To the Editor:

In December 2008, the Institute of Medicine (IOM) released a report, *Resident Duty Hours: Enhancing Sleep, Supervision, and Safety,* calling for changes in resident training programs to reduce fatigue-related medical errors and to protect patients. Shortly after the IOM released its report, the American Osteopathic Association (AOA) weighed in on the report’s findings—with a press release on December 2, 2008, and with statements by AOA President Carlo J. DiMarco, DO, on the AOA President’s Blog on March 10, 2009. The AOA’s press release and Dr DiMarco’s remarks—both of which expressed opposition to the recommendations in the IOM report—are very disappointing. If the AOA does not change its stance on resident work hours, the AOA will lose credibility and relinquish control over the work hour debate.

To illustrate this point, a review of some history is appropriate. In 1950, two British researchers, Richard Doll, MD, and A. Bradford Hill, PhD, reported a link between cigarette smoking and lung cancer in “Smoking and Carcinoma of the Lung: Preliminary Report,” published in the *British Medical Journal.* The tobacco industry immediately attacked this research, claiming that there was no scientific evidence to support the claims of Doll and Hill, and that these researchers had merely discovered a coincidental association between smoking and lung cancer.

It was not until 1962 that the conclusions of Doll and Hill received serious consideration. In that year, the US Surgeon General convened a committee of experts in the fields of tobacco use and lung cancer, and in 1964, the committee issued its landmark report, *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service.* In the report, the committee reviewed more than 7000 scientific articles and came to the conclusion that smoking increased the risk of lung cancer by 9 to 10 times, compared with the risk in nonsmokers.

As with the report by Doll and Hill, the tobacco industry tried to discredit the Surgeon General’s report by pointing out that it contained no empirical evidence and no proposed biological or chemical method for how smoking caused lung cancer. The tobacco industry was highly successful with its efforts to discredit the Surgeon General’s report. The US Congress did not ban radio and television advertising of tobacco until 1970. How many lives would have been saved if the work by Doll and Hill in 1950 had been taken seriously and not discredited by the tobacco industry? Perhaps billions.

The IOM is a prestigious organization made up of eminent experts in many fields of medicine. The IOM has issued a series of landmark studies—most notably the 1999 report, *To Err is Human: Building a Safer Health System,* an analysis of the association between...
medical errors and patient mortality. Resident Duty Hours\textsuperscript{1} was produced by a committee of experts in medicine, engineering, education, and occupational safety. After reviewing hundreds of scientific articles, this committee reached the conclusion that the current resident duty hour policies of resident training programs are inadequate, leading to increased medical errors by residents and increased morbidity and mortality of patients. The IOM committee made several recommendations to revise resident work hours and workloads in order to decrease medical mistakes and save patient lives.

In his blog posting of March 10, 2009, AOA President DiMarco\textsuperscript{3} stated, “To date, all the information IOM has cited is either anecdotal, not evidence-based or studies that are more than 10 years out-of-date.” However, the following citations are just a few of the studies listed on the first page of the reference section of Resident Duty Hours:\textsuperscript{1}


These referenced studies are clearly not anecdotal, not 10 years out of date, and not lacking in evidence. Many more such high-quality, evidence-based studies are listed in Resident Duty Hours\textsuperscript{1} as references for the information in the report.

The resident work hour debate is starting to sound a lot like Doll and Hille\textsuperscript{4} and the Surgeon General\textsuperscript{5} vs the tobacco industry. It is clearly not convenient for the AOA or the Accreditation Council on Graduate Medical Education (ACGME) to accept the literature and evidence on the effects of unsupervised sleep-deprived residents—much like it was not convenient for the tobacco industry to accept the literature and reports on the link between smoking and lung cancer. Is the AOA prepared to have the same kind of credibility that the tobacco industry has today?

In the AOA press release\textsuperscript{2} from December 2, 2008, the following statement regarding the AOA’s position on resident work hours is given:

The AOA believes that differences in work flow between medical specialties and the geographic location of training programs necessitate a multidimensional policy versus a single policy applicable to all programs.

