The Teaching Physician

for those who teach students and residents in family medicine

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POEMs for the Teaching Physician

Useful Signs and Symptoms for Diagnosis of Influenza

Clinical question: How accurate is the history and physical examination in the diagnosis of influenza?

Setting: Various (meta-analysis)

Study design: Systematic review

Synopsis: Evidence on the accuracy of the history and physical examination (HPE) in the diagnosis of influenza has not been systematically reviewed. The authors searched MEDLINE, bibliographies of identified studies, the Database of Abstracts of Reviews of Effectiveness, and contacted experts for articles reporting information on the accuracy of the HPE in the diagnosis of influenza A and B. Two investigators separately reviewed all abstracts of identified studies, and a consensus approach was used to determine which articles were included in the review. Included articles were cohort studies (following patients identified at the initial time of illness) that used a reference laboratory test as the gold standard for the diagnosis of influenza. Although not specifically stated, it is likely that physicians performing the HPE were unaware of the results of the reference standard. From an initial group of 97 studies, only seven met the inclusion criteria. Results were pooled for the diagnosis of either influenza A or B. Three signs or symptoms were most useful to help rule in influenza: rigors (positive likelihood ratio [LR+]= 7.2), fever and onset of symptoms less than 3 days before office visit (LR+=4.0), and sweating (LR+=3.0). Symptoms that were helpful in ruling out influenza were no systemic symptoms (negative likelihood ratio [LR-]=0.36), absence of coughing (LR-= 0.38), being able to cope with daily activities (LR-=0.39), and not needing to be confined to bed (LR-=0.50).

Bottom line: Three signs or symptoms are most useful to rule in influenza: rigors, fever and onset of symptoms less than 3 days prior to office visit, and sweating. Four symptoms are helpful at ruling out influenza: absence of systemic symptoms, absence of coughing, no difficulty coping with daily activities, and not needing to be confined to bed. (LOE=2b)*

Source article: Ebell MH, White LL, Casault T. A systematic review of the history and physical examination to diagnose influenza. J Am Board Fam Pract 2004;17:1-5.

Note from the editors: Remember that likelihood ratios can be used with "odds." For example, begin by estimating the odds that a patient presenting with respiratory symptoms has influenza (this will change by the time of year). During flu season, these odds are quite high, perhaps 1:2 ("1 to 2"). To use likelihood ratios, multiply the odds by the likelihood ratio. For example, if the patient has rigors, the odds would then change from 1 to 3 (25%) to (1 x 7.2) to 3 (7.2:3 or 7.2/10.2=70%). If your patient off the street has baseline odds of influenza of 1 to 3 and has no systemic symptoms, the odds would be 1 x .36 to 3 (.36:3 or 0.36/ 3.36 or 10.8%).

Sterile Gloves Not Necessary for Laceration Repair

Clinical question: Do sterile gloves offer greater protection from wound infection than clean nonsterile gloves?

Setting: Emergency department

Study design: Randomized controlled trial (single-blinded)

Synopsis: The investigators enrolled 816 patients (81% of eligible patients) presenting to the emergency department of three hospitals with clean, non-bite lacerations deemed not to require antibiotic therapy. Patients were randomized to be treated by physicians who wore either sterilized latex-free gloves or standard, boxed, nonsterilized latex-free gloves to perform the repair. Allocation to group assignment did not seem to be concealed from the enrolling physician (ie, the person enrolling the patient could have known to which group the patient would be assigned, which may have affected enrollment). Patients were not aware of whether sterile or nonsterile gloves were used. The treating physicians, however, were aware of the type of gloves they were wearing, and it is possible that they were more scrupulous with cleaning if they had the nonsterile gloves. Follow-up was performed by a physician unaware of treatment assignment, with only 2% lost. Infection occurred in 6.1% of patients treated with sterile gloves and 4.4% of patients treated with nonsterile gloves, a nonsignificant difference. The study had the ability to find a 50% difference in infection rate, if one existed.

Bottom line: Infection rates in patients undergoing uncomplicated laceration repair are not different when sterile gloves, rather than simply clean gloves, are worn. (LOE =1b-)*

Source article: Perelman VS, Grancis GJ, Rutledge T, et al. Sterile versus nonsterile gloves for repair of uncomplicated lacerations in the emergency department: a randomized controlled trial. Ann Emerg Med 2004; 43:362-70.

