



June 2018 News

PLEASE FORWARD TO YOUR COLLEAGUES

www.wikistim.org

If you are encountering this newsletter for the first time, please visit the [ABOUT](#) section on the WIKISTIM [home page](#), which describes WIKISTIM's unique resources and is accessible without registration.

WHAT WOULD JOHN SHAW BILLINGS HAVE DONE?

Nearly 150 years ago, in 1870, the influential physician John Shaw Billings agreed to direct the Library of the Surgeon General's Office, now the National Library of Medicine. This collection, the largest in the United States at the time, comprised approximately 1,800 unindexed books. Billings brought to this position his awareness of the importance of reading research reports as well as his experience with the difficult task of sifting through stacks and stacks of unindexed publications for specific data. He met this challenge by creating the first index of the holdings even as he compounded his task by increasing the collection to 25,000 books and 15,000 journals or "pamphlets" in his first four years as director.

What was true in the 19th century remains true today: scientific publications provide guidance for improving patient care, expanding indications, identifying research gaps, educating patients, justifying reimbursement, gaining regulatory approval for innovations, and marketing therapies. The number of such publications has continued to burgeon, however, even as access to the primary data they report remains constrained by the expense and time required to find and analyze pertinent reports among the thousands published in a wide variety of journals. WIKISTIM is our effort to use 21st-century technology to meet this challenge—a challenge that has, ironically, been amplified by that same technology. We cannot help but wonder what Dr. Billings would have done had he had our resources to hand.

A REMINDER

We ask people to provide an email address and some basic information when they register for WIKISTIM, but we only require the email address. When registrants are kind enough to tell us something about themselves, we can develop a picture of their specialties, the types of places where they work, and where are located. This information can help us improve our services in the future. We never share personal information about our users.

June 2018 STATISTICS

Membership

In May, WIKISTIM membership rose above 700, as we anticipated based upon our rate of growth. Thank you for spreading the word!

We established WIKISTIM as a community resource, and it will thrive with your input and support. In the

past month, we were delighted to receive 16 completed data sheets from our Dr. Jonathan Young, at whose initiative we will be adding a section on noninvasive brain stimulation, for which he will be the editor. We will be working to get that section online ASAP.

Another way to help is to make a donation via PAYPAL using this [DONATE](#) link or by sending a check to The Neuromodulation Foundation, 117 East 25th Street, Baltimore, MD 21218. Please encourage institutional and corporate sponsors as well. We'd love to add your name and theirs to our list of financial supporters below!

Number of citations entered in each section

- DBS 4334
- DRG 73, with 9 completed WIKISTIM abstracts
- GES 467
- PNS 53
- SCS 2174, with 128 completed or partially completed WIKISTIM abstracts
- SNS 893

SUPPORT FOR WIKISTIM

Individual supporters

- Thomas Abell, MD
- James Brennan, MD
- The Donlin & Harriett Long Family Charitable Gift Fund
- Richard B. North, MD
- B. Todd Sitzman, MD, MPH

Industry support

- Boston Scientific
- Nevro

Nonprofit support

- The International Neuromodulation Society (publicity and conference registration)
- The Neuromodulation Foundation, Inc. (WIKISTIM's parent organization)
- The North American Neuromodulation Society

CITATIONS ADDED for June 2018 (no new primary data citations located this month for GES or PNFS)

DBS

1. Aires A, Gomes T, Linhares P, Cunha F, Rosas MJ, Vaz R. The impact of deep brain stimulation on health related quality of life and disease-specific disability in Meige syndrome (MS). *Clin Neurol Neurosurg* 2018 171:53-57 <https://www.ncbi.nlm.nih.gov/pubmed/29807200>
2. Allert N, Jusciute E, Quindt R, Lindlau A, Nolden BM, Daryaeitabar M, Karbe H. DBS electrodes with single disconnected contacts: long-term observation and implications for the management. *Neuromodulation* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29701886>
3. Anderson RW, Farokhniaee A, Gunalan K, Howell B, McIntyre CC. Action potential initiation, propagation, and cortical invasion in the hyperdirect pathway during subthalamic deep brain stimulation. *Brain Stimul* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29779963>
4. Canaz H, Karalok I, Topcular B, Agaoglu M, Yapici Z, Aydin S. DBS in pediatric patients: institutional experience. *Childs Nerv Syst* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29797064>

