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To cite this article: M Maizels (2005) The Patient with Daily Headaches, South African Family Practice, 47:10, 43-50, DOI: [10.1080/20786204.2005.10873304](https://doi.org/10.1080/20786204.2005.10873304)

To link to this article: <https://doi.org/10.1080/20786204.2005.10873304>



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Published online: 15 Aug 2014.



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The Patient with Daily Headaches

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Abstract

The term "chronic daily headache" (CDH) describes a variety of headache types, of which chronic migraine is the most common. Daily headaches often are disabling and may be challenging to diagnose and treat. Medication overuse, or drug rebound headache, is the most treatable cause of refractory daily headache. A pathologic underlying cause should be considered in patients with recent-onset daily headache, a change from a previous headache pattern, or associated neurological or systemic symptoms. Treatment of CDH focuses on reduction of headache triggers and use of preventive medication, most commonly antidepressants, antiepileptic drugs, and beta blockers. Medication overuse must be treated with discontinuation of symptomatic medicines, a transitional therapy, and long-term prophylaxis. Anxiety and depression are common in patients with CDH and should be identified and treated. Although the condition is challenging, appropriate treatment of patients with CDH can bring about significant improvement in the patient's quality-of-life.

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Introduction

Family physicians frequently care for patients who have migraine and other primary headache disorders. In recent years, the number of headache-related consultations has doubled, and the number continues to increase.¹ Although most headaches are episodic, an estimated 4 to 5 percent of adults have chronic daily headaches (CDH).^{2,3} Patients with CDH have a poorer quality of life than patients with episodic migraine headaches.⁴ CDH is the cause for most referrals to specialist headache clinics.⁵

Patients with CDH most commonly have a history of episodic migraine that has evolved to a daily headache (chronic migraine). Regardless of the original headache syndrome, overuse of medication occurs in approximately one third of patients who develop daily headaches. Medication-induced headache, or drug rebound headache, has been described as an "unrecognized epidemic."⁶ In tertiary headache treatment centres, 50 to 82 percent of patients who have CDH have medication overuse.⁷

Patients with daily headaches are categorised as having primary or secondary headaches. The primary headaches are further divided into those lasting less than or longer than four hours^{8,9} (Table I).⁹

Patient Assessment

In a systematic approach to the patient with CDH, the physician evaluates the

patient for potential ominous pathology, determines the primary headache type, and assesses underlying physical contributors to headache, triggering factors, co-morbidities, and the patient's medication history (Table II).¹⁰ The elements of the clinical history, physical examination, and laboratory tests that are suggestive of specific diagnoses causing CDH are summarised in Table III.

Potentially Significant Pathology

All patients with daily headache require a careful evaluation to exclude

secondary causes. Although they may not specifically express it, most patients with CDH are concerned about serious pathology.¹¹ Potential indicators of intracranial pathology in patients with sudden-onset acute headache are occipito-nuchal location, age greater than 40 years, and an abnormal neurological examination. Symptoms of particular concern in patients with non-acute headache include increasing headache frequency or progressive symptoms, neurological signs or symptoms (including lack of coordination, subjective numbness and tingling), or

Table I: Differential Diagnosis of Chronic Daily Headache

Primary headaches	Secondary headaches
Headache duration > 4 hours (with or without medication overuse)	Headache associated with vascular disorders
Chronic (transformed) migraine	Arteriovenous malformation
Chronic tension-type headache	Giant cell arteritis
New daily persistent headache	Carotid dissection
Hemicrania continua	Vasculitis
Headache duration < 4 hours	Headache associated with nonvascular intracranial disorders
Strictly unilateral-prominent autonomic features	Neoplasm
Cluster headache	Idiopathic intracranial hypertension (pseudotumor cerebri)
Paroxysmal hemicrania*	Infection
Unilateral or bilateral-no autonomic features	Post-traumatic headache
Trigeminal neuralgia	Subdural hematoma
Idiopathic stabbing headache	Myofascial pain
Cough headache	Cervical spine disorders
Benign exertional headache	Temporomandibular joint dysfunction
Headache associated with sexual activity	Headache caused by sleep disorders Obstructive sleep apnea

*-The symptoms of paroxysmal hemicrania resemble those of cluster headaches but are briefer in duration (three to 45 minutes) and occur more frequently (one to 45 episodes per day). Information from Chronic daily headache: diagnosis and treatment. In: Silberstein SD, Lipton RB, Goadsby PJ. Headache in clinical practice. 2d ed. London: Martin Dunitz, 2002:129.