* LOE—level of evidence. This is on a scale from 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

Information Technology and Teaching in the Office

A Medical Student's Perspective on Personal Digital Assistant (PDA) Software

By Adam Leight, MS4, and Richard Usatine, MD, University of Texas Health Science Center at San Antonio

We recently introduced handheld devices to the incoming class of third-year medical students at the University of Texas Health Science Center at San Antonio. With so many medical software programs available for the Palm and the Pocket PC, students and clinicians may feel overwhelmed with choices. Instead of investing a lot of money in commercial software, we encouraged students to start with inexpensive or free programs that have been found to be useful and authoritative for senior medical students and faculty members. Here are some of the programs that we recommended.

iSilo is a document reader that supports hypertext and embedded graphics. It can be purchased for $20 and comes with a free companion program for document conversion called iSilo-X. In a single step, any HTML document can be converted and displayed on iSilo, and the hot links will all remain functional. By simply "clicking" on the table of contents you can jump to the corresponding section of the text, allowing easy navigation within even the largest documents.

There are literally thousands of iSilo medical documents available on the Web. Most of them are free. Many have embedded full-color graphics and photographs—spanning topics from rash diagnosis to congenital heart disease. A quick Google search will turn up many sites, but two of the best collections can be found at www.apprisor.com/dlselect.cfm and www.meistermed.com.

After free registration at Apprisor, you can download a wide variety of abstracts and documents, including prevention guidelines from the American Heart Association, the American College of Physicians, the Colorado Clinical Guidelines Collaborative, JNC-7, NCEP ATP III guidelines, and many more. Apprisor comes with a free proprietary viewer, but you won't need it if you own iSilo, since these documents are all 100% iSilo compatible.

At meistermed.com, the site's author makes great use of hypertext links in iSilo with free programs like lyte-meister and asthma meister. Lyte-meister provides a guided algorithm that steps through common electrolyte disturbances, while asthma meister provides a guided decision tree to help manage asthma exacerbations. Other "meisters" include lipid meister, STD meister, Pap meister, and a meister for endocarditis prophylaxis.

Using iSilo-X you can easily make your own iSilo documents. Just use Microsoft Word to save your document in HTML format and then "drag and drop" the file onto iSilo-X. With one click of the mouse your document is instantly converted to iSilo format and placed in your Palm install directory. Just perform a hot sync and you're ready to go. Meistermed.com has a brief tutorial for inserting hot links into your own documents with professional results. For example, we converted our department's family medicine third-year clerkship manual into an iSilo document, complete with hot links. Now students can view the manual on their Palm Pilots.

Web-clipper places a clickable button on your Internet Explorer toolbar that converts any Web site into an iSilo document with graphics and hot links, if you choose to have them preserved. In fact, you can specify the "depth" of conversion, and iSilo-X will follow all of the hot links on that Web page and convert every linked Web page as well. Set as many layers of depth as you like, and iSilo-X will trace each page, and the pages linked to that page, and so on, and return a single document for your Palm Pilot with its entire hot link structure intact.

Another free program that I use every day is Merck Medicus, powered by Unbound Medicine. Actually, this is a suite of programs: The first is the Merck Manual, 17th edition—perhaps the single best medical reference available. This electronic version of this venerable medical text serves me well in both the clinic and on the wards. With its concise synopsis of etiology, pathology, diagnosis, laboratory findings, and treatment, the Merck makes it easy for me to read up on my patients' problems no matter where I am. It also comes with a handbook of diagnostic tests that no student or resident can afford to be without. Separately, these two references would cost you $40–$50 each, so get the Merck Medicus quickly, while it's still free.

The third feature that's included with Merck Medicus is an asynchronous information portal. A check box labeled "more info" follows many entries in the Merck Manual and in the handbook of diagnostic tests. Click the box, and the next time you perform a hot sync, related articles, pictures, and graphics are retrieved from the Internet for viewing on your PC. Another feature of the information portal allows you to subscribe to Reuters medical news service, with refreshed content every time you hot sync. Yet another service offers daily "mini-abstracts" from hundreds of available Medline journals. After you read the mini-abstract you can click "more info," and the next time that you hot sync you will be taken to your Personal Library page at Merck Medicus where you can download and even store articles and information that you've selected.

