

# Common Misconceptions in the Evaluation of ED Dizzy Patients Parallel Those Found in Emergency Medicine Texts

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## Introduction

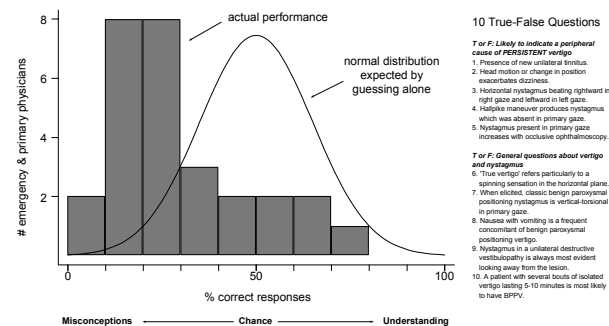
Recognized, preventable medical errors are estimated to account for 44,000-98,000 deaths annually in the U.S.<sup>1</sup> In the Emergency Department [ED], errors in diagnosis may represent the majority of errors.<sup>2</sup> Although in the outpatient setting fewer than one in ten cases of dizziness is attributed to a 'serious cause' such as cerebrovascular accident (6%) or cardiac dysrhythmia (1.5%),<sup>3</sup> in the ED up to 25% of patients over age 50 may have ischemic stroke as a cause of new, isolated vertigo.<sup>4</sup> In the ED setting, therefore, there is an added premium on accurate diagnosis and a need for simple bedside methods to identify those at greatest risk.

Although bedside techniques to distinguish 'benign' from 'malignant' causes of dizziness have been described previously by academic sub-specialists trained in neuro-otology,<sup>5-6</sup> it is unclear to what extent these methods have been incorporated into the knowledge base of front-line healthcare providers.

## Objectives

We sought to determine whether bedside techniques commonly employed by neuro-vestibular specialists were familiar enough to ED and other primary providers to help them identify medically-serious causes of dizziness. We hypothesized that misconceptions about the bedside evaluation of dizzy patients would be common and that a major source of misinformation would be the published medical literature, particularly textbooks.

Figure 1. Histogram of ED & Primary Care Provider Scores on a 10-Question, True-False Exam Regarding the Bedside Evaluation of Dizzy Patients



## Methods & Statistics

On two separate occasions, we anonymously quizzed 14 physicians attending a dizziness lecture, using 10 true-false questions about the clinical evaluation of dizzy patients. The group comprised 14 ED physicians (mixed residents and attendings) and 14 primary care physicians (all attendings) at two different, well-regarded University teaching hospitals. With institutional review board approval, we conducted an unmasked, retrospective, anonymous analysis of the survey data. We calculated the percent correct responses for individuals and for each question across individuals. We then compared these results to 50% (results expected by guessing alone) using a binomial exact statistic. Later, qualitative comparisons were made between these results and textbook findings.

## Results

Among 14 ED physicians, the mean individual score was 31% (range 0-60%, median 30%). The same results were found among the 14 PCPs (mean score 29%, range 0-70%, median 25%). Combining the two groups, no question was answered correctly at a rate significantly above that expected by guessing alone (range 8-60%), and 6 of 10 questions (#2, 3, 4, 5, 6, 10) were answered correctly at rates significantly below that expected by guessing alone (8-26%,  $p = 0.00002-0.02$ ). As can be seen graphically (Figure 1), these data imply misinformation, rather than lack of knowledge.

Three of the most common misconceptions place ED physicians at substantial risk of missing cerebrovascular accidents causing dizziness:

(1) "if the Dix-Hallpike maneuver elicits nystagmus in a patient with persistent vertigo, then the patient has benign positional vertigo [BPPV]"

This is only true when there are brief bouts of vertigo (< 2 minutes duration), and only then when the nystagmus elicited has a specific waveform (vertical-torsional) and certain temporal characteristics (latency to onset, damps quickly, fatigues on repeated trials).<sup>7</sup>

(2) "if a patient with persistent vertigo feels worse when they move their head, the cause is likely peripheral!"

If a patient with persistent vertigo feels worse when they move their head, it is a good indicator of a vestibular problem; however, it does not discriminate between a 'benign' peripheral vestibular problem (e.g. labyrinthitis) and a 'malignant' central one (e.g. stroke).<sup>6</sup>

(3) "a patient with several bouts of isolated vertigo lasting 5-10 minutes is most likely to have BPPV"

Vertigo caused by BPPV typically lasts 10-40 seconds, and almost never longer than 2 minutes.<sup>7</sup> Five to ten minutes is a common duration reported in patients suffering from TIAs in the posterior cerebral circulation.<sup>8</sup>

Using sub-specialist literature (peer-reviewed<sup>5-7</sup> and textbook<sup>9</sup>) as the reference standard, three commonly used textbooks of Emergency Medicine (Rosen<sup>10</sup>, Harwood<sup>11</sup>, and Tintinalli<sup>12</sup>) were found to have similar errors to those identified in quiz results. It is important to note that similar misconceptions were also found in commonly used medical<sup>13</sup> and neurologic textbooks<sup>14-16</sup> as well as peer-reviewed journals across disciplines<sup>17-20</sup>.

## Conclusions & Future Directions

Our results indicate that misconceptions about the bedside approach to dizzy patients may be commonplace, and perhaps derive from misinformation in Emergency Medicine texts and other published literature. Such misconceptions could increase the risk of misdiagnosis and reduce patient safety.

Limitations of our study include the small and potentially biased sample, retrospective design, and lack of instrument validation. Despite these limitations, the strength of the associations, consistency across disparate groups, and concordance between survey responses and textbook findings provide strong support for our conclusions.

In subsequent studies, we intend to explore the relationship between misinformation and the risk of actual misdiagnosis of ED dizzy patients, as well as possible methods to reduce such diagnostic errors.

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