Thus, in December 2008, the AOA stated its opposition to a single policy that would regulate work hours for all resident training programs. However, in 2003, the AOA apparently supported—and implemented—a single set of requirements to regulate work hours in all resident training programs, as evidenced by the following statement in the same December 2008 press release:\textsuperscript{2}

In 2003, the AOA implemented policies governing resident work hours and conditions for all osteopathic graduate medical education programs. These requirements include limitations on resident work hours, scheduling revisions aimed at avoiding sleep deprivation and other steps designed to improve patient safety and the mental well-being of resident physicians.

These AOA requirements applying to all residency programs must have been successful, because Dr DiMarco\textsuperscript{3} stated the following in his March 10, 2009, blog entry:

AOA work hour standards, as developed by the Council on Osteopathic Postdoctoral Training (COPT), are currently more rigorous than what was originally recommended by the IOM.

Considering the seemingly conflicting statements made by the AOA on policies regulating resident work hours, it is confusing to determine exactly where the AOA stands on this issue. Does the AOA support the IOM’s single policy on resident work hours applicable to all resident training programs? One would think it might, because the IOM policy appears to be similar to the single set of requirements implemented by the AOA in 2003. Or does the AOA oppose the IOM’s single policy applicable to all programs—perhaps because the IOM’s suggested regulations were not developed by the AOA?

There is another problem with the AOA’s press release\textsuperscript{2} from December 2, 2008, as highlighted by the following statement in the release:

The AOA believes that differences in work flow between medical specialties and the geographic location of training programs necessitate a multidimensional policy versus a single policy applicable to all programs. Any work hour policy should be based on research that is unambiguous, robust, valid and reliable, and must analyze the short term and long term quality tradeoffs.

In epidemiologic studies, there exists the principle of scientific generalizability, which refers to the applicability of conclusions made in a particular study population to other populations.\textsuperscript{8} Generalizing from one population to another depends on a common exposure-disease relationship being present in both populations of
interest. If the exposure-disease relationship is present in a study population but not in another population of interest, conclusions from the study population cannot be extended to the other population of interest.

The parameter used in the IOM report to draw conclusions from a sample population and apply those conclusions to a population of interest was work hours—which have common effects among all medical specialties and locations. The effects of long work hours will not change from New York to California. Nor will the effects of long work hours be different in family practice residencies compared with urology residencies. Thus, no additional research is required to show the “unambiguous, robust, and valid” results desired by the AOA.

The IOM’s *Resident Duty Hours* report is based on studies that are generalizable throughout all specialties in medicine. Therefore, the report’s recommendations can apply to all medical specialties in any geographic location.

The AOA expressed its interest in reducing medical errors in its December 2, 2008, press release as follows:

The AOA remains committed to reducing errors, ensuring quality patient care, and providing comprehensive and continuous education opportunities to osteopathic physicians.

If the AOA is serious about reducing medical errors, it should refocus its energies and efforts on the following actions:

1. The AOA should endorse the IOM’s recommendations contained in *Resident Duty Hours*. Furthermore, the AOA should assemble an ad hoc Residency Work Hour Committee composed of interns, residents, program directors, and safety experts (who have specific expertise in operator fatigue) to implement policies suggested by the IOM’s report. This committee should be given a deadline of 90 days to publish its recommendations.

2. The AOA should lobby the US Congress to legislate the recommendations made by the proposed AOA ad hoc Residency Work Hour Committee. The AOA would not be successful if it had to solely implement and enforce the committee’s recommendations. If the ACGME did not concomitantly implement the same resident work hour regulations as the AOA, many residency program directors might simply terminate their AOA-approved status in favor of ACGME accreditation.

