Adolescent Health Update

A Clinical Guide for Pediatricians

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Headache in Adolescence

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Headaches are among the most common problems encountered in adolescents. Most headaches can be managed in the office. In rare cases, patients require emergency intervention; some require specialty referral. This article focuses on the types of headache most frequently seen in adolescents. (Table 1)

EPIDEMIOLOGY

Life-threatening headaches are uncommon in adolescence; migraine and "regular" or tension headaches are not. Up to 30% of adolescents experience frequent migraine or tension headaches and half of those destined to suffer from migraine experience their first migraine before they turn 18.[1]

CLASSIFICATION

The differential diagnosis of headaches involves a wide variety of medical and central nervous system etiologies.[2] (Table 2)

- **Primary headaches** have no underlying pathology and are often genetic or environmental. These include migraine, tension, and cluster headaches. Cluster headache is infrequent in adolescents.[3]
- **Secondary headaches** are due to other medical conditions or causes such as flu, exertion, sinusitis, minor head trauma, medication, hypertension, or, rarely, intracranial lesions such as tumor.

Further clinical classification divides primary and secondary headaches into acute, acute recurrent, chronic progressive, chronic nonprogressive, and mixed.

- **Acute headache with no history of a previous similar event**
  Acute single-event headaches may be generalized or localized and may present with or without neurologic symptoms or signs. Most are due to fever, illness, or minor trauma. If an acute headache is noted in an ill child whose symptoms are not readily explained, a serious underlying cause, such as a central nervous system (CNS) infection or hemorrhage, must be ruled out. Other causes, such as drugs, trauma, or tumor, must be considered. A specific diagnosis and rapid intervention may be lifesaving.
- **Acute recurrent**
  Acute recurrent headaches are episodic or periodic headaches separated by pain-free intervals. Migraine is the most common acute recurrent headache.

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Goals and Objectives

Goal: Pediatricians will become familiar with headaches in adolescents as well as their cost-effective office-based evaluation and treatment.

Objectives: Pediatricians will be better prepared to:

- Identify the most common types of headaches seen in adolescents
- Discuss the appropriate evaluation for adolescents with headache
- Know when to suspect either a significant neurologic disorder or other underlying condition requiring intervention and/or referral
- Know when laboratory testing and/or imaging should be considered
- Discuss nonpharmacologic strategies for preventing and treating headaches
- Identify the first-line treatment of common headache disorders

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- **Chronic progressive**
  In chronic progressive headache, the patient has a relatively short history of headaches that are worsening in both frequency and severity over time, suggesting an underlying organic cause. The progression may occur rapidly or slowly; rapid progression is more ominous. Immediate investigation is indicated when these headaches are associated with neurologic symptoms such as double vision, projectile vomiting, lethargy, balance difficulty, or an abnormal neurologic examination.
- **Chronic nonprogressive**
  Chronic nonprogressive headaches are known by various names, including tension-type headaches, muscle contraction headaches, chronic daily headaches, and rebound or medication overuse headaches. Some authors even include chronic migraine and/or transformed migraine among chronic nonprogressive headaches. Episodic tension-type headaches may occur as often as several days per week but always less than 15 days per month. Chronic tension-type headaches occur 15 or more days per month; in some patients they may be continuous ("24/7"). There are no neurologic symptoms, no symptoms of increased intracranial pressure, and the neurologic examination is normal. These patients may report severe headache during the office visit, yet appear to be in no distress. Adolescents with chronic tension-type headache often miss excessive school and overuse over-the-counter (OTC) medications. They should be asked about prescription and OTC medication intake and told that 3 or more doses weekly for weeks on end can cause rebound headache. (See Talking Point, page 3)
- **Mixed**
  Some adolescents have "mixed headache." They report experiencing "really bad headaches" (ie, migraine) once or twice a month as well as "regular" (tension-type) headaches occasionally, several times per week or daily. Accurate diagnosis is important.

TABLE 1

Types of headaches most commonly seen in adolescents

Four types of headache are frequently seen in adolescents. Some patients experience more than one type of headache and others will experience combined or mixed headaches. None of these headaches have associated neurological symptoms or signs. Life-threatening headaches are rare in adolescents.