Diagnosaurus, another free offering from Unbound Medicine, has quickly become a favorite of many students. This little gem indexes more than 1,000 differential diagnoses, and with its help, students not only learn to look good on rounds, they also learn to make important connections in the clinical setting. One of the stumbling blocks for medical students in the early clinical years is premature closure. Excited by making a connection to information learned in the preclinical years, students often misapprehend a clinical situation when they recognize just one or two key elements. Hearing hoof beats, they immediately recognize a zebra. Precisely because their clinical experience is so limited, junior medical students can recognize only a small number of clinical patterns. This handy index, cross-referenced by organ system, by symptom, and by disease, can help students defer premature closure by suggesting likely alternative diagnoses.

The Antibiotic Guide, by Johns Hopkins University, is quite similar to ePocrates ID. Perhaps the most important difference is that Abx. Guide is available free of charge, while ePocrates ID comes only with the ePocrates "pro" version, which is currently priced at $60/year. Abx. Guide is continuously updated and allows the user to access antimicrobial treatment guidelines indexed by bug, by drug, or by organ system. Typical entrees include information on drug class, indication, and spectrum of activity, as well as dosing, price, pregnancy risk,

drug interactions, and adverse reactions. In conjunction with the free version of ePocrates, students are well-prepared to meet the prescription challenges presented by typical patients.

For your pediatric patients, $17.95 puts the Kidometer, from Riley Children's Hospital, in the palm of your hand. Enter a child's age in months for newborns to toddlers, or in years up to 17 years old, and Kidometer will show you how they measure up. With basic vitals, cardiology and EKG standards, developmental milestones, growth, nutrition, hematology, endocrine labs, Tanner staging, prevention guidelines, immunization schedules, and resuscitation drugs, your students can dedicate fewer brain cells to memorizing lists of data, leaving more processing power available to take care of patients. For pediatric drug calculations, which are a common source of medical errors, Peds Omnibus will lend a hand. This free utility also calculates formula/nutrition requirements and IV fluids.

MentSTAT is a real mind saver. After a good night's sleep, most students and clinicians can pass the Folstein MMSE, but few can administer it to patients correctly from memory. This one-screen program can guide even the post-call and bleary-eyed through flawless administration of the exam.

Finally, FileZ is a program that no Palm user should be without. This file manager allows you to display and transfer all files on your Palm OS device. You can edit file attributes like "back-up" or "hidden," move files between RAM and memory cards, and beam files to another user via the built-in infrared data port.

PDAs play many important roles in medicine today. In the clinic and on the wards, they provide instant access to the most current and sophisticated medical references. PDAs foster enthusiasm for learning and create a wealth of teachable moments. Whether you're a seasoned professional or just beginning to use PDAs in medicine, a few well-written, inexpensive programs can help you teach students and residents how to practice smarter medicine and how to deliver a higher quality of patient care.

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

iSilo & iSilo-X	www.iSilo.com	Palm OS & Pocket PC	$19.95
Merck Medicus	www.merckmedicus.com/pp/us/hcp/hcp_home.jsp	Palm OS & Pocket PC	Free
Diagnosaurus	www.Diagnosaurus.com	Palm OS & Pocket PC	Free
Johns Hopkins Abx. Guide	http://hopkins-abxguide.org	Palm OS & Pocket PC	Free
Kidometer	www.kidometer.com	Palm OS	$17.95
Peds Omnibus	www.FPpda.com	Palm OS	Free
MentSTAT	www.freewarepalm.com/educational/mentstat.shtml	Palm OS	Free
FileZ	www.freewarepalm.com/utilities/filez.shtml	Palm OS	Free

Clinical Guidelines That Can Improve Your Care

When Good Guidelines Say "Don't Test"

By Caryl Heaton, DO; UMDNJ-Robert Wood Johnson Medical School

Most of us readily add new screening tests to our preventive counseling when we hear from a good source, say, the United States Preventive Services Task Force (USPSTF), that a test is worthwhile. The patients have usually been asking for it long before we get the "OK." It's quite another thing when the USPSTF tells us not to do a test that we have been doing all along. In 2002 the Task Force told us that there was insufficient evidence to recommend for or against the PSA test for prostate cancer screening (an "I" recommendation), but this was actually an "upgrade" since the recommendation had been against doing PSAs at all (a "D" recommendation). (See Table 1 for recommendation levels.)

