

A paved walkway in a park-like setting with trees and a large circular seal on the ground. The seal features a central emblem with a leaf and the word "DISCIPLINA" below it. The text "THE OHIO STATE UNIVERSITY" is visible around the perimeter of the seal.

# **Updates on the Management and Treatment of Headache Disorders**

**Kevin Weber, MD, MHA**





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# Disclosures

- I receive fellowship funding from Abbvie.
- I receive research funding from Lundbeck and Lilly.
- The clinical recommendations presented today are evidence based and free of commercial bias.



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# Objectives

- To review new pharmacologic and neuromodulation treatments for migraine rescue treatment.
- To review new pharmacologic and neuromodulation treatments for migraine preventative treatment.
- To learn about the data on alternative and complementary treatments in migraine.
- To discuss the management of cluster headache and other trigeminal autonomic cephalalgias.



# Migraine Epidemiology



- Yearly prevalence 12% in the U.S.
- 18% women, 6% men
- 1-2% of global population has chronic
- 2nd most disabling condition worldwide
- In the U.S., Alaska natives and Native Americans the most affected, Asians the least.

- Burch RC, Buse DC, Lipton RB. Migraine: Epidemiology, Burden, and Comorbidity. *Neurol Clin.* 2019 Nov;37(4):631-649. doi: 10.1016/j.ncl.2019.06.001. Epub 2019 Aug 27. PMID: 31563224.
- Burch R, Rizzoli P, Loder E. The Prevalence and Impact of Migraine and Severe Headache in the United States: Figures and Trends From Government Health Studies. *Headache.* 2018 Apr;58(4):496-505. doi: 10.1111/head.13281. Epub 2018 Mar 12. PMID: 29527677.

# Options for Home Rescue therapy (old)

- Acetaminophen
  - NSAIDs, including prescription indomethacin, diclofenac, etodolac, etc.
  - Combination analgesics (acetaminophen/caffeine/aspirin). AVOID butalbital-containing compounds due to risk of medication overuse headaches
  - Triptans
    - Longer-acting: frovatriptan, zolmitriptan (pill and nasal spray), naratriptan
    - Shorter-acting: sumatriptan (pill, nasal powder, injectable, nasal spray), almotriptan, rizatriptan, eletriptan
  - Ergots
  - DHE (subcutaneous or nasal spray)
  - Anti-emetics
  - Prochlorperazine (rectal, oral, injectable), metoclopramide (oral or injectable), promethazine (rectal, oral, injectable)
- Source: Becker, W. J. (2015) "Acute Migraine Treatment." *Continuum*; 21 (4): 953-972.



# Rescue Clinical Pearls

- Avoid triptans, ergots in patients with coronary artery disease, peripheral vascular disease, or stroke.
- These are technically contraindicated in migraine with brainstem aura and hemiplegic migraine as well (controversial).
- Avoid medication overuse headaches. Limit all rescue medication use to 10 days/month or less. Exceptions are muscle relaxants and anti-emetics.
- Oral steroid tapers can break migraine cycles. I usually use a three day course of dexamethasone (4 mg TID day 1, 4 mg BID day 2, 4 mg once day 3) or prednisone (60 mg daily for 5 days and then taper by 10 mg per day until off). Add PPI/H2 blocker if not already on one, and avoid this in patients with poorly controlled diabetes.
- Another option is chlorzoxazone 500 mg every 6 hours for 5 days
- Sometimes infusion/ED IV therapy is warranted.



# Problems with the old

- What to do about patients with history of coronary artery disease? Stroke? Peripheral artery/vascular disease?
  - We typically avoid triptans, ergots in patients with coronary artery disease, peripheral vascular disease, hemiplegic migraine, or stroke. Also usually avoid NSAIDs in these patients
- What about patients with hemiplegic migraine? Migraine with brainstem aura?
  - Triptans/ergots are technically contraindicated in migraine with brainstem aura as well. This is controversial.



