Empowering Patients During Insulin Initiation: A Real-World Approach

To the Editor:
The clinical practice article in the February issue, written by James R. LaSalle, DO,1 clearly shows that educating patients about their type 2 diabetes mellitus (T2DM)—including the disease process and effective treatment options—will likely give them the power, courage, and confidence to properly manage this condition. After all, the word doctor is derived from the Latin word docere, which means to teach.2

After serving on clinical rotations for about a year, I have learned much—though, of course, there is still so much more that I need to learn. Because medicine entails a lifelong devotion to learning, I will continue my education process indefinitely. One observation that I have made during my training is that T2DM, like hypertension, is one of those diseases that has the potential to be a silent killer. Many patients do not realize that they have diabetes mellitus until routine blood work is prescribed by their primary care physicians. Results of blood tests may reveal that a patient who has not experienced any adverse symptoms or adverse outcomes is walking around with a fasting blood glucose level of 140 mg/dL. When patients are told that they have diabetes mellitus, I hear time and time again the same response: “But I feel fine, doc!”

As a fourth-year osteopathic medical student, I have had many opportunities to observe physician-patient interactions. Unfortunately, my observations have demonstrated that, more times than not, the conversation ends when the patient finds out that he or she has diabetes mellitus. Typically, the physician will scribble down treatment on a prescription pad and perhaps—if the patient is lucky—also explain a couple of the adverse outcomes of uncontrolled diabetes mellitus. Needless to say, the patient is not appropriately educated in this approach.

I understand that many physicians are overworked and overwhelmed by the amount of patients that they have to see everyday. However, spending an extra 10 to 15 minutes with a patient who is newly diagnosed as having T2DM—or any disease for that matter—can really go a long way in helping the patient understand and cope with this disease.

Dr LaSalle1 mentions the importance of certified diabetes educators (CDEs) and the barriers that physicians and patients face in using these professionals as part of treatment strategies for diabetes mellitus. These specialized educators can indeed play a crucial role in the ongoing management of diabetes mellitus. Nevertheless, the use of CDEs does not absolve physicians of the responsibility of taking a few extra minutes to educate a patient about diabetes mellitus within the first few office visits after diagnosis. One benefit of giving patients such extra attention is that it will demonstrate that the physician truly cares and advocates for the patient. Furthermore, according to Romayne Gallagher, MD, the following six points should be kept in mind to promote...
patients’ health literacy and to help patients understand their disease process, adhere to their treatments, and improve their outcome:

- Slow down when speaking to patients.
- Use plain, nonmedical language.
- Show or draw pictures—visual pictures with an explanation [are] best.
- Limit the amount of information provided and repeat it.
- Confirm that patients understand by asking them to repeat instructions to you.
- Be open to patients asking questions.

Although educating patients will require that more time be spent with them, this extra time will ultimately give the patients more empowerment and confidence to successfully manage their diabetes mellitus. As Dr LaSalle states:

Evidence indicates that empowering patients to take greater control of their diabetes mellitus through education and patient-oriented insulin titration regimens may improve glycemic control and reduce the risk of complications.

As physicians—regardless of specialty or affiliation with osteopathic or allopathic medicine—we should want our patients to be given all possible opportunities to succeed in the fight against disease. When they do succeed, we can take pride in the fact that all our hard work, as well as the patients’ own efforts, paid off. We should do everything that we can to heal and to have positive impacts on our patients’ lives. Isn’t this the reason that we dedicated our lives to medicine in the first place?

Vincenzo A. Barbato, OMS IV  
Nova Southeastern University College of Osteopathic Medicine, Fort Lauderdale, Florida

References

How to Avoid a Heart Attack: Putting It All Together

“It ain’t what you don’t know that gets you into trouble. It’s what you know for sure that just ain’t so.”  
Mark Twain

To the Editor:

My clinical review “How to Avoid a Heart Attack: Putting It All Together,” published in the May 2009 supplement to JAOA—The Journal of the American Osteopathic Association, provided osteopathic physicians and other clinicians with a framework for using a simple global program to modify the risk factors associated with myocardial infarctions. Dr Juhl and his colleagues take exception to my conclusion that vitamins E, C, B₉, B₆ (folic acid), and B₁₂ have little usefulness as agents in the prevention of cardiovascular disease (CVD). Their letter resurrects a debate that has been fought in the preventive cardiology arena for the past decade. In this debate, however, a clear and decisive winner has emerged.