Whether you do a test with an "I" recommendation is more of a personal choice, since the evidence is inconclusive. It should depend on how confident you are that you appropriately inform patients of the controversies in screening and the possibility and additional risks of false positive tests. It may also depend on how judicious you are with follow-up testing and referral. Some "I" recommendations, especially those that are counseling (not screening) recommendations (counseling on weight loss, for example), have very little risk to the patient and strong "face validity." An "I" recommendation doesn't mean we don't do it. It just means we don't have great evidence to back it up.

The Task Force is the gold standard for guidelines in this country. They use strict evidence-based criteria, and when you see recommendations that differ from theirs, they are usually coming from a consensus-based guideline and/or group that may have a vested interest one way or the other. However, it's safe to say that the Task Force is a conservative group, maybe the most conservative in the country.

The Task Force used to publish all the guidelines at one time, but now they distribute them on the Web as they are finished. There have been 32 newly published recommendations from the USPSTF since last August, and most of them were "I" recommendations; the next largest group were "D" recommendations. Some of these were reissued from the Task Force because of changes in the way they do business. The basics of these recommendations are listed in Table 1. Refer to the Web site, www.ahrq.gov/clinic/uspstfix.htm for much more information.

Trying to unlearn certain habits, like doing a scoliosis exam on adolescents, will be tough. We have to remember that the basis for not doing a test is usually that there is undue harm from a false positive result. In the example of scoliosis, the Task Force states that significant scoliosis will be picked up without routine screening and that routine screening finds too many minor effects. These minor changes unnecessarily lead to back braces or therapy, and there is no evidence that screening leads to an overall "good."

Some of us know that it will be easier to do the test than to deal with a school physical form that has a spot for "scoliosis" and have to write "not recommended." But, if teachers of family medicine don't follow the evidence-based guidelines for prevention, who will?

Caryl Heaton, DO, UMDNJ-New Jersey Medical School, Editor

(See next page for Table 1)

Task Force Ratings—Strength of Recommendations

A—The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.
B—The USPSTF recommends that clinicians provide [this service] to eligible patients. The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.
C—The USPSTF makes no recommendation for or against routine provision of [the service]. The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.
D—The USPSTF recommends against routinely providing [the service] to asymptomatic patients. The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.
I—The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. Evidence that [the service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Table 1
USPSTF Recommendations August 2003–June 2004

