I see diabetic patients in every office session and wonder when the next one will walk through the door. The American Diabetes Association (ADA) has recently updated their guidelines regarding the diagnosis and care of diabetic patients, with more evidence-based recommendations and a streamlining of the guideline.

Again, the ADA reaffirmed that the measurement of hemoglobin A1C is not recommended for diagnosis of diabetes; measurement of fasting plasma glucose (FPG) in children and nonpregnant adults remains the preferred method of diagnosis, with a cutoff of ≥126 mg/dL as diagnostic of diabetes. A new recommendation regarding testing in asymptomatic patients was added (formerly screening for diabetes). Testing should be done if the body mass index (BMI) is ≥ 25 kg/m² with one or more risk factors for diabetes (see Table 1). If the FPG is normal, repeat testing should be performed at least every 3 years. Testing in patients without risk factors should begin at age 45.

Impaired fasting glucose (IFG) is defined as an FPG of 100–125 mg/dL and impaired glucose tolerance (IGT) as a 2-hour plasma glucose of 140–199 mg/dL. Both of these conditions fall into the pre-diabetes range and should be treated aggressively to avoid progression to diabetes. Current treatment recommendations include lifestyle modification and the newly...
standards of medical care in diabetes—2008

added recommendation of metformin therapy if the patient has both IFG and IGT, other risk factors as in Table 1, and is obese and under the age of 60.

Childhood obesity is on the rise, and we also need to be evaluating children for diabetes. The guidelines recommend testing with FPG in all children who are overweight (BMI > 85th percentile for age and gender, weight for height > 85th percentile, or weight > 120% ideal for height) beginning at age 10, or onset of puberty if it occurs before age 10, and who have two or more additional risk factors (see Table 2). Testing should occur every 2 years if initially negative.

Regarding treatment, the recommendation for A1C goal remains < 7%, but there may be slight incremental benefit to push the A1C level to the normal range (< 6%) if hypoglycemia is not present. They also added a new statement based solely upon expert opinion that it is appropriate to not have such stringent A1C goals for some patients based upon their history and comorbidities (history of severe hypoglycemia, limited life expectancy, children, longstanding diabetes (≥ 3 decades) with minimal or stable microvascular complications, and comorbid conditions—not further defined). There is also a new recommendation for weight loss to include use of low carbohydrate or low fat calorie restricted diets. The guideline also recommends specific monitoring of lipids, renal function, and protein intake (for patients with nephropathy) in patients on a low carbohydrate diet.

Finally, for prevention of diabetic complications, the recommendations have been streamlined to include emphasis on the use of ACE inhibitors or angiotensin receptor blockers for treatment of hypertension if at all possible, the use of statins for most patients (goal LDL < 100 mg/dL, or 40% of baseline if on maximum tolerated statin dose and not at goal), triglycerides < 150 mg/dL and HDL > 40 mg/dL for men and > 50 mg/dL for women (but LDL goals should be the focus). Diagnosis of hypertension should be made with two separate measurements of blood pressure > 130 mm Hg systolic or > 80 mmHg diastolic. The treatment goal for blood pressure remains < 130/80 mmHg. Also, they continue to recommend annual testing for microalbuminuria, even in patients on an ACE or ARB to monitor the success of therapy.

The guidelines include many other recommendations regarding GDM, treatment of children with diabetes, care of patients with Type 1 diabetes, and care of special populations, such as hospitalized patients. Please check out the full references for further details.

