Editor’s Note: The process of the 2-minute mini-lecture is to get a commitment, probe for supporting evidence, reinforce what was right, correct any mistakes, and teach general rules. In this scenario, Dr Ricer (Dr R) works with a third-year student (M3) who is seeing a man with elevated blood sugar.

**MS3:** This patient is a 50-year-old Caucasian man with a benign medical history, to this point, who had his fingerstick blood sugar checked at a community health fair, and it was 210. He reports no symptoms at all.

**Dr R:** What symptoms did you ask about?

**MS3:** Polyuria, polydipsia, and polyphagia, or unexplained weight loss.

**Dr R:** Those are the classic symptoms traditionally taught for diabetes, but only a very small percentage of people who turn out to have diabetes will present with these classic symptoms.

**MS3:** What symptoms do they usually present with?

**Dr R:** Probably the two symptoms I see most commonly on initial presentation are just “fatigue” or erectile dysfunction.

**MS3:** Erectile dysfunction?

**Dr R:** Yes. Whenever a male asks me about the “little blue pill,” the first thing I check for is diabetes.¹

**MS3:** Wouldn’t they have symptoms long before ED?

**Dr R:** No. Diabetes is most often found as a high blood glucose reading on a routine screen or blood drawn for an entirely different reason.

**MS3:** How can they have this disease, but have no symptoms?

(continued on page 2)

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**Information Technology and Teaching in the Office**

**Using Digital Images to Enhance Patient Care, Learning, and Teaching**

By Richard Usatine, MD, University of Texas Health Science Center at San Antonio

The expansion of digital images on the Internet, smart phones, and the availability of low-cost digital cameras has revolutionized the practice of medicine. Not only can you find images by Google image search, but you can use medical Web sites dedicated to help you make the correct diagnosis. Not only are physicians using these sites, but your patients are finding these sites and making educated guesses as to the cause of their medical disorders.

This article will take you through the best electronic resources for the diagnosis of skin and other disorders that present with distinctive visual patterns. One excellent example of this is the free “Skinsight” Internet site found at www.skinsight.com. It has an amazing “Skin Condition Finder” that allows you to select age, gender, and body location and then shows photographs and explanations of the skin conditions that match those selections. The selections are divided into best matches and close matches. There is even a discussion about the particular reasons for rashes in that body part. The site is intended for use by patients and does not include specific therapy or prescribing information, but certainly students and doctors will find the images to be compelling. The site is produced by Logical Images, and this is the public, less powerful version of their VisualDx program, which requires a subscription and includes 1,000 diagnoses, searchable findings, and the therapy information the consumer site lacks. Logical Images has also created a self-paced tutorial for students and recently moved the expanded tutorial to the professional area of Skinsight: www.skinsight.com/info/for_professionals/rash-rashes. The site includes training in the basics

(continued on page 4)
Patient With Hyperglycemia

Dr R: What is the difference between disease and illness? Think back to your first year when you didn’t think the clinical courses were as important as the basic science courses.

MS3: I don’t remember.

Dr R: This difference is critical in clinical medicine. Disease is the pathophysiologic process. Illness is how it makes the patient feel. Patients present with “illness.” We usually try to diagnose “disease.”

MS3: So, if he doesn’t feel bad at all, he has a disease but no illness?

Dr R: Exactly. You were taught diseases in medical school, but patients present with illnesses. It’s an adjustment you’ll need to try to learn. Can you think of any other diseases that have no illness?

MS3: High cholesterol.

Dr R: Great. High blood pressure is another one.

MS3: Wow, those are three of the most common diseases in medicine.

Dr R: Yes, and it makes treatment more difficult since it’s hard to make an asymptomatic patient “feel” better.

MS3: But it’s easy to make them feel worse, especially with medication side effects.

Dr R: You are wise beyond your years, my young Jedi. What happens when you make an asymptomatic patient feel worse with medication?

MS3: They quit taking it.

Dr R: Therefore, patient education is critical. The patient without “illness” may not believe he has any problems. Or, even if the doctor says there’s a problem, the patient doesn’t believe it’s causing any damage. He may believe that ignorance is bliss and that it would be best never to check for problems.

MS3: This is going to be another one of those cases that’s not as simple as I thought, isn’t it?

Dr R: You betcha. Tell me more about our patient.

