# Diagnosis and Treatment of the Dizzy Patient

1 author:

Adnan Khan
Research and Development Solutions
**52** PUBLICATIONS   **330** CITATIONS

Some of the authors of this publication are also working on these related projects:

Project   Establishment of a research site to test ideas in a poor urban location View project

Project   JPMA Supplement 2013 View project

# Diagnosis and Treatment of the Dizzy Patient

*Adnan Khan, MD,* * and Kurt Kroenke, MD††*

### EDUCATIONAL OBJECTIVES

- To describe and use a symptom-oriented classification of dizziness
- To learn to perform an initial 5-minute examination of the dizzy patient in primary care
- To describe the role of specialized testing in evaluating the dizzy patient
- To choose the appropriate management strategy in treating the dizzy patient

See CME questions on page 56.

## Key Questions

**1** What are the most common causes of dizziness in primary care?

**2** How can one briefly evaluate the dizzy patient in a busy primary care setting?

**3** When is it appropriate to get further tests, and which tests are useful?

**4** What is the most appropriate treatment for the common types of dizziness in primary care?

A 58-year-old bus driver presents with a chief symptom of dizzy spells over the past month. The spells have typically occurred several times per day, last less than a minute, and are described as "things moving around." Positional changes such as lying down, sitting up, or moving to a standing position seem to precipitate some of the spells. Although he feels a bit queasy with the spells, he has not had any vomiting. He also denies syncope, palpitations, hearing problems, tinnitus, or focal weakness or sensory

From *North Vernon Internal Medicine, North Vernon, Indiana; the †Indiana University School of Medicine, Indianapolis; and the ‡Regenstrief Institute for Health Care, Indianapolis, IN. Address correspondence to Dr. Kurt Kroenke, Regenstrief Institute for Health Care, 1001 West 10th Street, RG-6, Indianapolis, IN 46202-2859.

changes. He has a history of mild hypertension currently controlled on hydrochlorothiazide 25 mg and atenolol 50 mg daily. A diuretic has been prescribed for years, and the atenolol was started 6 months ago.

▶ **What kind of dizziness does this patient have?**

Dizziness is a common symptom. Not only is there a risk of 15 to 30% that any patient will have at least one attack of dizziness in his or her lifetime,[1] it results in over 6 million office visits annually in the United States.[1-3] However troubling it might be to the patient, dizziness is seldom life threatening. Indeed, one half to two thirds of patients either recover completely or improve substantially within a few weeks of symptom onset. The primary care physician's role is to differentiate the few life threatening cases (e.g., cerebrovascular event, tumor, cardiac arrthymia) from the majority of cases that are not, and carry out a prudent yet comprehensive work up. Several reviews have focused on selected types of dizziness,[4] special populations,[5] or a comprehensive review of the symptom.[1,6,7] In this article, we will present a practical approach to classifying, evaluating, and managing the patient who presents with dizziness in primary care.

## Classification

Dizzy patients generally are classified by either sensations or etiology. A popular sensation-based approach outlined by Drachman[8] categorizes dizziness as:

- Vertigo
- Presyncope
- Dysequilibrium
- Lightheadedness

While some sensations correspond more often than not to at least a general etiological category (e.g., vertigo suggests vestibular dysfunction at least 80 to 90% of the time), these four sensations remain nonspecific, occurring with many different disorders, including otologic, cardiovascular, neurologic, and psychiatric. Table 1 shows the relative frequencies of specific causes of dizziness. Following is a brief delin-

## TABLE 1. Frequency of Specific Causes of Dizziness*

| Cause | Frequency (%) |
|---|---|
| Peripheral vestibulopathy | 35–55 |
|   Benign positional vertigo | 10–20 |
|   Vestibular neuritis/labrynthitis | 5–15 |
|   Meniere's disease | 5 |
|   Nonspecific vestibulopathy | 5–20 |
| Central vestibulopathy | 5–10 |
|   Cerebrovascular ischemia (strokes or TIA) | 5 |
|   Tumor (acoustic neuroma, cerebellar) | <1 |
|   Other (multiple sclerosis, migraine, non-specific vestibulopathy) | 1–5 |
| Psychiatric disorders (depression, anxiety, somatoform disorders) | 10–25 |
| Idiopathic causes | 10–20 |
| Orthostatic hypotension | 2–10 |
| Cardiac arrythmias | 1–3 |
| Other (medications, metabolic disorders, infections, anemia) | 5–15 |

* Adapted from Kroenke et al.[1]

TIA = transient ischemic attack.

eation of the relationship between sensations and the most common corresponding causes.

## Vertigo

Vertigo is the sensation (or illusion) of motion either of the patient's body or the surroundings. Patients often describe the sensation as spinning, tilting, or moving sideways. True vertigo accounts for more than half of all cases of dizziness and can be further classified into peripheral and central according to etiology with peripheral causes being far more common (90% of all vertigo) than central causes. The three most common specific causes of peripheral vertigo are benign positional vertigo, labyrinthitis, and Meniere's disease.

