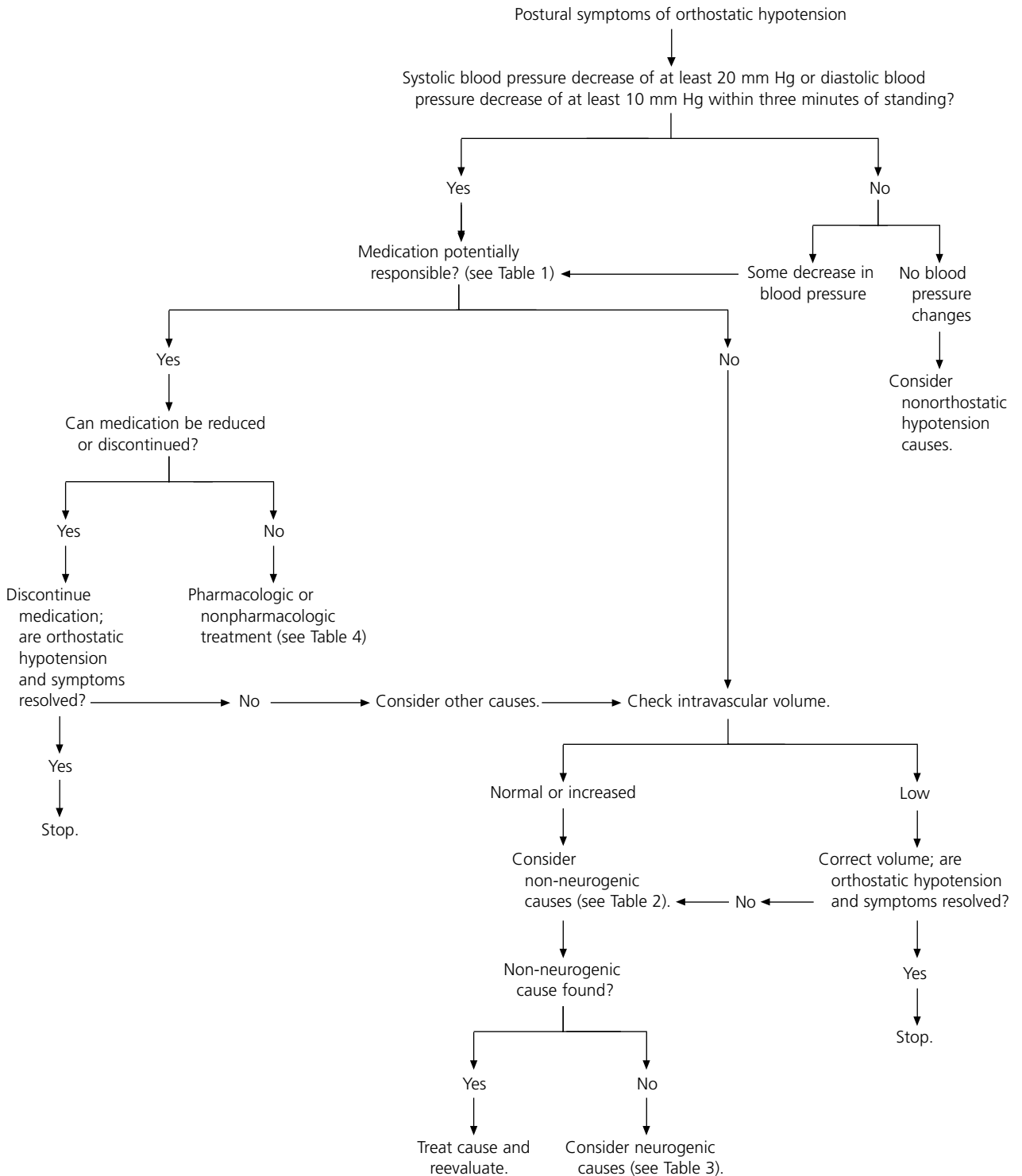


FIGURE 1. Algorithm for the evaluation of orthostatic hypotension.

TABLE 1

Etiologies and Drugs That Can Cause Orthostatic Hypotension

Non-neurogenic etiologies	Neurogenic etiologies	Drugs
Cardiac pump failure	Spinal cord problems	Alpha and beta blockers
Aortic stenosis	Syringomyelia	Antihypertensives
Bradyarrhythmia	Tabes dorsalis	Bromocriptine (Parlodel)
Myocardial infarction	Transverse myelitis	Diuretics
Myocarditis	Tumors	Insulin
Pericarditis	Peripheral nervous system problems	MAO inhibitors
Tachyarrhythmia	HIV/AIDS	Marijuana
Reduced intravascular volume	Alcoholic polyneuropathy	Minor tranquilizers
Adrenal insufficiency	Amyloidosis	Narcotics/sedatives
Burns	Diabetes mellitus	Nitrates
Dehydration	Dopamine beta-hydroxylase deficiency	Phenothiazines
Diabetes insipidus	Guillain-Barré syndrome	Sildenafil (Viagra)
Diarrhea	Paraneoplastic syndrome	Sympatholytics
Hemorrhage	Renal failure	Sympathomimetics (with prolonged use)
Salt-losing nephropathy	Vitamin B ₁₂ or folate deficiency	Tricyclic antidepressants
Straining with heavy lifting, urination, or defecation	Other neurogenic etiologies	Vasodilators
Vomiting	Brain-stem lesions	Vincristine (Oncovin)
Venous pooling	Brain tumors	
Alcohol consumption	Carotid sinus hypersensitivity	
Fever	Cerebral vascular accidents	
Heat (e.g., hot environment, hot shower or bath)	Dysautonomias	
Postprandial dilation of splanchnic vessel beds	Multiple sclerosis	
Prolonged recumbency or standing	Multiple system atrophy	
Sepsis	Neurocardiogenic syncope	
Vigorous exercise with dilation of skeletal vessel beds	Parkinson's disease	
	Pure autonomic failure	
	Syringobulbia	

HIV = human immunodeficiency virus; AIDS = acquired immunodeficiency syndrome; MAO = monoamine oxidase.