MS3: He has no family history of diabetes, even in uncles or aunts. He went out and bought a glucose meter and checked his blood sugars at home several times—130 and 140 before breakfast (different days) and 210 and 220 after meals. He had blood work done prior to this appointment. His physical exam is normal. His height is 5’9”, his weight 155 pounds, his blood pressure 110/70 mm Hg. His HEENT, lung, cardiac, abdominal, and extremity exams are all normal. I pulled up his labs. His AIC was 7.9. His complete metabolic profile was normal except the glucose, which was 130. His total cholesterol was 155, HDL 50, triglycerides 50, and LDL 95. His urine dipstick and urine micro-albumin were negative. He is on no medications.

Dr R: What’s your diagnosis?

MS3: Diabetes mellitus type 2.

Dr R: Does he meet the criteria for a diagnosis of diabetes?

MS3: Yes. He more than meets the ADA criteria for diagnosing diabetes. He has had at least two fasting glucose values greater than 126. And, his AIC is greater than 6.5. He also had at least two random glucoses over 200 but, without classic signs or symptoms of hyperglycemia, those random measures don’t meet the criteria. He only needed two measures, and he has had three measures above the cutoffs.

Dr R: What makes you think he has type 2?

MS3: He’s 50 years old.

Dr R: Is there anything that seems different about him from a usual patient with type 2?

MS3: His lack of a FHx of DM.

Dr R: That’s one, what else?

MS3: I don’t know what you mean. His blood sugars are high.

Dr R: Those are just numbers. Let’s look at the patient. What is the cause of DM type 2?

MS3: Insulin resistance.

Dr R: Correct. From what cause?

MS3: Obesity.

Dr R: Absolutely. Is this patient obese?

MS3: No. His BMI is in the normal range. Uh-oh, red flag! I don’t understand. I feel a mini-lecture coming on.

Dr R: Quite so, Skywalker. A person with type 2 diabetes inherited the genes for this process from his or her parents. However, the disease doesn’t manifest itself unless the person becomes overweight. What then occurs is insulin resistance. The beta cells of the pancreas have to overproduce insulin (hyperinsulinemia) to overcome the insulin resistance at the cellular level. There is debate as to what truly causes the other diseases in this “syndrome,” this hyperinsulinemia, the genetic abnormality, or the obesity itself, but the person’s blood pressure rises, there are usually classic cholesterol changes of high triglycerides and low HDL, the patient usually develops “fatty liver,” urate levels can rise (without overt gout), women usually have varying degrees of PCOS (polycystic ovarian syndrome), and the patient usually has sleep apnea. DM2 is part of this syndrome and rarely (if ever) presents as a solo disease. DM2 is usually one of the last manifestations of this syndrome. Hypertension is usually present for years or decades before the diabetes develops to a point where we can diagnosis it with our current lab values. All of these disease processes together (or really just one disease process, Insulin Resistance Syndrome) produces total body atherosclerosis and neuropathy, which is why DM2 (really IRS) is the primary cause of heart attacks, new blindness, limb amputation, and renal failure. Always think of all the other parts of this syndrome whenever you see any one part of the syndrome.

MS3: But this patient isn’t overweight, doesn’t have hypertension, doesn’t have abnormal HDL or triglycerides, and doesn’t have abnormal ALT, AST, or urate.

Dr R: Hence my question about what makes you think he has type 2?

MS3: Isn’t he too old for type 1?

Dr R: He’s too old for the fast onset type 1 you learned about in year 2, but have you ever heard about LADA (Latent Autoimmune Diabetes of Adults)?

MS3: No.

Dr R: A lot of people aren’t fully aware of this process. Let me try to explain. Type 1 DM is caused by a lack of insulin produced by the pancreas. This lack is classically caused by a cross-reaction of antibodies designed
to fight a viral infection attacking the cells of the pancreas. In children and adolescents, each patient may produce multiple classes of Islet Cell Antibodies, and these antibodies rapidly destroy the insulin-producing cells, leading to Type 1 diabetes. In adults, there is an autoimmune process that produces only one Islet Cell Antibody (ICA) in each patient and, therefore, destruction of the beta cells occurs more slowly, over a few years. A “slow” onset type 1 or LADA. These patients will need insulin within a short period of time and will not respond to drugs that reduce insulin resistance such as the glitazones since insulin resistance is not the problem.