# What's New in Rescue Therapy?

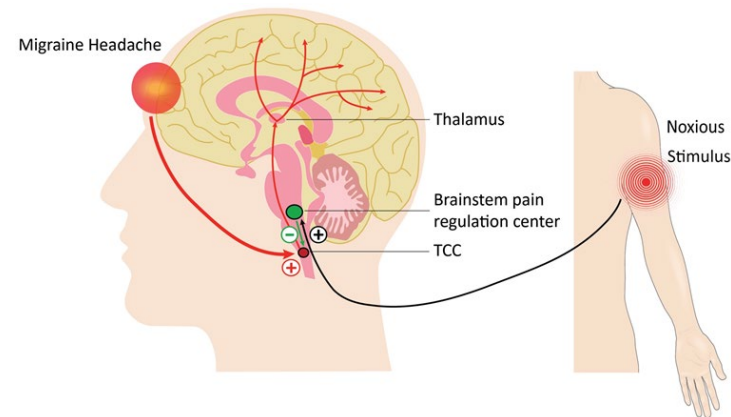
- Remote Electrical Stimulation
- Non-invasive Vagus Nerve Stimulation
- Serotonin receptor 1F agonists (ditans)
- Calcitonin gene receptor antagonists (gepants)
  - Two oral rescue treatments approved, one tablet and one oral dissolvable tablet
  - Nasal spray on the horizon – use in cluster headache?
- Supraorbital nerve stimulation (Cefaly – see below under “What’s new in Prevention?”)
- Combined supraorbital and occipital stimulation (Relivion MG)
  - Coming soon





# Remote Electrical Stimulation (Nerivio)

- “Pain relief (66.7% [66/99] vs 38.8% [40/103]; therapeutic gain of 27.9% [CI95%, 15.6-40.2];  $P < .0001$ ), pain-free (37.4% vs 18.4%,  $P = .003$ ), and MBS relief (46.3% vs 22.2%,  $P = .0008$ ) at 2 hours post-treatment.”



- Yarnitsky, D., Dodick, D.W., Grosberg, B.M., Burstein, R., Ironi, A., Harris, D., Lin, T. and Silberstein, S.D. (2019), Remote Electrical Neuromodulation (REN) Relieves Acute Migraine: A Randomized, Double-Blind, Placebo-Controlled, Multicenter Trial. *Headache: The Journal of Head and Face Pain*, 59: 1240-1252. doi:10.1111/head.13551

# Remote Electrical Stimulation (Nerivio)

- 99 dollars per device, as low as 10 dollars for first device
- Covers 12 treatments at 45 minutes each
- No contraindications or serious adverse events



• Image source: [theranica.com](http://theranica.com)

# Non-Invasive Vagus Nerve Stimulation (Gammacore)

- Bilateral 120-second stimulations to the right and left sides of the neck within 20 minutes of migraine onset; allowed to repeat once after 15 minutes if pain not improve
- Failed to meet primary endpoint vs. sham of pain freedom at 2 hours.
- Met other secondary endpoints of pain freedom at 30, 60 minutes and pain relief at 120 minutes



• Study source: Tassorelli C, Grazi L, de Tommaso M, et al. Noninvasive vagus nerve stimulation as acute therapy for migraine: The randomized PRESTO study. *Neurology*. 2018;91:e364-e373

• Image source: gammacore.com

# Non-invasive Vagus Nerve Stimulation (Gammacore)

- Advantages: non-pharmacologic, non-invasive, also used in TACs (trigeminal autonomic cephalgias)
- Disadvantages: poor insurance coverage, expensive (go through company at [gammacore.com](http://gammacore.com))
- Contraindications: diagnosed with narrowing of the arteries (carotid atherosclerosis), Patients who have had surgery to cut the vagus nerve in the neck (cervical vagotomy), Pediatric patients, Pregnant women, Patients with clinically significant hypertension, hypotension, bradycardia, or tachycardia, have a metallic device such as a stent, bone plate, or bone screw implanted at or near their neck



# Non-invasive Vagus Nerve Stimulation (Gammacore)

- Also FDA-approved for prevention of migraine (ages 12 and up)
  - Unilateral stimulation for two 120 second treatments twice daily
- Study did not meet endpoint of significant reduction in headache days vs. sham, however, post-hoc analysis of treatment adherent patients was significant.
  - Also some concern about sham device providing some vagal stimulation
- Also approved in adults for the acute treatment of (episodic) cluster and prevention of (chronic) cluster
- Approved for use in adults for hemicrania continua and paroxysmal hemicrania

- Diener HC, Goadsby PJ, Ashina M, et al. Non-invasive vagus nerve stimulation (nVNS) for the preventive treatment of episodic migraine: the multicenter, double-blind, randomized, sham-controlled PREMIUM trial. *Cephalalgia*. 2019;39(12):1475–1487.



