

# THE WAITING ROOM

THIS WAY IN

## Vagus Nerve Stimulation for Epilepsy

BY ANDREA KING COLLIER

Approximately 30 percent of people with epilepsy have seizures that don't respond to current medications. For these people, vagus nerve stimulation (VNS) has been one therapeutic option, but the evidence supporting its use has been mixed. Now, the American Academy of Neurology (AAN) has released an update to its evidence-based guideline for the use of VNS in people with epilepsy that looks closely at this evidence and makes recommendations on its use. The guideline, which replaces the 1999 guideline on the same topic, has been endorsed by the American Epilepsy Society.

### VNS FOR EPILEPSY

According to the Centers for Disease Control and Prevention, at least 2.2 million Americans are living with some form of epilepsy, which is a neurologic condition that causes seizures in the brain.

In VNS, a device is surgically implanted under the person's chest. Then, a wire is threaded under the skin connecting the device to the vagus nerve, one of 12 pairs of cranial nerves that originate in the brain and help control involuntary body functions such as breathing and digestion. When activated, the device stimulates the vagus nerve, which in turn transmits electrical impulses to the brain.

The U.S. Food and Drug Administration (FDA) has approved VNS as adjunctive (add-on) therapy for people whose seizures have not been helped adequately by antiepileptic drugs (AEDs); people over age 12 with partial epilepsy, which starts in one area of the brain but may spread to other areas (as opposed

to generalized epilepsy, in which seizures involve the entire brain from the start); and adults aged 18 and older whose depression is not helped by other treatments.

### THE UPDATED GUIDELINE

The AAN's updated evidence-based guideline was established by a comprehensive review of 216 studies published on the procedure, says George Morris III, M.D., Fellow of the AAN, director of the Regional Epilepsy Center at Aurora St. Luke's Medical Center in Milwaukee, WI, and lead author.

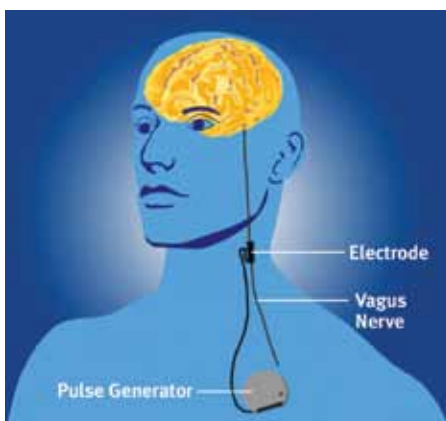
The guideline found that weak evidence exists to support VNS for reducing seizures, for preventing seizures before they occur (evidence for this is only with VNS magnet activation at the time of seizure auras), and—as an added benefit—for improving mood in people with epilepsy. (Go to [bit.ly/1eB6sXo](http://bit.ly/1eB6sXo) to read the summary for patients.  For a video interview with epilepsy expert Dr. Linda Selwa, go to [bit.ly/NbvqJU](http://bit.ly/NbvqJU).) But exactly what does that mean for patients?

According to David Spencer, M.D., a neurologist at the Oregon Health and Science University's Epilepsy Center and Fellow of the AAN, "terms such as 'weak evidence' may concern physicians who believe in VNS. However, the language of a guideline is intended not to overreach. It is a reflection of the current data." Evidence from more studies—and more well-conducted studies—could change the recommendations in the future.

### EVIDENCE VERSUS EMINENCE

The authors of the updated VNS guideline evaluated all 216 studies based on the strength of their evidence.

"The major role of evidence-based medicine is to identify what we know, what we don't know, and where we have to use our judgment," says Gary Gronseth, M.D., vice chairman of neurology at the University of Kansas Medical Center in Kansas City and Fellow of the AAN. Dr. Gronseth (who was not involved in the study) has been helping the AAN create evidence-based guidelines since the mid-1990s. Before the rise of evidence-based medicine, neurologists often practiced what Dr. Gronseth calls "eminence-based medicine": in other words, they adopted the practices recommended by the most



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—DAVID SPENCER, M.D.