**MS3:** How would you diagnose this?

**Dr R:** You could order Islet Cell Antibodies, but that’s expensive since any one of the six or more ICAs can be the culprit, and you’d have to order all of them. You could draw an insulin or C-peptide level (showing the patient is producing their own insulin) and then draw it again in 6 months or a year. If the patient’s level is decreasing, that is evidence of decreasing functioning beta cells and may indicate a need to get the patient on insulin. You could also keep a high index of suspicion and just see how well the medications work. If the patient doesn’t respond to glitazones or only partially responds to metformin, your suspicion goes up.

**Dr R:** Great point. However, he could be the point person who developed the mutation. What have we learned today?

**MS3:** Why would they respond at all to metformin; doesn’t it work by reducing insulin resistance?

**Dr R:** That is one of its mechanisms. Remember that metformin has two mechanisms; it also reduces hepatic gluconeogenesis.

**MS3:** I thought diabetes was easy to differentiate by age alone.

**Dr R:** No, it is differentiated by pathophysiology and pathophysiology guides treatment. Just to throw in another wrinkle, this “non-obese” patient with diabetes could also have MODY (Maturity Onset Diabetes of the Young).

**MS3:** Ack! That’s first-year biochemistry.

**Dr R:** Actually, everything we’ve discussed so far, including the mechanisms of the medications is first-year biochemistry. MODY is a one amino acid mutation inherited disorder. There are at least six different mutations known (MODYs 1–6). The most common is a mutated glucokinase, the trigger for insulin release. The “set point” of the glucose “thermostat” is higher in these patients such that insulin is not released until the blood glucose is higher than in normal patients.

**MS3:** But he had no family history of diabetes.

**Dr R:** Great point. However, he could be the point person who developed the mutation. What have we learned today?

**REFERENCES**


Using Digital Images

of the skin exam, the essential descriptive terminology of dermatology, a lesson on variations in dermatologic diagnosis, and an interactive example of how visual diagnostic decision support can enhance care. Logical Images encourages educational sites to link to this comprehensive self-paced tutorial. VisualDx and the Learnderm site are a wonderful example of how decision support and point of care tools can enhance and transform medical education. Every medical student and resident should take this self-study tutorial on how to diagnose skin problems.

VisualDx is not just dermatology. It has robust modules on the eye, the mouth, and bioterrorism and the pulmonary system, including chest X-ray findings. It also includes public health-related modules for child abuse recognition, pressure ulcers, and MRSA. Uniquely, VisualDx allows the user to search by diagnostically relevant terms such as symptoms, signs, geography, medical history, medications, and many other findings to develop a differential diagnosis. The ability to use VisualDx is required at some medical schools. User trials indicate that VisualDx visual diagnostic decision support can improve diagnostic accuracy by more than 120%. The photographs are superb, and the decision support is very sophisticated. For the first time, subscribers can get a free iPhone app to search this database. The iPhone app delivers the same high-quality images and concise disease descriptions including treatment information.

Many universities and emergency departments have purchased enterprise versions of VisualDx. First check to see if you have free access at your workplace. If so, you can get the iPhone version for free too. Also, you may go directly to www.visualdx.com/ and get a free trial and then decide upon the purchase of a 1-year subscription ($99 for pediatrics only and $199 for the broader clinician package). One economical way to subscribe is to buy one of their new books, which comes with a free electronic subscription. On Amazon.com you can purchase “VisualDx: Essential Pediatric Dermatology” for $78 and get a full-year pediatrics subscription to the Internet and iPhone version of VisualDx. (Don’t forget to go through stfm.org when purchasing your Amazon products so STFM gets their percentage.) “VisualDx: Essential Adult Dermatology” contains full Internet access and is the next in the series to be released on Amazon on April 1.

There are dedicated atlases on the Internet by organ system that can help you find the images you were looking for. Most of these atlases have their own search engines which can help direct you to the right diagnosis.

Table 1 lists some of the best free resources currently available online. All of these sites can help you make a diagnosis by providing you with visual images for comparison. Some also have decision support tools as well. Look at these sites now before you need them at the point of care. Once you are familiar with these sites, you will want to show them to your students as part of how you practice and teach family medicine.

Please do be careful when searching for images on the Web in front of patients. Sometimes what pops up is not “pretty” (or for that matter G or PG rated). I turn the screen away from the patients before I initiate the search and then screen out what I will show them. I always ask first if they would want to see some pictures of other persons with a similar condition and if it is “OK to search” in front of them. Most patients are delighted, but you may have an occasional patient who does not want to view the images. When you teach, model this behavior in front of your students. Show them how visual images and decision support tools on the Internet at the point of care can help with caring for patients.