# Ditans



- Lasmiditan (Reyvow), centrally-acting serotonin H1F agonist, NOT vasoconstrictive
- Pain freedom at 2 hours: 38.8% 200 mg ( $p < 0.001$ ), 31.4% 100 mg ( $p < 0.001$ ), 28.4% 50 mg ( $p = 0.003$ ), placebo 21.4%
- Dizziness and somnolence were bothersome side effects



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# Lasmiditan (Reyvow)

- Comes in 50 and 100 mg tabs
- Schedule V DEA
- 8 hour driving restriction with taking it
- Take once at onset of migraine
- 8 tabs/month. Copay card.
- NO contraindications (watch for serotonin syndrome), OK to use with CAD, stroke, PAD/PVD patients.



# Gepants (for rescue)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

## Ubrogepant for the Treatment of Migraine

David W. Dodick, M.D., Richard B. Lipton, M.D., Jessica Ailani, M.D.,  
Kaifeng Lu, Ph.D., Michelle Finnegan, M.P.H., Joel M. Trugman, M.D.,  
and Armin Szegedi, M.D.

- CGRP antagonists, small molecule
- Out as rescue treatments first
- CYP3A4 system: avoid use with strong inhibitors/inducers
- Ubrogepant pain freedom at 2 hours: 11.8% placebo, 19.2% 50 mg group, 21.2% in 100 mg group
- Statistically significant vs. placebo
- Also good data for most bothersome symptom relief





# Ubrogepant (Ubrelyvy)

- 16 pills per month (some insurances only allow 10)
- Copay card
- Still some confusion for insurers with gepants and CGRP antibodies (preventatives, discussed later)
- Avoid with strong CYP3A4 inducers (phenytoin, barbiturates, rifampin, St. John's Wort or inhibitors (e.g., ketoconazole, itraconazole, clarithromycin).
- Reduce dose with moderate/weak inducers/inhibitors (verapamil, cyclosporine, ciprofloxacin, fluconazole, fluvoxamine, grapefruit juice). Reduce dose with kidney/liver disease



# Rimegepant (Nurtec)

ORIGINAL ARTICLE

## Rimegepant, an Oral Calcitonin Gene–Related Peptide Receptor Antagonist, for Migraine

Richard B. Lipton, M.D., Robert Croop, M.D., Elyse G. Stock, M.D., David A. Stock, Ph.D., Beth A. Morris, B.A., Marianne Frost, M.A., Gene M. Dubowchik, Ph.D., Charles M. Conway, Ph.D., Vladimir Coric, M.D., and Peter J. Goadsby, M.D., Ph.D.

Article  
19 References 27 Citing Articles

Metrics  
July 11, 2019  
N Engl J Med 2019; 381:142-149  
DOI: 10.1056/NEJMoa1811090  
Chinese Translation 中文翻译

- Pain freedom at 2 hours: 19.6% treatment group (75 mg), 12.0% placebo (p<0.001)
- 8-16 pills per month, dissolves under the tongue
- Copay card.
- Similar restrictions to Ubrogapant: No strong CYP3A4 inducers/inhibitors. Wait 48 hours between doses for moderate/weak inducers/inhibitors



# What is CGRP?

- CGRP (calcitonin gene-related peptide)
- A neuropeptide, and potent vasodilator. Present in CNS and peripherally.
- CGRP antibodies do not cross the blood-brain barrier. Small molecule CGRP antagonists barely do.

- Edvinsson, L. The trigeminovascular pathway: role of CGRP and CGRP receptors in migraine. *Headache* 57(Suppl. 2), 47–55 (2017).



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# CGRP History

- 1980s: CGRP discovered
- Late 1980s: CGRP thought to play a role in migraine. Found to be elevated in migraine attacks
- Early 1990s: sumatriptan found to reduce CGRP levels during migraine attacks
- Early 2000s: IV CGRP induces migraine in migraineurs
- Early 2000s: CGRP antagonists developed and found in trials to be effective at aborting migraine attacks
- 2011: Merck withdraws CGRP antagonist telcagepant due to liver toxicity
- Later, CGRP antibodies are developed.