There is no compelling, evidenced-based literature to support the routine use of vitamins E, C, B₉, B₆, or folic acid in a comprehensive program to lower patients’ cardiovascular risk. There is, by contrast, a multitude of credible medical organizations—as well as a substantial body of published, credible, evidence-based studies—that discourage the use of these agents to prevent CVD. I intend this letter to serve as a brief summary of the conclusions of these organizations and studies.

Evidence Against Vitamin E and Vitamin C Supplementation

The Mayo Clinic recommendations regarding vitamin E are as follows:

Vitamin E has been proposed for the prevention or treatment of numerous health conditions, often based on its antioxidant properties. However, aside from the treatment of vitamin E deficiency (which is rare), there are no clearly proven medicinal uses of vitamin E supplementation beyond the recommended daily allowance.

Perhaps the single most compelling study to support the lack of effectiveness of vitamin E and C supplements is the MRC/BHF Heart Protection Study, a randomized, placebo-controlled trial in which antioxidant vitamin supplementation was examined in 20,536 individuals with coronary disease, other occlusive arterial disease, or diabetes mellitus. The study participants were randomly allocated to receive vitamin E (600 mg), vitamin C (250 mg), and beta carotene (20 mg) daily or matching placebo. Intention-to-treat comparisons of outcome were conducted among all participants.

The MRC/BHF researchers found no significant differences between the vitamin and placebo groups in all-cause mortality or in deaths caused by vascular or nonvascular conditions. Nor were there any significant differences between groups in the numbers of participants having nonfatal myocardial infarction or coronary death, nonfatal or fatal stroke, or coronary or noncoronary revascularization. Thus, the investigators concluded that among the high-risk individuals in the study, the use of antioxidant vitamins did not produce any significant reductions in 5-year mortality from, or incidence of, any type of vascular disease, cancer, or other major outcome, compared with placebo.

Meta-Analysis

In 2003, researchers at the Cleveland Clinic published a meta-analysis of the state of the literature regarding the use of vitamin E and other antioxidant vitamins to prevent CVD. In the vitamin E portion of the meta-analysis,
81,788 patients were included. The overall result found by the investigators was that “vitamin E did not provide any benefit in lowering mortality compared to control treatments” and “it did not significantly decrease the risk of cardiovascular death or stroke.”

The researchers also stated that “the lack of beneficial effect was seen consistently regardless of the doses of the vitamins used and the diversity of the patient population.” The Cleveland Clinic team concluded that the results of their study do not support the routine use of vitamin E to prevent CVD.

**Clinical Studies**

The Heart Outcomes Prevention Evaluation (HOPE) study followed almost 10,000 patients who were at high risk for myocardial infarctions or strokes for 4.5 years. The investigators found that participants taking natural-source vitamin E (400 IU daily) experienced “no fewer cardiovascular events or hospitalizations for heart failure or chest pain than patients taking placebo.” In the follow-up HOPE-2 study, almost 4,000 of the original participants continued to take vitamin E or placebo for an additional 2.5 years. The HOPE-2 investigators concluded that after the 7 years of treatment, “[v]itamin E provided no significant protection against heart attacks, strokes, unstable angina, or deaths from cardiovascular disease or all cause mortality.” The researchers did report, however, that participants taking vitamin E were 13% more likely to experience and 21% more likely to be hospitalized for, heart failure—a unexpected finding not reported in other large studies. Both the HOPE and HOPE-2 trials provided “compelling evidence” that moderately high doses of vitamin E do not reduce the risk of serious cardiovascular events among men and women older than 50 years and who have established heart disease or diabetes mellitus.