5. Chircop C, Dingli N, Aquilina A, Zrinzo L, Aquilina J. MRI-verified 'asleep' deep brain stimulation in Malta through cross border collaboration: clinical outcome of the first five years. *Br J Neurosurg* 2018 epub 1-7 <https://www.ncbi.nlm.nih.gov/pubmed/29806504>
6. Coenen VA, Schumacher LV, Kaller C, Schlaepfer TE, Reinacher PC, Egger K, Urbach H, Reisert M. The anatomy of the human medial forebrain bundle: ventral tegmental area connections to reward-associated subcortical and frontal lobe regions. *Neuroimage Clin* 2018 18:770-783 <https://www.ncbi.nlm.nih.gov/pubmed/29845013>
7. Conrad EC, Mossner JM, Chou KL, Patil PG. Atlas-independent, electrophysiological mapping of the optimal locus of subthalamic deep brain stimulation for the motor symptoms of Parkinson disease. *Stereotact Funct Neurosurg* 2018 epub 1-9 <https://www.ncbi.nlm.nih.gov/pubmed/29791914>
8. Dayal V, Grover T, Limousin P, Akram H, Cappon D, Candelario J, Salazar M, Tripoliti E, Zrinzo L, Hyam J, Jahanshahi M, Hariz M, Foltynie T. The effect of short pulse width settings on the therapeutic window in subthalamic nucleus deep brain stimulation for Parkinson's disease. *J Parkinsons Dis* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29843252>
9. De Vloo P, Thal D, van Kuyck K, Nuttin B. Histopathology after microelectrode recording and twelve years of deep brain stimulation. *Brain Stimul* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29776858>
10. Diestro JDB, Vesagas TS, Teleg RA, Aguilar JA, Anlacan JP, Jamora RDG. Deep brain stimulation for Parkinson disease in the Philippines: outcomes of the Philippine Movement Disorder Surgery Center. *World Neurosurg* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29709756>
11. Du TT, Chen YC, Lu YQ, Meng FG, Yang H, Zhang JG. Subthalamic nucleus deep brain stimulation protects neurons by activating autophagy via PP2A inactivation in a rat model of Parkinson's disease. *Exp Neurol* 2018 306:232-242 <https://www.ncbi.nlm.nih.gov/pubmed/29792848>
12. Ferrea S, Groiss SJ, Elben S, Hartmann CJ, Dunnett SB, Rosser A, Saft C, Schnitzler A, Vesper J, Wojtecki L; Surgical Approaches Working Group of the European Huntington's Disease Network (EHDN). Pallidal deep brain stimulation in juvenile Huntington's disease: local field potential oscillations and clinical data. *J Neurol* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29725840>
13. Fischer P, Chen CC, Chang YJ, Yeh CH, Pogosyan A, Herz DM, Cheeran B, Green AL, Aziz TZ, Hyam J, Little S, Foltynie T, Limousin P, Zrinzo L, Hasegawa H, Samuel M, Ashkan K, Brown P, Tan H. Alternating modulation of subthalamic nucleus beta oscillations during stepping. *J Neurosci* 2018 38(22):5111-5121 <https://www.ncbi.nlm.nih.gov/pubmed/29760182>
14. Foki T, Hitzl D, Pirker W, Novak K, Pusswald G, Lehrner J. Individual cognitive change after DBS-surgery in Parkinson's disease patients using reliable change index methodology. *Neuropsychiatr* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29767379>
15. Goetz L, Bhattacharjee M, Ferraye MU, Fraix V, Maineri C, Nosko D, Fenoy AJ, Piallat B, Torres N, Krainik A, Seigneuret E, David O, Parent M, Parent A, Pollak P, Benabid AL, Debu B, Chabardès S. Deep brain stimulation of the pedunculopontine nucleus area in Parkinson disease: MRI-based anatomoclinical correlations and optimal target. *Neurosurgery* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29846707>
16. Hashtjini MM, Jahromi GP, Sadr SS, Meftahi GH, Hatf B, Javidnazar D. Deep brain stimulation in a rat model of post-traumatic stress disorder modifies forebrain neuronal activity and serum corticosterone. *Iran J Basic Med Sci* 2018 21(4):370-375 <https://www.ncbi.nlm.nih.gov/pubmed/29796219>
17. Huh R, Song IU, Chung M. Neuropsychological consequences of pallidal deep brain stimulation altering brain networks. *J Clin Neurosci* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29801987>