Moreover, both the AOA and ACGME lack the necessary resources to inspect resident training programs to ensure that these programs are in compliance with work hour restrictions. The AOA should lobby for legislation similar to New York State’s “Section 405” resident work hour restrictions (ie, random inspections by a government agency, anonymous reporting of violations, fines for non-compliance). With such restrictions in place, resident training programs would not lose accreditation status as a result of work hour violations. In addition, the possibility of financial penalties would make programs more likely to remain compliant with work hour restrictions.

3. The AOA should lobby the US Congress for increased funding for graduate medical education to help pay for the new resident work hour restrictions. This increased funding would likely be offset by decreased medical errors, resulting in decreased patient complications and decreased healthcare costs.

By the AOA taking the initiative and demonstrating proactive behavior in calling for federal legislation to regulate resident work hours, the AOA would gain control over this issue. The AOA would also maintain its integrity and credibility with respect to medical education and patient safety.

If the AOA does nothing—or, even worse, tries to discredit the IOM report—legislation that may not be favorable to either the AOA or ACGME will likely be created and enacted. By initiating policy regarding the IOM’s *Resident Duty Hours* report, the AOA will demonstrate that it takes medical errors and patient safety very seriously.

Resident work hour regulations will undoubtedly become stricter. The tide of healthcare reform, coupled with the illumination of the resident work hour issue by the IOM, will create an upswelling of support for reform in resident training programs—just as the IOM’s *To Err is Human* report led to unprecedented support for reform to reduce medical errors. If the AOA continues on its current path of discredit ing the IOM’s *Resident Duty Hours* report, the AOA will lose the debate and its own credibility—just like the tobacco industry.

I am an AOA member and an osteopathic physician. I hope that my letter has successfully highlighted some of the flaws in the AOA’s arguments regarding the IOM report on resident work hours. In my letter, I have also offered an alternative course of action on this matter. I want to be part of an organization that respects well-researched problems and well-reasoned solutions—even when providing that respect may not be convenient. To quote Upton Sinclair, “It is difficult to get a man to understand something when his job depends on not understanding it.” Please do not let the AOA be that “man.” Rather, consider how many patient lives the AOA may save by embracing the IOM report on resident work hours and by fostering reform in resident training programs.

There is a saying in epidemiology that is derived from an 1854 lecture by Louis Pasteur: “In the fields of observation, chance favors only the prepared mind.” The IOM has done an enormous
amount of work investigating the issue of resident duty hours, showing that the IOM has the “prepared mind.” Let us support this work.

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References

Response
The American Osteopathic Association (AOA) takes the well-being of osteopathic medical trainees and patient safety very seriously. All matters regarding duty hours are closely monitored by the AOA’s Council on Osteopathic Postdoctoral Training (COPT) for adherence to AOA policy through program site reviews and the trainee hotline, which was established to give osteopathic residents the ability to alert the AOA when violations occur.

In response to the December 2008 Institute of Medicine (IOM) report Resident Duty Hours: Enhancing Sleep, Supervision, and Safety, a subcommittee of the COPT was asked to review and address each recommendation. As a result, the COPT confirmed that the AOA already follows or exceeds many of the IOM’s recommendations.2

As Dr Conklin points out, the COPT and AOA leadership do not agree with all of the IOM’s recommendations or with the models and research used to form them. For example, the IOM report1 references duty hour standards that predate changes both the AOA and the Accreditation Council for Graduate Medical Education (ACGME) had approved and were about to implement in 2003. Although not old, the research studies quoted in the IOM report were nonetheless outdated, given that the AOA and ACGME already had new policies in place.

Neither the AOA nor the ACGME have agreed to change their policies and systems based on the IOM report. However, the ACGME has formed a Resident Duty Hours Task Force and retained an external agency to conduct an objective literature review based on current duty hour standards in the United States.3 If refinements to duty hours appear necessary, this agency will draft a proposal, which will then go forward to the ACGME Board of Directors for their input in February 2010, with changes expected to be implemented in July 2011.3 The COPT will monitor their findings.