**BENIGN POSITIONAL VERTIGO (BPV)** is episodic, aggravated or brought on by changes in position, and lasts for a few seconds. Symptoms occur upon change of position like turning, rolling over or getting in and out of bed, bending over, or straightening up. While the onset of BPV is sometimes temporally related to potential precipitating factors such as viral infection or head injury, most often it is idiopathic. It is more common in middle-aged to elderly patients. A commonly postulated cause is debris in the semicircular canals, which results in stimulation of the vestibular organ, although definitive evidence for this etiology is limited. Vertigo usually occurs when the affected ear is in the dependent position. Compared to the more severe vertiginous attacks seen with disorders such as labyrinthitis and Meniere's disease, the episodes of vertigo that occcur with BPV are often brief (10 to 15 seconds) and milder, so that the patient might often

mention it as an incidental finding in a routine office visit (several weeks or more after the BPV first began) rather than presenting acutely with these symptoms.

**LABRYNTHITIS** (sometimes called vestibular neuronitis) is presumed to be due to temporary inflammation or irritation of the vestibular nerve with or (usually) without atrophy of the sense organ. It occurs acutely, lasts for several days and resolves spontaneously. Recurrent episodes might occur and on occasion there are family outbreaks, suggesting an infectious etiology for at least some of the cases. Vertigo is typically more sustained and disabling than BPV, so that patients with labyrinthitis often present either to an emergency room or as walk-in patients to the office with the first onset of symptoms.

**MENIERE'S DISEASE** is characterized by repeated episodes of tinnitus, fluctuating hearing loss, and severe vertigo accompanied eventually by a progressive sensorineural hearing loss. Episodes typically last from several hours to a day or two and can be quite severe. The frequency and severity of vertigo might improve as hearing impairment worsens. The presumed cause is recurrent endolymphatic hypertension (hydrops) with dilatation of the endolymphatic sac leading to hair cell atrophy. Although one ear is often predominantly affected, bilateral involvement is seen in 20 to 40% of the cases.

**CENTRAL VERTIGO** accounts for a minority of cases of vertigo and includes disorders such as cerebrovascular disease, brain tumors, migraine, or multiple sclerosis. Vertigo or nonvertiginous dizziness occur in one third to half of patients with migraine and, while one retrospective study reported that isolated dizziness can be a migraine equivalent,[9] other studies suggest that dizziness in the absence of headache is seldom due to migraine.[10] Cerebrovascular disease accounts for about 6% of the cases of dizziness. Vertigo is mild, immediate, and prolonged, and is usually accompanied by spontaneous nystagmus that is not fatigable. Indeed, acute ongoing vertigo is a "cardinal sign" of posterior circulation stroke and occurs in approximately 78% of such cases. Because it might be difficult to differentiate posterior circulation strokes from vestibular neuronitis, it is important to inquire about the cardiovascular risk factors. Recurrent spontaneous episodes of vertigo lasting minutes might suggest transient ischemic attacks (TIA). A concomitant neurological deficit should also raise the suspicion of a central cause and prompt a work up in that direction.

## Nonvertiginous Dizziness

**PRESYNCOPE** is the sensation of near fainting. This review does not deal with full loss of consciousness or syncope, which requires a different diagnostic approach nicely summarized elsewhere.[11,12] Presyncope accounts for 5% of all cases of dizziness and usually is considered a symptom of cardiovascular disease. It is helpful to consider cardiac and vascular causes separately because the latter usually are benign and are by far the most common. Cardiac causes of presyncope

**Orthostatic hypotension**
- Volume depletion
- Autonomic neuropathy (e.g., diabetes mellitus)
- Medication-induced
- Aging

**Cardiac**
- Outflow obstruction (especially aortic stenosis, hypertrophic cardiomyopathy)
- Dysrhythmia, including bradycardia, tachyarrhythmias (atrial or ventricular), conduction disturbances (such as heart block)

**Vagal stimulation**
- Vasovagal reaction that may occur with anxiety-provoking situations (e.g., blood drawing), prolonged standing, etc.
- Other precipitants, such as micturition (especially in elderly), post-tussive (in patients with chronic lung disease and prolonged coughing spells), defecation (in patients with constipation or excessive straining)

can be electrical in origin (tachyarrhythmias or bradyarrhythmias) or structural (especially aortic outflow obstruction). Vascular causes of syncope are typically not ischemic events but are less serious, reversible conditions such as orthostatic hypotension or temporary reactions due to vagal stimulation. Table 2 summarizes common causes of presyncope.

**DYSEQUILIBRIUM** accounts for approximately 5% of all cases of dizziness and is a sensation of being unsteady when standing or, in particular, walking. It is the least "cephalic" of dizziness sensations so that some patients with dysequilibrium when asked, "Is the dizziness in your head or in your feet," will choose the latter. Balance depends not only on the vestibular system but also the visual and somatosensory systems. Thus, multiple factors can contribute to imbalance, including chronic vestibulopathies, visual problems (e.g., errors of refraction, cataract, loss of biocular vision, macular degeneration), musculoskeletal disorders (e.g., arthritis, muscle weaknesses) and somatosensory or gait deficits (e.g., neuropathies, previous strokes, cerebellar disease, Parkinson's disease, dementia). Because elderly patients are susceptible to disturbances in multiple systems, they are the most likely to experience dysequilbrium.