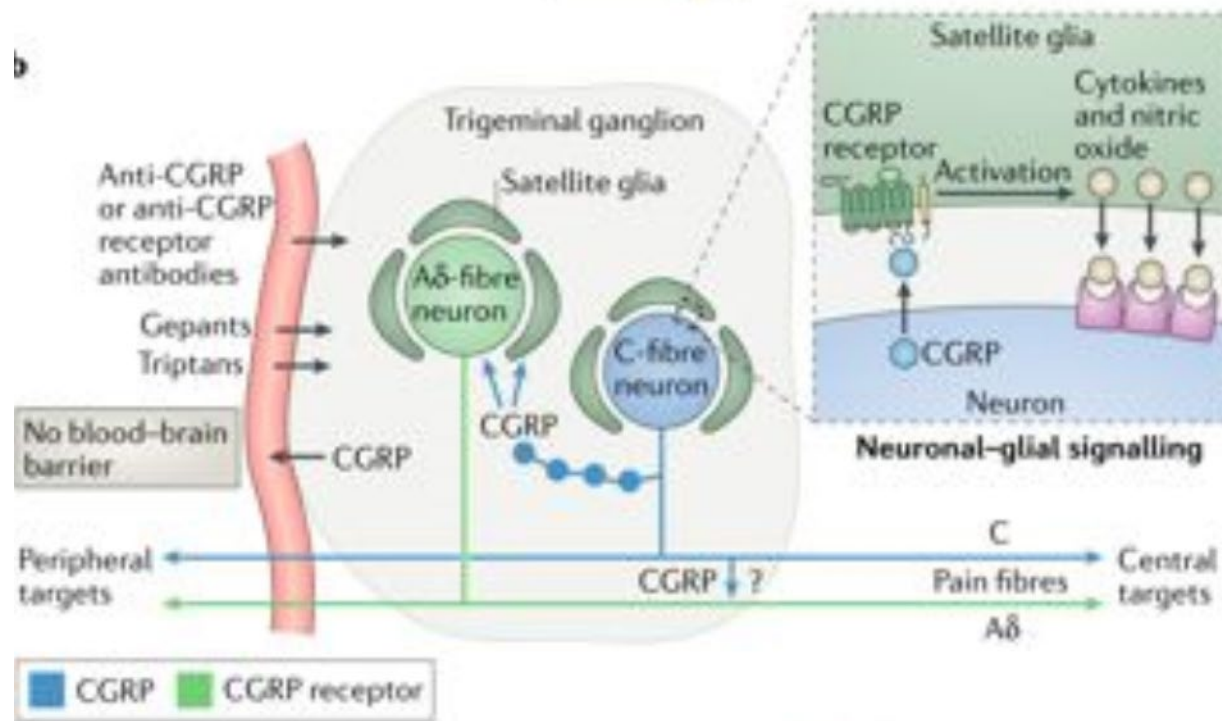
# How We Think CGRP Blockade Works

- In the trigeminal ganglion peripherally, to block migraine pain amplification
- CGRP does not cause neurogenic inflammation in humans or rats
- Migraine not triggered by central or peripheral vasodilation
- So, the dura is likely not involved like we once thought.

- Peroutka, S. J. Neurogenic inflammation and migraine: implications for the therapeutics. *Mol. Interv.* 5, 304 (2005)

