



# Pediatric Headache: Review of a common problem and an approach to early management

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# Disclosures

- No financial disclosures or conflicts of interest

# How big of an issue is headache?

- 58% percent of children experience headaches
- By 18 years of age 90% of adolescents will have had a headache
  - 20% of kids age 4 – 18 will have recurrent headaches over a year
  - ~ 8% have migraine
  - 1.5% of middle school students have chronic headaches

# How big of an issue is headache?

- Migraine is the 2<sup>nd</sup> leading cause of years lived with disability according to the Global Burden of Disease
  - Most disabling neurological disease in the world for people under age 50
- Annual loss productivity 1.4 to 17 billion USD
  - In children = missed school days, missing extracurriculars and activities
  - Headaches account for ~20% of children that are medically homebound
  - In parents = missed work and less participation in family activities

# Under Recognized & Over Stigmatized

- WHO estimates 1/3 of patients with migraine haven't seen a doctor in the last year

- 50% of

**#NotJustAHeadache**

- It is believed that 1/3 of patients with migraine are not diagnosed

- WHY?

# Watch Your Language!

| LANGUAGE  |  |
|---|--|
| CHAMP Recommendation  | Currently Used   |
| Headache Disease(s), Headache Disorder(s)                         | Headache(s)  |
| Headache Attack, Migraine Attack, Cluster Attack                  | Headache(s), Migraine(s), Episode(s)   |
| Migraine Disease, Living with Migraine Disease                    | Migraine Headache, Migraines   |
| Person with Migraine disease, Person Living with Migraine Disease | Migraine Personality, Migraineur, Migrainer, Migraine Person, Migraine-Type Person |
| Experience(s) the Pain and Disability of Migraine Disease         | Suffering from Migraine, Migraine Sufferer   |
| Migraine Spectrum, Migraine Continuum                             | None   |
| Migraine Remission, Break in Migraine Attacks                     | Cured of Migraine, Migraine Cure, Migraine Miracle                                 |
| Medication Adaptation Headache                                    | Medication Overuse Headache, Rebound Headache                                      |

# Primary Headaches

## Migraine Without Aurae

- A. At least five attacks<sup>1</sup> fulfilling criteria B-D
- B. Headache attacks lasting 4-72 hr (untreated or unsuccessfully treated)<sup>2;3</sup>
- C. Headache has at least two of the following four characteristics:
  - 1. unilateral location
  - 2. pulsating quality
  - 3. moderate or severe pain intensity
  - 4. aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)
- D. During headache at least one of the following:
  - 1. nausea and/or vomiting
  - 2. photophobia and phonophobia
- E. Not better accounted for by another ICHD-3 diagnosis.

D

# Under Served

- As of 2013, 416 UCNS certified Headache Specialists for 36 million people with migraine (+ other primary headaches + children)
- Limited education in pediatric headache treatment in medical education programs
- Can delay diagnosis, delay appropriate treatment, even result in harmful treatment