**LIGHTHEADEDNESS** is a more vague sensation best reserved as a descriptor for patients who do not experience one of the three more discrete types of dizziness sensations—vertigo, presyncope, or dysequilibrium. Patients might describe these latter three sensations as "spinning," "fainting," or "falling." Patients with the more vague lightheadedness might often have other ill-defined symptoms or multiple somatic complaints when further questioned. While any etiology of dizziness might occasionally produce a nondescript, "lightheaded" type of sensation, the two most prominent considerations are psychiatric (primarily depressive, anxiety, or somatoform disorders) or idiopathic

causes, which together account for up to one third of all cases of dizziness in primary care.

The patient's age, vertiginous nature of the dizziness, and brief spells provoked by positional changes all make BPV a strong possibility. The recent change in blood pressure medication, however, also presents the possibility of orthostatic hypotension. On physical examination, our patient has a blood pressure of 140/80 mm Hg and a regular pulse of 70 beats per minute supine; upon standing, this becomes 134/76 mm Hg and 78 beats per minute respectively, and the patient feels some transient lightheadedness. Cardiac exam reveals a soft S4 but is otherwise unremarkable. Neurological examination is normal. On the Hallpike maneuver, the patient develops dizziness (without nystagmus) when lying down and head is turned to the right.

▶ **What is an appropriate initial evaluation of the dizzy patient?**

A brief, focused evaluation coupled with simple follow-up rather than initial diagnostic testing or referral is warranted in most patients. One reason for this is the apparently favorable prognosis associated with dizziness as it presents in the primary care setting. It appears that one third to half of patients will recover or substantially improve within several weeks of their initial office visit for dizziness, and another third will improve gradually over 2 to 4 months.[13] While there are few cohort studies, dizziness does not appear to be a marker for mortality in the subsequent 1 to 2 years.[13,14] Isolated dizziness seems to be a distinctly uncommon manifestation of serious causes that might preclude watchful waiting, such as cerebrovascular ischemia, brain tumors, and cardiac arrhythmias.[1,10]

A second reason for an initial "no-testing" approach is the relatively small number of cases where laboratory testing or other technology-dependent assessment procedures produce "surprise" diagnoses not suspected by a simple office evaluation. Over 75% of the cases where a diagnosis can be established will be diagnosed by history and physical examination alone, with the history contributing most of these diagnoses.[10] Table 3 outlines an initial "5-minute exam" of the dizzy patient, further described below.

**History**

As with many common symptoms, history is the single most useful part of the evaluation. The clinician must establish early on whether dizziness stems from a serious or benign etiology. While it is best to elicit the patient's own description of the event without prompting, three questions are particularly helpful:

**History**
- Open-ended question: "Can you describe your dizziness."
- 3 key sensations: Does dizziness feel like: Spinning? Fainting? Falling?
- Positional effects of: Lying down? Standing? Walking?
- Other symptoms
  Syncope (prompting further cardiac evaluation)
  Cochlear symptoms, such as tinnitus or hearing loss
  (suggesting Meniere's, acoustic neuroma, or other specific vestibular disorders)
  Multiple somatic symptoms (suggesting a psychogenic cause)
- Identify obvious precipitating factors—medication, viral illness, dehydration

**Physical**
- Orthostatic blood pressure and pulse (supine/standing)
- Cardiac auscultation
- Observe gait
- Vestibular screening (looking for nystagmus)
  Primary position (eyes straight ahead)
  Gaze-evoked (right, left, up, down)
  Hallpike maneuver
  Head-shaking

1. *Is the dizziness one of 3 key sensations: spinning, fainting, or falling?* Vertigo is a particularly useful diagnostic sensation; while the sensation itself does not pinpoint the exact site, a sensation of motion is associated with a lesion somewhere in the vestibular system 80 to 90% of the time.

2. *Is there a positional effect on symptoms?* With BPV, the effect is almost always one of transient dizziness (10 to 15 seconds) and occurs with change of head position, lying down, or sitting up. The most common cause of presyncope is an orthostatic change in blood pressure, in which case the patient reports that dizziness occurs upon assuming a more upright position (supine to sitting, or sitting to standing). Dysequilibrium is manifested only when the patient is walking or standing. So simply asking the effects of position—lying down, sitting, standing, and walking—is one of the more valuable historical questions.

3. *What other symptoms are associated with dizziness?* Syncope is a particularly important symptom to inquire about, since actual loss of consciousness targets that very small subset of dizzy patients in whom early cardiac evaluation may be contemplated. Tinnitus and/or hearing changes are associated with certain vestibular disorders such as Meniere's disease or the rare acoustic neuroma. Nausea and, in particular, vomiting suggest vertigo

rather than a nonvertiginous cause of dizziness. A central cause would not commonly present with isolated dizziness but instead would be expected to produce "neighboring" neurological symptoms as well. Dizziness that is frequently accompanied by headaches suggests the possibility of migraine. Psychogenic causes, such as depression, anxiety, or somatoform disorders, typically have fatigue, insomnia, or other physical and emotional symptoms in addition to dizziness.

## Physical Examination

A focused physical examination would include the following steps. Take the blood pressure and pulse while the patient is supine and upright (to detect orthostatic changes), perform the head-hanging (Hallpike) maneuver, auscultate the heart, and watch the patient walk and turn (looking for balance or gait difficulties). In some cases, an even more limited examination might be sufficient. The person with classic BPV symptoms in whom the Hallpike maneuver reproduces vertigo and nystagmus, or the dizzy patient recently started on a blood pressure medication who has orthostatic hypotension as well as symptoms reproduced by standing, are instances where history coupled with a single manuever on physical examination establishes the diagnosis.