The US Preventive Services Task Force (USPSTF):	*Strength of Recommendation*
Recommends against routine screening for **bladder cancer** in adults.	D
Concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for **lung cancer** with either low-dose computerized tomography (LDCT), chest X ray (CXR), sputum cytology, or a combination of these tests.	I
Concludes that the evidence is insufficient to recommend for or against routinely screening adults for **oral cancer.**	I
Recommends against routine screening for **ovarian cancer.**	D
Recommends against routine screening for **pancreatic cancer** in asymptomatic adults using abdominal palpation, ultrasonography, or serologic markers.	D
Recommends against routine screening for **testicular cancer** in asymptomatic adolescent and adult males.	D
Recommends against routine screening with resting electrocardiography (ECG), exercise treadmill test (ETT), or electron-beam computerized tomography (EBCT) scanning for coronary calcium for either the presence of severe **coronary artery stenosis** (CAS) or the prediction of **coronary heart disease** (CHD) events in adults at low risk for CHD events.	D
Found insufficient evidence to recommend for or against routine screening with ECG, ETT, or EBCT scanning for coronary calcium for either the presence of **severe CAS** or the prediction of **CHD** events in adults at increased risk for CHD events.	I
Strongly recommends that all pregnant women be screened for **asymptomatic bacteriuria** using urine culture at 12–16 weeks' gestation.	A
Recommends against the routine screening of men and nonpregnant women for **asymptomatic bacteriuria.**	D
Strongly recommends screening for **hepatitis B** virus (HBV) infection in pregnant women at their first prenatal visit.	A
Recommends against routinely screening the general asymptomatic population for chronic **hepatitis B virus** infection	D
Recommends against routine screening for **hepatitis C virus** (HCV) infection in asymptomatic adults who are not at increased risk (general population) for infection	D
Found insufficient evidence to recommend for or against routine screening for **HCV** infection in adults at high risk for infection.	I
Found insufficient evidence to recommend for or against routine screening of parents or guardians for the **physical abuse or neglect** of children, of women for intimate partner violence, or of older adults or their caregivers for elder abuse.	I
Recommends screening and behavioral counseling interventions to reduce **alcohol misuse by adults,** including pregnant women, in primary care settings	B
Concludes that the evidence is insufficient to recommend for or against screening and behavioral counseling interventions to prevent or reduce **alcohol misuse by adolescents** in primary care settings.	I
Concludes that the evidence is insufficient to recommend for or against routine screening by primary care clinicians to detect **suicide** risk in the general population.	I
Recommends that primary care clinicians prescribe oral fluoride supplementation at currently recommended doses to preschool children older than 6 months of age whose primary water source is deficient in **fluoride.**	B
Concludes that the evidence is insufficient to recommend for or against routine risk assessment of preschool children by primary care clinicians for the prevention of **dental disease.**	I
Concludes the evidence is insufficient to recommend for or against routine screening for **thyroid disease** in adults.	I
Concludes that the evidence is insufficient to recommend for or against the routine use of interventions to prevent **low back pain** in adults in primary care settings	I
Strongly recommends **Rh (D) blood typing and antibody testing** for all pregnant women during their first visit for pregnancy-related care.	A
Recommends repeated **Rh (D) antibody testing** for all unsensitized Rh (D)-negative women at 24–28 weeks' gestation, unless the biological father is known to be Rh (D)-negative.	B
Recommends against the routine screening of asymptomatic adolescents for **idiopathic scoliosis.**	D
Recommends screening to detect **amblyopia, strabismus,** and **defects in visual acuity** in children younger than age 5 years.	B
Strongly recommends screening for **cervical cancer** in women who have been sexually active and have a cervix.	A
Recommends against routinely screening women older than age 65 for **cervical cancer** if they have had adequate recent screening with normal Pap smears and are not otherwise at high risk for cervical cancer.	D
Recommends against routine Pap smear screening in women who have had a **total hysterectomy** for benign disease.	D
Concludes that the evidence is insufficient to recommend for or against the routine use of new technologies to screen for **cervical cancer.**	I
Concludes that the evidence is insufficient to recommend for or against the routine use of *human papillomavirus* (HPV) testing as a primary screening test for **cervical cancer.**	I
Recommends that clinicians screen all adult patients for **obesity** and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.	B
Concludes that the evidence is insufficient to recommend for or against the use of moderate- or low-intensity counseling together with behavioral interventions to promote sustained weight loss in **obese** adults.	I
Concludes that the evidence is insufficient to recommend for or against the use of counseling of any intensity and behavioral interventions to promote sustained weight loss in **overweight** adults.	I

Teaching Points—A 2-minute Mini-lecture

TIA

By Donna Kern, MD, Medical University of South Carolina

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 Donna Kern (Dr K) works with a third-year student (MS3) who has seen a patient with suspected TIA (transient ischemic attacks).

MS3: Ms P is a 75-year-old woman who is here because she felt funny in church yesterday. Her left arm felt heavy and clumsy. And her speech became garbled. The episode lasted about 1 hour. By the time she got to the emergency room, she was starting to feel better. And she is following up here today.

Dr K: Let me stop you right there. It's your first rotation of the third year, and I'd like to point out how well you present already. I like that you gave the patient's age and sex along with the chief concern in the first sentence. And duration followed soon after, along with a description of the episode. That's great. Keep putting the key information up front like that—age, sex, presenting problem or concern, and duration. It really helps me pay attention to the presentation. Go on.

MS3: The most important past history is that she had a mild stroke about 5 years ago that caused weakness on the right, but she got better and felt like she regained all her strength. She has a history of hypertension, well controlled on a "water pill." She doesn't smoke and drinks a glass of wine around holidays. When she was seen in the ER, her physical examination was normal. They got a head CT scan that was normal. All her blood tests were normal. And she was told to follow-up here.

Dr K: Why do you suppose they got a head CT?
MS3: I think they were looking for a stroke.