The Women’s Angiographic Vitamin and Estrogen (WAVE) study examined the results of taking an unspecified type of vitamin E (400 IU twice daily) and vitamin C (500 mg twice daily) or placebo for more than 4 years. Not only did the vitamins provide no cardiovascular benefit, but all-cause mortality was significantly higher among the women taking the supplements ($P=$.045). The WAVE authors reached the following conclusion:

In postmenopausal women with coronary disease, neither HRT [hormone replacement therapy] nor antioxidant vitamin supplements provide cardiovascular benefit. Instead, a potential for harm was suggested with each treatment.

The Women’s Health Study—a clinical trial of the effects of vitamin E on the heart and blood vessels of women published in 2005—included almost 40,000 healthy women aged at least 45 years who were randomly assigned to receive either natural-source vitamin E (600 IU every other day) or placebo. The women were followed for an average of 10 years. The investigators found no significant differences in rates of overall cardiovascular events (ie, combined nonfatal myocardial infarctions, strokes, and cardiovascular deaths) or all-cause mortality between the groups.

The Physicians’ Health Study II is a recently published clinical trial of vitamin E and men’s cardiovascular health that included almost 15,000 healthy physicians aged at least 50 years as study participants. The physicians were randomly assigned to receive synthetic alpha tocopherol (400 IU every other day), vitamin C (500 mg daily), both vitamins, or placebo. During a mean follow-up period of 8 years, intake of vitamin E, vitamin C, or both had no effect on the incidence of major cardiovascular events, myocardial infarction, stroke, or cardiovascular mortality. Furthermore, use of vitamin E was associated with a significantly increased risk of hemorrhagic stroke ($P=$.04).

The Agency for Healthcare Research and Quality (AHRQ)—an organization that is responsible for developing scientific information for other agencies and organizations on which to base clinical guidelines—published a systematic review of the scientific literature in 2003 that assessed evidence for the efficacy of three antioxidants in the prevention and management of CVD or in the modification of known risk factors for CVD. The antioxidants examined in the study were vitamin E, vitamin C, and coenzyme Q10. Modification of the major risk factors for CVD (ie, diabetes mellitus, hypercholesterolemia, hypertension, and smoking) has long been associated with a decreased risk of CVD. Thus, identification of interventions that could be used to successfully treat patients with CVD or to modify the underlying risk factors was of great interest to the AHRQ researchers.

The AHRQ researchers included studies in their review that focused on vitamin E, vitamin C, or coenzyme Q10—alone or in combination—for selected conditions of CVD (ie, coronary artery disease and its sequelae, stroke, heart failure, and peripheral vascular disease). Studies were also included in the analysis if they affected known risk factors for CVD, such as blood lipid levels or hypertension.

The AHQR literature search identified 1339 articles that met the search criteria. Of these, the researchers identified 156 articles that represented results from 159 reports on 144 unique trials (ie, those trials reporting data not duplicated in another publication). Of the 159 reports referred for further analysis, one-third of the reports were judged to be of high quality based on the Jadad scale for assessing methodologic quality.

According to the AHQR team, the available evidence generally did not support the assertion that any benefit was associated with the use of vitamin E—either alone or in the combinations tested—for the prevention of
Observational data suggest that high levels of plasma homocysteine are a risk factor for CVD, with supporting experimental data indicating that even mild to moderate elevations in homocysteine cause oxidative stress, damage the endothelium, and enhance thrombogenicity. Researchers have examined whether such common elevations could be corrected with vitamin supplementation.

The idea that supplementation with folic acid and vitamins B6 and B12 would lower homocysteine levels and, in turn, lower cardiovascular events received its first blow in 2005 with the results of the Vitamin Intervention for Stroke Prevention (VISP) trial. Those results failed to show any benefit from vitamin therapy in patients with histories of stroke.