Episodic tension-type headache
- less than 15 days per month
- less severe pain compared to migraine
- band-like sensation
- no nausea or vomiting

Chronic tension-type headache
- frequent (15 or more days per month) or daily, sometimes continuous
- less severe pain compared to migraine
- band-like sensation
- no nausea or vomiting

Rebound (medication overuse headache)
- chronic tension-type headache caused by medication overuse (3 or more doses weekly for weeks on end)

Migraine headache
- may or may not be preceded by aura
- very often a family history of migraine
- variable frequency and severity
- sometimes associated with menses
- severe, pounding or throbbing pain
- intermittent (2 to 4 times per month, not daily)
- often characterized by pallor
- often accompanied by nausea and/or vomiting
- often causes sensitivity to light and noise
- attacks are typically followed by sleep

ETIOLOGY

Etiology varies by headache type.[4] Migraine is genetic and runs in families. It is variable in frequency and severity, and may be triggered by external factors such as school stress, lack of sleep, travel, illness, or food.

The migraine attack is caused by a combination of neurotransmitter (serotonin) disturbances and neuronal over-reactivity with vascular constriction and dilation. These factors cause headache, sensitivity to light and sound, and nausea and/or vomiting. The headache is usually severe and pounding.

Tension headache is caused by a combination of physical factors such as sleep, diet, and medication, and emotional factors such as anxiety, depression, and stress related to school, family, or peers. The headache is described as band-like and moderate in intensity compared to migraine.

TAKING THE HISTORY

The key to correct diagnosis and effective intervention is a careful history and a thorough physical and neurologic examination. While an initial parent interview may be helpful, the best understanding of the headache will come directly from the adolescent. Table 3 lists a series of questions that are helpful. Important clues that signal potentially worrisome causes are listed in Table 4.

Because stress-related and psychological

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factors may be important, a private patient interview is warranted. Assess the patient's affect. Ask about grades, social activities, work, and somatic complaints. If grades have dropped or the patient has been missing work, school, or social activities, look for signs of stress, depression, inappropriate behavior, or substance abuse.

Some women have migraine only with their periods or more often with their periods. The exact prevalence of menstrual migraine in teens is unknown, but the pattern should be noted.

PHYSICAL AND NEUROLOGICAL EXAMINATION

In the majority of migraineurs between attacks, and in all patients with tension headaches and rebound headache, the physical and neurological examinations are normal. On physical examination, check for skin lesions that suggest neurocutaneous syndromes (eg, café-au-lait spots as are seen in neurofibromatosis, signs of trauma). The neurological exam should reveal normal fundi and normal external ocular muscle movement. There should be normal and symmetrical strength and coordination and no gait problems. Any abnormal findings should prompt suspicion of an underlying neurological disorder. (See Table 4)

TALKING POINT

Rebound Headache

When a patient with a normal physical and neurological examination reports chronic headache, in addition to the standard questions, also ask about the use of over-the-counter and prescription analgesics. Rebound or medication-overuse headache occurs when patients take medications for headache pain 3 or more times per week for weeks on end. Explain to the patient and parent that the rebound headaches will continue until these medications are discontinued. Instruct them to cut their intake by half for 5 days, then by half again for 5 days, then entirely.

Talk about lifestyle causes of tension headache and, if appropriate, discuss a referral for counseling, relaxation therapy, or biofeedback. Stress the importance of daily school attendance. Ask the patient to return if headaches persist.

FORMULATING A DIAGNOSIS

Although the majority of headaches in adolescents are not due to serious underlying disorders, patients with severe headache are often afraid that their symptoms signal serious pathology. After the initial history, physical examination, and possibly imaging, the clinician can respond to these concerns with confident reassurance and a plan for treatment and follow-up.

If a patient has intermittent severe headaches 2 to 4 times a month with pallor, nausea, vomiting, sensitivity to light and noise followed by sleep, and especially if there is a relevant family history, the diagnosis is almost certainly migraine. If the patient has frequent, less-severe, band-like headaches more than 15 days per month with no nausea or vomiting and normal examinations, the diagnosis is chronic tension-type headache. If the headaches occur less often than this and still without nausea or vomiting the diagnosis of episodic tension headache is likely. Overuse of medication reported in conjunction with chronic tension headache may signal rebound headache. If the patient has both occasional migraine and frequent tension headaches, the diagnosis is mixed headache.

Synthesis of the history and examination allow the formulation of a focused differential diagnosis. Components of the history and physical examination that indicate a need for referral or further evaluation are presented in Table 4. Any neurologic symptoms or abnormalities on the examination should be pursued.

