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CME Outfitters

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CME Outfitters

Creating Individualized Treatment Plans for Patients with Migraine

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Learning Objective

Identify factors that determine treatment decision-making for specific patient subgroups with migraine.

Case Presentation

- I saw Donald in clinic initially on December 27, 2016. He is a 79-year-old male with a history of headaches for about 11 years. He tells me that the headaches first became problematic in February 2016, when they first became persistent. He had magnetic resonance imaging (MRI) back in 2014 that was done for the indication of intractable episodic headaches; however, the pain is now without relief. He was previously evaluated by another neurologist who recommended vitamin D and B12 supplementation as well as rheumatology evaluation for mildly elevated C-reactive protein (CRP) with normal sedimentation rate. He was seen by a rheumatologist, who thought this was not of rheumatological etiology.
- The patient's severe headaches are at a pain intensity of 8-9/10 twice a week, and on other days his severity is rated at a 5-7/10. He describes pain in the bilateral frontal regions that radiate backward and then also involves his neck and shoulders. The pain is continuous, throbbing, and tightening. In addition to sensitivity of light and sound, he has occasional vertigo, lightheadedness, and difficulty concentrating. He does not have any visual, sensory, motor, or language disturbances for auras.

Case Presentation

TRIGGERS/LIFESTYLE FACTORS/RISK FACTORS:

There are no provoking factors other than probably stress, flashing lights, sound, and weather changes. Alcohol does not provoke head pain. There have been a number of stressors, including taking care of an ill grandson for a number of weeks, which was emotionally exhausting. He also experienced home foreclosure in September and for a period of time was homeless, followed by the loss of his furniture, and an ill dog. He reports some depression related to head pain but denies a prior history of psychiatric illness. He is particularly bothered by not being able to enjoy activities due to head pain, including playing cards and a new-found desire for acting. Obstructive sleep apnea is not treated with continuous positive airway pressure (CPAP). He no longer thinks it helps headaches.

Case Presentation (Continued)

PAST MEDICAL HISTORY: Current medical problems include history of transient ischemic attack (described as wobbling for 24-48 hours), which resolved; asthma; hypertension; cervical spondylosis; gastroesophageal reflux disease; hiatal hernia; obstructive sleep apnea, which is associated with worsening headaches after a nap in the daytime, which is improved with daytime compliance to CPAP.

PAST PSYCHIATRIC HISTORY: He reports some depression related to head pain, but denies a prior history of psychiatric illness.

PAST SURGICAL HISTORY: Right knee surgery, right-sided ankle surgery, and cataract surgery

FAMILY HISTORY: His mother has a prior history of headache disorders.

CURRENT MEDICATIONS: Metoprolol, tizanidine, terazosin, potassium, multivitamins, omega-3, clopidogrel, atorvastatin

ACUTE TREATMENT: Excedrin was used daily and is now used in alternation with acetaminophen daily. Excedrin daily, headaches go away in 15 minutes. Acetaminophen 975 mg helps in 1-2 hours and is taken every day.

Case Presentation (Continued)

PREVENTIVE TREATMENT: Botox was tried once (17 injections?). Acupuncture and chiropractic manipulation were of no benefit.

PAST TRIALS: In the past, he has tried amitriptyline (which caused confusion) and topiramate (caused side effects); propranolol was not tried (history of bradycardia). Duloxetine 30 mg does not help. Sumatriptan and rizatriptan caused headaches. Acupuncture and chiropractic manipulation were of no benefit. Botox was tried once (17 injections?).

ALLERGIES: Include codeine. In the past, he has tried amitriptyline (which caused confusion) and topiramate (caused side effects); propranolol was not tried.

SOCIAL HISTORY: He has been retired since 2005. Married. Quit smoking 25 years ago. Previously worked as a chemist, testing pharmaceutical compounds. Drinks alcohol about once per week and coffee 3 times per day.

REVIEW OF SYSTEMS: Confusion; poor memory, forgetting appointments; change in sleep habits; excessive daytime drowsiness; loss of interest in activities; loss of consciousness; spinning sensation; muscle pain, mostly in the right hip, arms, and shoulder; balance difficulties; tremor; difficulty walking; lightheadedness; weight gain; shortness of breath; and joint pain. He reports right shoulder pain as well as right-sided hip pain, which have been recent and for several days. There is no pain with chewing.