In the HOPE-2 trial, some of the same investigators who reported evidence against cardiovascular benefit from vitamin E in the original HOPE trial reported data showing no effect from vitamin B (including folic acid) supplementation in preventing cardiovascular events. The HOPE-2 lead author, Eva M. Lonn, MD, of McMaster University in Hamilton, Ontario, Canada, said the following at a press conference at the American College of Cardiology’s 55th Annual Scientific Session in 2006, where the HOPE-2 results were presented:

Because the primary study outcome is neutral, I think we have to conclude that supplementation with high-dose folic acid and vitamins B6 and B12 does not reduce major vascular events in a high-risk population with established vascular disease.

Although the results of HOPE-2 were neutral, Dr Lonn added the following about the findings of the study:

I think they’re important, because we have been often derailed in our efforts to implement secondary prevention adequately, and the focus should be on what has been proven to work—namely, a healthy lifestyle with a good intake of fruits and vegetables, exercise, and, for those who already have had an event, certain drugs such as aspirin, statins, beta blockers, and ACE [angiotensin-converting enzyme] inhibitors, which have proven benefit.

The Norwegian Vitamin (NORVIT) trial found no benefit in preventing recurrent cardiovascular events from the use of folic acid and other B vitamins in patients who started taking these supplements within 7 days after myocardial infarction. The researchers, led by principal investigator Kaare Harald Bonaa, MD, of the University of Tromso in Norway, actually reported an increase in cardiovascular events with the combination of folic acid and vitamins B6 and B12.

In an editorial accompanying the NORVIT trial, Joseph Loscalzo, MD, PhD, of Brigham and Women’s Hospital and Harvard Medical School in Boston, Massachusetts, wrote that the consistency of results in three similar, though not identical, patient populations (HOPE-2, VISP, and NORVIT) “leads to the unequivocal conclusion that there is no clinical benefit of the use of folic acid and vitamin B12 (with or without the addition of vitamin B6) in patients with established vascular disease.”

Results of the NORVIT study also suggest that administration of combination B vitamins with the goal of reducing plasma homocysteine levels may actually increase the risk of CVD in patients, and that folic acid alone may increase patients’ risk of cancer. At the Hot Line Session II of the European Society of Cardiology Congress in September 2005, Dr Bonaa noted the following:

The results of the NORVIT trial are important because they tell doctors that prescribing high doses of B vitamins will not prevent heart disease or stroke. B vitamins should be prescribed only to patients who have B vitamin deficiency diseases.

(continued)
Finally, the American Heart Association19 advises the following regarding B vitamin supplements:

So far, no controlled treatment study has shown that folic acid supplements reduce the risk of atherosclerosis or that taking these vitamins affects the development or recurrence of cardiovascular disease.

Conclusion

The central question posed in the letter to the editor by Juhl et al2 is whether supplements of vitamins E and C and the B vitamins have demonstrated an evidence-based reduction in patients’ cardiovascular risk. Unfortunately, the authors’ criticism of the perceived deficiencies of a previously published study3 does not constitute evidence to support their position; it serves only to point out those perceived flaws.

Multiple meta-analyses and reviews of published medical literature have convincingly established that there are few, if any, objective, evidence-based, well-designed trials to support the use of supplements of vitamins E or C or those in the B family to reduce risk of cardiovascular events. Furthermore, I am unaware of any study that advocates the use of these supplements to help patients or to rejuvenate our ailing medical delivery system.

If Dr Juhl and his coauthors seek to establish the medical value of these supplements, I would recommend that they design, participate in, and publish a study to establish their yet unproven hypothesis. Until such a goal is accomplished, my opinion (shared by the Mayo Clinic,3 the Cleveland Clinic,3 the AHRQ,12 and the American Heart Association19) is that published evidence clearly does not support the use of vitamins E, C, B₉, B₆, or B₁₂ to improve patients’ cardiovascular health.

References


New COMLEX-USA-to-USMLE Conversion Formula Needed

To the Editor:

Clinical rotations during the third and fourth years of osteopathic medical school have provided each of us with invaluable experience in medicine. However, we obtained something even more valuable from our discussions with attending physicians—both DOs and MDs—regarding the residency application process. A common theme from these conversations was the standardized testing system in osteopathic medicine.