18. Jänntti V, Ylinen T, Subramaniam NP, Kamata K, Yli-Hankala A, Kauppinen P, Sonkajärvi E. Electroencephalographic signals during anesthesia recorded from surface and depth electrodes. *Int J Radiat Biol* 2018 epub 1-18 <https://www.ncbi.nlm.nih.gov/pubmed/29775401>
19. Kharkar S, Ellenbogen JR, Samuel M, Rizos A, Silverdale M, Chaudhuri KR, Ashkan K. Changes in Parkinson's disease sleep symptoms and daytime somnolence after bilateral subthalamic deep brain stimulation in Parkinson's disease. *NPJ Parkinsons Dis* 2018 epub 4:16 <https://www.ncbi.nlm.nih.gov/pubmed/29845108>
20. Kirsch AD, Hassin-Baer S, Matthies C, Volkmann J, Steigerwald F. Anodic versus cathodic neurostimulation of the subthalamic nucleus: a randomized-controlled study of acute clinical effects. *Parkinsonism Relat Disord* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29784559>
21. Ko AL, Magown P, Ozpinar A, Hamzaoglu V, Burchiel KJ. Asleep deep brain stimulation reduces incidence of intracranial air during electrode implantation. *Stereotact Funct Neurosurg* 2018 epub 1-8. <https://www.ncbi.nlm.nih.gov/pubmed/29847829>
22. Koivu M, Huotarinen A, Scheperjans F, Laakso A, Kivisaari R, Pekkonen E. Motor outcome and electrode location in deep brain stimulation in Parkinson's disease. *Brain Behav* 2018 e01003 <https://www.ncbi.nlm.nih.gov/pubmed/29851316>
23. Lenoir C, Algoet M, Vanderclausen C, Peeters A, Santos SF, Mouraux A. Report of one confirmed generalized seizure and one suspected partial seizure induced by deep continuous theta burst stimulation of the right operculo-insular cortex. *Brain Stimul* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29805097>
24. Lipski WJ, Alhourani A, Pirnia T, Jones PW, Dastolfo-Hromack C, Helou LB, Crammond DJ, Shaiman S, Dickey MW, Holt LL, Turner RS, Fiez JA, Richardson RM. Subthalamic nucleus neurons differentially encode early and late aspects of speech production. *J Neurosci* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29789378>
25. Liu R, Crawford J, Callahan PM, Terry AV, Constantinidis C, Blake DT. Intermittent stimulation in the nucleus basalis of Meynert improves sustained attention in rhesus monkeys. *Neuropharmacology* 2018 137:202-210 <https://www.ncbi.nlm.nih.gov/pubmed/29704983>
26. Manos T, Zeitler M, Tass PA. Short-term dosage regimen for stimulation-induced long-lasting desynchronization. *Front Physiol* 2018 epub 9:376 <https://www.ncbi.nlm.nih.gov/pubmed/29706900>
27. Marceglia S, D'Antrassi P, Prenassi M, Rossi L, Barbieri S. Point of care research: integrating patient-generated data into electronic health records for clinical trials. *AMIA Annu Symp Proc* 2018 epub 2017:1262-1271 <https://www.ncbi.nlm.nih.gov/pubmed/29854195>
28. Mazzone P, Stefani A, Viselli F, Scarnati E. Frameless stereotaxis for subthalamic nucleus deep brain stimulation: an innovative method for the direct visualization of electrode implantation by intraoperative x-ray control. *Brain Sci* 2018 epub 8(5) <https://www.ncbi.nlm.nih.gov/pubmed/29762549>
29. Middlebrooks EH, Tuna IS, Grewal SS, Almeida L, Heckman MG, Lesser ER, Foote KD, Okun MS, Holanda VM. Segmentation of the globus pallidus internus using probabilistic diffusion tractography for deep brain stimulation targeting in Parkinson disease. *AJNR Am J Neuroradiol* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29700048>
30. Müller EJ, Robinson PA. Quantitative theory of deep brain stimulation of the subthalamic nucleus for the suppression of pathological rhythms in Parkinson's disease. *PLoS Comput Biol* 2018 14(5):e1006217 <https://www.ncbi.nlm.nih.gov/pubmed/29813060>
31. Nerrant E, Gonzalez V, Milesi C, Vasques X, Ruge D, Roujeau T, De Antonio Rubio I, Cyprien F, Seng EC, Demailly D, Roubertie A, Boularan A, Greco F, Perrigault PF, Cambonie G, Coubes P, Cif L. Deep brain stimulation treated dystonia-trajectory via status dystonicus. *Mov Disord* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29786895>