Table II: Diagnostic Approach to the Patient with Chronic Daily Headache

<p>1. Are there worrisome features (SNOOP)?¹⁰</p> <ul style="list-style-type: none"> • Systemic symptoms or illness (especially fever, change in mentation, anticoagulation, current or recent pregnancy, or cancer) • Neurologic symptoms or signs (papilloedema, asymmetric cranial nerve or motor function, or abnormal cerebellar function) • Onset is recent or sudden • Onset after 40 years of age • Previous headache history is different or progressive 	
<p>2. What is the primary headache type? (Determine original headache pattern and any changes over time)</p> <p><i>Duration longer than four hours</i></p> <ul style="list-style-type: none"> • Migraine features: chronic (transformed) migraine • Lacking migraine features: chronic tension-type headache • Abrupt onset headache pattern: new daily persistent headache • Strictly unilateral: hemicrania continua <p><i>Duration shorter than four hours</i></p> <ul style="list-style-type: none"> • Strictly unilateral/autonomic features: indomethacin-responsive headaches • Unilateral or bilateral/no associated autonomic features 	
<p>3. Evidence of medication overuse (including non-prescription drugs and caffeine)</p>	
<p>4. Evidence for underlying physical factors</p> <ul style="list-style-type: none"> • Myofascial factors: <ul style="list-style-type: none"> - Cervical - Temporomandibular - Fibromyalgia - Other chronic pain • Sinus symptoms • Sleep disturbance 	
<p>5. Evidence for psychiatric comorbidity</p> <ul style="list-style-type: none"> • Depressive disorders • Anxiety disorders • Chemical dependency • Personality disorders 	

Information from Dodick DW. Clinical clues and clinical rules: primary vs secondary headache. *Adv Stud Med* 2003;3:3:551.

Table III: Clues to the Diagnosis of Chronic Daily Headache

Patient evaluation	Suggested diagnosis
Clinical history	
• Recent onset; recent change; progressive symptoms of headache	Possible secondary headache
• Fever; weight loss; history of cancer	Possible systemic illness/secondary headache
• Daily headache with occasional migraine-like flares	Chronic migraine
• Daily headache without migraine-like flares	Chronic tension-type headache
• Headache started "out of the blue"; has occurred daily from onset	New daily persistent headache
• Near-daily use of symptomatic medications; no worrisome features	Medication-overuse headache
• Severe headache lasting < 4 hours; strictly unilateral; tearing and/or rhinitis; clock-like regularity; clustering of episodes	Cluster headache
• History of cervical trauma; headaches triggered by cervical movement	Cervicogenic headache
• Obese, fertile woman; transient visual symptoms; pulsatile tinnitus	Idiopathic intracranial hypertension (pseudotumor cerebri)
• Anxiety or depression	Identifies comorbidity but does not influence primary headache diagnosis
Physical examination	
• Papilledema	Intracranial mass; idiopathic intracranial hypertension (pseudotumor cerebri)
• Any abnormality on neurologic examination	Possible secondary headache
• Restricted or painful cervical motion, or temporomandibular motion	Cervicogenic headache; temporomandibular dysfunction
Laboratory examination	
• Anaemia; elevated liver enzyme levels; hypothyroid or hyperthyroid	Evaluate and treat underlying condition.

headache awakening the patient from sleep (not explained by cluster headache or typical migraine).¹²

In the absence of neurological findings, episodic migraine does not require imaging studies^{12,13}; the evidence is less clear for chronic migraine and chronic non-migraine headaches. Based on the low rate of detection of significant pathology, a work group of the American Academy of Neurology (AAN) came to this conclusion: "At this time, there is insufficient evidence to define the role of CT [computed tomography] and MRI [magnetic resonance imaging] in the evaluation of patients with headaches that are not consistent with migraine."¹³ A more recent guideline¹² from the AAN recommends that neuroimaging be considered in patients with unexplained abnormal findings on the neurological examination, but states that there is no clear evidence to recommend MRI or CT as the initial examination.