Dr K: By stroke, you mean. . .

MS3: An infarct.

Dr K: OK. Anything else?

MS3: Brain tumor?

Dr K: I think that's reasonable. You can have a hemorrhagic stroke, too. Or other diagnoses related to hemorrhage, such as a subdural hematoma. So, on physical exam, you probably found nothing, right? Given a normal head CT and normal labs, what's the most likely diagnosis?

MS3: TIA.

Dr K: Absolutely. So what would you do now?

MS3: That's what I'm not sure of. She was taking an aspirin a day. I know there are other medications that can help prevent a stroke, but I'm not sure whether or not they help.

Dr K: Why don't you review TIAs tonight, and we can talk about it tomorrow.

The next day:
Dr K: So what did you find about TIA prevention?

MS3: I e-mailed a PharmD who gave us a lecture on TIAs and strokes, and she referred me to a POEM that analyzed an article comparing aspirin to aspirin plus Persantine (Wahlgren NG. Critical analysis of the combination of dipyridamole plus acetylsalicyclic acid versus acetylsalicylic acid alone in the secondary prevention of stroke. Int J Clin Pract 1998;supplement 97:3-6). The study was a meta-analysis that put together all the randomized trials. One study made the biggest difference: the second European Stroke Prevention Study (ESPS-2) that contributed to a relative risk of vascular events of 0.83 (95% CI, 0.72–0.95) for aspirin plus dipyridamole versus aspirin alone. Based on the ESPS-2 data, the addition of dipyridamole to aspirin prevented 26 strokes or deaths per 1,000 treated patients compared with aspirin alone.

Dr K: Well, that's news to me. Thanks. I haven't been using Persantine in that setting. So what did you learn about finding information?

MS3: That it's fastest to ask someone who keeps up with the literature in that area?

Dr K: (laughs) Good point! That's very true. And to use an evidence-based resource that you trust and that has already analyzed the primary literature. Those are both great techniques for keeping up to date. So should I change my practice?

MS3: Well . . . it was mainly this one study.

Dr K: Good point, again. OK, you made all the points I would make. Nice job, teacher! And even when you look to evidence-based resources, the analysis can vary. The Cochrane Database of Systematic Reviews has a review (De Schryver ELLM, Algra A, van Gijn J. Dipyridamole for preventing stroke and other vascular events in patients with vascular disease (Cochrane Review). In: The Cochrane Library, Issue 2, 2004. Chichester, UK: John Wiley & Sons, Ltd.) that argues that dipyridamole is not helpful.

Alec Chessman, MD, Medical University of South Carolina, Editor

Excerpted from "For the Office-based Teacher of Family Medicine"

Using the Socratic Method in Office-based Teaching

By Douglas P. Lewis, MD, Department of Family and Community Medicine, University of Kansas-Wichita

(Fam Med 2004;36(3):162-3.)

I have explored various teaching methods and styles and have found the Socratic method a useful tool for educating students and residents on the principles and practices of family medicine. While the Socratic method is often viewed as a teaching strategy for group settings, it also is an effective method for promoting learning during the one-on-one dialogue between teacher and learner. Therefore, it is an excellent tool for office-based teaching that preceptors can easily learn with some background education.

Socrates was a Greek philosopher who lived from 470 to 399 BC. He was married and had three children. After serving in the military, he spent most of his time talking to whomever would listen. Due to his wisdom, he became well known for his method of inquiry and gathered a devoted following. However, not everyone approved of his activity. Some Athenians felt he was leading their young people astray and brought him to trial before 501 citizens, where they found him guilty of impiety by a narrow margin. The prosecutor recommended a sentence of death, and the people of Athens agreed, believing that the guilty must be punished. Socrates did not flee as his supporters encouraged him to do. Instead, he voluntarily ingested hemlock and died.[1] Thus a legend was born.