Table 1

<table>
<thead>
<tr>
<th>Risk Factors for Diabetes, Adults</th>
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</thead>
<tbody>
<tr>
<td>• Physical inactivity</td>
</tr>
<tr>
<td>• First-degree relative with diabetes</td>
</tr>
<tr>
<td>• Members of a high-risk ethnic population (e.g., African American, Latino, Native American, Asian American, Pacific Islander)</td>
</tr>
<tr>
<td>• Women who delivered a baby &gt;9 pounds or who were diagnosed with gestational diabetes</td>
</tr>
<tr>
<td>• Hypertension (&gt;140/90 or being treated for hypertension)</td>
</tr>
<tr>
<td>• HDL cholesterol &lt;35 or triglycerides &gt;250</td>
</tr>
<tr>
<td>• Women with polycystic ovarian syndrome</td>
</tr>
<tr>
<td>• Impaired glucose tolerance or impaired fasting glucose on prior testing</td>
</tr>
<tr>
<td>• Presence of clinical conditions associated with insulin resistance (e.g., acanthosis nigricans, severe obesity)</td>
</tr>
<tr>
<td>• History of cardiovascular disease</td>
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</table>

Table 2

<table>
<thead>
<tr>
<th>Risk Factors for Diabetes, Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Family history of diabetes in first- or second-degree relative</td>
</tr>
<tr>
<td>• Race/ethnicity (African American, Native American, Latino, Asian American, Pacific Islander)</td>
</tr>
<tr>
<td>• Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovarian syndrome)</td>
</tr>
<tr>
<td>• Maternal history of diabetes or gestational diabetes</td>
</tr>
</tbody>
</table>

References


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

Diana Heiman, MD, University of Connecticut, Co-Editor
Options and Considerations for Online Meetings

delivery and also provide a cadre of other options for communicating among the participants within those courses. Yet for many of the functions outlined above, these LMS are complex and costly to use.

There are a growing number of inexpensive, simple to use and navigate commercial and Shareware software tools. Used correctly these products can greatly enrich the connections we have between the community physician, students, and academic faculty. It is now feasible to incorporate the cost of use into departmental budgets with good justification. The costs range from free to about $1,000 per year and depend on the features, overall ease of use, brand name, and need for user IT support. They can enhance the overall human connections with our learners and preceptors while decreasing the costly and time-consuming travel to office sites for an often brief, one on one meeting with preceptors.

How do the Web conferencing programs work? Well, in general they rely on standard Internet protocols and either require a small client program to be temporarily or permanently installed on each of the computers that will be connected. These programs perform secure connections between computers, such that there is easy broadcasting of the presenter’s desktop, data, and audio/visual feeds to all other computers as desired.

Features vary based on product but in general allow between two and 15 simultaneous users to be connected to the “host” or originator of the Web event. The host needs to invite the others to participate and then sends a secure login via e-mail. This invitation can be either done in advance or on the spur of the moment if desired. Once the participants click on this link, the client program is launched, and they can sign into the Web conference. Then the desktop of the presenter is seen by the meeting attendees, along with whatever program is being run at the time (Word, PowerPoint, Web Browser, Movie, etc). The presenter can also be talking directly with the audience, either in a separate telephone teleconference or directly through the Web conferencing program with Voice over IP (VoIP) on the Internet. There may also be a video feed from the presenter and/or the other participants’ desktop, depending on product and hosts preferences. Some programs allow all participants to share a video or picture of themselves while the conference is progressing. Most allow the host to turn over control of their desktop to another user to “drive” and make changes to the software being displayed. Several allow users to take online surveys and live polls of the attendees while in the Web meeting.

This wide range of options opens the door for many potential uses for medical education.

• Continuing Medical Education: Web conferences can be a wonderfully interactive and effective method of CME delivery. Small learning groups can be formed either in advance or spontaneously by who signs up for the CME event. Polling can be used to see participants’ prior knowledge and future plans for changing practice behavior.

• Computer training for software or hardware: I am aware of preceptors being trained with Web conferences on how to use evidence-based medicine software in groups with this process. I have also participated in vendor-run Web conferences for training on new versions of an electronic health record.

• Distance support of hardware and or software: We will be using Web conferencing to do one-on-one support for our preceptors for their newly supplied handheld computers. When there has been an issue in the past, we have talked through the problem and at times have had to do site visits to explore these issues. With the ability to directly manipulate their computer remotely, we believe most problem solving can be done quicker and more efficiently.