Table II¹⁰ lists significant features that raise the index of suspicion for a pathologic cause in patients with chronic or recurrent headaches. Patients who have had a stable headache pattern for at least six months rarely have significant intracranial pathology. In the absence of worrisome features, these patients do not require imaging.¹² An imaging study for the sake of reassurance is occasionally warranted, but a thorough clinical evaluation usually obviates the need.

Isolated headache without neurological symptoms is an unusual presentation of brain tumour that occurs in only 8 percent of cases.¹⁴ Although a classic profile of a brain tumour headache has been described (severe headache that is worse in the morning and associated with nausea or vomiting), the pattern is not commonly encountered.¹⁵

In adults, it is unusual for headache to be the presenting symptom of an underlying systemic disease in the absence of other symptoms. Clinical

suspicion should guide testing for anaemia, thyroid disease, liver disease, connective tissue disorders, and infectious diseases (i.e., human immunodeficiency virus antibody and Lyme serology) in patients who have risks or features raising the likelihood of these conditions. Diagnostic testing for a systemic cause may have a greater yield in patients with recent onset of daily headache syndromes. Patients often attribute headache to elevated blood pressure, but only sudden or extreme elevations of blood pressure cause headache.¹⁶

Identifying the Primary Headache

Episodic headaches are usually diagnosed on the basis of the signs and symptoms of the individual headache attack. In patients with CDH, diagnosis is best reached by examining the history of the original headache pattern and its evolution over time.

Migraine

Most patients with CDH who present to physicians with headache have chronic (transformed) migraine.¹⁷ These patients have a history of episodic migraine that has evolved (transformed) over time into a pattern of almost daily headaches. These daily headaches may be mild, but migraine flares may continue to be superimposed on the daily headache symptoms. The most common causes of migraine transformation are frequent headaches at baseline and obesity.¹⁸ Other modifiable risk factors for transformation include medication overuse, snoring, and stressful life events. Risk factors that cannot be modified are female gender, low education/socioeconomic status, and head injury. Sudden transformation may be associated with trauma to the head or neck, medical illness, surgery, or psychological trauma.⁷

Interestingly, chronic tension-type headaches and other daily headaches (such as post-traumatic

headache) may evolve into a pattern of chronic migraine.¹⁹ Chronic migraine may represent a final pathway for several different primary headache types.

Tension-type headache

Patients with chronic tension-type headache have daily or near-daily headaches that typically are occipital or diffuse and pressure-like. It is unclear whether psychological or muscle tension is actually present and, if present, whether these are primary events or epiphenomena. Psychological and muscle tension also are present with migraine.²⁰ The role of cervical pathology in chronic

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tension-type headache continues to be defined. Limited evidence from a single small case series shows that selective blocks of the C1-C2 lateral joint completely relieve headache in two thirds of a highly selected group of patients with occipital headaches.²¹

New daily persistent headache

This type of headache develops "out of the blue" and persists. Patients with new daily persistent headache have no history of headache; if headaches did pre-exist, there is a sudden change to daily headache. A precipitating event is noted in over one half of patients. The most common events are a febrile or viral illness, general

surgery, or a stressful life event.²² These headaches are often refractory to therapy and may persist indefinitely. New daily persistent headache may occur with or without features of migraine.

Hemicrania continua

Although rare, hemicrania continua is an important disorder to consider because it responds consistently to therapy with indomethacin. The headache is constant, with exacerbations of pain, strictly unilateral, and often associated with autonomic symptoms of tearing and rhinorrhoea.

Brief and unilateral syndromes

Cluster headache is commonly misdiagnosed as migraine, and migraine is occasionally mislabelled as cluster headache. Cluster headache is readily recognized as a daily or near-daily headache, strictly unilateral, of excruciating severity, and associated with tearing, rhinitis, or other facial autonomic symptoms on the side of the headache. The key feature distinguishing this condition from migraine is that cluster headache has a briefer duration, usually 30 minutes to three hours. Other diagnostic clues to cluster headache are clock-like regularity of headache recurrence and reliable triggering by alcohol consumption. Cluster headache is usually episodic, persisting for weeks to months at a time and remitting for months or years between episodes. Approximately 10 percent of cases, however, are reported to be chronic, with continuous daily episodes. Clinical features and therapies for cluster headache have recently been reviewed.²³

Other brief headache syndromes are uncommon but merit recognition. Brief headache syndromes that are strictly unilateral usually are associated with autonomic features such as tearing and rhinitis. Other than cluster headache, these headaches are consistently responsive to indomethacin therapy, to the extent that a

positive response to this agent is a diagnostic feature.