We were often questioned about our reasons for taking both the United States Medical Licensing Examination (USMLE) and the Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA). Our reasons for doing so consisted of two layers. The superficial layer concerned the rules and regulations of Accreditation Council for Graduate Medical Education (ACGME) residency programs, which we were each interested in pursuing. Many of these programs require successful completion of Step 1 and Step 2 of the USMLE in order to be con-
sidered for an interview. This requirement might be changed with revised rules and regulations, but the deeper layer of our reasons for taking both the USMLE and COMLEX-USA would remain.

The deeper layer of our reasoning seemed to strike home with the attending physicians. This layer concerned comparison of examination scores. How does a director of an ACGME residency program compare an osteopathic medical student’s COMLEX-USA score with an allopathic medical student’s USMLE score? In the September 2006 issue of JAOA—The Journal of the American Osteopathic Association, Dr Philip C. Slocum and Janet S. Louder1 reported formulas for estimating USMLE Step 1 and Step 2 scores from, respectively, COMLEX-USA Level 1 and Level 2 scores. However, when we examined these formulas, we realized why ACGME program directors who are unfamiliar with the COMLEX-USA would require a USMLE score from all applicants.

The formulas as reported by Slocum and Louder are as follows:

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\text{USMLE Step 1} & = 67.97 + 0.24 \times \text{COMLEX-USA Level 1} \\
\text{USMLE Step 2} & = 102.2 + 0.18 \times \text{COMLEX-USA Level 2}
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Using the first formula, a score of 500 on the COMLEX-USA Level 1 (which would be in the 50th percentile of scores) is equivalent to a score of 188 on the USMLE Step 1. Based on a simple z-score table and a standard deviation of approximately 20 on Step 1 of the USMLE (which has an average score between 200 and 220), a score of 188 corresponds to the 5th percentile.

These numbers would lead an ACGME program director who is trying to convert a COMLEX-USA score into a USMLE score to rightfully assume that an average score on the COMLEX-USA is equivalent to a score in the fifth percentile on the USMLE. Thus, the formula proposed by Slocum and Louder1 does not provide these program directors with an accurate view of osteopathic medical student qualifications.

Until a larger study presents a more useful method for converting standardized testing scores, ACGME program directors will continue to withhold interviews from qualified osteopathic medical students—unless those students also have USMLE scores to report. Instead of trying to force ACGME programs to accept COMLEX-USA results, we believe it is more important for the osteopathic medical profession to develop a formula for examination score conversion that will more accurately reflect the qualifications of osteopathic medical students.

Sahil P. Parikh, DO
St. Joseph’s Regional Medical Center, Paterson, NJ
Carly A. Shiembob, DO
Aria Health System, Philadelphia, PA

References

Response
Janet S. Louder and I are thrilled that our September 2006 JAOA article1 on predicting United States Medical Licensing Examination (USMLE) scores from Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA) scores is still sparking discussion, as evidenced by the letter by Drs Parikh and Shiembob. Since the article was written, both the National Board of Medical Examiners and the National Board of Osteopathic Medical Examiners have reformatted their examinations—thereby affecting any statistical analysis regarding the examinations.

The COMLEX-USA—now more than ever—reflects osteopathic clinical information, while the USMLE clearly does not reflect any osteopathic clinical content. We have not reevaluated the available data for any new correlations between these tests. However, we would expect less correlation now than when we conducted our analysis more than 5 years ago. The American Osteopathic Association’s Commission on Osteopathic College Accreditation and National Board of Osteopathic Medical Examiners are obviously concerned that examination content and assessments maintain the distinction between the osteopathic and allopathic medical professions. Each year, the examinations reflect more divergence between these medical professions than was the case during the years we conducted our study.

As far as the statistics of our study go, I believe that a quotation attributed to Benjamin Disraeli, prime minister of the United Kingdom in 1868 and from 1874 to 1880,2 says it best:

There are three kinds of lies: lies, damned lies, and statistics.

I thank Drs Parikh and Shiembob for their interest.

Philip C. Slocum, DO
Professor of Medicine, Dean, Kirksville College of Osteopathic Medicine-A.T. Still University of Health Sciences, Missouri

References