Laboratory and Diagnostic Tests

Laboratory tests and imaging should be ordered based upon the history, the character and temporal pattern of the headache, the physical and neurologic examinations, and the differential diagnoses. (Please see "A Word About Testing," page 6) As discussed in a 2002 American Academy of Neurology practice parameter, routine neuroimaging is not indicated for patients with migraine or tension headaches who have no associated risk factors, no neurological symptoms, and a normal physical examination.[5]

TABLE 2

Differential Diagnosis of Headace Types Most Commonly Seen in Adolescents

Acute generalized
Fever
Systemic infection
CNS infection
Toxins (carbon monoxide, amphetamines)
Trauma

Acute localized
Trauma
Sinusitis with fever
Otitis
Pharyngitis
Temporomandibular joint disorder

Acute recurrent
Migraine

Chronic progressive
Hydrocephalus
Neoplasm
Benign intracranial hypertension (formerly pseudotumor cerebri)
Trauma

Chronic nonprogressive
Episodic tension-type
Chronic tension-type
Medication overuse (rebound)

Mixed
Combined migraine and tension headaches

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Imaging, using either computerized tomography (CT) or magnetic resonance imaging (MRI) should be considered if the physician suspects increased intracranial pressure or a mass lesion. Although MRI provides better definition of the intracranial contents, CT will generally pick up those structural lesions that cause headache.

CT scan is most useful in emergency settings where hemorrhage, ventricular enlargement, or a mass lesion is the primary consideration. If headache is complicated by abnormal movements or loss of consciousness, an EEG may be of value to rule out an atypical seizure disorder.[6] However, the EEG is of limited value in the routine evaluation of headaches in adolescents. Nonspecific abnormalities are common and can be misleading.

A lumbar puncture is most useful when one suspects an infectious disorder such as bacterial meningitis, aseptic meningitis, or encephalitis, or when benign intracranial hypertension is a consideration. In almost all circumstances, lumbar puncture should be preceded by brain imaging, as a spinal tap in the presence of increased intracranial pressure can be dangerous.

MANAGEMENT OF TENSION HEADACHES

Occasional tension headaches are common in adolescents and can often be treated symptomatically without further evaluation. Patients with nonsevere headaches that do not interfere with school attendance can be instructed to treat their symptoms episodically with nonsteroidal anti-inflammatory drugs (NSAIDs) or acetaminophen. In some patients, however, the headaches increase in frequency and/or severity and lead to frequent school absences and/or overuse of medication. When headaches are occurring twice a week or more often, consider a more in-depth evaluation of stress related to school, family, and peers.

Begin with a supportive discussion regarding nonpharmacologic therapies. Stress reduction, maintenance of school attendance, and elimination of overuse of OTC medications are paramount. If those measures are unsuccessful, further psychological evaluation and recommendations for counseling should be considered.

MANAGEMENT OF MIGRAINE

Migraine attacks are variable, even in the same patient, in terms of severity, duration, and associated symptoms. Only 15% to 30% of adolescents with migraine have a visual aura that precedes the migraine attack, typically by about 30 minutes[1] Teenagers should be educated about attack prevention and about how early treatment can modify severity of their attacks.

Nonpharmacologic Management

Lifestyle plays a major role in both the provocation and the prevention of migraine. Adequate rest, appropriate diet, sufficient fluid intake, and minimizing stress are all helpful. We encourage patients to investigate nonpharmacologic approaches such as counseling, relaxation therapy, cognitive behavioral therapy, hypnosis, and biofeedback. Some adolescents may find that dietary issues play a role in their headaches, and skipping meals may be a headache precipitant. A headache diary may help patients identify triggers that may include dietary factors. In such cases, we suggest eliminating foods that contain vasoactive chemicals for the first 6 to 8 weeks of treatment, taking care to explain that dietary triggers are not food allergies. Dietary triggers may include caffeine-containing foods (especially cola drinks and chocolate), nitrite-containing foods (such as hot dogs and pepperoni),

TABLE 3

Guide to the Clinical Interview

This table provides a quick checklist for the headache history. Along with the headache-specific history, the pediatrician should observe the patient along with patient/parent interaction. It is important to ask about depression and anxiety, and take into account any mental health problems that might be present.