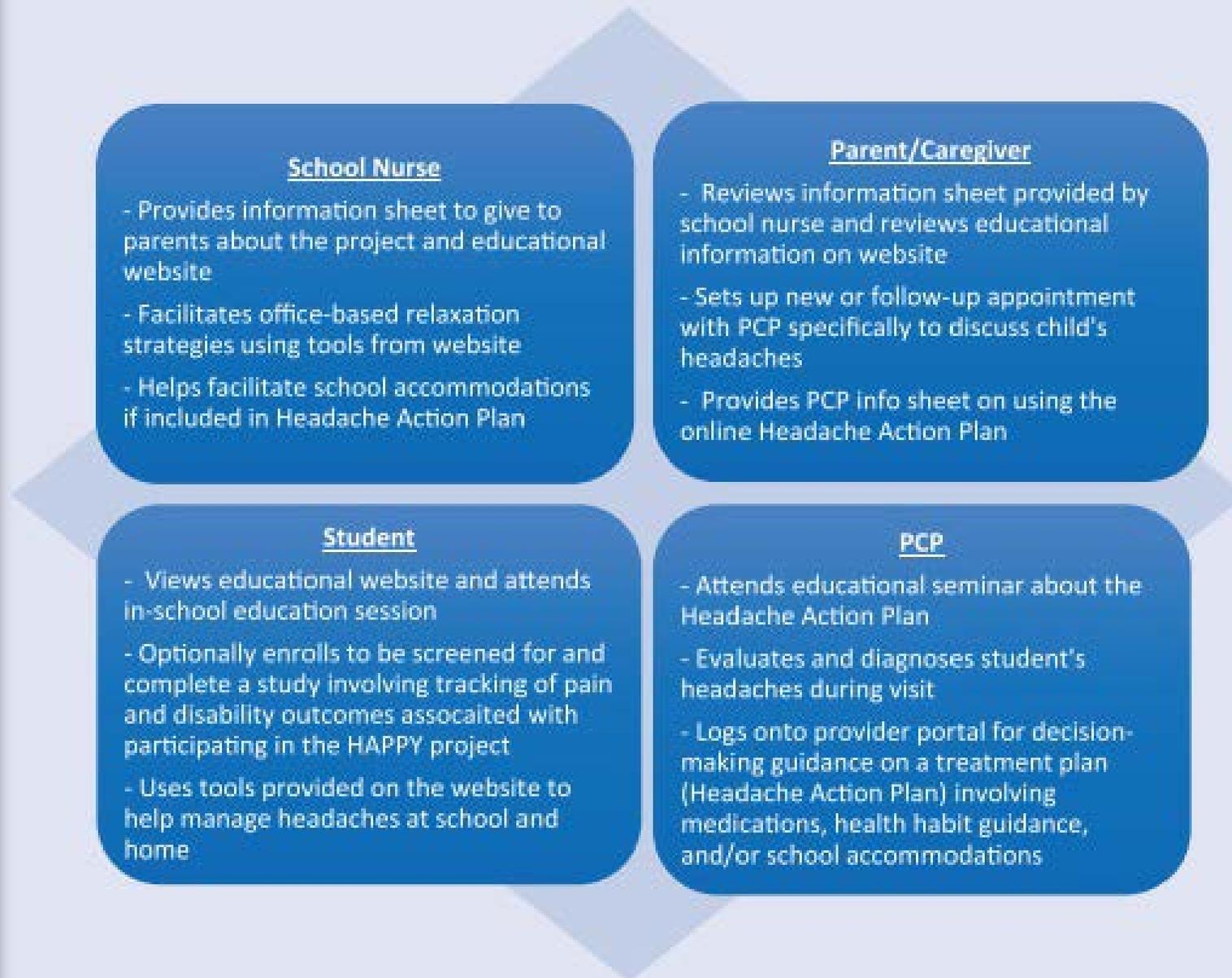
# The Headache Action Plan Project for Youth (HAPPY): School Nurses as Facilitators of System Change in Pediatric Migraine

- School nurses are often the first medical professional with whom children with headaches will come into contact
- Hold a pivotal role in helping to initiate proper treatment
- HAPPY project – teaching of school nurses, PCP's and students with access to a user-friendly resource website
  - [www.headachereliefguide.com](http://www.headachereliefguide.com)

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**Figure 1.** Overview of HAPPY as a function of role



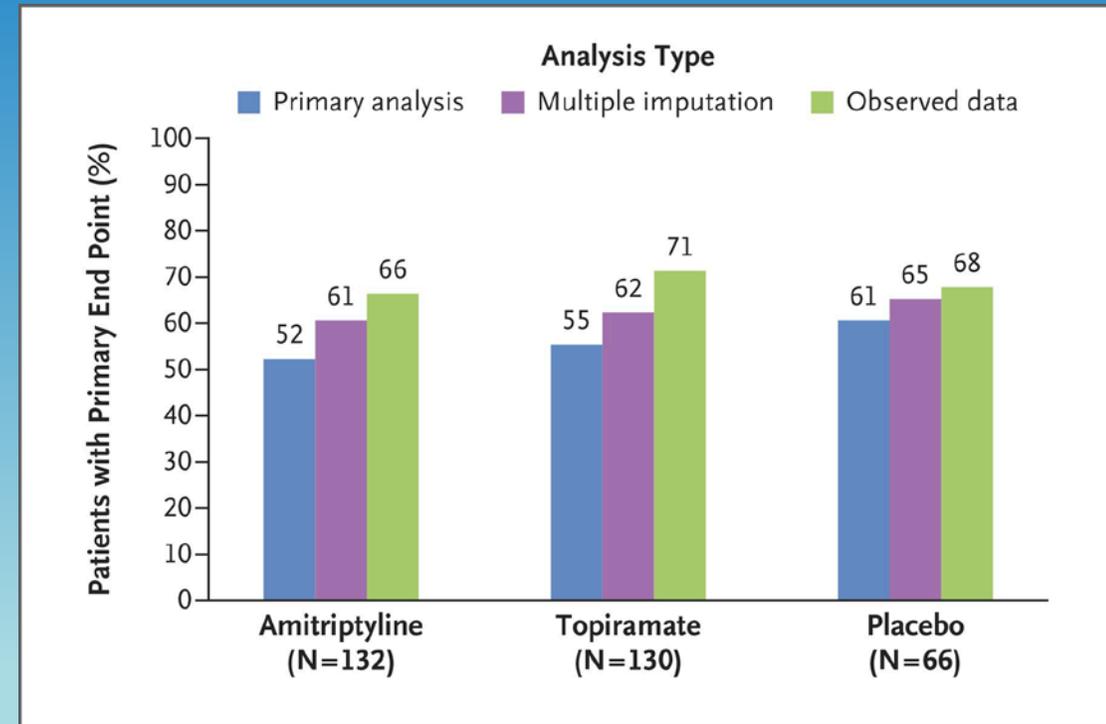
# Headache Education Active-Waiting Directive: A Program to Enhance Well-Being During Long Referral Wait Times

