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A Novel, Evidence-Based Approach to Diagnosing Acute Dizziness and Vertigo

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KEYWORDS

• Dizziness • Vertigo • Stroke • Vestibular diseases • Diagnosis
• Medical history taking • Physical examination • Emergency departments

KEY POINTS

- The prevailing diagnostic paradigm for diagnosing emergency department (ED) patients with dizziness is based on dizziness symptom quality or type.
- Recent research suggests that the logic underlying this traditional approach is flawed.
- A newer approach based on timing and triggers of the dizziness likely offers a better diagnostic approach, especially in an unselected ED dizziness population.
- This new approach uses timing-trigger categories to define targeted bedside history and physical exam techniques to differentiate benign from dangerous causes.
- Evidence-based eye movement exams accurately discriminate BPPV (Dix-Hallpike test) and vestibular neuritis (HINTS test) from dangerous central mimics such as stroke.
- Future research should seek to prospectively study the new approach to dizziness for its overall diagnostic accuracy, resource efficiency, and impact on health outcomes.

INTRODUCTION

Dizziness accounts for 3.3% to 4.4% of ED visits.[1–3] This translates into more than 4.3 million ED patients with dizziness or vertigo annually in the United States[4] and probably 50 to 100 million worldwide.

Dizziness means different things to different people. Patients may describe feeling dizzy, lightheaded, faint, giddy, spacey, off-balance, rocking, swaying, or spinning. Expert international consensus definitions for vestibular[5] and related symptoms[6] are shown in **Box 1**. Although historically much has been made of the distinction between the terms *dizziness* and *vertigo*, current evidence (described by Kerber and Newman-Toker (Pitfalls article) elsewhere in this issue) suggests the distinction is of limited clinical usefulness. This article does not make a distinction between these terms unless specifically noted.

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Box 1
International consensus definitions for major vestibular symptoms[5,6]

Dizziness is the sensation of disturbed or impaired spatial orientation without a false or distorted sense of motion. This includes sensations sometimes referred to as giddiness, lightheadedness, or nonspecific dizziness but does not include vertigo.

Presyncope (also near-syncope or faintness) is the sensation of impending loss of consciousness. This sensation may or may not be followed by syncope. When patients report "lightheadedness," it should be classified as presyncope, dizziness, or both.

Syncope (also faint) is transient loss of consciousness due to transient global cerebral hypoperfusion characterized by rapid onset, short duration, and spontaneous complete recovery. Syncope usually leads to loss of postural control and falling.

Vertigo is the sensation of self-motion (of head/body) when no self-motion is occurring or the sensation of distorted self-motion during an otherwise normal head movement.

Unsteadiness is the feeling of being unstable while seated, standing, or walking without a particular directional preference. This sensation has previously been called disequilibrium or imbalance.

The differential diagnosis of dizziness is broad, with no single cause accounting for more than 5% to 10% of cases.[1] This article focuses on the most common and most serious causes of new-onset dizziness in adults. More than 15% of patients presenting with dizziness to an ED have dangerous causes.[1] Sometimes, a serious cause is obvious based on the presentation (eg, dizziness with fever, cough, and hypoxia due to pneumonia). Other times, dangerous conditions can present with isolated dizziness that mimics benign problems.[7–11] Misdiagnosis in this latter group is not uncommon, even when patients are evaluated by neurologists.[12–16]

An important clinical goal is to distinguish serious from benign causes using the fewest resources possible. On average, however, diagnosing dizziness consumes disproportionate resources through extensive testing and hospital admission.[1,4] Indiscriminate application of CT, CT angiography (CTA), and MRI has low yield and low value in this patient population,[17–21] yet brain imaging for dizziness continues to increase steadily over time.[4] Use of brain imaging varies 1.5-fold across hospitals without differences in the detection of neurologic causes.[22] Annual spending on patients with dizziness in US EDs is now $4 billion,[4] with another $5 billion spent on those admitted.[23]

Previously, the evidence base for diagnosing patients with dizziness was limited.[24] A proliferation of recent research, however, has supplied clinicians with high-quality data to guide bedside diagnosis and management, particularly with regard to identifying cerebrovascular causes. This article proposes a new diagnostic paradigm based on symptom timing and triggers, derived from recent advances in evidence-based, targeted bedside examinations for specific dizziness subpopulations. New, acute dizziness presentations are focused on, and discussions about treatment are limited except where specifically relevant to initial ED management.

NEW DIAGNOSTIC APPROACH

Accumulating evidence over the past decade suggests using a different approach based on the timing and triggers for dizziness symptoms rather than type.[25,26] Timing refers to the onset, duration, and evolution of the dizziness. Triggers refer to actions, movements, or situations that provoke the onset of dizziness in patients who have intermittent symptoms.

A timing and triggers history in dizziness results in 6 possible syndromes (**Table 1**). This conceptual approach has been endorsed by an international committee of