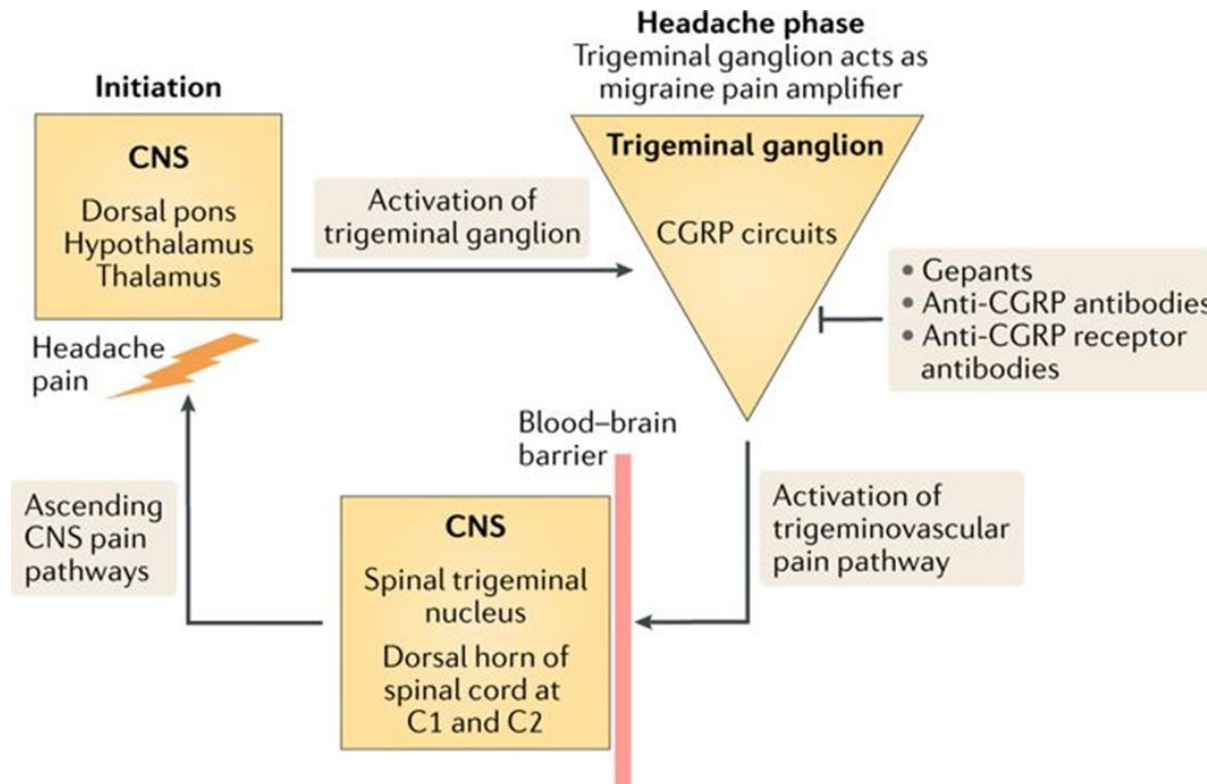


# CGRP at the Trigeminal Ganglion



- Image Source: Edvinsson L., Haanes KA, Warfvinge K., Krause DN. CGRP as the target of new migraine therapies - successful translation from bench to clinic. *Nat Rev Neurol.* 2018 Jun;14(6):338-350.

# How We Think CGRP Blockade Works



- Image Source: Edvinsson L., Haanes KA, Warfvinge K., Krause DN. CGRP as the target of new migraine therapies - successful translation from bench to clinic. Nat Rev Neurol. 2018 Jun;14(6):338-350.

# Preventative Treatments (old)

Headache  
© 2012 American Headache Society

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doi: 10.1111/j.1526-4610.2012.02185.x  
Published by Wiley Periodicals, Inc.

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## Research Submissions

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### **The 2012 AHS/AAN Guidelines for Prevention of Episodic Migraine: A Summary and Comparison With Other Recent Clinical Practice Guidelines**