We understand his teaching style from the writings of Plato, his most famous student, since Socrates himself wrote no opinion or treatise. Many discussions centered around sharing opinions on moral issues such as piety or justice. After feigning ignorance of the subject at hand, Socrates demonstrated his skill as a teacher by asking a series of logically leading questions that revealed the scope of the learner's understanding and both identified and redirected faulty logic. Through this process, the learner realized the weakness of his beliefs, became aware of new information, and fine-tuned critical thinking skills. Revelation and self-discovery were inherent to the process.[2-4]

For the Socratic method to work effectively in the clinical setting, the teacher must have a firm understanding of the topic at hand. When a learner presents an error in knowledge or judgment, the teacher must quickly recognize where the deficit lies and decide on the specific teaching point. The goal then becomes guiding learners to a self-awareness of their deficit via a series of logically connected questions. When done properly, the learners will recognize their error and take incremental steps in the right direction until eventually arriving at the correct answer on their own.

How does this work in actual practice? Imagine a scenario where a medical student presents a patient who is obese and has been having polyuria, polydipsia, and polyphagia for 8 weeks with 15 pounds of unexplained weight loss. There is a family history of diabetes, and the student suspects that his/her patient has developed the same. The student's suggestion to confirm the diagnosis is ordering a hemoglobin A1C. The clinical teacher recognizes the learner's knowledge deficit: HgbA1C is not the ideal way to confirm suspected diabetes since it is not a direct measure of blood sugar and is not immediately available to the clinician. The task becomes formulating a series of logically leading questions to bring the learner to the self-discovery that a random blood sugar is actually what needs to be obtained. The dialogue may go like this:

Instructor: "What is diabetes?"

Student: "Elevated blood sugar."

Instructor: "What does a HgbA1C tell you?"

Student: "If it's elevated, it tells me my patient has diabetes."

Instructor: "You are correct that it can assist you in making the diagnosis, but is there a better, faster way to do it?"

Student: "Not that I can recall."

Instructor: "What does a HgbA1C measure?"

Student: "Glycosylated hemoglobin."

Instructor: "Right. Is that a direct measure of blood sugar?"

Student: "Well no. It indirectly gives an estimate of blood sugar levels over time."

Instructor: "Yes. That's great. So how could we obtain a direct measure that could allow us to make an immediate diagnosis rather than waiting a few days for the HgbA1C to come back from the lab?"

Student: "We could directly measure blood sugar."

Instructor: "Excellent. We can make the diagnosis now and explain to the patient why he has had those symptoms. Treatment can then be started immediately instead of days later."

This is a simple but not unlikely example. A knowledge deficit was readily apparent from the presentation. Through the instructor's series of questions, the student reviewed known information and the student's understanding increased until he/she realized that a random blood sugar was the best test for the patient. Positive feedback was given directly through words, but also indirectly by the instructor, allowing the student to find the answer by him/herself. The instructor demonstrated the logical sequence of questions to ask in approaching the problem so that in a future situation, the student can ask him/herself similar questions and lead him/herself to the right answer.

In summary, the Socratic method is a powerful tool for promoting and teaching critical thinking skills. The one-on-one dialogue between teacher and student is ideal for its use. It definitely takes practice to become familiar with the method because the focus is on assisting the learner in the development of critical thinking skills through the process of self-discovery. Once competent, an instructor can efficiently and effectively utilize the Socratic method in an office-based setting.

A word of caution is necessary. Socrates often incorporated irony into his dialogues. When added to a natural tendency toward sarcasm, he often angered people with his questioning.[1,3,5] Similar tactics that antagonize or humiliate the learner have no place in effective medical education. Instead, the teacher must encourage the learner and create a comfortable learning environment.

Equally important is the consideration that not everyone learns in the same fashion and that no method will work for everyone or under every circumstance. However, in my experience, positive response is the rule. I hope you find it equally effective.

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References

1. Wikepedia Encyclopedia. Trial of Socrates. www.wikipedia.org/wiki/Trial_of_Socrates. Accessed June 24, 2003.
2. Wikepedia Encyclopedia. Socrates. www.wikipedia.org/wiki/Socrates. Accessed June 24, 2003.
3. Garlikov R.Using the Socratic method. www.garlikov.com/teaching/smmore.htm. Accessed June 24, 2003.
4. Wikepedia Encyclopedia. Socratic method. www.wikipedia.org/wiki/Socratic_method. Accessed June 24, 2003.
5. Kerns T. Socratic method. In: Introduction to philosophy (Web-based learning module). http://home.myuw.net/tkerns/waol-phi-website/lecsite/lec-socmethod.html. Accessed June 24, 2003.

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