- Educational Impact Study of adults on the waiting list for an academic headache center in Toronto attended headache well-being education seminar
- Educational topics:
  - Medication overuse
  - Stress management
  - Sleep hygiene
  - Hydration
  - Morning protein intake
- Results
  - Decrease in MIDAS scores
  - 50% reduction in ED visits
  - Decrease in medication use
  - Improvement in hydration, sleep, and morning protein
- 80% reported program useful
  - 42% very satisfied
  - 44% somewhat satisfied
- 79% reported feeling empowered after the session

# Childhood and Adolescent Migraine Prevention (CHAMP) Study

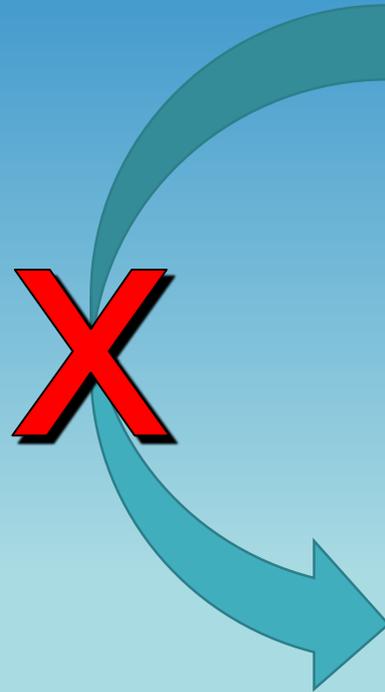
- Children ages 8-17 years with disability scores (PedsMIDAS) of mild to severe; n = 328
- $\geq 4$  headache days per month
- Patients who received amitriptyline or topiramate had higher rates of adverse events:
  - Amitriptyline
    - fatigue (30% vs. 14%)
    - dry mouth (25% vs. 12%)
    - 3 serious AE
  - Topiramate
    - paresthesia (31% vs. 8%)
    - weight loss (8% vs. 0%)
    - 1 serious AE

$\geq 50\%$  reduction in # of HA days



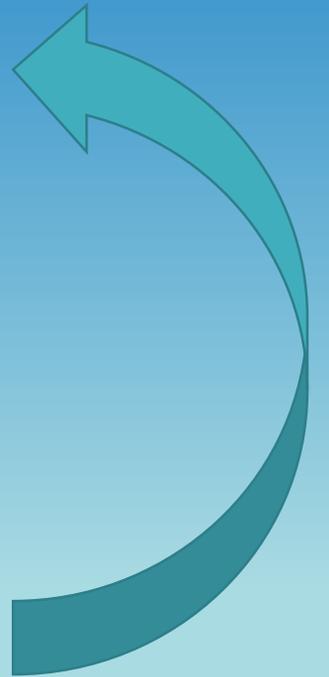
Powers, et al. N Engl J Med 2017; 376:115-124. DOI: 10.1056/NEJMoa1610384

# Why does it matter?



Episodic  
Headache

Chronic  
Headache

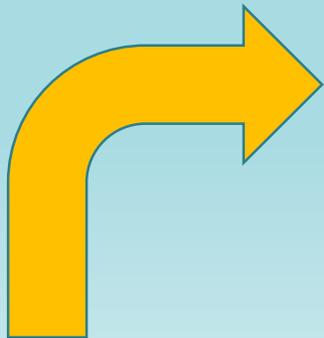


# Our Approach

Lifestyle and Headache Hygiene

Acute Treatment

Prophylaxis (if needed)