• Building a Virtual Preceptor Network: Often in my years as predoctoral director, I heard the desire to find out from the other community preceptors how they deal with different student-related issues. In-person retreats are difficult to arrange, but a quarterly Web conference that takes place just before office hours might be an excellent alternative. In addition, the preceptors themselves could “link up” in virtual networks of their choosing, giving peer support to one another.

• Midpoint feedback: How about that difficulty giving feedback that the preceptor would like help giving to the student? A Web meeting could place all of them in the same virtual room, allowing the academic faculty to facilitate a discussion about student needs and future expectations.

• Observation and feedback of preceptor/student encounter: Taking this one step further, for the inexperienced preceptor a direct observation of teaching style can be helpful in anchoring good habits and techniques early on. This could be done by directly observing a preceptor student encounter from a distance and giving immediate feedback. This could also be used as a means for quality control for educational excellence.

• Simultaneous student projects: Let’s say for example you want students to work on a collaborative project while at distant sites. The secure connections that Web conferencing offers can facilitate this process.

See Table 1 for some example programs. Most can be tried for a limited time for free.

Personally, one of the most interesting opportunities I had to use Web conferencing was in working with two students who were on international electives in Honduras. I was able to keep tabs on how they were doing and remain available to them via the use of the free program Skype. I was also able to talk with their preceptors prior to their arrival to set expectations and do follow-up conversations after they had returned to the United States. In the future I anticipate doing additional training and collaborative work with these techniques when students travel far from home.
Table 1
Example Programs

<table>
<thead>
<tr>
<th>Sample Programs</th>
<th>Web URL</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebEx</td>
<td><a href="http://webex.com">http://webex.com</a></td>
<td>Most used software—can install for one-time events</td>
</tr>
<tr>
<td>GoToMeeting</td>
<td><a href="http://www.gotomeeting.com">www.gotomeeting.com</a></td>
<td>Well supported—also has software for GoToPC that allow remote access</td>
</tr>
<tr>
<td>E POP</td>
<td><a href="http://www.wiredred.com">www.wiredred.com</a></td>
<td>Newer program—easy to install in large institutions</td>
</tr>
<tr>
<td>Tandberg</td>
<td><a href="http://www.tandberg.com">www.tandberg.com</a></td>
<td>Offers high-end options as well as Video telephones; WebEx is conferencing software</td>
</tr>
<tr>
<td>Skype with addition of</td>
<td><a href="http://www.skype.com">www.skype.com</a></td>
<td>Free calling/video with Skype; TalkandWrite allows sharing documents/desktop.</td>
</tr>
<tr>
<td>Talk and Write</td>
<td><a href="http://www.talkandwrite.com">www.talkandwrite.com</a></td>
<td></td>
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</tbody>
</table>

Enjoy and experiment with these options, but remember that educational techniques should be used only if they fit the circumstances. There can be a temptation to use technology because you can. It is wise to consider the options available and plan out well how you will use the tools (purpose, process, and training of end users). Remember that it can take a moderate amount of time to learn how to use the software, although these are becoming much more intuitive to use. End users still might need a moderate amount of support in setting up and getting onto the Web conference. It is still often a wise idea to have a support person available to answer questions and help people who are facing challenges in getting connected until users get comfortable with these tools.

Reference material:
Teaching Points—A 2-minute Mini-lecture

Toxoplasmosis Counseling in a Pregnant Woman

By Robert Ellis, MD, University of Cincinnati, and Carrie Ellis, DVM, Animal Hospital on Mt. Lookout Square, Cincinnati

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 Ellis (Dr E) works with a third-year student (MS3) who has seen a woman who is pregnant and has concerns about her cats.

MS3: Ms R is a 23-year-old woman. She is gravida 1 at 16 weeks. She lives alone, and the baby’s father is not going to be involved. I went through all the items on the visit checklist, and I don’t have any questions. But she has questions about her two cats. Her friend says her cats are bad for her and her baby, and she needs to get rid of them. I’m not sure what to tell her.