A screening vestibular examination is warranted in cases where the cause of dizziness is not obvious. This brief exam usually can be completed in one minute. The four elements of this vestibular exam have in common the evaluation of nystagmus:

1. *Primary* position. Have the patient look straight ahead
2. *Gaze-evoked.* Have the patient look right, left, up, and down, holding each position for 5 to 10 seconds. Deviations of 30 to 45 degrees are sufficient to detect pathologic nystagmus; extreme gaze might accentuate physiologic (normal) nystagmus. More than 3 to 5 beats of nystagmus is abnormal.
3. *Hallpike maneuver.* Figure 1 illustrates this maneuver. With the patient seated on the examination table, help the patient lie down quickly with one ear turned toward the table. Help the patient up to a sitting position, and repeat the maneuver with the other ear facing the table. Although hyperextending the patient's neck over the edge of the table has traditionally been recommended, this is not always possible and might not be necessary in many patients. With each change of position, both reclining and arising, watch for nystagmus, and ask the patient to report any symptoms. Classically, with BPV, the patient experiences the response in only one position, because only one of the vestibular
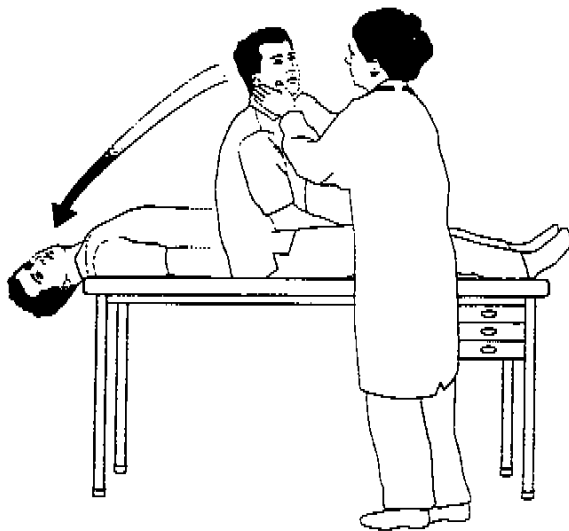
**FIGURE 1** Performing the Hallpike maneuver. (Adapted with permission from Mohr DN. The syndrome of paroxysmal positional vertigo. West J Med 1986;145:645–650. Reproduced from the Journal of Clinical Outcomes Management 1997;4(4):38. ©1997 Turner White Communications, Inc. All rights reserved.) Illustration by Matt Chansky.

apparatuses is diseased. While BPV is said to have a torsional (rotatory) type of nystagmus, this might often be difficult for a primary care physician to distinguish from horizontal nystagmus. The distinction typically is not critical because most patients with either horizontal or torsional nystagmus have a peripheral (i.e., benign) type of vestibulopathy, whether due to BPV or some other peripheral vestibular dysfunction.

The Hallpike maneuver is positive in about half of patients with BPV— usually those with symptoms of recent onset. It is said that in the vastly more common peripheral (i.e., benign) version of positional vertigo that nystagmus occurs after a brief lag period (2 to 5 seconds after a positional change), becomes less with repeated maneuvers ("fatigues"), and is associated with profound vertigo. In contrast, the uncommon positional vertigo due to central lesions has substantial nystagmus with milder vertiginous symptoms and the nystagmus occurs immediately with positional changes and does not fatigue or attenuate. In primary care, the peripheral type of positional vertigo (i.e., BPV) is so much more common than central causes that a history and exam classic for BPV usually obviates further evaluation (unless the symptoms do not gradually abate).

4. *Head-shaking.* The patient closes his eyes, rapidly shakes his head back and forth for 10 seconds, and then opens his eyes. The examiner looks for nystagmus.

Nystagmus due to peripheral causes usually beats horizontally. Vertical nystagmus (i.e., upward or downward beating) is uncommon and should prompt early evaluation for central causes (e.g., neuroimaging, formal vestibular testing, neurology or otolaryngology referral).

While some clinicians feel more comfortable conducting at least a brief cardiovascular and neurologic examination in the dizzy patient, a detailed examination of either system is time consuming and has a surprisingly low diagnostic yield because of the infrequency of cardiac or neurologic causes of dizziness.[1,10,15] The more detailed exams may be best reserved for patients with other "red flags," such as true syncope, recurrent and unexplained presyncopal episodes, or other neurologic symptoms.

In the past, hyperventilation had been recommended by some experts to diagnose symptoms due to "primary hyperventilation." However, recent evidence suggests that the latter syndrome usually is a manifestation of an underlying panic or other anxiety disorder. While hyperventilation might be somewhat more likely to reproduce symptoms in patients with psychogenic dizziness, such patients will also note exacerbation of their symptoms in response to a number of other maneuvers.[10,15] Furthermore, the hyperventilation maneuver is nonspecific in that it can reproduce symptoms in patients with dizziness due to nonpsychiatric causes.



