

Headache Education

Square One: Headache Education for the Medical Student

William B. Young, MD; Noah Rosen, MD; Fred Sheftell, MD

Headache education for the physician begins in medical school. The American Headache Society has endorsed a curriculum and core competencies.

Key words: medical student education, core competencies, headache training

(*Headache* 2007;47:351-354)

COMMENTS

Despite vigorous educational efforts by the American Headache Society (AHS), physicians remain undereducated about, and uncomfortable with, diagnosing and treating primary and secondary headaches. Since primary headache disorders represent such a large part of the primary care physician's practice, and secondary headaches are both commonly seen and commonly overdiagnosed, the average physician needs better education. Only 50 of 95 responding medical schools say that they have a headache clinic.¹ Even academic neurologists who have an interest in headache medicine spend most of their time in clinic and less than 25% of their time teaching or doing research. Medical schools averaged only 1 hour of pre-clinical and 2 hours of clinical headache teaching.² While 97% of neurology residency training directors or chairs believe that migraine is a valid neurologic disorder, only 80% of neurology residencies have a lecture devoted to headache. In a survey of academic

members of the AHS, 20% of respondents reported that no headache lecture was offered to medical students in their institutions.³ In order to address this fact it was deemed necessary to create a core curriculum for medical student education in headache.

The Medical Student Education subsection of the Education Committee of the AHS was tasked to develop core competencies and a strategy for their dissemination. These core competencies are to stand as the first step in a path of learning about headache, starting in medical school, with other, more extensive, core competencies for residency, headache fellowship training, and continuing medical education.

After work by the subsection, and modification and approval by the Education and Executive Committees, the AHS has endorsed the following core competencies:

I. Patient Care:

Based upon a comprehensive assessment the student should demonstrate the following skills:

1. Ability to distinguish headaches of primary origin from those resulting from secondary causes.
2. Ability to take a focused history, including pertinent positive and negative features that facilitate a diagnosis and help distinguish

From the Department of Neurology, Thomas Jefferson University Hospital, Philadelphia, PA (Drs. Young and Rosen); New England Headache Center, Stamford, CT (Dr. Sheftell).

Address all correspondence to Dr. William B. Young, Department of Neurology, Thomas Jefferson University Hospital, 111 South Eleventh Street Gibbon Building, Suite #8130, Philadelphia, PA 19107, USA.

Accepted for publication November 16, 2006.

within the following differential for primary headaches:

- a. uncomplicated migraine
 - b. uncomplicated tension-type headache
 - c. uncomplicated cluster headache
 - d. trigeminal neuralgia
 - e. chronic migraine with or without medication overuse
3. Ability to take a relevant history and perform a focused physical and neurologic examination to diagnose and distinguish between these secondary headaches:
 - a. Subarachnoid hemorrhage due to ruptured aneurysm
 - b. Bacterial meningitis
 - c. Viral meningitis
 - d. Encephalitis
 - e. Brain tumor presenting with headache and focal neurologic signs or seizures
 - f. Subdural or epidural hematoma with diffuse or focal signs
 - g. Postlumbar puncture headache
 - h. Giant cell arteritis
 4. Ability to perform a focused physical examination that is appropriate for a patient presenting with headache.
 5. Ability to formulate a differential diagnosis and determine need for laboratory investigation.
 6. Ability to create a reasonable management and therapeutic plan.

II. Medical Knowledge:

Medical student should demonstrate knowledge of the following:

General Principles

1. The epidemiology of migraine, tension-type headache, and chronic daily headache in the United States.
2. The general principles underlying the International Headache Society (IHS) criteria classification schema for primary and secondary headache.
3. The IHS criteria for migraine without aura.
4. The typical features of migraine with aura.

5. The typical features of cluster headache and be able to distinguish cluster headache from migraine.
6. The typical features of tension-type headache.
7. The warning signs for secondary headache, especially ominous causes.
8. The important clinical features of subarachnoid hemorrhage and other causes of thunderclap headache, subdural hematoma, epidural hematoma, low pressure/post LP headache, idiopathic intracranial hypertension, brain tumor headache, bacterial and viral meningitis, encephalitis, acute angle closure glaucoma.
9. The natural history of posttraumatic headache in patients with mild-to-moderate head injury.
10. The difference between a cause and a trigger of headache.

Anatomy and Pathophysiology

11. The anatomy of the trigeminal nerve, its branches, and central structures involved in pain processing from the head, face, and neck.
12. Important aspects of migraine pathophysiology: neurogenic inflammation, spreading excitation/depression, peripheral and central sensitization, central generator/modulation, and genetic predisposition.
13. That Wolff's vascular theory of migraine is *not* an appropriate model of migraine.