Dr E: What about cats could be dangerous during pregnancy?

MS3: Well, toxoplasmosis can be bad, because it is the “T” in the congenital “TORCH” infections.

Dr E: And the others are?

MS3: For TORCH? The others are Other, Rubella, Cytomegalovirus, and Herpes Simplex Virus. Other is syphilis, I think.

Dr E: Good. You’ve got the basics down! What is toxoplasmosis, and what does it cause?

MS3: I am not sure what type of organism it is, but I know it can cause a severe infection and even death in newborns.

Dr E: That’s right. Toxoplasmosis is a parasite. I give a talk on prenatal care, so I know the numbers. Toxoplasmosis causes as many as 6,000 congenital infections each year in the United States, and more than 60 million people are seropositive. Sequelae can include chorioretinitis causing permanent vision loss, learning disabilities, and even death. What patients are at highest risk for developing complications?

MS3: Well, pregnant women and their fetuses.

Dr E: So pregnancy is a risky time? Any other situations that would be risky for an infection like this?

MS3: People with HIV would also be at higher risk.

Dr E: Right! Not only HIV patients, but any patient who is immunocompromised. So this includes cancer patients, patients with organ transplants, or any patient on chronic corticosteroids. Do you know how it is transmitted?

MS3: Cats are involved.

Dr E: The cat is known as the definitive host for Toxo. Remember what that means? (MS nods “no”). The parasite develops into its adult or sexual stage of life in the definitive host. Go on.

MS3: Cats pass Toxo. In their feces. And people can get infected by swallowing the feces.

Dr E: Correct. But here’s a critical point that will answer her question. What’s the time sequence from the cat passing feces to a human becoming infected?

MS3: Sorry. I don’t know.

Dr E: A key point to remember is that it takes 1–5 days after being passed in a cat’s stool before T. gondii can sporulate and become infective. That means that if she scoops out the litter box every day, her risk of becoming infected through her cat is extremely unlikely. Other ways she can reduce her risk is to keep her cats indoors, because cats usually get T. gondii from eating rodents and other small mammals. She should also make sure she feeds her cats a commercial bought diet rather than a raw food diet. Raw food diets for pets have become much more popular recently with the problems of pet food recalls, and these raw food sources are a potential source for infection of cats.

MS3: So if she follows these instructions, she will not get toxoplasmosis and she does not have to give up her cats. That’s great.

Dr E: It’s true that she should not give up her cats. This is supported by Centers for Disease Control recommendations. But we still have not discussed the two most common sources of acquiring T. gondii.

MS3: What? I thought it was from cats?

Dr E: That is only one source. The most common way to acquire T. gondii is eating raw or undercooked meat. Greater than 50% of infections are acquired in this manner, making T. gondii the third leading cause of foodborne deaths in this country. One study found that only 30% of the women were aware that T. gondii may be found in raw or undercooked meat. So we should counsel her about making sure she cooks all meats adequately. Another common source is through gardening. Stray and outdoor cats like to use the garden as a litter box. This can lead to a possible exposure if patients do not take precautions such as wearing gloves, washing hands after gardening, and washing fruits and vegetables.

MS3: Would it be helpful to test her for toxoplasmosis? If she’s already been infected, then it might make a difference?
Dr E: Great point. ACOG, the American College of Obstetrician and Gynecologists, doesn’t recommend universally screening all pregnant women. But we do know that if a woman is seropositive prior to becoming pregnant, there is little risk to her unborn child. A past maternal infection prior to becoming pregnant confers fetal protection. However, only about 14% of women of childbearing age are seropositive. We can consider screening women who we feel are at high risk.

There are also several studies that show doctors are not good at accurately counseling patients about T. gondii, if they counsel at all. One study showed that only 35% of patients received information about T. gondii from their obstetrician. Another study showed that greater than a quarter of obstetricians, internists, and family doctors inappropriately advised pregnant women to avoid all cats. Many family doctors and internists did not know that raw meat (35%) and gardening (54%) were sources of T. gondii infections. These studies clearly show a need not only for educating patients but also educating fellow doctors about the risk and prevention of T. gondii.