Richard Usatine, MD, University of Texas Health Science Center at San Antonio, Editor

Thomas Agresta, MD, University of Connecticut, Coeditor

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<td>Best Free Resources Currently Available Online</td>
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ENT—ear, nose, and throat  
CDC—Centers for Disease Control and Prevention
We all know the frustration—the patient who had well-controlled blood pressure comes in with pressures through the roof and just “stopped his meds.”

We then spend an excessive amount of time reiterating the need to take the pills every day unless a doctor stops or changes the pills, discussing risks of uncontrolled hypertension, etc. But do we always spend the time to explore why the patient stopped his/her meds?

I’m sure you have patients like mine who just do what the doctor says because the doctor says, but we are seeing an increasing number of patients who don’t just take recommendations at face value and who want to have an active role in their health decisions. While this may seem daunting at first, there is distinct benefit related to adherence in having a discussion about health belief models and encouraging active patient involvement in medical decision making.

The National Collaborating Centre for Primary Care in the United Kingdom has released a guideline addressing patient adherence and has some good recommendations to foster communication with patients to improve adherence.

First and foremost, all communication barriers should be considered: hearing or visual difficulty, learning disability, inability to speak or write in English (or Spanish in my patient population). Attempts should always be made to communicate effectively with the patient in a way he/she understands—using translators and having access to patient education handouts in languages common to the practice.

Next, question the patient regarding the amount of involvement they would like to have in their medical decision making or if they would like to have family members involved. For instance, there are patients who only want to know the basics about their medical conditions and don’t want the nitty gritty details: “Just the facts ma'am.” There are also patients who want every unlikely side effect explained to them prior to making any decision. I definitely have both types in my practice. Also, be sure to document the discussion of risks and benefits with the patient, especially if it is a treatment the patient is likely to stop on their own.

An important part of patient adherence is ensuring they have an accurate medication and allergy list that they carry with them in case of emergency. This list should also include all over-the-counter medications, herbs, and supplements they are taking. Also encouraging them to carry a list of their medical problems or use medical alert bracelets is something that I recommend but is not covered in the guideline.

There is a common belief that (my) patients have that taking a medication for 1, 2, or 3 months (the duration of the original prescription and refills) “cures” their problem, and they no longer need to take the pills. It is therefore crucial that when a medication is lifelong (like thyroid hormone replacement) that the patient understand this and the serious consequences of stopping that medication. The amount of information that is presented to patients will depend on their health belief model but at minimum should include common and serious side effects, duration of treatment, and what to do if they skip a dose.

So now to the million dollar question: How do I get my patient to adhere to prescribed medications 100% of the time? Well, there are some tips, but no one has the answer for all patients all of the time. You should begin by assessing adherence, realizing that most patients have periods of decreased adherence at times. How much of the time is the patient actually taking the medication as prescribed in the last week? Assess reasons for nonadherence without blaming the patient for not taking the medications. Are they having trouble affording the medication? Have they cut doses in half or skipped doses? Are there side effects that are bothersome? Calling the pharmacy to see if the patient is obtaining refills on time can provide insight into adherence as well.

Although there is no evidence supporting individual interventions for improving adherence, there are things to try with patients to increase adherence depending on the individual need. First, make the dosing regimen as simple as possible. Recommend that the patient use a pill box to assist in remembering to take the meds daily. Prescribe medications that have packaging that lists the daily doses when possible (such as oral contraceptives). Encourage the patient to keep a record of when they take their medications.

A regular review of all medications prescribed may lead to a change in dosing regimen or eliminating medications that aren’t effective, thus simplifying the medication list and improving patient satisfaction and adherence in the process.

Understanding where your patient is coming from in the setting of adherence can reduce frustration on your part and lead to an overall improvement in patient care.

Guideline:

Caryl Heaton, DO, UMDNJ-New Jersey Medical School, Editor
Diana Heiman, MD, University of Connecticut, Co-Editor
From the “Evidence-Based Practice” HelpDesk Answers Published by Family Physicians Inquiries Network (FPIN)

What Is the Sensitivity and Specificity of Routine EEG in the Diagnosis of Epilepsy?