While the physician's presumptive diagnosis is still benign positional vertigo, borderline orthostasis due to blood pressure medication cannot be excluded and another type of peripheral vestibulopathy is also considered possible. Indeed, dizziness might be multifactorial (i.e., two or more causative or contributory factors) in one third to one half of patients. Thus, the dose of atenolol is decreased to 25 mg per day. Also, the patient is instructed in habituation exercises and told to call back or return to the clinic if symptoms change or gradual improvement does not occur in the next two to four weeks. Several months later the patient returns to clinic. He reports the dizziness initially improved but never completely resolved, and recently he has been bothered by dizziness more days than not. While positional changes might trigger some spells, he is also aware at times of lightheadedness while simply sitting. He asks, "What happens if I get a bad spell while driving the bus?" The patient is referred for audiometry and electronystagmography (ENG). Except for a mild high-frequency sensorineural hearing loss, the tests are otherwise normal.

## ▶ What is the role of specialized testing in evaluating the dizzy patient?

### Vestibular Testing

**AUDIOMETRY** might be helpful in the patient with cochlear symptoms, such as tinnitus or asymmetric hearing loss. Abnormal audiograms might indicate Meniere's disease or, rarely, a cerebellopontine angle tumor such as acoustic neuroma.

**ELECTRONYSTAGMOGRAPHY (ENG)** involves the use of electrodes to measure nystagmus occurring spontaneously or after induction with lateral gaze, positional changes or caloric stimulation. While ENG is very specific for vestibular disorders, sensitivity is variable, and it cannot readily distinguish central from peripheral causes.

**OTHER TESTS** include brainstem auditory evoked responses (BAERs), rotatory chair, and dynamic posturography. Brainstem auditory evoked response is occasionally indicated if clinical evaluation, audiometry, or ENG suggest a central vestibulopathy or eighth cranial nerve involvement, while the latter two tests might substitute for or augment ENG in special situations.

### Neurologic Testing

**NEUROIMAGING** is the one neurologic test occasionally warranted in the evaluation of the dizzy patient. While a computerized tomography scan is the procedure of choice for strokes (because of cost and availability), magnetic resonance imaging is better able to image posterior fossa structures. Imaging (preferably magnetic resonance imaging) should also be considered in case of vertigo with associated neurologic deficits. Because central causes of dizziness are uncommon in primary care (and even in referral populations), neuroimaging typically is not indicated in the absence of neurological deficits on clinical examination or symptoms suggestive of a stroke, tumor, multiple sclerosis, or other central nervous system disorder.

**OTHER NEUROLOGIC TESTS.** Electroencephalography (EEG) typically is not useful in evaluating dizziness, and noninvasive carotid studies such as ultrasonography would be warranted only if other neurologic symptoms suggested transient ischemic attacks.

### Cardiovascular and Other Testing

**CARDIOVASCULAR TESTING.** An electrocardiogram is commonly obtained in older patients with cardiovascular risk factors but has a low diagnostic value in patients with a normal cardiac exam and nonsyncopal dizziness. Other tests helpful in evaluating syncope, ischemia, or valvular disease (Holter and event monitors, echocardiography, stress testing, tilt-tables, and electrophysiologic studies) have not been shown to be useful in evaluating isolated dizziness.

**ROUTINE LABORATORY TESTING** has an extremely low yield in clinical series of dizzy patients. Serum glucose, electrolytes, hemoglobin or other selected laboratory tests might be selectively ordered in individual patients based upon clinical suspicion.

The patient insists on having a computerized tomography scan to "make sure there is no brain tumor." Reluctantly, the physician complies and the scan is normal. On a follow-up visit to discuss these findings, the patient admits to recent fatigue, difficulty sleeping, depressed mood and some anxiety. His company is threatening to lay off some bus drivers and he is worried about family finances. Also, his recently divorced daughter has moved back home with her 2-year old son. After further discussion, he agrees to a trial of an antidepressant.

## ▶ How should one approach psychiatric causes of dizziness?

Psychiatric disorders account for 20% or more of cases of dizziness, and should be considered when the dizziness is nondescript (e.g., lightheadedness), persistent and unexplained, or associated with multiple other somatic or emotional symptoms. Primary care physicians are variably adept at recognizing depression and anxiety in their patients. Using the Primary Care Evaluation of Mental Disorders (PRIME-MD) questionnaire[16] improves accuracy of diagnosis. The original PRIME-MD consisted of a screening questionnaire completed by the patient followed by a set of questions by the physician; a new version completed entirely by the patient is now available. Other case-finding instruments are also available.[17] Moreover, it has recently been shown that a single question about depressed mood has an 85 to 90% sensitivity for detecting depressive disorders.

Factors that make psychogenic dizziness more likely include age less than 40 years, associated somatic symptoms (e.g., generalized weakness, fatigue, headache), and dizziness provoked by hyperventilation. Hyperventilation alone is not diagnostic of psychiatric disease as it can elicit dizziness in a number of patients with nonpsychogenic causes of dizziness as well.

Patients with somatic presentations of psychiatric disorders are sometimes reluctant, at least initially, to embrace a psychological basis for their physical symptoms. It might be counterproductive in such cases to push too hard for the patient to accept a psychogenic etiology. Instead, psychiatric distress as a consequence (rather than a cause) of the persistent symptoms, the biochemical underpinnings of depression, and anxiety (i.e., neurotransmitter imbalance), and the proven efficacy of antidepressants in a variety of symptom syndromes (migraine headache, neuropathic pain, irritable bowel, fibromyalgia, chronic tin-

■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■

● Acute vertigo attacks that occur with peripheral vestibular disorders such as labyrinthitis and Meniere's disease may benefit from meclizine and, if needed, a benzodiazepine. However, meclizine is probably overprescribed for chronic vestibulopathies and nonvertiginous dizziness.