Case Presentation (Continued)

PHYSICAL EXAMINATION:

Blood Pressure: 136/53

Pulse: 52

Respirations: 22

Temperature: 97.7 °F (36.5 °C)

Body Mass Index: 33

General: Distress, normal temporal artery pulsations, without palpable cord or tenderness, normal range of neck motion

NEUROLOGICAL EXAMINATION:

Mental status: Alert, fluent, and follows commands. Good fund of knowledge, although admits to difficulty with naming and some forgetfulness. Cranial nerves: Disc clear. No cranial nerve deficits. Pupils equally round, reactive to light. Temporal arteries appear normal.

Motor: Full strength throughout.

Sensation: Intact to light touch. Reflexes: 1 to 2+. Toes downgoing. Coordination: Finger-to-nose intact. Heel-to-shin intact.

Gait: Steady. Normal Romberg. Mildly impaired tandem.

Case Presentation (Continued)

DIAGNOSTIC TESTING:

The patient had MRI of the brain in August 2014 that showed stable white matter disease.

C-spine showed mild cervical multilevel spondylitic changes as well as in the T-spine.

Sedimentation rate 1 (normal), C-reactive protein 0.13 (mildly elevated).

Headache Assessment Scales

MIDAS (Migraine Disability Assessment)

1-Miss work/school (days) 0

2-Productivity reduced >50% (days) 10

3-Housework not done (days) 0

4-Housework reduced >50% (days) 0

5-Miss activities family/social/leisure (days) 10

MIDAS Total (days) 20

MIDAS Grade III = Moderate

HIT-6 (Headache Impact Test) Score: 71

1-Severe Pain	11
2-Limit daily activities	10
3-Wish to lie down	13
4-Too tired for activities	13
5-Fed up or irritated	13
6-Limit concentration	11
HIT-6 Total	71

Clinical Considerations

1. What is Donald's diagnosis?
2. What is the next diagnostic step?
3. What is the next best step to manage his headaches?
4. What important factors should be considered?
5. How may he benefit from an integrated treatment plan?

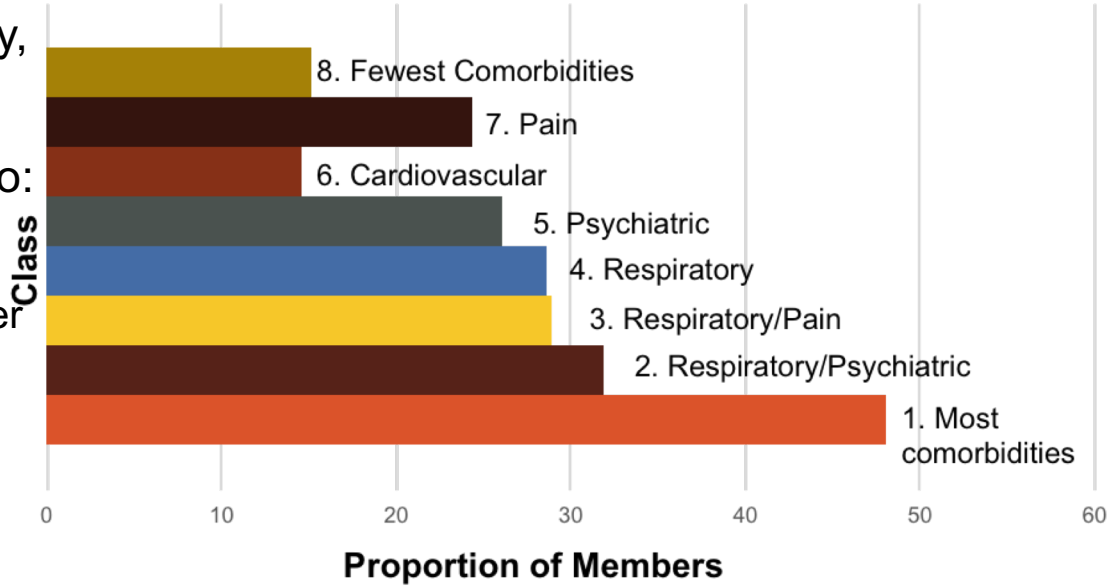
Risk Factors for Migraine Progression

- **Demographics**
  - Female gender
  - Low socioeconomic state
- **Obesity**
- **History of trauma**
  - Head and/or neck injury
  - Traumatic life event
- **Sleep disorders**
  - Insomnia
  - Snoring
- **Psychiatric comorbidities**
  - Anxiety
  - Depression
- **Pain disorders**
  - Arthritis
- **Medication factors**
  - Medication overuse of acute analgesics
  - Inadequate treatment/ineffective response
  - Caffeine overuse
- **Attack characteristics**
  - High frequency
  - Allodynia
  - Frequent nausea

Buse DC, et al. *Headache*. 2018. https://onlinelibrary.wiley.com/doi/epdf/10.1111/head.13459.