Drug Rebound and Medication Overuse

Patients who do not stop analgesic overuse fail to improve despite use of preventive therapy.^{24,25} Conversely, patients who stop taking analgesics on a daily basis have a marked reduction in frequency of headache. Drug rebound headache is a common treatable cause of transformed migraine, and some experts believe it is important in other daily headache syndromes, including post-concussive headache.²⁶ Patients who have drug rebound headache are typically refractory to usual acute and prophylactic interventions. The patient who repeatedly presents to the emergency department requesting narcotics for headache relief most commonly has drug rebound headache.²⁷

There is no established threshold for the quantity, frequency, or duration of medication use required for the development of drug rebound headache. Affected patients typically take headache-relieving medication daily or near daily, but the sustained use of these medications more than three days per week is probably sufficient to develop drug rebound headache. All symptomatic headache medications, including triptans,²⁸ have the potential to cause drug rebound headache. The agents most commonly reported to cause drug rebound headache are narcotics, butalbital products, and combination products containing caffeine.²⁵

Physicians should remain alert to signs of secondary headache in patients who are self-medicating frequently. Only after a careful evaluation for secondary headache should drug rebound headache be suspected in patients with medication overuse.

Headache History

An initial, open-ended question, such

as "Tell me about your headaches," will yield valuable information that may not be acquired by a relentless pursuit using closed-ended questions. Patients may report having several different types of headache and give each one a label, such as "migraine," "tension headache," or "sinus headache." The patient should be allowed to describe each of these headache types, even though they may all represent different manifestations of the spectrum of a migraine headache.²⁹

Particular attention should be given



to the patient's age at onset, the circumstances of headache onset, the time when headaches worsened or began occurring daily, and associated life events. Medical or surgical illnesses, trauma involving the head or neck, and life stressors commonly are identified with the onset of headaches or the transformation of headaches from episodic and/or manageable to CDH.

Physical Examination

The neurological examination is crucial to exclude even subtle signs of cerebral dysfunction. The patient's ability to communicate the history is a valuable measure of mental status. The fundoscopic examination must be documented. Subtle signs of frontal lobe dysfunction may be demonstrated by testing stereognosis (such as the ability to identify an object placed in the patient's palm). A thorough examination also will reassure the patient and may obviate the need for imaging studies when there are no historical features of concern.

A myofascial evaluation should include cervical range-of-motion, trigger points of the upper back, and temporomandibular motion and

Table IV: Clinical Approach in Patients with Chronic Daily Headache

1. Treat medication overuse, if present (see Table VI).
2. Select pharmacologic therapies (see Table V).
3. Treat potential underlying pathology. <ul style="list-style-type: none"> • Myofascial pain • Physical therapy • Temporomandibular treatment • Psychiatric comorbidity (antidepressants, anxiolytics) • Sinus evaluation and treatment
4. Limit symptomatic medication use to two days per week (after withdrawal ["detoxification"] is completed). <ul style="list-style-type: none"> • Recommend use of non-steroidal anti-inflammatory drugs. • Recommend use of triptans for migraine flares. • Avoid use of medications prone to drug rebound, especially combination analgesics, caffeine-containing compounds, butalbital products, and narcotics.
5. Consider behaviour therapy <ul style="list-style-type: none"> • Encourage lifestyle management • Regular exercise • Regular meals; no caffeine; migraine diet • Sleep hygiene • Stress reduction • Biofeedback • Cognitive-behaviour therapy
6. Monitor progress (using headache calendar).