# TEENS

- 1619 teenagers (12-18 years) from six Catalonian schools responded to survey
- 30.5% experienced recurrent headaches
  - 32% of those had at least 1 headache per week
  - 11.5% migraine
- Headaches significantly more common in teenagers who:
  - Had poor sleeping habits
  - Lacked physical activity
  - Skipped breakfast
  - Consumed caffeine
  - Were smokers

# How Important is Headache Hygiene?

- 947 charts from headache clinic at Nemours Hospital for Children reviewed to see if patients had achieved headache hygiene and if they had achieved goal of 50% headache reduction
- Headache Hygiene (Remember the Eights!)
  - $5 + 2 + 1 + \text{None} = 8$
- In patients who achieved headache hygiene 83% achieved treatment goal
- In patients who did not achieve headache hygiene only 35% reached treatment goal.

Pezzuto, T. Poster Presented at American Headache Society Scientific Meeting. June 26 – July 1, 2018. San Francisco, CA.

Be Specific!

Avoid Blaming Language!

# Hydration

- “A randomized trial on the effects of regular water intake in patients with recurrent headaches ”

Spigt, M., Weerkamp, N., Troost, J., van Schayck, C. and Knottnerus, J. (211). *Family Practice*, 29(4), pp.370-375.

- RCT of increasing water consumption by 1.5 L vs control
- 4.5 point improvement on MSQL
- 47% vs 25% perceived intervention effect of much improvement



# Water Recs

- Drink at least 8 glasses of water per day
- Carry water during school day
- Drink water all day! Not just when home from school
- Consider sending a water note to school
- 4oz (4 big gulps!) for every 20 minutes of physical activity

# Sleep

- Lack of sleep endorsed as trigger factor for migraine in 69.6% of children in one study
  - In adults late onset of sleep was reported as an occasional TF by 32% of patients whereas lack of sleep was reported as a TF by 44% - 57% of adults living with migraine.
- “Sleep Hygiene and Migraine in Children and Adolescents”
  - patients with migraine showed significantly higher rates of poor sleep hygiene than controls
  - Sleep hygiene encouraged with improvement in frequency and mean duration of headaches
- “Behavioral Sleep Modification May Revert Transformed Migraine to Episodic Migraine”
  - RCT in adults with 100% conversion from chronic to episodic

# Sleep

- Sleep 8-12 hours every night
- Consistency is key!
- Establish a bedtime routine
- Eliminate daytime naps
- Ask about snoring!



# Dietary Habits



- “The diet factor in pediatric and adolescent migraine”
  - Implicated foods: Caffeine, chocolate, nitrates, MSG, aspartame
  - Fasting is reported as a trigger in 45 % - 56% of patients with migraine in population based studies
- “Caffeine-Induced Headache in Children and Adolescents”
  - 36 children and adolescents with high caffeine consumption and chronic headaches
  - Gradually withdrawn with complete improvement in 33 patients

# Dietary Habits

- Make time to eat breakfast every morning
- Check if eating school food
- Recommend checking menu and send a lunch on days the child doesn't eat the offered items
- Limit processed foods and caffeine

# Exercise

- “Exercise as migraine prophylaxis: A randomized study using relaxation and topiramate as controls”
  - RCT of exercise 40 minutes 3 times per week vs. topiramate vs. relaxation
  - All equally effective
- At least 30 (work up to 60) minutes of aerobic activity 5 days per week
- Don't forget to hydrate!



# Behavioral Therapy/Stress

- Use a chief complaint of headaches as a check-in – bullying, abuse, fear, expectations
- “Prophylactic Treatment of Migraine in Children. Part 1. A Systematic Review of non-Pharmacological Trials”
  - 19 trials showing benefit over controls
    - Relaxation
    - relaxation + biofeedback
    - relaxation + biofeedback + cognitive behavioral treatment
  - Relaxation + behavioral therapy was more effective than placebo

# Our Approach

Lifestyle and Headache Hygiene

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graph TD; A[Lifestyle and Headache Hygiene] --> B[Acute Treatment]; B --> C[Prophylaxis (if needed)];
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Acute Treatment

Prophylaxis (if needed)

# Acute Treatment

- Treat early with full dose
  - Relief of headache
  - No recurrence
  - Preserve function
- Step care approach vs stratified care approach
  - stratified > efficacy
  - stratified saves healthcare \$\$\$

## • Triptans

- $\geq 6$  years:
  - rizatriptan
  - sumatriptan nasal (studied but not FDA)
  - zolmitriptan nasal (studies in progress)
- $\geq 12$  years:
  - almotriptan
  - zolmitriptan nasal only
  - Treximet (sumatriptan/naproxen)