Headache Database

1. When did your headache(s) start?
2. How often do your headaches occur?
3. Are your headaches occurring more often?
4. Are your headaches becoming more severe?
5. Does anything special bring them on?
6. Can you tell 15 to 30 minutes before that a headache is coming? How?
7. Where is your pain and what does the pain feel like?
8. Do you have other symptoms with the headache? Nausea or vomiting?
9. Does anything make your headache worse? Better?
10. Do you take anything for your headache? How often?
11. How long does your headache last?
12. Does anyone else in the family have headaches?
13. Are you taking any medications regularly, including OTCs?
14. How do you feel between your headaches?
15. How many days of school have you missed because of your headache?
16. What do you think is causing your headaches?

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tyramine (eg, in aged cheeses and soy sauce), and monosodium glutamate (MSG), found in many food products prepared for home and restaurant use.

Treatment of the acute attack may include nonpharmacologic treatment, symptomatic treatment, and abortive treatment. Symptoms are sometimes relieved with rest in a quiet, cool, dark room and a cold compress. Some patients have infrequent attacks, vomit early, and go to sleep. In those cases, medication does not have a chance to work and is therefore not required.

Pharmacologic Management of Migraine

The pharmacologic treatment of migraine, examined at length in a 2004 American Academy of Neurology practice parameter,[7] is divided into symptomatic and/or abortive treatment at the time of the attack and prophylactic measures to prevent future attacks.[8] Table 5 presents pharmacologic approaches often used for adolescents.

If the adolescent is treating attacks with OTC analgesics or prescribed medicines more than twice per week, consideration should be given to use of a daily preventive medication. Many times, prophylaxis is not 100% effective and patients will also need symptomatic/abortive medications.

In many patients, symptomatic treatment, which includes treating the nausea and vomiting, mild sedation, and analgesics for pain, is sufficient. Sleep may relieve migraine, and giving a sedative such as diphenhydramine or diazepam may ease symptoms and bring about sleep. Antiemetics should be used if significant nausea and/or vomiting are present. Teens prefer oral preparations over injections or suppositories. Oral ondansetron (4 mg to 8 mg PO Q 8H), although expensive, has very few side effects and is effective; metoclopramide (5 mg to 10 mg PO Q 6H) can also be effective.

Once the nausea and/or vomiting are relieved, pain relief can be accomplished without the use of narcotic analgesics or barbiturates. Maximum doses of NSAIDs, such as ibuprofen or naproxen, can be quite effective, and acetaminophen has also been shown to be helpful.

If the attack is prolonged, and/or the headache recurs, or if history has shown that the teen's headache persists when analgesics alone are used, abortive intervention using triptans should be considered.

Although triptans have not been approved by the FDA for patients 17 years and younger, substantial literature supports their use, and recent practice parameters cite effectiveness of nasal sumatriptan.[7,9] Use of any triptan is limited to 2 doses per 24 hours and 2 days per week. A starting dose of nasal sumatriptan (5 mg to 10 mg) may be effective. If symptoms persist or headache recurs, the dose may be repeated once after 2 hours. Patients may also take ibuprofen as often as every 6 hours or acetaminophen as often as every 4 hours along with the triptan, and they may choose to alternate the ibuprofen and acetaminophen.

If nasal sumatriptan is well tolerated but ineffective, it may be helpful to try a larger dose (20mg). If, over the course of 2 or 3 headaches, there is still no

TABLE 4

Indications for referral or further testing

Both the general physical and neurological examinations are normal in the majority of patients with migraine or tension headaches. Neurological symptoms or findings should prompt rapid evaluation and intervention, either immediately (in the emergency room) or via referral to a pediatric neurologist. If the clinical examination prompts concern about a possible space-occupying lesion or other serious condition, and neither a pediatric nor an adult neurologist is available, the pediatrician should proceed with imaging studies.