Elizabeth Loder, MD, MPH; Rebecca Burch, MD; Paul Rizzoli, MD





# Preventative Treatments (old)

Table 1.—AHS/AAN Migraine Prevention Guidelines  
Drugs Recommended for Use

Drug	Examples of Studied Doses
<b>Level A: established as effective</b>	
<b>Should be offered to patients requiring migraine prophylaxis</b>	
Divalproex/sodium valproate	400-1000 mg/day
Metoprolol	47.5-200 mg/day
Petasites (butterbur)	50-75 mg bid
Propranolol	120-240 mg/day
Timolol	10-15 mg bid
Topiramate	25-200 mg/day
<b>Level B: probably effective</b>	
<b>Should be considered for patients requiring migraine prophylaxis</b>	
Amitriptyline	25-150 mg/day
Fenoprofen	200-600 mg tid
Feverfew	50-300 mg bid; 2.08-18.75 mg tid for MIG-99 preparation
Histamine	1-10 ng subcutaneously twice a week
Ibuprofen	200 mg bid
Ketoprofen	50 mg tid
Magnesium	600 mg trimagnesium dicitrate qd
Naproxen/naproxen sodium	500-1100 mg/day for naproxen 550 mg bid for naproxen sodium
Riboflavin	400 mg/day
Venlafaxine	150 mg extended release/day
Atenolol	100 mg/day
<b>Level C: possibly effective</b>	
<b>May be considered for patients requiring migraine prophylaxis</b>	
Candesartan	16 mg/day
Carbamazepine	600 mg/day
Clonidine	0.75-0.15 mg/day; patch formulations also studied
Guanfacine	0.5-1 mg/day
Lisinopril	10-20 mg/day
Nebivolol	5 mg/day
Pindolol	10 mg/day
Flurbiprofen	200 mg/day
Mefenamic acid	500 mg tid
Coenzyme Q10	100 mg tid
Cyproheptadine	4 mg/day



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# Clinical Pearls (old)

- Tailor treatments to patient's other comorbidities.
- Consider topiramate for an obese patient, venlafaxine for a patient with anxiety, amitriptyline for a patient with poor sleep, beta blocker for patient with high blood pressure, etc.
- Onabotulinumtoxin A is only approved for chronic migraine



# Preventative Treatments (old)

- Beta blockers are problematic in patients with normo/hypotension, low heart rate, or who have asthma.
- Candesartan again has issue with patients with normo/hypotension, renal disease.
- Topiramate can cause calcium phosphate kidney stones, weight loss, cognitive/mood side effects, paresthesias.
- Valproate problematic in women of child-bearing age, has numerous unpleasant side effects.
- Amitriptyline/nortriptyline cause weight gain, sedation, and are problematic with cardiac patients.
- OnabotulinumtoxinA (only for chronic migraine) is a lot of needles! Can also be difficult to access in rural areas.



# What's New in Prevention?

- Single pulse transcranial magnetic stimulation
- Transcutaneous supraorbital neurostimulation
- Non-invasive vagus nerve stimulation (see above under “What’s new in Rescue Therapy?”)
- Calcitonin gene-related peptide antibodies and antagonists
  - Other future targets: PACAP38 ligand, orexin, opioid receptors, nitric oxide synthetase
- Percutaneous Mastoid Electrical Stimulation
  - No sham study, but promising results so far



# Transcutaneous Supraorbital Neurostimulation (Cefaly)

- Approved by FDA for migraine prevention (20 minutes per day) and acute treatment of migraine (1 hour per treatment).
- Cost: ~\$300-400
- Also need to buy electrodes at \$25 a pop for three electrodes, each lasting about 20 sessions. \$33 for electrodes with hypoallergenic gel
- 50% responder rate, but not headache days/month reduction (primary endpoint), was significant vs. sham
- Significance reached for acute migraine treatment

• Source for prevention: Schoenen et al. *Neurology* 2013;80;697-704.

• Source for acute treatment: Chou et al. "Acute migraine therapy with external trigeminal neurostimulation (ACME): A randomized controlled trial. *Cephalalgia*. 2019;39:3-14.



# Transcutaneous Supraorbital Neurostimulation (Cefaly)



- source image from [www.cefaly.com](http://www.cefaly.com)

# CGRP antibodies

- There are currently four CGRP antibodies approved for the prophylaxis of migraine (episodic and chronic). Three are to the peptide itself, one is to the receptor
- Erenumab (Aimovig), Ajoovy (fremanezumab), Emgality (galcanezumab), Vyepti (eptinezumab) approved by the FDA for preventative treatment of migraine
- Three are subcutaneous, one is intravenous (eptinezumab)
- Studied in chronic and episodic migraine as well as cluster (only galcanezumab approved for episodic cluster)
- Promising results so far with few side effects



# CGRP advantages

- Very few side effects noted in the trials.
- Injection site reaction (except with eptinezumab)
- Constipation (especially erenumab)
- Hypertension (erenumab)
- URI symptoms
- Quick onset
- NO contraindications on the label.
- May benefit those who failed other treatments (Ad hoc data)
- Ad hoc data with onabotulinumtoxin A showing synergistic effect
- Competition
- Accessible so far





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# CGRP Disadvantages

- Cost
- Deductibles are challenging, Medicare donuts as well
- Uncertainty, particularly with cardiac and pregnant patients
- A study of patients with Erenumab and stable angina was conducted
  - Total exercise time measured
  - Erenumab non-inferior to placebo
- Patients self-administering medication
- Will insurers cover both CGRP antibodies and onabotulinumtoxinA?  
Mixed results so far.