Treatment and Management

14. The initial management steps in the medical emergencies that can present as headache.
15. The basic mechanisms of migraine-specific treatments.
16. Be able to treat a well-diagnosed migraine patient using acute symptomatic first-line and rescue treatments, including the triptans, NSAIDs, and other short-acting analgesics.
17. Know the major classes of pharmacologic preventives of migraine, including beta-adrenergic blockers, tricyclic antidepressants, calcium channel blockers, and anticonvulsants. Recognize propranolol, amitriptyline, valproic acid, and topiramate as the migraine preventives with the best evidence of efficacy.
18. The implications of frequent acute headache medication use and medication overuse

headache and recognize it in a clinical setting.

Comorbid Illness

19. The concept of comorbidity, and recognize anxiety, depression, bipolar disorder, fibromyalgia, irritable bowel as comorbid disorders of migraine.
20. The role of the multidisciplinary team in the assessment and treatment of severe primary headache disorders.

III. Interpersonal Communication Skills:

The medical student should be able to demonstrate the following abilities:

1. Listen to and understand patients with headache.
2. Familiarity with the use of at least 1 pain rating scale.
3. Communicate effectively with patients using verbal, nonverbal, and written skills.
4. Communicate effectively and work collaboratively with allied healthcare professionals.
5. Provide explanation of treatment and educate family members of patients.

IV. Practice-Based Learning and Improvement:

Medical student should be able to demonstrate these abilities:

1. Understanding the need for lifelong learning.
2. Obtain and evaluate up-to-date information on headache and the care of patients with headache.
3. Actively participate in case-based learning.
4. Review of outcomes and patient satisfaction.

V. Professionalism:

Medical student should demonstrate professionalism by:

1. Responding appropriately to communication from the patient.
2. Using medical records for appropriate documentation.
3. Recognizing need for continuity of care and coordinating care with other members of team.
4. Demonstrating ethical behavior, integrity, honor, compassion, and confidentiality in the delivery of care to a patient with headache.
5. Respecting patients, families, and colleagues.
6. Recognizing patient safety issues.

VI. Systems-Based Practice:

Medical student should be able to demonstrate these abilities:

1. Ability to access allied health professional resources in community, region, and nation.
2. Use of appropriate consultation and referral mechanisms in the treatment of headache.
3. Use of accurate and concise terminology for communication in the management of headache disorders.

During discussion by the subcommittee, several points about the core competencies led to debate and deserve mention. The competencies are deliberately crafted in a manner that permits a variety of approaches. Teaching may be accomplished by basic science, neurology, medicine, family practice, or neurosurgery departments. We did not specify the medical school year or rotations in which learning should occur. The IHS criteria are evoked only once: asking students to know the definition of migraine without aura. Learning more definitions was felt to be inappropriately technical for the medical student, and learning none would be both simplistic and fail to acknowledge the IHS criteria, their importance and their similarities to the DSM criteria for psychiatry, about which students learn a substantial amount. One item deals with what should not be learned: educators are advised not to teach the vascular theory of Wolff, since it is the Committee's opinion that this theory is invalid and impedes more up-to-date understanding of the pathophysiology of migraine.

Having agreed on a core knowledge set and objectives, several questions arise. How do we disseminate and implement the core curriculum? Is the educational community interested in and motivated for implementation? How will the AHS, the Academy of Neurology, and other organizations work together with this core curriculum? Will appropriate educational materials be easily accessible to the educators and the learners who need them? What further materials would be needed to move headache education into the next decade?

To accomplish these goals, the AHS is mobilizing a task force to: (1) develop and disseminate teaching materials suitable for medical students; (2) reach neurology course directors who are members of the AHS

and Academy of Neurology headache interest section, or other appropriate persons capable of implementing parts or all of the core competencies; and (3) create knowledge-assessment tools, including a question bank for use in the national boards and an online assessment tool with feedback to both the learner and medical school.

The timeline for this medical student project will include 6 months for the creation of a basic toolkit or lecture slides, handouts, problems, and test questions, and 1 to 2 years to fully implement an educational program with next-generation educational materials and assessment tools that will be available through the AHS website.

The AHS is committed to helping headache sufferers and the medical professionals who care for them. Medical school is square one!

REFERENCES

1. Kommineni M, Finkel AG. Teaching headache in America: Survey of neurology chairs and residency directors. *Headache*. 2005;45:862-865.
2. Finkel AG. American academic headache specialists in neurology: Practice characteristics and culture. *Cephalalgia*. 2004;24:522-527.
3. Finkel AG. Academic headache medicine in America: Report of academic membership survey of the American Headache Society special interest section on academic affairs. *Headache*. 2003;43:266-271.