Adapted with permission from Engstrom JW, Aminoff MJ. Evaluation and treatment of orthostatic hypotension. Am Fam Physician 1997;56:1379 with information from references 11 through 13.

TABLE 2

Clinical Clues to Non-Neurogenic Etiologies of Orthostatic Hypotension

<i>Findings on history and physical examination</i>	<i>Possible etiology</i>
Chest pain, palpitations, shortness of breath, rales, edema, arrhythmia, murmur	Congestive heart failure, myocardial infarction, arrhythmia, pericarditis, or myocarditis
Swollen extremities, edema	Congestive heart failure, venous obstruction, prolonged sitting or standing (resulting in venous pooling)
Symptoms on awakening or after a meal	Venous pooling or postprandial hypotension
Vomiting, diarrhea, bleeding, burns, diuretic use, clinical signs of dehydration	Intravascular volume depletion
Various symptoms of endocrine diseases	Adrenal insufficiency, diabetes insipidus
Fever	Sepsis or other acute infectious process

TABLE 3
Clinical Clues to Neurogenic Etiologies of Orthostatic Hypotension

<i>Findings on history and physical examination</i>	<i>Possible etiology</i>
Autonomic failure with no other neurologic symptoms	Pure autonomic failure
Parkinsonian features, urinary incontinence or retention, cerebellar dysfunction, autonomic symptoms	Multiple system atrophy
Dysautonomia of acute onset or occurring over a few weeks (can occur with supine hypertension)	Guillain-Barré syndrome
Chronic alcohol abuse	Alcoholic polyneuropathy
Risk of sexually transmitted diseases	AIDS, tabes dorsalis
Various acute, subacute, or relapsing symptoms	Multiple sclerosis

AIDS = acquired immunodeficiency virus.
Information from references 1, 11, 15, and 16.

For example, after starting a medication, a patient may develop an illness that causes orthostatic hypotension, or a patient may have a condition that causes mild or asymptomatic orthostatic hypotension that becomes symptomatic when a new medication is added. If the patient is taking a potentially causative medication, the drug should be discontinued if possible. If it is not possible to stop the medication, other causes might be considered; it also may be necessary to treat the orthostatic hypotension pharmacologically or by some other method (*Table 4*).^{8,12-15}

If medication does not appear to be fully or partly responsible for a patient's symptoms, non-neurogenic etiologies should be considered, and intravascular volume should be determined. If a patient is volume-depleted, hydration may improve symptoms; if a patient is euvolemic, other non-neurogenic causes should be considered. The patient's history and physical examination should direct further evaluation.

If medication and non-neurogenic etiologies are ruled out, neurogenic causes should be considered, using the patient's history and physical examination to direct the evaluation. Many of the neurogenic etiologies of ortho-

The first steps in treatment of orthostatic hypotension are diagnosis and management of the underlying cause.

TABLE 4
Selected Nonpharmacologic Treatments for Orthostatic Hypotension

Implement	Avoid
Dorsiflex feet several times before standing	Standing motionless
Make slow, careful changes in position	Rising quickly after prolonged lying or sitting
Eat small, frequent meals	Large meals
Increase salt and fluid intake	Alcohol consumption
Elevate head of bed 5 to 20 degrees	Vigorous exercise
Schedule activities in the afternoon	Heat, hot baths, and hot environment
Wear compression stockings	Dehydration
	Working with arms above shoulders
	Straining with urination or defecation
	Coughing spells
	Rapid ascent to high altitude
	Hyperventilation
	Fever

Information from references 8 and 12 through 15.

static hypotension are difficult to diagnose and treat, and neurologic consultation may be necessary. Although it is not part of the formal definition of orthostatic hypotension, the absence of a significant increase in heart rate along with a significant postural decrease in blood pressure may suggest an autonomic cause.¹³

The evaluation and management of orthostatic hypotension must be carried out in the context of the patient's unique clinical circumstances. In some patients, stopping a medication may cause more harm than benefit if the hypotension symptoms are mild.

Orthostatic hypotension may have more than one cause; a patient with mild neurogenic orthostatic hypotension who becomes dehydrated or starts taking a new medication could develop symptomatic orthostatic hypotension. Because orthostatic hypotension is associated with several

Patient: _____ Date: _____ Time: _____ AM/PM




Measuring Orthostatic Blood Pressure



1. Have the patient lie down for 5 minutes.
2. Measure blood pressure and pulse rate.
3. Have the patient stand.
4. Repeat blood pressure and pulse rate measurements after standing 1 and 3 minutes.

A drop in bp of ≥ 20 mm Hg, or in diastolic bp of ≥ 10 mm Hg, or experiencing lightheadedness or dizziness is considered abnormal.

Also pulse increase >20 bpm indicated orthostasis

Position	Time	BP	Associated Symptoms
Lying Down 	5 Minutes	BP _____ / _____ HR _____	
Standing 	1 Minutes	BP _____ / _____ HR _____	
Standing 	3 Minutes	BP _____ / _____ HR _____	

For relevant articles, go to: www.cdc.gov/injury/STEADI



Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

STEADI Stopping Elderly Accidents, Deaths & Injuries