

in the first year and 62% within 2 years.<sup>7</sup> In our experience of reviewing 883 patients who present with dizziness or vertigo, we excluded 26 patients with stroke, 12 with transient ischemic attack, and 4 with intracranial hemorrhage (unpublished data). We found 11 stroke events with a median follow-up of 2 years. None of these events occurred within the first 2 days after the initial presentation, because even with detailed records reviewed by highly qualified neurologists, we were unable to separate the stroke event from the initial dizziness presentation when the duration between the two was so short. Therefore, we suggest that stroke identified within the first 1 or 2 days after the initial dizziness presentation should be interpreted with caution and not be used to calculate short-term stroke risk.

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## Potential Conflicts of Interest

Nothing to report.

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## Reply

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We greatly appreciate Dr Yang et al's interest in our article. They suggest that the short-term ( $\leq 2$  days) stroke events in our study were directly related to the initial dizziness encounter (ie, the initial dizziness presentation was actually caused by the same cerebral ischemic event as the subsequent emergency department [ED] visit). In addition, they recommend not including the stroke events that occurred within this short-term period in the calculation of cumulative stroke risk.

We agree with Yang et al that it is certainly possible at least some of the short-term stroke events were the continuation of an initially unrecognized ischemic stroke. However, this is a complex issue and it also remains possible that some events, even among those with a stroke visit within 2 days of the dizziness presentation, were not related at all. We were surprised to find that most of the patients with stroke within 2 days had acute lesions on imaging in regions not typically considered sources of dizziness (not the cerebellum or brainstem).<sup>1</sup> Dizziness is a very common symptom, and it is only infrequently attributed to cerebral ischemia.<sup>2</sup> Stroke is also relatively common, and therefore we should expect some strokes to occur soon after dizziness symptoms simply by chance alone. Additionally, as Yang et al point out, it can be challenging to determine whether the symptoms were even continuous between visits, particularly when using medical record review methods. Although our study was limited by medical record review, it had important strengths, including the population-based design, rigorous surveillance methods for both dizziness and stroke presentations, and a validated stroke classification system that is not dependent on the use of magnetic resonance imaging.

For the purposes of our specific study, we disagree with the recommendation of Yang et al to exclude strokes that occurred in the short-term period from the calculation of cumulative risk. The primary purpose of our study was to determine the cumulative risk of any validated stroke that occurred after an ED dizziness visit that was not attributed to stroke. These visits were 2 discrete medical encounters. As stated in the article's introduction, we wanted to perform this

study as a way to assess the accuracy of prior stroke prevalence estimates for ED dizziness visits. All of the prior studies had important limitations that could have resulted in falsely low estimates of stroke prevalence. If the estimates in these prior studies were falsely low (due to stroke misclassification), then we would expect stroke risk to be high in the follow-up time period. Because we found that the cumulative risk of any stroke event was very low, we concluded that our study substantiates the prior cross-sectional studies that suggested a low prevalence of acute stroke among ED dizziness visits. Therefore, the inclusion of these short-term return visits was necessary for our purposes.

In their letter, Yang et al also present new data on this topic that is used to support their conclusions. Although adequate details regarding the methods are not provided, the results they report would provide additional support for the general finding that stroke is a low-risk subsequent event for patients with a dizziness presentation presumed to be nonstroke in origin.

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### Potential Conflicts of Interest

Nothing to report.

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