# Gepants

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

## Atogepant for the Preventive Treatment of Migraine

Jessica Ailani, M.D., Richard B. Lipton, M.D., Peter J. Goadsby, M.D., Hua Guo, Ph.D., Rosa Miceli, B.S.N., Lawrence Severt, M.D., Michelle Finnegan, M.P.H., and Joel M. Trugman, M.D., for the ADVANCE Study Group\*

- Two approved for prophylaxis of episodic migraine: rimegepant (also approved for rescue) dosed every other day and atogepant (Qulipta) dosed daily.
- Chronic migraine data coming soon?
- Difference of 1.2-1.7 less migraine days/month vs. placebo
- Drug interactions, as above.
- Minimal side effects



# How to prescribe



- Coverage app free on smartphone
- List days per month of migraine, as well as previous treatments tried (and for how long, if possible, and any side effects). Usually need at least two classes of: anti-hypertensive, anti-epileptic, anti-depressant classes
- List whether patient has: unilateral headache, pounding/pulsating, worsened by physical activity, nausea, vomiting, phono/photophobia



# Simvastatin plus vitamin D

Published in final edited form as:

*Ann Neurol.* 2015 December ; 78(6): 970–981. doi:10.1002/ana.24534.

## **Simvastatin and Vitamin D for Migraine Prevention: A Randomized Controlled Trial**

Catherine Buettner, MD, MPH<sup>1</sup>, Rony-Reuven Nir, PhD, BSc<sup>2</sup>, Suzanne M. Bertisch, MD, MPH<sup>1</sup>, Carolyn Bernstein, MD<sup>3</sup>, Aaron Schain, PhD<sup>3</sup>, Murray A. Mittleman, MD, DrPH<sup>4</sup>, and Rami Burstein, PhD<sup>3</sup>

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- Simvastatin 20 mg BID
- Vitamin D3 1000U BID



# Memantine

Headache  
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ISSN 0017-8748  
doi: 10.1111/head.12732  
Published by Wiley Periodicals, Inc.

## Research Submission

### **Memantine for Prophylactic Treatment of Migraine Without Aura: A Randomized Double-Blind Placebo-Controlled Study**

Rezvan Noruzzadeh, MD; Amirhossein Modabbernia, MD; Vajiheh Aghamollaii, MD;  
Majid Ghaffarpour, MD; Mohammad Hossein Harirchian, MD; Sarvenaz Salahi; Nikta Nikbakht;  
Nahid Noruzi; Abbas Tafakhori, MD

- Level B pregnancy!
- Study chose 5 mg BID, also have used 10 mg BID in clinical practice with additional effect.



# Alternative Treatments

Herbal Preparations, Vitamins, Minerals, and Other Interventions	
<b>Strong evidence</b>	Petasites (butterbur) is established as effective and should be offered for migraine prevention ( <b>Level A</b> ).
<b>Moderate evidence</b>	Riboflavin, magnesium, and MIG-99 (feverfew) are probably effective and should be considered for migraine prevention ( <b>Level B</b> ).
<b>Weak evidence</b>	Coenzyme Q10 and estrogen are possibly effective and may be considered for migraine prevention ( <b>Level C</b> ).
<b>Insufficient evidence</b>	Evidence is inadequate or conflicting to support or refute the use of omega 3 or hyperbaric oxygen therapy for migraine prevention ( <b>Level U</b> ).