32. Pan H, Zhao Y, Zhai Z, Zheng J, Zhou Y, Zhai Q, Cao X, Tian J, Zhao L. Role of plasminogen activator inhibitor-1 in the diagnosis and prognosis of patients with Parkinson's disease. *Exp Ther Med* 2018 15(6):5517-5522 <https://www.ncbi.nlm.nih.gov/pubmed/29844807>
33. Patriat R, Cooper SE, Duchin Y, Niederer J, Lenglet C, Aman J, Park MC, Vitek JL, Harel N. Individualized tractography-based parcellation of the globus pallidus pars interna using 7T MRI in movement disorder patients prior to DBS surgery. *Neuroimage* 2018 178:198-209 <https://www.ncbi.nlm.nih.gov/pubmed/29787868>
34. Piacentino M, Beggio G, Zordan L, Bonanni P. Hippocampal deep brain stimulation: persistent seizure control after bilateral extra-cranial electrode fracture. *Neurol Sci* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29756178>
35. Pinnell RC, Pereira de Vasconcelos A, Cassel JC, Hofmann UG. A miniaturized, programmable deep-brain stimulator for group-housing and water maze use. *Front Neurosci* 2018 epub 12:231 <https://www.ncbi.nlm.nih.gov/pubmed/29706862>
36. Polar CA, Gupta R, Lehmkuhle MJ, Dorval AD. Correlation between cortical beta power and gait speed is suppressed in a parkinsonian model, but restored by therapeutic deep brain stimulation. *Neurobiol Dis* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29859320>
37. Prezelj N, Trošt M, Georgiev D, Flisar D. Lightning may pose a danger to patients receiving deep brain stimulation: case report. *J Neurosurg* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29712499>
38. Ranjan M, Boutet A, Xu DS, Lozano CS, Kumar R, Fasano A, Kucharczyk W, Lozano AM. Subthalamic nucleus visualization on routine clinical preoperative MRI scans: a retrospective study of clinical and image characteristics predicting its visualization. *Stereotact Funct Neurosurg* 2018 epub 1-7 <https://www.ncbi.nlm.nih.gov/pubmed/29847826>
39. Richieri R, Blackman G, Musil R, Spatola G, Cavanna AE, Lançon C, Régis J. Positive clinical effects of gamma knife capsulotomy in a patient with deep brain stimulation-refractory Tourette syndrome and obsessive compulsive disorder. *Clin Neurol Neurosurg* 2018 170:34-37 <https://www.ncbi.nlm.nih.gov/pubmed/29723733>
40. Ridler C. Deep brain stimulation boosts motor connectivity. *Nat Rev Neurol* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29795332>
41. Sasaki T, Agari T, Kuwahara K, Kin I, Okazaki M, Sasada S, Shinko A, Kameda M, Yasuhara T, Date I. Efficacy of dural sealant system for preventing brain shift and improving accuracy in deep brain stimulation surgery. *Neurol Med Chir (Tokyo)* 2018 58(5):199-205 <https://www.ncbi.nlm.nih.gov/pubmed/29710057>
42. Schaper FLWVJ, Zhao Y, Janssen MLF, Wagner GL, Colon AJ, Hilkmann DMW, Gommer E, Vlooswijk MCG, Hoogland G, Ackermans L, Bour LJ, Van Wezel RJA, Boon P, Temel Y, Heida T, Van Kranen-Mastenbroek VHJM, Rouhl RPW. Single-cell recordings to target the anterior nucleus of the thalamus in deep brain stimulation for patients with refractory epilepsy. *Int J Neural Syst* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29768988>
43. Shamir RR, Duchin Y, Kim J, Patriat R, Marmor O, Bergman H, Vitek JL, Sapiro G, Bick A, Eliahou R, Eitan R, Israel Z, Harel N. Microelectrode recordings validate the clinical visualization of subthalamic-nucleus based on 7t magnetic resonance imaging and machine learning for deep brain stimulation surgery. *Neurosurgery* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29800386>
44. Skogseid IM, Røsby O, Konglund A, Connelly JP, Nedregård B, Jablonski GE, Kvernmo N, Stray-Pedersen A, Glover JC. Dystonia-deafness syndrome caused by ACTB p.Arg183Trp heterozygosity shows striatal dopaminergic dysfunction and response to pallidal stimulation. *J Neurodev Disord* 2018 10(1):17 <https://www.ncbi.nlm.nih.gov/pubmed/29788902>