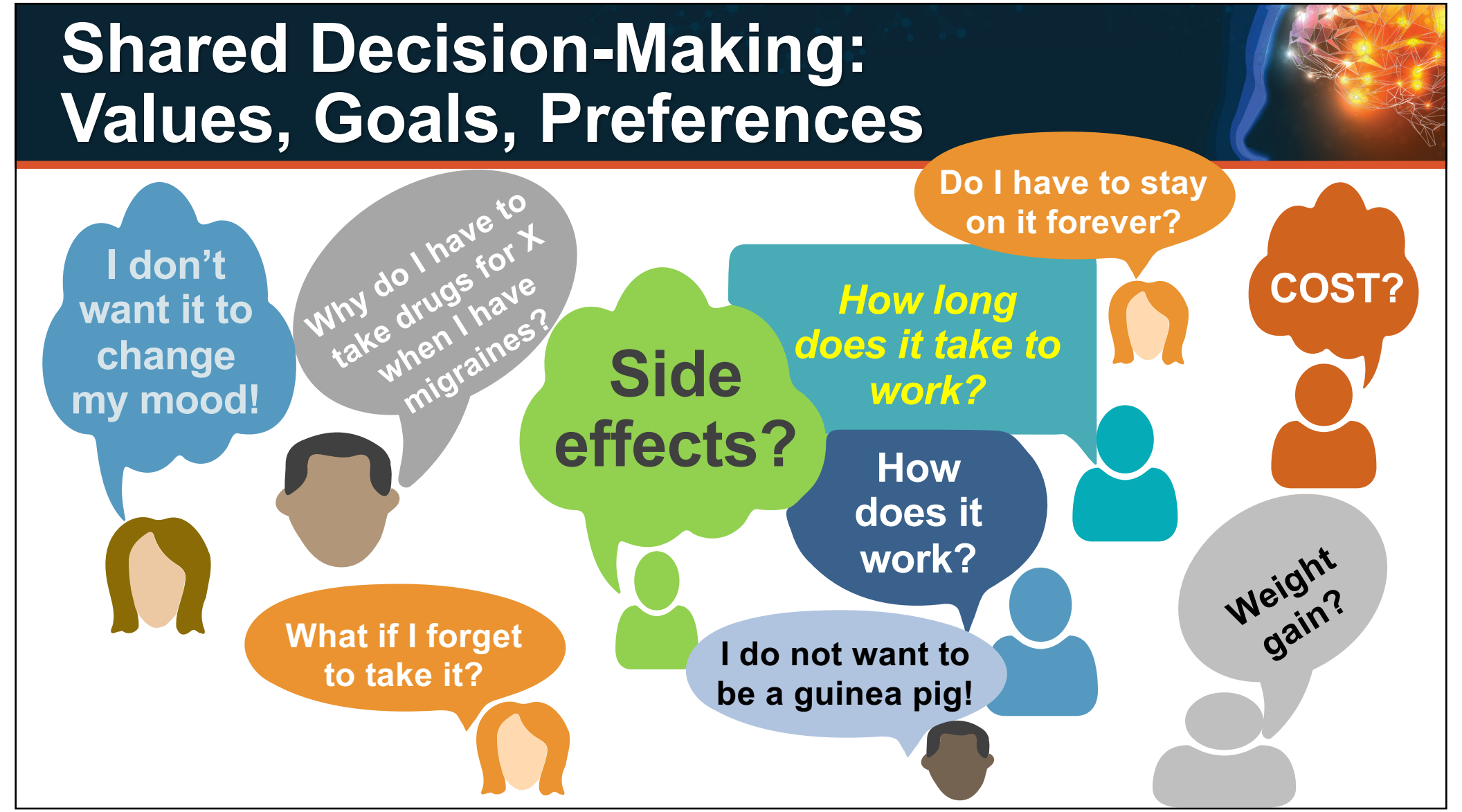
Are There Clinical Subgroups of Migraine Based on Comorbidity and Condition Profiles?