By Joshua Merok, MD, Helen P. Xenos, MD, UIC Illinois Masonic FMR, Chicago

Evidence-based Answer

The sensitivity of electroencephalogram (EEG) for the diagnosis of suspected epilepsy in adults is 29% to 55%. Sensitivity can be increased to 80% to 90% with use of serial EEGs. The specificity in healthy patients is generally 99.5%. (SOR A, based on multiple diagnostic cohort studies.)

Evidence Summary

A 2007 systematic review assessed evidence for the use of routine EEG in the evaluation of a first adult seizure.1 The review included 11 prospective cohort studies with a total of 1,766 adult patients. Pediatric studies and studies with fewer than 10 patients were excluded. Data from studies containing a mixed population of adult and pediatric cases were reviewed, and data pertaining to adult patients were extracted. Epileptiform activity was seen on initial EEG in 29% of cases (510 of 1,766).

Two recent narrative reviews also addressed the sensitivity of EEG to diagnose epilepsy.2,3 Both reviews sited multiple retrospective studies. In these cohorts, epileptiform activity was seen on the initial EEG in 29% to 55% of patients assigned a clinical diagnosis of epilepsy.

A 1987 retrospective cohort of 429 adults with a clinical diagnosis of epilepsy was used to define an operational curve for serial EEGs. Data from more than 1,200 EEGs were analyzed. Half of these patients with clinical epilepsy had epileptiform activity present on their first recording. Sensitivity increased to 84% by the third EEG and 92% by the fourth.4

To determine the specificity of screening EEGs, a prospective cohort of 13,658 healthy men without epilepsy who were candidates for aircrew training was studied.5 Only 69 of 13,658 candidates (0.5%) had epileptiform activity on their EEG, yielding a specificity of 99.5%. Between 5 and 29 years of clinical follow-up was available for 43 of the 69 patients with epileptiform activity. Only one of these patients developed epilepsy.

References


SOR—strength of recommendation
LOE—level of evidence

Jon O. Neher, MD, University of Washington, Editor

HelpDesk Answers are provided by Evidence-Based Practice, a monthly publication of the Family Practice Inquiries Network (www.fpin.org)

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POEMs for the Teaching Physician

Cognitive Behavioral Therapy Effective for Depressed Elderly

**Clinical Question:** Is cognitive behavioral therapy effective in the treatment of depressed patients who are 65 years or older?

**Study Design:** Randomized controlled trial (single-blinded)

**Funding:** Foundation

**Allocation:** Concealed

**Setting:** Outpatient (primary care)

**Synopsis:** Cognitive behavioral therapy (CBT) is infrequently used in the treatment of elderly adults, possibly as a result of insufficient evidence showing a benefit. These investigators recruited 204 patients, 65 years or older, who met standard DSM-IV-TR criteria for major (88%) or minor (12%) depression from primary care community settings. The patients were randomly assigned (concealed allocation assignment) to one of three treatment groups: (1) CBT, consisting of up to twelve 50-minute sessions specifically focusing on exploring patients’ beliefs about the negative effects of physical illness, (2) Talking Control (TC), consisting of similar length and number of sessions in which the therapist showed interest and warmth but did not challenge dysfunctional beliefs, give advice, or focus on emotional issues, or (3) Treatment as Usual (TAU), consisting of medication, routine support, or referral to special services (not including CBT) as felt appropriate by the primary care clinician. Individuals masked to treatment group assignment assessed outcomes using standard, previously validated depression, anxiety, and social functioning scoring tools. Complete follow-up occurred for 82% of patients at 10 months. Using intention-to-treat analysis, significantly more patients in the CBT group experienced a clinically significant 50% or greater reduction in depression scores compared with the TC and TUA groups (33% versus 21% and 23%, respectively; numbers needed to treat =8 and 10). No significant differences occurred in anxiety or social functioning scores. There were also no differences in number of treatment sessions attended between the CBT and TC groups, or the number of prescriptions for treatment.

**Bottom Line:** CBT is more effective than empathetic listening and usual care in the management of depressed patients 65 years or older. In this study, only one third of the patients, at best, responded significantly to a specific treatment. (LOE=1b)


ACE Inhibitor Preferred Over ARB in Patients With Ischemic Heart Disease

**Clinical Question:** In patients with stable ischemic heart disease, does treatment with an angiotensin-converting enzyme inhibitor, angiotensin II-receptor blockers, or both improve outcomes?