● Benign positional vertigo can be usually treated with simple reassurance since symptoms are typically mild and usually improve within weeks to several months. For severe or persistent symptoms, the patient may be educated about habituation exercises to perform at home, or the canalolith repositioning procedure (Epley's maneuver) may be attempted in the office.

● Meniere's disease in which attacks are frequent or disabling may benefit from prophylactic treatment with salt restriction and/or diuretic therapy. Occasional patients may require referral to otolaryngology for consideration of surgery.

● Correct reversible causes of orthostatic hypotension.

● For the elderly patient with chronic dysequilibrium, take measures to prevent falls, including the use of a cane, walker, or other assistive device if necessary.

● Consider a trial of antidepressants for the patients with psychogenic dizziness related to depressive or certain anxiety (e.g., panic) disorders.

nitus) are ways of persuading the patient to accept a therapeutic trial.

**After six weeks of antidepressant treatment, the patient has noticed some improvement in his fatigue, insomnia, and depressed mood. His dizziness, while not entirely resolved, is now an episodic symptom that the patient feels is now quite tolerable.**

► **What are effective treatment strategies for patients with dizziness?**

While treatment for many of the causes of dizziness has not been well established, the news for the patient is not all bad. In up to half of patients, dizziness spontaneously resolves or substantially improves within two weeks. It some cases, dizziness is an associated symptom of viral or other self-limited illnesses. Other times, it results from dehydration or a medication side effect. The two most common causes of peripheral vertigo—labyrinthitis and BPV—typically resolve within days or weeks, respectively.

Dizziness might be a chronic or recurrent symptom in 15 to 20% of patients. The three most common causes in these cases are chronic vestibulopathies, dysequilibrium, and psychiatric disorders. Specific therapy for the first two conditions is lacking, although many patients gradually compensate and their symptoms become more tolerable and less worrisome. Clinical trials of treatment for psychogenic dizziness

have not been conducted, although somatic symptoms in general commonly improve in patients whose depression or anxiety is effectively ameliorated.

Finally, when managing a patient with dizziness, it is important to remember that approximately half of patients might have two or more potential causative or contributory factors for their symptoms. For example, an elderly patient might have a complex type of dizziness variably described as feeling faint when standing, unsteadiness when walking, and a nagging lightheadedness unrelated to position. Upon evaluation, the patient is found to have orthostatic hypotension, depression, and dysequilibrium due to a peripheral neuropathy and macular degeneration. Identifying and targeting factors that might be remediable, such as the orthostasis and depression, might ameliorate at least some of the symptoms. Table 4 outlines some of the treatments most likely to be considered in caring for the dizzy patient in primary care. Some of these are reviewed in more detail elsewhere in the literature.[6,7]

Benign positional vertigo is frequently mild and such patients might require nothing more than explanation and reassurance that spontaneous resolution over several weeks or months is the rule. Two nonpharmacological options are available for the patient with more severe, persistent, or disabling symptoms. One is to educate the patient about habituation exercises that can be performed at home.[18] Three or four times a day, the patient reproduces the symptom by sitting in bed, then assuming the appropriate eardown position and holding it until dizziness subsides, then returning to the sitting position. This manuever should be repeated at each exercise period until the response fatigues. Compliance might be poor in some patients, because they are not willing to reproduce their symptoms. A second procedure, done by the clinician in the office, is the canalith repositioning pro-

**TABLE 5**

**Terms Patients May Use to Describe a Spatial Sense**

■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■

| | | |
|---|---|---|
| Dizziness | Spinning | Staggering |
| Light-headed | Swaying | Drunk feeling |
| Woozy | Twisting | Bouncing |
| Haziness | Moving | Tilting |
| Weird feeling | Weaving | Listing |
| Fuzzy-headed | Rocking | Fainting |
| Floating | Rolling | Falling |
| Swimming | Imbalance | Blacking out |
| Blurred vision | Unsteadiness | Passing out |
| Vertigo | Poor equilibrium | |

# Dizzy Patient

Obtain history, including precise description of sensation of dizziness (spinning, fainting, falling, unsteadiness), medications, toxic exposures, and symptoms suggestive of cardiovascular or neurologic disease

Syncope? 
YES — Ask about vasovagal symptoms and evaluate for orthostatic blood pressure and pulse changes.