Table V: Common Preventive Therapies for Chronic Daily Headache

Drug class	Dosing	Contraindications/side effects	Comments
TCA's			
Amitriptyline (Tryptanol®)	10 mg at bedtime; increase weekly up to 50 to 75 mg at bedtime Maximum: 150 mg at bedtime	Sedation, dry mouth, constipation, weight gain	Obtain baseline ECG.
Nortriptyline (Aventyl®)	10 to 25 mg in morning or at bedtime; increase weekly up to 75 to 100 mg Maximum: 150 mg per day	Less anticholinergic than amitriptyline	Obtain baseline ECG.
Desipramine	10 to 25 mg in morning or at bedtime; increase weekly up to 75 to 100 mg Maximum: 150 mg per day	Nonsedating, no weight gain	Obtain baseline ECG.
SSRIs			
Fluoxetine (Prozac®)	10 to 20 mg in morning or at bedtime	Diminished libido, nausea, constipation, weight gain	Most useful if depression is present
Paroxetine (Aropax®)	Same as above	Same as above	Same as above
Antiepileptic drugs			
Valproic acid (Epilim®, Convulex®)	125 to 250 mg at bedtime; increase up to 250 to 500 mg twice daily Maximum: 1,000 mg twice daily	Nausea, sedation, tremor, hair loss, weight gain; teratogenic; may cause polycystic ovaries	Obtain baseline liver function tests.
Gabapentin (Neurontin®)	100 to 300 mg at bedtime; titrate slowly up to 300 mg three times daily, then more rapidly up to 800 mg three times daily	Sedation, nausea, weight gain	May help sleep and anxiety
Topiramate (Topamax®)	15 to 25 mg at bedtime; increase weekly up to 50 mg twice daily or 100 mg at bedtime Maximum: 100 mg twice daily	Very common: paresthesias and cognitive side effects Rare: acute glaucoma syndrome, anhydrosis; kidney stones in 1.5%	Promotes weight loss
Beta blockers*			
Propranolol (Inderal®)	20 to 40 mg twice daily; increase as tolerated	Fatigue, depression, sexual dysfunction	Useful only if migraine component
Antispasmodics			
Tizanidine (Not in RSA)	2 to 4 mg at bedtime, up to 4 mg three times daily if sedation level is tolerable	Sedation	Promotes sleep; reported useful in fibromyalgia
Botulinum toxin	25- to 100-unit injections every three months	Eyebrow ptosis; lacks internal side effects	Extremely costly; consider for use in patients with refractory headaches
TCA = tricyclic antidepressants; ECG = electrocardiogram; SSRI = selective serotonin reuptake inhibitor. *Studies of beta blockers limited to episodic migraine.			

tenderness. However, positive physical findings are common and do not necessarily indicate the cause of the headache. Seventy-five percent of patients with migraine complain of associated neck pain; triptan therapy resolves both neck pain and headache.³⁰

The question of sinus abnormalities as a cause of headache remains controversial.^{31,32} Nearly 90 percent of patients with frequent episodes of "sinus" headache fulfill criteria for migraine headache.³³ CT imaging or nasal endoscopy may occasionally identify a treatable cause of headache in a patient with sinus symptoms.

Assessing Psychiatric Comorbidity

Anxiety and depression are highly prevalent in patients who have CDH⁷ and, when present, may negatively influence prognosis. All patients who have CDH should be screened for psychiatric co-morbidity. Direct questioning (such as, "Are you depressed?"), indirect questioning, and screening instruments (such as the Beck Depression Inventory) may be used. The Primary Care Evaluation of Mental Disorders (PRIME-MD), a multidimensional psychiatric screening tool that also identifies other somatic complaints,³⁴ may be

particularly useful for screening patients with headache.

Treatment

The appropriate treatment of patients with CDH emphasizes the reduction of headache triggers and the use of preventive therapy (*Tables IV and V*). The goals of migraine preventive therapy are to:

1. Reduce attack frequency, severity, and duration.
2. Improve responsiveness to treatment of acute attacks.
3. Improve function and reduce disability.¹³

Table VI: Treatment of Medication Overuse (Drug Rebound Headache)

1. Withdrawal of symptomatic medications, including caffeine. <ul style="list-style-type: none"> A. Gradually taper medications in patients where physiologic withdrawal is a concern (i.e., narcotics, butalbital). B. Use abrupt withdrawal or taper medications in all other patients.
2. Preventive therapy Any preventive therapy, or combination, from Table 5
3. Transition therapy (one medication from group A may be combined with one from group B) <ul style="list-style-type: none"> A. Daily migraine-specific therapy <ul style="list-style-type: none"> Dihydroergotamine: intranasal, intramuscular, or intravenous Long-acting triptan: naratriptan (Naramig®) or frovatriptan (Not in RSA) B. Anti-inflammatory agents <ul style="list-style-type: none"> Short course of corticosteroids Long-acting non-steroidal anti-inflammatory drugs
4. Rescue therapy, as needed <ul style="list-style-type: none"> A. Non-narcotic analgesics: parenteral ketorolac (Toradol®) B. Antiemetics C. Sedating antihistamines: diphenhydramine (Benadryl®) or hydroxyzine (Atarax®)