Reducing resident work hours below current standards may result in unintended consequences. For example, the IOM report admits that implementing the recommendations would result in a $1.7 billion unfunded mandate;1 reductions in service by residents would require hospitals to seek support from physicians and non-physician clinicians, changes that could damage the current quality of care provided to patients. The COPT leadership believes that reductions in duty hours could result in an additional year of training for residents in some specialties. This type of change would present a difficult dilemma for graduate medical education in the United States because current funding would not support an additional training year.

The AOA believes that the European model for graduate medical education as discussed in the IOM report1 should not be used for decisions on the US training structure. No one argues that sleep deprivation can lead to medical errors. However, decisions to further curtail the number of hours for graduate medical education in US training programs without evidence would be premature and potentially devastating for the current residency training system. The AOA COPT is constantly reviewing duty hour issues and will support additional changes when there is credible evidence and a structure to support changes.

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References

E-learning in Medical Education

To the Editor:

The schedules and demands of medical educators and medical students are escalating. Despite having increased patient care responsibilities, medical educators are expected to teach more and more. As a result, many teaching physicians are asking, “How can we
continue to practice medicine and still meet the needs of our students?"

Traditional medical education in the United States was influenced by those such as Sir William Osler and Alexander Flexner.1 For example, once the "Flexner Report"2 was published in the 1900s, medical education was forever changed to apply national standards in admissions, teaching, and assessments, among other criteria. Since then, traditional teaching methods, such as lectures and the Socratic Method,3 have been used to deliver medical education to thousands of medical students.

However, the delivery of medical education is evolving. New styles of teaching, such as problem-based learning, are being used around the world and at all levels of medical education.4 Students are using blogs, cellular telephones, e-mails, personal digital assistants, twitter, and Wikis to communicate instantly and efficiently with peers and professors. Medical students also offer each other advice on student Web sites such as http://www.studentdoctor.net. As medical educators, how can we harness this new technology to stay in tune with students? How can we use the technology to our benefit?

Every month, new sets of osteopathic medical students begin their rotations with us. In addition, when we hire new advanced practitioners (eg, physician assistants), we find ourselves repeating the same information with every group. In our experience, electronic media helped us harness technology to deliver education in a new and exciting way.

Learning management systems—also referred to as course management systems and virtual learning environments—such as Moodle (Moodle Trust; http://moodle.org) and Blackboard (Blackboard Inc; http://www.blackboard.com/) allow educators to deliver the same educational content electronically instead of through traditional methods. These systems save work, energy, and valuable time that can be used for patients instead.

Learning modules comprised of Microsoft Office PowerPoint presentations (Microsoft Corporation, Redmond, Washington), videos, podcasts, audio, and other media are just some examples of the content that can be delivered as stand-alone modules or incorporated into a learning management system. Students can use PowerPoint presentations, reading assignments, or asynchronous (ie, self-directed) courses to review various topics at their own pace and time. Such assignments can be completed before starting a rotation or in conjunction with the rotation. Educators can also generate assignments timed for when the material is covered.

At our institution, we use a learning management system to deliver PowerPoint presentations and other digital media and to administer pre- and posttests to students. Our system tracks grades and generate reports, which are emailed to instructors the same day that the students take the test. We are able to track which modules they have done and how long they took to review the modules. In our experience, learning management systems have been very successful with students, residents, and advanced practitioners.

Electronic modes of education will become more widely used with time, perhaps becoming a standard way of educating medical students and other healthcare providers in the future. As a result, medical educators need to become familiar with the various ways education and other everyday practices may be delivered electronically. It is important for medical educators to embrace technology as a valuable resource at our disposal to positively impact students and residents.

Whatever the way that you choose to use electronic media, learning can be enjoyable and efficient if a system that works is implemented. We encourage all medical educators to become familiar with newer ways of teaching using electronic media.

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References

Editor's Note: On page 135, Don N. Peska, DO, and Kadiyiye O. Lewis, EdD, analyze osteopathic medical students' participation in and satisfaction with asynchronous technology during clinical clerkships.