**Setting:** Various (meta-analysis)

**Study Design:** Meta-analysis (randomized controlled trials)

**Funding:** Government

**Synopsis:** To answer this question, the researchers searched four databases, including those of the Cochrane Library, to find studies comparing ACE inhibitors and ARBs in patients with heart disease. Two investigators independently identified studies for inclusion and then extracted information and evaluated study quality. They also searched reference lists of identified research articles but did not include any research published only in abstract. Heterogeneity and publication bias were assessed for each subset of studies. Most studies were of moderate to high quality. In seven studies of almost 40,000 patients, ACE inhibitor treatment decreased total mortality by 13% (relative risk=0.87; 95% CI=.81–.94). In six studies enrolling 37,706 patients, ACE inhibitor treatment decreased cardiovascular mortality by a similar amount (relative risk=0.83; 7.98). Single studies of ARB treatment did not show a benefit on either of these outcomes as compared with placebo. Similarly, ACE inhibitor therapy, but not ARB treatment, has been demonstrated to decrease cardiovascular mortality, nonfatal myocardial infarction, and stroke. The combination of ARBs and ACE inhibitors did not affect outcomes but increased side effects.

**Bottom Line:** In patients with ischemic heart disease with preserved ventricular function (ie, without heart failure), angiotensin-converting enzyme (ACE) inhibitors added to traditional therapy produces an additional decrease in mortality, nonfatal myocardial infarction, and stroke. Treatment with angiotensin II-receptor blockers (ARBs) does not have evidence of benefit. (LOE=1a)


LOE—level of evidence. This is on a scale of 1a (best) to 5 (worst). 1b for an article about treatment is a well-designed randomized controlled trial with a narrow confidence interval.

Mark Ebell, MD, MS, Michigan State University, Editor

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As more medical schools and office practices adopt electronic health records (EHRs), medical students are increasingly learning to conduct and document patient encounters electronically. The EHR offers many advantages over paper records as a clinical teaching tool, yet medical teachers may miss opportunities to use the EHR to enhance student learning. In many medical schools, the family medicine clerkship or an ambulatory rotation in a preceptor’s office may be students’ only chance to learn optimal integration of the EHR in the outpatient setting.

Office-based teachers of family medicine can enhance medical students’ learning using the EHR in the ambulatory setting. This enhanced learning may be done in a time-efficient manner within the context of the ambulatory visit. Three ways for office-based teachers to use the EHR to optimize students’ learning include (1) enhancing EHR-specific communication skills, (2) Increasing “just in time” learning for students and patients, and (3) improving students’ clinical performance.

**Enhancing EHR-specific Doctor-Patient Communication**

Students may have heard physicians sharing concerns about the potentially negative impact of the EHR on the doctor-patient relationship. In spite of this, preceptors can teach students to enhance their EHR-specific communication skills by adjusting the room’s geography and by using the doctor-patient-computer triangle (Figure 1). Students should introduce themselves to the patient BEFORE turning to the computer, adjust the screen so that the patient can see it easily, and adjust their chair to maintain good eye contact with the patient. Students should ensure they alert the patient before typing for extended periods (more than 30 seconds). A typical “signposting” cue would be “Excuse me while I spend a minute or so typing in your lab orders for today.”

Students should be encouraged to print labs and flowsheets from the patient’s data.

**Increasing “Just in Time” Learning**

In the context of patient care, “just in time” learning is defined as learning that occurs about the patient’s current problems in real time within the context of the visit. To be practical and useful, students must be able to access and assimilate information quickly (less than 5 minutes). To encourage “just in time” learning, teach students to use high-quality sources of pre-sorted evidence, such as ePocrates, the 5-Minute Clinical Consult, DynaMed, and AHRQ’s Electronic Preventive Services Selector. Students should be discouraged from consulting source literature (eg, Medline or the Cochrane Collaboration) during the brief ambulatory encounter, although they might do so later in their own time. To enhance patient education, students can download and print materials from high-quality sites such as the American Family Physician. A range of such sites may be accessed on portable electronic devices or bookmarked on the office computers for easy reference (Table 1).
Acknowledgments: Funding was received from the University of Texas Academy of Health Science Education grant 2007. This study was presented at the 2008 Society of Teachers of Family Medicine in Baltimore and the 2008 North American Primary Care Research Group Annual Meeting in Puerto Rico.

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Table 1
Web References to Enhance “Just-in-Time” Learning

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