# Medication Use

- Use > 10 times per month for  $\geq 3$  months
  - Triptans
  - Ergots
  - Opioids
  - Mixed analgesics
- NSAID use  $\geq 15$  days per month for  $\geq 3$  months
- Butalbital -  $\geq 5$  days per month
- No role for opiates



# Medication Use

- Limit medication use for headache to 2-3 doses of acute symptomatic treatment per week
- Start each week with a plan!
- No role for preventing headache using acute treatments



CHILDREN'S HOSPITAL  
New Orleans, Louisiana

## Headache Hygiene



START IMPROVING YOUR CHILD'S HEADACHES TODAY

**Headache** is one of the most common symptoms reported by patients and frequently this begins in childhood. Nearly 60% of children report having had headaches and this increased to 90% by the time they reach age 18 years. Some children even experience chronic headaches in which they have headache more than 15 days per month.

Children can experience severe headaches like migraine headaches. Half of all migraine sufferers will experience their first attack before age 12.

Headaches can significantly impact a child's life, interfering with their ability to participate in school and other activities.

Doctors use many tools to treat headaches, but frequently the first thing your doctor may do to help your child's

headache is to review your child's daily habits and patterns and improve their headache hygiene. Things such as skipping meals and/or not drinking enough water each day are common causes of headaches and can make children who experience migraines have headaches more often.

Headache hygiene is the practice of creating an environment that can help to reduce the frequency, intensity, and severity of headaches and potentially lessen the need for medications.

Parents and caregivers play a very important and very active role in improving children's headaches by helping them to create healthy habits and practice good headache hygiene. Headache hygiene is the first step in the battle against headaches! You can get started today with these tips!



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# Bibliography

## References

- Bruni, O., Galli, F. and Guidetti, V. (1999). Sleep Hygiene and Migraine in Children and Adolescents. *Cephalalgia*, 19(25\_suppl), pp.57-59.
- Damen, L., Bruijn, J., Koes, B., Berger, M., Passchier, J. and Verhagen, A. (2006). Prophylactic Treatment of Migraine in Children. Part 1. A Systematic Review of non-Pharmacological Trials\*. *Cephalalgia*, 26(4), pp.373-383.
- Guidetti, V., Dosi, C. and Bruni, O. (2014). The relationship between sleep and headache in children: Implications for treatment. *Cephalalgia*, 34(10), pp.767-776.
- Hering-Hanit, R. and Gadoth, N. (2003). Caffeine-Induced Headache in Children and Adolescents. *Cephalalgia*, 23(5), pp.332-335.
- Hershey, A., Powers, S., Coffey, C., Eklund, D., Chamberlin, L. and Korbee, L. (2013). Childhood and Adolescent Migraine Prevention (CHAMP) Study: A Double-Blinded, Placebo-Controlled, Comparative Effectiveness Study of Amitriptyline, Topiramate, and Placebo in the Prevention of Childhood and Adolescent Migraine. *Headache: The Journal of Head and Face Pain*, 53(5), pp.799-816.
- Lagman-Bartolome, A., Lawler, V. and Lay, C. (2017). Headache Education Active-Waiting Directive: A Program to Enhance Well-Being During Long Referral Wait Times. *Headache: The Journal of Head and Face Pain*, 58(1), pp.109-117.
- Millichap, J. and Yee, M. (2003). The diet factor in pediatric and adolescent migraine. *Pediatric Neurology*, 28(1), pp.9-15.
- Shephard, R. (2012). Aerobic Exercise as a Therapy Option for Migraine: A Pilot Study. *Yearbook of Sports Medicine*, 2012, pp.301-302.
- Spigt, M., Weerkamp, N., Troost, J., van Schayck, C. and Knottnerus, J. (2011). A randomized trial on the effects of regular water intake in patients with recurrent headaches. *Family Practice*, 29(4), pp.370-375.
- Torres-Ferrus, M., Vila-Sala, C., Quintana, M., Ajanovic, S., Gallardo, V., Gomez, J., Alvarez-Sabin, J., Macaya, A. and Pozo-Rosich, P. (2018). Headache, comorbidities and lifestyle in an adolescent population (The TEENS Study). *Cephalalgia*, p.033310241877750.
- Varkey, E., Cider, A., Carlsson, J. and Linde, M. (2011). Exercise as migraine prophylaxis: A randomized study using relaxation and topiramate as controls. *Cephalalgia*, 31(14), pp.1428-1438.