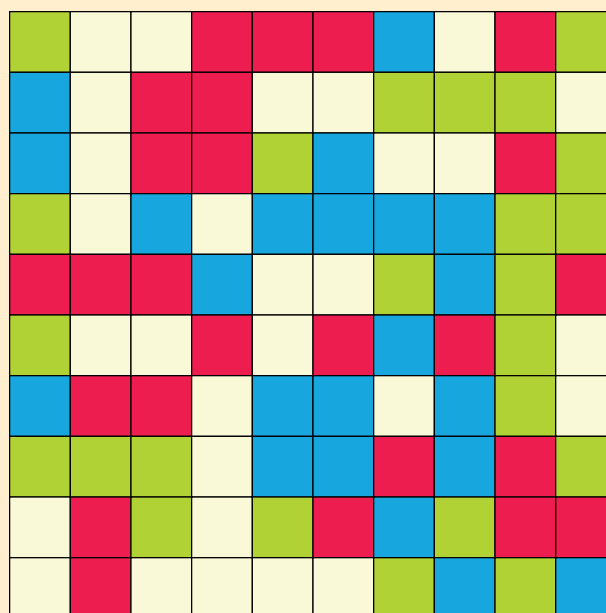
NEUROBICS

# Pattern Hunt

Get ready to test your recognition.

**W**ithin the colored grid below lurk many patterns. Some patterns are easier to spot than others. For instance, can you spot a clump of four tiles in a square that are all the same color? How many such clumps are there? Chances are you found the two clumps (red and blue) quickly, because your perceptual system is good at locating large patches of color.

Now try counting how many times each of the following patterns occurs. Notice how the patterns get harder and harder to find. Also notice how your perceptual system seems to change gears as you move from one pattern to the next, adjusting itself to look for different cues.



**A** Four adjacent tiles in a horizontal or vertical line, all the same color.

**B** Four adjacent tiles in a square clump that alternate between just two colors, like a checkerboard.

**C** Four adjacent tiles in a horizontal or vertical line that alternate between just two colors, like a checkerboard.

**D** Four adjacent tiles in a square clump that include all four colors.

**E** Four adjacent tiles in a horizontal or vertical line that include all four colors. — *Scott Kim, scott@scottkim.com*

ANSWERS ON P. 14

respected experts, combined with their own clinical judgment.

“If your professor said, ‘This is what you do,’ then that’s often what you did,” Dr. Gronseth says. “We’re trying to get beyond that.”

Ideally, the evidence should be based on large studies that include many people. When appropriate, the studies should be “blinded,” which means neither the researchers nor the participants know who is receiving the actual treatment and who is receiving a placebo—as well as “randomized,” which means that participants are assigned randomly (in a sense, by coin toss) to receive either the treatment or a placebo. The effects of the treatment should be clearly measured and not left to interpretation by the researchers. If more than one study produces similar results, the treatment recommendation is considered even more reliable.

However, the fact that no study exists proving that a particular treatment works is not proof that the treatment is useless, according to Dr. Gronseth. “This is one reason why doctors can’t rely on evidence alone—good evidence often does not exist,” he notes.

CONTINUED ON P. 14

## Summary of Vagus Nerve Stimulation (VNS) Guideline

- ▶ VNS may be considered as adjunctive treatment for children with partial or generalized epilepsy. (Weak evidence)
- ▶ VNS may be considered in patients with Lennox-Gastaut syndrome. (Weak evidence).
- ▶ In adult patients receiving VNS for epilepsy, improvement in mood may be an additional benefit. (Weak evidence)
- ▶ VNS may be considered progressively effective in patients over multiple years of exposure. (Weak evidence)
- ▶ Optimal VNS settings are still unknown, and the evidence is insufficient to support a recommendation for the use of standard stimulation versus rapid stimulation to reduce seizure occurrence. (Insufficient evidence)
- ▶ Patients may be counseled that VNS magnet activation may be associated with seizure abortion when used at the time of seizure auras (weak evidence) and that seizure abortion with magnet use may be associated with overall response to VNS treatment. (Weak evidence)
- ▶ There is insufficient evidence to determine whether or not new safety concerns have emerged since the last assessment. (Insufficient evidence)
- ▶ There is insufficient evidence to determine whether or not adverse effects differ in children from those in adults. (Insufficient evidence)

## NEUROLOGY NEWS

### Having Their Say: Patient Bloggers

**W**hile your doctors can give you information and guidance about your condition, they're not always the best source for practical advice. Patient bloggers offer that in spades as they chronicle their own journey with neurologic disease—sometimes funny, sometimes painful, but above all else, familiar.

We tried to find blogs that are well-written, honest, and responsible in the way they handle medical information.

