Benign paroxysmal positional vertigo (BPPV) presentations are one of the unique opportunities in medicine when the care rendered can result in substantial benefit with extremely low risk for harm. Disabling symptoms are cured in minutes by moving the otolithic debris out of the semicircular canal, and the maneuvers to do this carry no more risk than that of lying down and rolling over.

The treatment effects in BPPV hinge on identifying the appropriate patients and then performing the correct repositioning maneuver. BPPV of the posterior canal (PC) is the most common culprit. The benefits of the Epley maneuver in treating PC-BPPV are summarized in a recent Practice Parameter from the American Academy of Neurology: the number needed to treat (NNT) ranged from 1.4 to 3.7, which is among the largest effects achievable in medicine.1

Horizontal canal (HC) BPPV, the subject of Kim et al.2 in this issue of Neurology®, is the second most common type of BPPV. Compared to PC-BPPV, there are very few randomized controlled trials, which is why Kim et al. have made this important contribution. Although the symptoms in HC-BPPV and PC-BPPV are similar, important differences in the evaluation and management exist. First, the test for HC-BPPV is the supine positional test rather than the Dix-Hallpike test.1 Second, the characteristic positionally triggered nystagmus of HC-BPPV is in the horizontal plane as opposed to the vertical-torsional plane in PC-BPPV. Finally, the Epley maneuver is designed to remove debris from the PC, not the HC.

HC-BPPV occurs in 2 forms: geotropic and apogeotropic (figure). In geotropic HC-BPPV, the debris is in the long arm of the canal, whereas in apogeotropic it is in the short arm, close or adherent to the cupula. When a patient with right-sided geotropic HC-BPPV turns the head to the right, the debris moves toward the cupula (“ampullopetal”), which triggers left-beating nystagmus. Conversely, a right head turn in right-sided apogeotropic HC-BPPV results in debris movement away from the cupula (“ampullofugal”), which triggers left-beating nystagmus. Thus, the debris moves in opposite directions relative to the cupula in the geotropic and apogeotropic forms and these 2 variants should be considered when planning particle repositioning.

Apogeotropic HC-BPPV—long considered to be more difficult to treat than geotropic—is the focus of Kim et al.2 Maneuvers commonly applied, though with limited evidence, in HC-BPPV (e.g., the barbecue maneuver, forced prolonged position, and the Gufoni maneuver for the geotropic form)1,3 (see figure 1 and videos at Fife et al.1) are less likely to be effective in the apogeotropic variant. However, Kim and coworkers performed a randomized controlled trial comparing a Gufoni maneuver adapted for the apogeotropic variant, a new head-shaking maneuver, and a sham maneuver. For this adapted Gufoni maneuver, the patient turns the head upward toward the ceiling after first being brought to the side-lying position on the affected side (see figure 2 in Kim et al.). This is different from the standard Gufoni maneuver where the patient turns the head down after the first step of lying down on the unaffected side. The findings indicate that both the adapted Gufoni maneuver and the head-shaking maneuver have a high level of efficacy for apogeotropic HC-BPPV. More than 7 out of 10 Gufoni-treated subjects and 6 out of 10 head-shaking-treated subjects had resolution of nystagmus and vertigo on day 1, compared with only about 3 out of 10 sham-treated patients. These results translate into a NNT of 2.6 for the Gufoni maneuver and to 3.5 for the head-shaking maneuver.

The efficacy of the head-shaking maneuver was surprising. While the Gufoni maneuver is designed to move debris in a step-by-step manner along the canal and into the vestibule, the head-shaking maneuver uses very nonspecific movements. It seems conceivable that the head-shaking loosens debris ad-
herent to the cupula, but it is not clear how it moves the particles into the vestibule. More research to confirm this effect is warranted because there are clear advantages to the head-shaking maneuver. It is simple to remember and does not require the provider to define the affected side.

Other points warrant mention. A transition from apogeotropic to geotropic HC-BPPV occurred in most treated patients. These subjects then required the repositioning technique designed to treat geotropic HC-BPPV. Another important finding is that the sham group had a high spontaneous recovery rate of nearly 50% by day 2 and 84% by 1 week. This is much higher than in PC-BPPV and also higher than prior HC-BPPV natural history studies, suggesting that these movements may have actually had a treatment effect.

How generalizable are the results? This is not possible to determine from the current study. The providers in the study were all experts in differentiating BPPV from other causes of dizziness and differentiating among the BPPV variants. An old challenge in medicine is disseminating new information, and findings from routine care indicate that even basic BPPV knowledge has not effectively reached frontline providers. This is a problem because frontline...
providers see most of the BPPV cases. Despite more than 20 years of literature on the Epley maneuver, a patient who presents with BPPV in routine care is more likely to be radiated (i.e., undergo a head CT) than to be rolled over (i.e., cured with the repositioning maneuver).8

If our goal is “getting the right care to the right patient at the right time—every time,”9 then even the most impressive results from expert-led studies will need to be followed by dissemination and implementation research. Otherwise, we may continue to miss an important opportunity in medicine.

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Dr. Kerber: drafting/revising the manuscript, study concept or design, study supervision. Dr. Helmchen: drafting/revising the manuscript, study concept or design, analysis or interpretation of data.

DISCLOSURE
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