- Real-world clinical trials are needed to fully assess
  - In the Chronic Migraine Epidemiology and Outcomes Study, a prospective web-based survey study of 12,810 respondents with migraine, patients were divided into:
    - Comparing Class 1 (Most Comorbidities) and Class 8 (Fewest Comorbidities), Class 1 had a greater proportion of individuals with severe disability (Migraine Disability Assessment grade IV; 48.1% vs. 22.3% of overall individuals) and higher rates of allodynia (67.6% vs. 47.0%), medication overuse (36.4% vs. 15.0%), chronic migraine (23.1% vs. 9.1%), and aura (40.1% vs. 28.8%).



Lipton RB, et al. *Headache*. 2018;58(7):933-947.

Shared Decision-Making: Values, Goals, Preferences



Migraine Treatment Options

Migraine Treatment

Pharmacological Interventions

Prevention:
- Oral antihypertensives (betablockers, ACE-Is, ARBs)
- Anticonvulsants (valproate, topiramate)
- Botox injections
- CGRP mAb receptor/ peptide blocker

Acute:*
- Triptans
- Dihydroergotamine
- Ergotamine
- Neuroleptics
- Nonsteroidal anti-inflammatory drugs

Non-pharmacological Interventions

Psychological:
- Cognitive behavioral therapy
- Relaxation therapy
- Biofeedback

Neuromodulation:
- TMS device†
- Cefaly device†
- Non-invasive vagus nerve stimulator‡
- Acupuncture

Lifestyle/Supplements:
- Regular sleep/diet
- Hydration
- Trigger and stress management
- Aerobic exercise
- Supplements/ vitamins (riboflavin, magnesium, coenzyme Q10, feverfew, melatonin, butterbur

ACE-Is = angiotensin-converting-enzyme inhibitors; ARBs = angiotensin II receptor blockers; CGRP = calcitonin gene-related peptide; mAb= monoclonal antibody; TMS = transcranial magnetic stimulation.
*Limit medication overuse and tailor acute medications.
‡Approved by Food and Drug Administration (FDA) for acute and preventive indications.
‡GammaCore device cleared by FDA for acute attacks.

FDA-Approved Neuromodulation Devices for Migraine

Target	Acute Pain Relief	Preventive	Device
Transcutaneous supraorbital stimulation	Chou D, et al. 2018	Schoenen J, et al. 2013	
Transcranial magnetic stimulation (TMS)	Lipton RB, et al. 2010	Starling AJ, et al. 2018	
Non-invasive vagus nerve stimulation	Tassorelli C, et al. 2018 Approved by FDA for cluster	Under investigation Approved by FDA for cluster	

Chou D, et al. *Cephalalgia*. 2018;333102418811573; Schoenen J, et al. *Neurology*. 2013;80;697-704. Lipton RB, et al. *Lancet Neurol.* 2010;9:373-380. Starling AJ, et al. *Cephalalgia.* 2018;38:1038-1048. Tassorelli C, et al. *Neurology*. 2018;91:e364-e373.

Novel Migraine-Specific Preventive Treatments: mABs to CGRP or Its Receptor

	Erenumab	Galcanezumab	Fremanezumab	Eptinezumab
Target	CGRP receptor	CGRP ligand	CGRP ligand	CGRP ligand
Route of Administration	SC	SC	SC	IV
T 1/2	Not disclosed	25-35 days	Around 45 days	Around 32 days
Frequency	Monthly	Monthly	Monthly every 3 months	Every 3 months IV and monthly SC
Migraine prophylaxis indication	Episodic and chronic	Episodic and chronic	Episodic and chronic	Episodic and chronic
Status	FDA approved	FDA approved	FDA approved	Episodic and chronic phase III complete
Safety	Safe and tolerated	Safe and tolerated	Safe and tolerated	Safe and tolerated

Drugs@FDA: FDA Approved Drug Products. https://www.accessdata.fda.gov/scripts/cder/daf. Saper J, et. Al. Neurology. 2018; 90 (15 Suppl) S20.001.

SMART Goals

Specific, **M**easurable, **A**ttainable, **R**elevant, **T**imely

- Carefully listen to patient concerns, preferences, and goals
- Identify high-quality treatment based on side effect profile, comorbidities, and potential effectiveness

Questions & Answers

Don’t forget to fill out your evaluations to collect your credit.