45. Tareen TK, Artusi CA, Rodriguez-Porcel F, Devoto JL, Sheikh H, Mandybur GT, Duker AP, Espay AJ, Merola A. Dopaminergic dose adjustment and negative affective symptoms after deep brain stimulation. *J Neurol Sci* 2018 390:33-35 <https://www.ncbi.nlm.nih.gov/pubmed/29801902>
46. ter Horst KW, Lammers NM, Trinko R, Opland DM, Figuee M, Ackermans MT, Booij J, van den Munckhof P, Schuurman PR, Fliers E, Denys D, DiLeone RJ, la Fleur SE, Serlie MJ. Striatal dopamine regulates systemic glucose metabolism in humans and mice. *Sci Transl Med* 2018 epub 10(442) <https://www.ncbi.nlm.nih.gov/pubmed/29794060>
47. Thompson JA, Oukal S, Bergman H, Ojemann S, Hebb AO, Hanrahan S, Israel Z, Abosch A. Semi-automated application for estimating subthalamic nucleus boundaries and optimal target selection for deep brain stimulation implantation surgery. *J Neurosurg* 2018 epub 1-10 <https://www.ncbi.nlm.nih.gov/pubmed/29775152>
48. Whatley BP, Chopek JW, Hill R, Brownstone RM. Case studies in neuroscience: evidence of motor thalamus reorganization following bilateral forearm amputations. *J Neurophysiol* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29847233>

DRG

1. Giordano NL, van Helmond N, Chapman KB. Coccydynia treated with dorsal root ganglion stimulation. *Case Rep Anesthesiol* 2018 epub 2018:5832401 <https://www.ncbi.nlm.nih.gov/pubmed/29854470>