From the history
- No family history of migraine
- First and worst headache ever ("worst pain I've ever had")
- Onset of a new type of headache (less than 1 month's duration)
- Changes in a headache pattern (either frequency or intensity)
- Consistently localized or occipital pain
- Pain that awakens the patient
- Pain caused by straining and exertion (eg, sports, bowel movement)
- Pain unrelieved by initial treatments
- Pain with neurological symptoms or signs
- Vomiting, especially in the morning
- Seizures

From the physical examination
- Patient critically ill
- Signs of trauma
- Nuchal rigidity
- Presence of cranial bruits or macrocephaly
- Skin lesions that suggest neurocutaneous syndromes
- Localized tenderness of scalp or skull

From the neurological examination

Any neurologic signs:
- Abnormal funduscopic findings (eg, retinal hemorrhage, papilledema)
- Abnormal eye movements (nystagmus, 6th nerve palsy, double vision)
- Decreased or asymmetric muscle strength, tone, or bulk
- Gait abnormalities or balance difficulty (ataxia, dysmetria)
- Altered affect or level of consciousness

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improvement after two doses of nasal sumatriptan, the lowest dose of one of the other triptans may be prescribed to be used with the next headache. As before, if the second triptan is ineffective after 2 or 3 headaches, the dose may be increased, and if the higher dose of the second triptan is ineffective after 2 or 3 headaches, a third triptan may be prescribed to be used with the next headache, following the same regimen. (See Table 5)

Pharmacologic Tools for Migraine Prevention

None of the medications approved for prevention of migraine in adults are FDA-approved for use in children or adolescents.[7] However, many practitioners with clinical experience do use medications successfully for prevention of migraine in adolescents. Appropriate monitoring of the effectiveness of the medication as well as thorough discussion of its use with the patient and parents are essential.

In patients with migraine occurring more than twice weekly, prolonged migraine (headaches lasting 24 hours or more), severe migraine, or mixed headache, and/or OTC overuse, consider preventive medication for a period of 3 to 6 months. Commonly used medications include cyproheptadine, amitriptyline, divalproex sodium, and topiramate, although there is limited but insufficient data supporting their efficacy. Further, although propranolol has been a commonly used agent, there is conflicting evidence regarding its efficacy.[7]

Amitriptyline is especially valuable as an adjunct in pure migraine, mixed headache, and tension headache, and when adolescents have been overusing OTC medication. Because of cardiac concerns with amitriptyline, some pediatricians prefer to obtain an EKG in order assess the QTc interval. An EKG should be considered if larger doses are being used (>1 mg/kg), cardiac symptoms occur, or there is a family history of sudden death or cardiac arrhythmia. Given significant concerns regarding the dangers associated with amitriptyline overdose, it is also important to screen for depression and suicidality before prescribing it, and to encourage parents to monitor and supervise carefully both the administration of and household access to this medication.

Amitriptyline should be administered once nightly, starting at the low dosage of 5 mg to 10 mg and increasing to 20 mg or 30 mg over a period of 4 to 6 weeks as tolerated. In this way, side effects of sedation and increased appetite are minimized. The response to this drug may take 6 to 8 weeks. Patients should be instructed to telephone if they have problems with the medication at any time or if they are no better after 6 weeks.

Divalproex sodium, an anticonvulsant approved for the treatment of seizures in children and adolescents, has been approved for prevention of migraine in adults. Initiate at a low dose and increase slowly. One-quarter to one-half the dose used for epilepsy is often sufficient for headache; as little as 250 mg to 500 mg per day may be effective. While rare, hepatotoxicity and pancreatitis have been reported; laboratory monitoring is suggested. Concerns regarding weight gain, hair loss, and effects on ovarian function have also been raised.

Topiramate, which is FDA-approved for treatment of seizure in adults and children, has recently been approved for the prevention of migraine in adults. Beneficial results can be obtained with about half the dosage used for epilepsy. Beginning with a low dose and slowly increasing to a dose of 50 mg bid may be useful. Side effects are generally not seen at lower doses.

Given the variable nature of headache, the need for preventive measures should be reviewed periodically. If there have been only 2 to 3 migraines in the past few months, consider slowly discontinuing preventive medication. Medication should never be abruptly stopped; the dosage should be tapered over about 6 weeks. Patients need not return for follow-up unless their headaches return. Adolescent headache frequency peaks at the start of the school year; this is not a good time to discontinue preventive medication.

If migraine is associated with men-

A Word About Testing

Many clinicians are concerned that they will "miss" an underlying organic disorder such as brain tumor For this reason, as well as parental pressure, they may over-order brain imaging. The decision to order imaging studies begins with a few basic questions: [5]

- Are the headaches of recent onset (within the last month)?
- Are there any neurologic symptoms or signs in addition to the headaches? (Gait abnormalities? Seizures?)
- Are these symptoms (not just the headache) getting worse over time? Slowly? Quickly?
- Is there an absence of family history of migraine?
- Are there any red flags on the examination? Abnormal vital signs (elevated blood pressure, tachycardia, fever)? Significant skin lesions? Systemic signs? Neurologic deficits?