Reference material:

Alec Chessman, MD, Medical University of South Carolina, Editor
Evidence-based Answer
Azithromycin (500 mg on day 1, followed by 250 mg on days 2–4 in adults, or 60 mg/kg total dose in children) is as effective as a 10-day course of penicillin for treatment of streptococcal pharyngitis. However, the incidence of adverse events is significantly higher among patients treated with azithromycin than with penicillin. (SOR A, based on a systematic review.)

A systematic review included six pediatric trials in which children with streptococcal pharyngitis were randomized to take either azithromycin (10 or 20 mg/kg for 3 days) versus a standard 10-day course of penicillin. Penicillin-treated patients had a significantly higher bacterial cure rate than patients treated with the lower-dose (10 mg/kg) azithromycin in four of the six randomized clinical trials (RCTs). In the two RCTs that compared penicillin with higher-dose (20 mg/kg) azithromycin, bacterial cure rates were clinically superior with azithromycin in one study, and the two antibiotics were equivalent in the other.

Relapse and recurrence rates were also evaluated as secondary endpoints in several of the studies. In one of the studies, a multicenter RCT of 292 children (ages 2–12 years), bacterial recolonization rates after day 14 were significantly higher among children treated with the lower-dose azithromycin compared with penicillin. This same study evaluated patients at 6 months for possible group A Streptococcus sequelae. Seven patients developed pathology possibly related to group A Streptococcus (proteinuria, glomerulonephritis, or reactive arthritis), but all events resolved within 1 to 3 weeks.

Adverse events, mainly gastrointestinal, were higher in the two pediatric studies of 60 mg/kg total dose azithromycin compared with penicillin. In one study, adverse events occurred more frequently among patients treated with azithromycin (23% versus 3%, P<.0001, NNH=5). In the other pediatric study, the number of patients who withdrew secondary to adverse events was significantly higher in the azithromycin group (8% versus 1%, P<.025). Likewise, azithromycin was also associated with a higher incidence of side effects in adult patients (16.6% versus 1.7%, P<.001, NNH=6).

References

SOR—strength of recommendation
LOE—level of evidence

Jon O. Neher, MD, University of Washington, Editor
POEMs for the Teaching Physician

Lubricant Does Not Interfere With Pap Smears

Clinical Question: Does the use of water-soluble gel lubricant on the speculum interfere with the interpretation of Papanicolaou (Pap) smears?

Setting: Outpatient (primary care)

Study Design: Randomized controlled trial (nonblinded)

Funding: Government

Allocation: Uncertain

Synopsis: This randomized controlled trial compared the use of lubricant with the use of tap water on the plastic speculum during a Pap smear. Of the five family planning clinics that participated, two were randomized to use water-soluble gel for 6 months. Providers were asked to apply a dime-sized amount to the inferior blade of the speculum. The three control clinics were asked to use only tap water. Although providers and patients were not masked, the pathologists were, which was key to the validity of the study. There were 1,440 specimens obtained with lubricant and 1,466 without lubricant during the study period. Additionally, the authors compared results of Pap smears during the 6 months before and 6 months after the intervention with those of the intervention period. There were no differences in the rate of unsatisfactory Pap smears between intervention clinics and control clinics before and after the study period, all approximately 1.4%. Likewise, there were no differences in abnormal Pap smear rates for abnormal squamous cells of undetermined significance, low-grade and high-grade intraepithelial lesions, or atypical glandular cells. There were no cases of cervical cancer in any participating clinic during the study.

Bottom Line: The use of gel lubricant does not change the rate of unsatisfactory Papanicolaou (Pap) smears, nor is it associated with any change in the rates of abnormal smears. (LOE=1b)


Quality of Life Varies After Different Prostate Cancer Treatments

Clinical Question: What is the outcome of different approaches to the treatment of prostate cancer?