If indicated, evaluate for cardiovascular or neurologic disorders (physical examination; consider electrocardiogram, stress test, coronary angiography, echocardiogram, Holter or event monitor, tilt-table, neuroimaging, electroencephalogram)

NO

## Vertigo
Evaluate for nystagmus (Hallpike or head shake) and hearing loss

## Presyncope
Evaluate for orthostatic blood pressure and pulse changes
Perform brief cardiovascular/ neurologic examination

## Dysequilibrium
Evaluate for peripheral neuropathy, abnormal gait, visual impairment, and skeletal disorders

## Light-headedness
Ask about presence of somatic complaints
Evaluate for anxiety and depression

### Peripheral vestibulopathy
Treat and observe
If symptoms persist > 6 wks consider VFT (ENG)

### Central vestibulopathy
Consider neuroimaging VFT (ENG),and referral to neurologist or otolaryngologist

### Unilateral hearing loss
Order audiogram
Consider neuroimaging and referral to neurologist or otolaryngologist
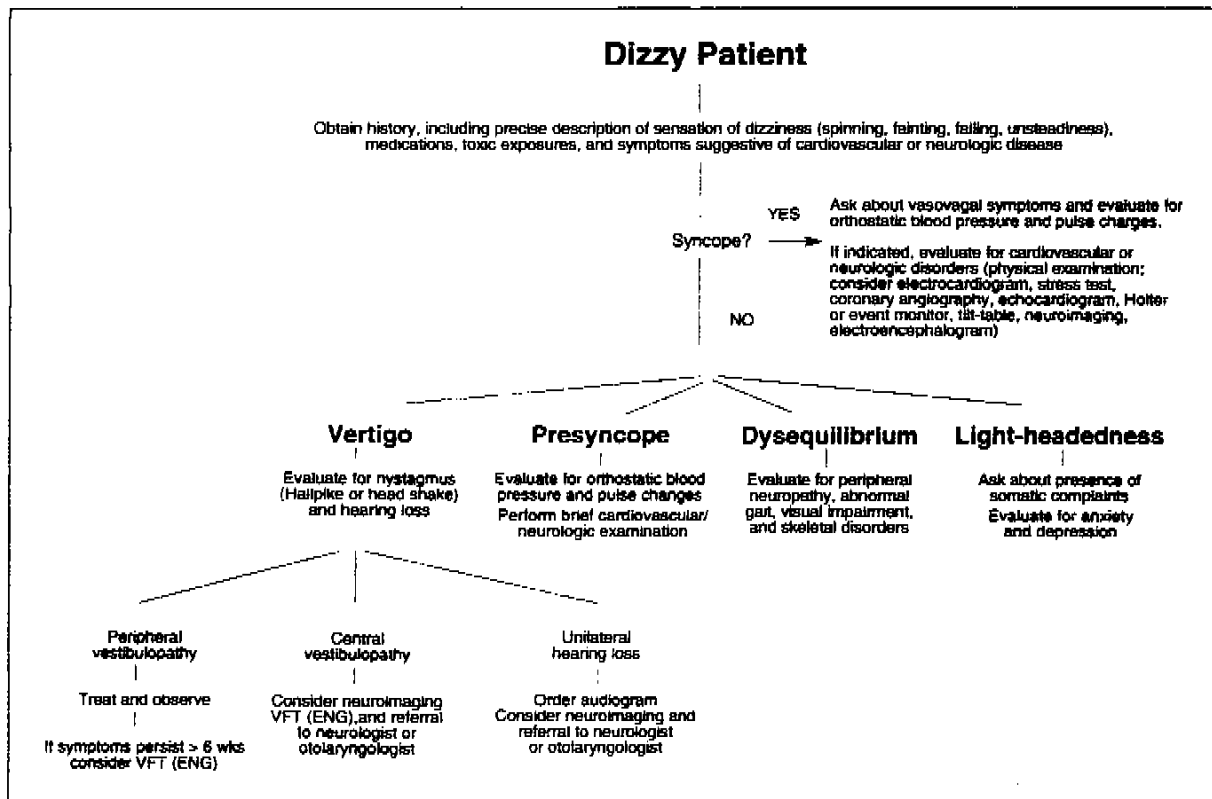
**FIGURE 2** Algorithm for evaluating a patient with dizziness. Patients with persistent, unexplained dizziness shoudl be reevaluated for psychiatric disorders, dysequilibrium, and referral for vestibular function tests. ENG = electronystagmography; VFT = vestibular function test. (Reproduced from the Journal of Clinical Outcomes Management 1997;4(4): 34. ©1997 Turner White Communications, Inc. All rights reserved.)

cedure (Epley's maneuver), which involves taking the patient through a series of head positions that (theoretically) return the intracanalicular debris to the utricle.[19] While efficacious in several small clinical trials, this procedure can be time-consuming for the primary care clinician to perform, and its feasiblity and success when attempted by practitioners outside a research setting remains to be determined.

Labrynthitis usually resolves spontaneously, often within a few days. During this time some symptomatic relief might be obtained with meclizine or, in more severe cases, the addition of a benzodiazepine.

Meniere's disease has a remitting and relapsing course, making assessment of any particular treatment difficult. It usually progresses to a moderately severe permanent hearing loss (2/3 unilateral) over 10 to 20 years, by which time the attacks of vertigo typically decline in both intensity and frequency. Although various treatment modalities have been suggested, there is little evidence to suggest one modality over another. Usually salt restriction and diuretics are helpful either individually or in combination. Meclizine also might provide some symptomatic relief. As a last resort, surgery[7] can be performed. One popular

procedure, endolymphatic shunt surgery, has lost favor over the years because several studies examining its efficacy were unable to show a clearcut benefit. Another option is surgical ablation of the vestibular apparatus on the affected side.

A word on meclizine is warranted, particularly because there are very few "dizziness-specific" medications. Because of the lack of alternatives, meclizine might be overprescribed. Ninety percent of patients with dizziness leave the physician's office with a prescription, often for meclizine.[7] There are only a few small clinical trials supporting its use. Alternatively, there is evidence (primarily animal studies) that vestibular suppressants might actually interfere with recovery from a vestibular insult by suppressing the vestibular input from the uninjured side that is essential for recovery.