SCS

1. Amirdelfan K, Yu C, Doust MW, Gliner BE, Morgan DM, Kapural L, Vallejo R, Sitzman BT, Yearwood TL, Bundschu R, Yang T, Benyamin R, Burgher AH, Brooks ES, Powell AA, Subbaroyan J. Long-term quality of life improvement for chronic intractable back and leg pain patients using spinal cord stimulation: 12-month results from the SENZA-RCT. *Qual Life Res* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29858746>
2. Bezdudnaya T, Lane MA, Marchenko V. Paced breathing and phrenic nerve responses evoked by epidural stimulation following complete high cervical spinal cord injury in rats. *J Appl Physiol* (1985) 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29771608>
3. Chen Y, Ma L, Du W, Shen X. Measuring functional core regions of hindlimb movement control in the rat spinal cord with intraspinal microstimulation. *Chinese. Sheng Wu Yi Xue Gong Cheng Xue Za Zhi* 2017 34(4):622-626 <https://www.ncbi.nlm.nih.gov/pubmed/29745562>
4. Falowski SM. An observational case series of spinal cord stimulation waveforms visualized on intraoperative neuromonitoring. *Neuromodulation* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29707900>
5. Kim E, Gamble S, Schwartz A, Cucchiari G. Neuromodulation in pediatrics: case series. *Clin J Pain* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29794496>
6. Koyama S, Xia J, Leblanc BW, Gu JW, Saab CY. Sub-paresthesia spinal cord stimulation reverses thermal hyperalgesia and modulates low frequency EEG in a rat model of neuropathic pain. *Sci Rep* 2018 8(1):7181 <https://www.ncbi.nlm.nih.gov/pubmed/29740068>
7. Nissen M, Ikäheimo TM, Huttunen J, Leinonen V, von Und Zu Fraunberg M. Long-term outcome of spinal cord stimulation in failed back surgery syndrome: 20 years of experience with 224 consecutive patients. *Neurosurgery* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29788145>
8. Shimizu T, Hosomi K, Maruo T, Goto Y, Shimokawa T, Haruhiko K, Saitoh Y. Repetitive transcranial magnetic stimulation accuracy as a spinal cord stimulation outcome predictor in patients with neuropathic pain. *J Clin Neurosci* 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29699887>

SNS

1. Dekopov AV, Tomskiy AA, Salyukov RV, Salyukova YR, Machevskaya OE, Kadyrov SU. Chronic sacral nerve electrostimulation in treatment of neurogenic pelvic organ dysfunction in children. Russian. Zh Vopr Neurokhir Im N N Burdenko 2018 82(2):107-111
<https://www.ncbi.nlm.nih.gov/pubmed/29795094>
2. Guzman-Negron JM, Pizarro-Berdichevsky J, Gill BC, Goldman HB. Can lumbosacral magnetic resonance imaging be performed safely in patients with a sacral neuromodulation device? An in-vivo prospective study. J Urol 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29852181>
3. Zaer H, Rasmussen MM, Zepke F, Bodin C, Domurath B, Kutzenberger J. Effect of spinal anterior root stimulation and sacral deafferentation on bladder and sexual dysfunction in spinal cord injury. Acta Neurochir (Wien) 2018 epub <https://www.ncbi.nlm.nih.gov/pubmed/29744665>

EDITORIAL BOARD

Editor-in-chief

Richard B. North, MD

Section editors

Thomas Abell, MD, Gastric Electrical Stimulation

Tracy Cameron, PhD, Peripheral Nerve Stimulation

Roger Dmochowski, MD, Sacral Nerve Stimulation

Robert Foreman, MD, PhD, Experimental Studies

Elliot Krames, MD, Dorsal Root Ganglion Stimulation

Bengt Linderöth, MD, PhD, Experimental Studies

Richard B. North, MD, Spinal Cord Stimulation

B. Todd Sitzman, MD, MPH, At Large

Konstantin Slavin, MD, Deep Brain Stimulation

Kristl Vonck, MD, PhD, Section on DBS for Epilepsy

Richard Weiner, MD, Peripheral Nerve Stimulation

Jonathan Young, MD, Noninvasive Brain Stimulation

To be determined, Vagus Nerve Stimulation

Managing editor

Jane Shipley

Disclosure

WIKISTIM includes citations for indications that are or might be considered off-label in the United States.

Contact

The Neuromodulation Foundation, Inc.

117 East 25th Street

Baltimore, MD 21218

wikistim@gmail.com

wikistim.org

neuromodfound.org