Findings in any of these areas mean that further evaluation is needed. (See Table 4) The type of evaluation is symptom-dependent. A stiff neck and fever calls for hospitalization and imaging study followed by lumbar puncture. Papilledema calls for imaging and rapid referral.

The speed with which the situation is evolving and the status of the patient will define the level of urgency. In some cases, immediate evaluation and referral are required. If in doubt, call for a consult.

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strual periods and menses are regular and predictable, using nonsteroidal anti-inflammatory drugs (NSAIDs) just before the period begins and daily for 3 or 4 days may be helpful. Two longer-acting triptans, frovatriptan and naratriptan, may be also useful in treatment of menstrual migraine or prolonged migraine.

Alternative therapies for migraine

There is little data regarding complementary and alternative treatments for migraine in adults and even less for children and adolescents. Small doses of magnesium and riboflavin are somewhat effective if taken daily. There are some studies regarding feverfew and butterbur in adults, and one on butterbur in children, but these are not first-line approaches. The National Center for

TABLE 5

Examples of medications used to treat migraine headache in adolescents[7]

The following are suggested doses; all dosages should be checked using additional sources before prescribing.

Therapeutic purpose	Medication class	Example	Adolescent starting dose	Usual dose	Side effects	Comments
Acute symptomatic	Analgesic	Acetaminophen*	325 mg PO Q 4H	650 mg Q 4H		Max 4 gm/day; 15 mg/kg
	Analgesic	Ibuprofen*	400 mg PO Q 6H	600 mg Q 6H	Gastric irritation	Max 3.2 gm/day; 10 mg/kg
Abortive	Triptan	Sumatriptan*	5 mg nasal spray† 25 mg PO† ‡	20 mg nasal spray† 50 mg -100 mg† ‡	Tingling, hot sensation; feeling of tightness in chest and neck	No more than 2 doses/day and no more than 2 days/week
	Triptan	Almotriptan§	6.25 mg PO† ‡	12.5 mg† ‡	As above	As above
	Triptan	Rizatriptan§	5 mg PO† ‡	10 mg† ‡	As above	As above
	Triptan	Eletriptan§	20 mg PO† ‡	40 mg† ‡	As above	As above
	Triptan	Zolmitriptan§	5 mg nasal spray† 2.5 mg PO† ‡	5 mg nasal spray† 5 mg† ‡	As above	As above
	Long-acting triptan	Frovatriptan§	2.5 mg PO‡ ¦	2.5 mg PO‡ ¦	As above	As above
	Long-acting triptan	Naratriptan§	1 mg PO‡ ¦	2.5 mg PO‡ ¦	As above	As above
	Ergot compound	Dihydroergotamine mesylate§	1 spray in each nostril; may repeat once (20-60 minutes later)	1 spray in each nostril; may repeat once (20-60 minutes later)	Nausea, bad taste, rhinitis	As above
Preventive¶	Antidepressant	Amitriptyline#	5 mg to 10 mg PO nightly, titrating up to 20 mg to 30 mg nightly	Depending on response and with careful monitoring, up to 1 mg/kg per day	Sedation, weight gain.	Not more than 100 mg/day. Consider EKG (see text)
	Anticonvulsant	Divalproex sodium#	125 mg PO/day	500 mg /day	Tremor, sedation	Not more than 1,000 mg/day
	Anticonvulsant	Topiramate#	25 mg PO/day	100 mg /day	Paresthesia	Not more than 200 mg/day

* See the American Academy of Neurology (AAN) practice parameter on effectiveness of ibuprofen, acetaminophen, and nasal sumatriptan for treatment of migraine.[7]
† If headache persists or recurs, may repeat dose once 2 hours later
‡ See AAN practice parameter on lack of data either supporting or refuting use of oral triptan preparations
§ No specific recommendation about the use of this drug in AAN practice parameter on treatment
¦ If headache persists or recurs, may repeat dose once 4 to 6 hours later
¶ Preventive medications often take 6 to 8 weeks to become effective
# AAN practice parameter on treatment finds insufficient evidence to make any recommendations concerning the use of this drug

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Complementary and Alternative Medicine sponsored by the National Institutes of Health (www.nccam.nih.gov) is a useful resource.