Presyncope might be due to a variety of causes. The most common specific cause is orthostatic hypotension, which might be readily reversible if due to volume depletion or a medication effect. Chronic orthostasis due to an autonomic neuropathy, aging, or idiopathic causes might sometimes be ameliorated by salt supplements, minerlacorticoid therapy, support

stockings, and other nonpharmacological measures. Cardiac arrythmias and cardiovascular structural defects are uncommon causes of dizziness but have specific therapies that are beyond the scope of this review.

Dysequillibrium also is multifactorial and treatment usually means addressing the cause of the symptom. In the elderly person, the deficits might not be correctible (with the exception of certain visual problems) and attention might best be focused on preventing falls, including the use of canes or other assistive devices as needed.

Lightheadedness should prompt screening for potentially treatable underlying psychiatric conditions. For depressive and certain anxiety (e.g., panic) disorders, antidepressants are an important option to consider. For patients with somatoform disorders marked by multiple chronic symptoms besides dizziness, the recommended management strategy involves linkage to a single primary care provider, regular follow-up visits and emphathic listening but avoidance of excessive diagnostic testing and referral to multiple specialists for repeated workups.

## Summary

In summary, dizziness is a common presenting complaint in primary care practice. It is disconcerting to the patients and often to the physician as well. Despite this, it carries a good prognosis. Most cases improve or resolve either spontaneously or with little treatment. Figure 2 outlines a practical algorithm to the evaluation of the dizzy patient in primary care.

A brief 5-minute exam is adequate for most patients at the initial visit. More extensive testing can be reserved for the small subset of patients with "red flags" (syncope, neurologic signs) or those with persistent, unexplained symptoms. If further evaluation is warranted, the most appropriate tests are formal vestibular function tests and screening for psychiatric disorders. While the former typically requires referral, the latter can readily be accomplished by the primary care clinician.

### ANNOTATED BIBLIOGRAPHY

1. Kroenke K, Hoffman RM, Einstadter D. A rational approach to the dizzy patient. J Clin Outcomes Management 1997;4:33–41.

   A practical approach to diagnosis. The article reviews literature for causes of dizziness, classifies them in a symptom-based scheme, and presents a simple yet comprehensive approach in the manner of a panel discussion.

2. Kroenke K. Dizziness in primary care. West J Med 1995;162:73–74.

   An overview that touches upon some of the more common aspects of the problem.

3. Sloane PD. Dizziness in primary care: results from the National Ambulatory Medical Care Survey. J Fam Pract 1989;29:33–38.

   An excellent review of data looking at the scope of dizziness in primary care. It also addresses the significant coexisting medical diagnoses that occur in the dizzy patients.

4. Hotson JR, Baloh RW. Acute vestibular syndromes. N Engl J Med 1998;339;680–685.

   Reviews vertigo with good description of pathophysiologic basis of the symptom. Also has a detailed bibliography.

5. Baloh RW. Dizziness in older people. J Am Geriatr Soc 1992;40:713–721.

   A more recent review of the subject. This article also presents an approach to managing the dizzy elderly patient.

6. Warner EA, Wallach PM, Adelman HM, Sahlin-Hughes K. Dizziness in primary care patients. J Gen Int Med 1992;7:454–463.

   A more recent and detailed review of dizziness in primary care practice. This article also presents an outline of management of the dizzy patient.

7. McGee SR. Dizzy patients: diagnosis and treatment. West J Med 1995;162:37–42.

   A good overall review of the subject based on a discussion presented by the author. It presents a superb bibliography.

8. Drachman DA, Hart CW. An approach to the dizzy patient. Neurology 1972;22:323–334.

   This is one of the classic studies of dizziness. Using patients recruited from a specialty dizziness clinic, it prospectively lists causes and attempts to develop a classification of dizziness based on symptoms at presentation.

9. Johnson GD. Medical management of migraine-related dizziness and vertigo. Laryngoscope 1998; 108(1 Pt 2):1–28.

   This is a retrospective review of 89 patients diagnosed with migraine-related dizziness by a single otolaryngologist. Although precise definitions of migraine-related dizziness (especially in the absence of headache) may remain controversial, this paper also provides an excellent review of the literature.

10. Kroenke K, Lucas CA, Rosenberg ML, et al. Causes of persistent dizziness: a prospective study of 100 patients in ambulatory care. Ann Int Med 1992;117: 898–904.

    Comprehensive study looking at various causes of dizziness in patients presenting in a primary care office. It emphasizes that over half the patients have more than one potential cause or contributory factor, and life threatening ailments are rare.

11. Linzer M, Yang EH, Estes NAM, et al. Diagnosing syncope: part 1. Ann Int Med 1997;126:989–996.

12. Linzer M, Yang EH, Estes NAM, et al. Diagnosing syncope: part 2. Ann Int Med 1997;127:76–86.

    A comprehensive review of evaluation of syncope. It presents a detailed workup of syncope as well management of difficult cases.

13. Kroenke K, Lucas C, Rosenberg ML, et al. One year out-come for patients with a chief complaint of dizziness. J Gen Int Med 1994;9:684–689.