- Source: AAN

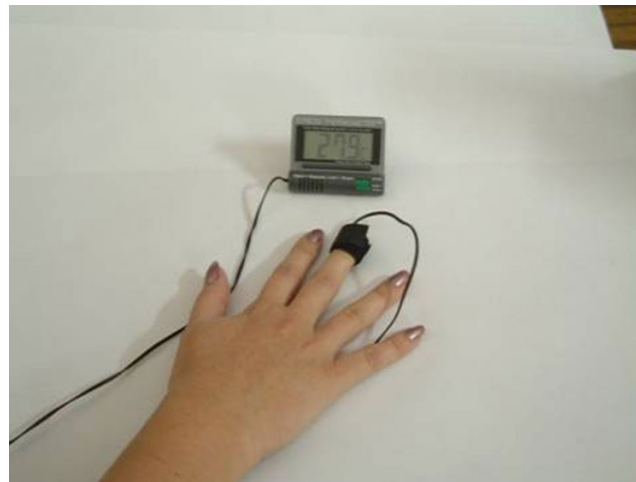
## Acupuncture for the prevention of episodic migraine (Review)

Linde K, Allais G, Brinkhaus B, Fei Y, Mehring M, Vertosick EA, Vickers A, White AR

- Small effect of true acupuncture over sham
- May be at least similarly effective to prophylactic drugs

# Behavioral Treatments

- Level A Evidence for: Biofeedback (EMG and thermal combined with relaxation training), cognitive behavioral therapy, relaxation therapy effective for migraine prevention



- Source for information: Campbell JK, Penzien DB, Wall EM (2000). "Evidence-based guidelines for migraine headache: Behavioral and physical treatments." *US Headache Consortium* . Available at: <http://tools.aan.com/professionals/practice/pdfs/gl0089.pdf>
- Photo Source: [www.biofeedback.co.za](http://www.biofeedback.co.za)



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# General Migraine Pearls

- Headache lifestyle is very important: keep caffeine intake steady, hydration, exercise, sleep, regular meals, mood. Consider dietary triggers.
- Many patients, especially with chronic migraine for many years, may require a multidisciplinary approach including physicians, physical therapists (a cervical component of migraine is often under diagnosed), and psychologists.
- Non-pharmacologic alternative medicine treatments may be effective as well

# Trigeminal autonomic cephalgias (TACs) – The Old

- Cluster rescue: oxygen, injectable/nasal spray triptans for rescue, one positive study for subcutaneous octreotide
- Cluster prevention: prednisone, verapamil, topiramate, valproate, lithium
- Paroxysmal hemicrania/hemicrania continua: indomethacin
- Short unilateral neuralgiform headaches with conjunctival injection and tearing (SUNCT/ SUNA): lamotrigine



# Trigeminal autonomic cephalgias (TACs) – The New

- Cluster rescue: gepants (under study), psychedelics (under study), nVNS (episodic)
- Cluster prevention: galcanezumab (episodic only-only FDA approved treatment for cluster headache), psychedelics (under study), nVNS (chronic), eptinezumab (episodic only – we are a trial site)
- Paroxysmal hemicrania and hemicrania continua: nVNS, Gliacin\* (derivative of boswellia serrata)

ORIGINAL ARTICLE

## Trial of Galcanezumab in Prevention of Episodic Cluster Headache

Peter J. Goadsby, M.D., Ph.D., David W. Dodick, M.D., Massimo Leone, M.D., Jennifer N. Bardos, Pharm.D., Tina M. Oakes, Ph.D., Brian A. Millen, Ph.D., Chunmei Zhou, M.S., Sherie A. Dowsett, Ph.D., Sheena K. Aurora, M.D., Andrew H. Ahn, M.D., Ph.D., Jyun-Yan Yang, M.D., Robert R. Conley, M.D., and James M. Martinez, M.D.

- Dosed 300 mg every month
- 3.5 less attacks per week compared to placebo,  $p=0.04$



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# ALLEVIATE

- Eptinezumab vs. placebo for prevention of episodic cluster headache.
- We are a site and looking for episodic cluster patients!
- Patients 18-75, who had their first cluster headaches prior to age 50
- Cycles last at least 6 weeks
- Has had a diagnosis of cluster headache for at least 12 months

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# Contact Information

- [Kevin.Weber@osumc.edu](mailto:Kevin.Weber@osumc.edu)
- Cell phone: 419-283-8343
- For tough patient advice/study patients/pointing you in the right direction

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# Thank you! Questions?