Many tricyclic antidepressants and certain anticonvulsants appear to be effective treatments, with amitriptyline (Tryptan®) having the best documented efficacy.^{35,36} Beta blockers are commonly used if there is a migraine component. Patients with refractory headaches often require therapy with several agents such as a tricyclic antidepressant plus an anticonvulsant and a beta blocker.

Selective serotonin reuptake inhibitors appear to be most useful in patients with psychiatric co-morbidity.

If the patient is overusing medications, the overuse must be

managed before prophylactic agents will be effective (Table VI). The treatment of drug rebound headache involves:

1. Withdrawal from all symptomatic agents, including caffeine.
2. A transition therapy to support the patient during detoxification.
3. Initiation or adjustment of headache prophylaxis.

The literature is insufficient to recommend any one treatment over another.³⁷ Patients often have exacerbation of headache in the first two weeks following withdrawal from

analgesics and may require four to 12 weeks after withdrawal (occasionally, even longer) to show improvement.

Once the patient has completed an adequate period of medication withdrawal, the use of symptomatic medications again may be allowed, but on a limited basis-no more than two days per week. Non-steroidal anti-inflammatory drugs and triptans are most commonly used in patients with occasional migraine flares. The use of medications that are highly prone to drug rebound, such as narcotics and combination products containing butalbital or caffeine, should be avoided. Dihydroergotamine may be used safely over an extended period.

The primary care physician can provide behavioural support by helping the patient identify lifestyle triggers and psychosocial stressors. Behaviours that help to prevent headache flares include establishing a habit of regular meal times, sleep and awake times, and exercise. It is useful to help the patient to identify any connection between psychosocial stressors and headache flares. Most headache patients can benefit from basic stress-reduction techniques such as yoga and meditation. There is compelling evidence for the efficacy of biofeedback, relaxation techniques, and cognitive-behaviour therapy for headache prophylaxis.³⁸ Referral to a medical psychologist or a pain psychologist should be considered for patients with significant psychosocial stressors or refractory headache.

Referral

Patients who do not respond to appropriate prophylaxis or who frequently use narcotics or butalbital products should be referred to a headache specialist. Patients with significant psychiatric co-morbidity, associated chronic pain, and/or chemical dependency may require the services of a multidisciplinary pain clinic. Tertiary headache centres that provide inpatient care should be

Strength of Recommendation

Key clinical recommendations	Labels	References
Consider neuro-imaging for patients with chronic headache and unexplained abnormal findings on the neurological examination.	B	12
Neuro-imaging is generally not indicated in patients with migraine and a normal neurologic examination.	B	12
Symptoms of particular concern in patients with non-acute headache include increasing headache frequency or progressive symptoms (including lack of coordination, subjective numbness or tingling), or headache awakening the patient from sleep (not explained by cluster headache or typical migraine).	B	12
Drug rebound headache should be considered in the patient who repeatedly presents to the office or emergency department requesting narcotics for relief.	C	27
Many tricyclic antidepressants and certain anticonvulsants are recommended as effective treatments for chronic daily headache, with amitriptyline (Tryptan®) having the best documented efficacy.	A	35

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, opinion, or case series. See page 2252 for more information.

considered for patients who have not responded to aggressive outpatient therapy.

The author thanks Anne Walling, M.D., for suggesting the topic for this manuscript.

The author indicates that he does not have any conflicts of interest. Sources of funding: Dr. Maizels has been a speaker for Merck & Co., Inc.; Pfizer Inc.; and Novartis Inc.; and is or has been a consultant for Merck & Co., Inc.; GlaxoSmithKline, Inc.; Pharmacia; and Ortho-McNeil, Inc. In addition, he has received research grants from Merck & Co, Inc.; Novartis Inc.; and the Natural Science Corporation of America. He solicits funding from all major pharmaceutical companies to support continuing medical education-approved migraine symposia. ✎

See CPD Questionnaire, page 56

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