Setting: Outpatient (any)

Study Design: Cohort (prospective)

Funding: Government

Synopsis: Direct comparisons of different approaches to the treatment of prostate cancer are uncommon in the literature. This study identified patients undergoing brachytherapy (n=306), external beam radiation (n=292), and radical prostatectomy (n=603). Some patients underwent more than one treatment (ie, 35 patients received brachytherapy and radiation or androgen suppression), and most patients undergoing surgery had nerve-sparing procedures. A range of quality of life and satisfaction outcomes were measured at 2, 6, 12, 24, and 30 months by asking both patients and their spouses. A clinically meaningful change was defined as a change of at least one half standard deviation. Patients had a median age of 59 years, and 9% were black. Groups differed in a number of ways: white patients were more likely to choose surgery; black patients had more comorbidities, a larger mean prostate size, and a higher mean prostate-specific antigen (PSA). Patients choosing brachytherapy were more likely to have a low-risk cancer and a Gleason score of less than 7 points. The results are fairly complex, and the graphs of symptoms versus time since treatment may be helpful when counseling patients. A few patterns emerged, though. Nerve-sparing surgery was significantly better than non-nerve-sparing surgery with regard to sexual and urinary incontinence scores. Patients receiving radiation plus neoadjuvant hormone therapy had significantly worse sexual outcomes than those receiving radiotherapy only. Although sexual function and urinary incontinence scores declined precipitously after surgery, some recovery occurred over the next 2 years. Worse outcomes were associated with obesity, black race, a larger prostate volume, and a higher pretreatment PSA. Spousal and patient concerns over urinary and sexual adverse effects were correlated, as were outcome satisfaction among patients and symptoms related to sexual function, vitality, and urinary function. The study is limited by the relatively short (2-year) follow-up period.

Bottom Line: Quality of life is significantly affected by treatment for prostate cancer, and it varies with the type of treatment. Randomized trials that directly compare treatments are still needed. (LOE = 2b)


Imiquimod, 5-FU Effective for Actinic Keratoses

Clinical Question: What is the best treatment for actinic keratoses?

Setting: Outpatient (specialty)

Study Design: Randomized controlled trial (nonblinded)

Funding: Unknown/not stated
**Allocation:** Uncertain

**Synopsis:** This study enrolled 75 patients with actinic keratoses; their mean age was 73 years and 83% were men. The treatment area could include five to 10 lesions in a 5 cm x 10 cm area in any one part of the body. The patients were randomly assigned to treatment with 5% imiquimod (applied three times weekly for 8 hours for 4 weeks), cryosurgery (20 to 40 seconds, followed, if necessary, by a second session 2 weeks later), or 5-FU (twice daily for 4 weeks). Cure was evaluated 8 weeks after the last imiquimod application, 6 weeks after the last cryosurgery, and 4 weeks after the last 5-FU application. No patients appear to have been lost to follow-up. Clinical clearance rates were 68% for cryosurgery, 85% for imiquimod, and 96% for 5-FU. Although clinical examination favored the 5-FU group, histologic clearance was highest in the imiquimod group (73%, 67%, and 32% for imiquimod, 5-FU, and cryosurgery, respectively). Among all patients, 12-month sustained clearance was 73%, 33%, and 4%, respectively. At 12 months, excellent cosmetic outcome was seen in 4% of patients who received cryosurgery or 5-FU and 31% of the imiquimod group. Adverse effects were not clearly described but appear to have been minor. Both creams, however, are costly: 12 packets of imiquimod (Aldara) cost $250 compared with $225 for a 40 g tube of 5-FU cream (www.drugstore.com).

**Bottom Line:** Although more and larger studies are needed, these results suggest that imiquimod and 5-fluorouracil (5-FU) are somewhat more effective than cryotherapy for the treatment of actinic keratoses. (LOE = 1b-)


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