#### ALZHEIMER'S DISEASE/DEMENTIA

Two helpful and well-written Alzheimer's disease (AD) blogs for caregivers are the Alzheimer's Front Row ([alzheimersfrontrow.blogspot.com](http://alzheimersfrontrow.blogspot.com)) and its companion website, Alzheimer's Reading Room ([alzheimersreadingroom.com](http://alzheimersreadingroom.com)). They are written and curated by Bob DeMarco. DeMarco quit his job to move to Florida to care for his mother, Dorothy.

#### EPILEPSY

The Epilepsy Warriors blog ([epilepsywarriors.com](http://epilepsywarriors.com)) is written by a woman named Niki, whose son, Cole, has epilepsy. Niki brings passion and extensive knowledge of resources to her blog in order to help guide other parents of children living with epilepsy.

Living Well With Epilepsy ([livinwellwithepilepsy.com](http://livinwellwithepilepsy.com)) is by writer Jessica Keenan Smith. Having lived with epilepsy for more than 25 years, she has a great deal of experience to share.

#### MIGRAINES

Kerrie Smyres launched The Daily Headache ([thedailyheadache.com](http://thedailyheadache.com)) in 2005 to share information and support with other migraineurs. Smyres' blog follows her efforts to lead a normal life in the face of daily, often debilitating headaches.

#### MULTIPLE SCLEROSIS

Managing MS: Straight Talk From a 31-



**OFF AND ON** Cartoonist Peter Dunlap-Shohl chronicles his life with Parkinson's disease.

Year Survivor ([debbiepetrina.authorsxpress.com](http://debbiepetrina.authorsxpress.com)) is Debbie Petrina's blog with advice for everyone—from the newly diagnosed to people like her, who have been living with MS for many years.

#### NEUROPATHY

One of the most popular blogs about peripheral neuropathy is Dean Lewis' Living With Peripheral Neuropathy ([livingwithperipheralneuropathy.com](http://livingwithperipheralneuropathy.com)).

Bryan Hinkle, who has chronic inflammatory demyelinating polyneuropathy (CIDP), blogs about his participation in a clinical trial of stem cell transplantation for CIDP at [bryanhinklest.blogspot.com](http://bryanhinklest.blogspot.com).

#### PARKINSON'S DISEASE

Shake, Rattle and Roll ([katekellsall.typepad.com](http://katekellsall.typepad.com)), from blogger Kate Kelsall, is full of humor, honesty, and joy. Kelsall has lived with Parkinson's disease (PD) for 15 years.

Off and On ([offandonakpdrag.blogspot.com](http://offandonakpdrag.blogspot.com)) is a blog from cartoonist Peter Dunlap-Shohl. He offers valuable information, support, and a sense of humor.

#### STROKE

The Stroke Survivor Blog ([strokesurvivorblog.com](http://strokesurvivorblog.com)) is by Kathy Boncher, whose husband suffered a stroke in 2008. Boncher details their journey together as he fought back to recovery.

Rocky Mountain Stroke Survivor ([rockymountainstrokesurvivor.com](http://rockymountainstrokesurvivor.com)) is written by a young mother about her fight to recover after her stroke. Its power lies in its honesty.

—Andrea King Collier

CONTINUED FROM P. 13

#### IMPACT FOR THE FUTURE

Guidelines, such as this one, can have implications for patients and physicians because of insurance coverage. Most providers currently cover VNS therapy. With the added evidence beyond the 1999 guideline, the update guideline recommends that physicians carefully document the use of medications and dosages use to treat epilepsy before moving to VNS. The guideline also recommends that physicians get approvals from payers before proceeding with the procedure, especially in children under 12 years of age.

The guideline also cautions against physicians listing depression as the primary reason for performing the procedure. Currently, Medicare (and many other payors) do not reimburse for the treatment of depression with VNS.

#### CALL FOR MORE RESEARCH

“Doing this kind of research is a chance to reflect back on the field's collective experience with a treatment. The process also offers insight into any adverse effects of a treatment or procedure, such as increased risk for infection,” says Dr. Spencer.

The guideline also points to the need for research and studies going forward. Dr. Morris and Dr. Spencer agree that evidence-based guidelines such as this one can point to the need for more evidence, which may change and expand the parameters of care.

#### NEUROBICS ANSWERS

CONTINUED FROM P. 13