CONCLUSION

Patients with neurological symptoms or signs require prompt consultation and/or referral. Migraine can ordinarily be managed with lifestyle changes and medication. In the spectrum of tension headache, which includes chronic tension-type and rebound headache, the most difficult problems are excessive school absences and OTC medication overuse. Patient education regarding rebound headache, lifestyle factors, and stress management are important in managing all types of headaches. Most adolescents with headache can be cared for by their pediatricians.

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Adolescent Health Update

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Comments and questions are welcome and should be directed to: *Adolescent Health Update*, American Academy of Pediatrics, 141 Northwest Point Blvd., Elk Grove Village, IL 60007, or send an e-mail to adolhealth@aap.org.

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Getting the Scoop on Headache

Learning to understand what causes headaches is the first step to controlling them.

Are headaches common in teens?

About 6 out of 10 adolescents have an occasional headache. In one study, 1 in 6 teens had frequent tension-type headaches and 1 in 20 teens had migraine.

Is it likely that a teen who gets severe headaches has a brain tumor?

It's not likely at all. The overwhelming majority of headaches are neither serious nor life-threatening. Episodic tension headaches are usually caused by physical factors such as flu, fever, or lack of sleep, or emotional factors such as stress. The most common recurring headaches are tension-type and migraine.

How can I tell if my headaches are due to migraine?

Migraine is a strong, pounding headache that returns 2 to 4 times a month. Migraine runs in families. Patients look pale, become quiet, are bothered by light and noise, and wish to lie down. Many lose their appetite and become nauseated; some may vomit. The attacks usually last less than 4 hours and are often relieved by sleep.

How can I tell if my headaches mean that something is really wrong?

If your headaches are getting more frequent and/or more severe over time, if they awaken you from sleep, if they are associated with neurological symptoms (such as a seizure, trouble keeping your balance, visual problems or vomiting) see your doctor.

What if someone has headaches almost every school day but not on the weekend?

That sounds like a tension headache, the most common type of episodic headache in teens. We really don't know a lot about its biological basis, but we do know that stress, insufficient sleep, and diet play a role. If stress-related, counseling, biofeedback, and medication can be useful. The best first steps are to keep a regular schedule, get 8 hours of sleep, don't skip meals, and don't miss school!

Is it possible to take too much over-the-counter pain reliever?

Definitely! Too much medicine causes rebound headaches – they return as soon as the medicine wears off. If you find that you are taking pain relievers 3 or more times per week, see your doctor.

What is rebound headache?

Rebound headache is like a tension-type headache, but is due to medication overuse. When you use over-the-counter or prescription pain-relievers or caffeine-containing medicines for headache too often (3 or more times a week for weeks on end), you make your brain super-sensitive so that even a little headache seems more painful. (Too much caffeine can do this, too.) Then you get more headaches, they hurt more, and you take even more medicine. Stopping these medications breaks the cycle. It is the key to getting better.

How to manage your headaches

- Stay informed. Read about your type of headache and its treatment.
- Keep a headache diary
- Avoid headache "triggers" (things that bring on a headache)
- Watch your diet – Common headache triggers include caffeine (soft drinks, chocolate), nitrites (hot dogs, pepperoni), tyramine (aged cheeses, soy sauce), and monosodium glutamate (MSG). These triggers are found in many food products used at home and in restaurants.
- Ask your doctor for written instructions about what to do when you have a headache
- Limit over-the-counter medicines to no more than 2 doses per week.
- Follow a regular schedule
- Don't skip meals
- Get 8 hours of sleep each night
- Learn ways to manage stress

Living with migraine

- Take your medicine as directed
- *When you know a migraine is coming*
  - Seek rest and quiet
  - Try to relax
  - Avoid stress
  - Use a cold compress
  - Take the maximum suggested dose of prescribed medication
- See your doctor regularly
- Call your doctor when you have problems
- Follow the "how to manage your headache" tips above

Resources on the Internet

American Council for Headache Education (ACHE)
www.achenet.org

American Headache Society
www.ahsnet.org

National Headache Foundation
www.headaches.org

National Center for Complementary and Alternative Medicine
www.nccam.nih.gov

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