# Continuing Education in the Health Professions


*Proceedings of a Conference*
*Chaired by Suzanne W. Fletcher, M.D., M.Sc.*

*Edited by Mary Hager, Sue Russell,*
*and Suzanne W. Fletcher, M.D., M.Sc.*

JOSIAH MACY JR FOUNDATION

# Continuing Education in the Health Professions: Improving Healthcare Through Lifelong Learning

*A Conference Sponsored by the Josiah Macy, Jr. Foundation*

*Chaired by Suzanne W. Fletcher, M.D., M.Sc.*
*Bermuda*
*November 2007*

*Edited by Mary Hager, Sue Russell, and Suzanne W. Fletcher, M.D., M.Sc.*

*Published by the*
*Josiah Macy, Jr. Foundation*
*44 East 64th Street*
*New York, NY 10065*

*www.josiahmacyfoundation.org*

*2008*

# Table of Contents

*The Macy Conference format provides ample time for discussion and, after reading commissioned background papers and hearing remarks prepared by the authors and several participants, the 36 participants seated around the table offered countless informed observations, comments, and opinions. The Discussion Highlights sections at the end of each session group these comments according to themes that emerged, though many comments might have been placed in several categories. The papers, remarks, and comments have been lightly edited for brevity and clarity. On the final day, participants developed the set of conclusions and recommendations found in the Executive Summary and, again, beginning on page 219.*

# Preface

**June E. Osborn, M.D.**

During my tenure as president of the Macy Foundation, we funded efforts to improve undergraduate health professional and even graduate medical education. However, it seemed difficult, if not impossible, to find a useful entry point on continuing education, even though it was a massive enterprise that was mandated very broadly. What is more, I repeatedly bumped up against the fact that much of the funding for continuing medical education (CME) was being provided by pharmaceutical company sponsors. Decades earlier that was true, of course, but not to anywhere near the extent that had come to be the case. In fact, as I inquired of colleagues closer to the issue than I was, I got estimates that 60-90 percent of all CME was supported by industry. Indeed, so pervasive was that mechanism of support that almost no alternative sources remained. While there was nothing intrinsically wrong with that state of affairs, it tended to be festooned by associated phenomena having little to do with education per se, such as free lunches, gifting of other sorts, or even more attractive subsidies such as opportunities to qualify for CME credits by enrolling in courses offered in desirable spots.

Clearly there was room for considerable concern about the planning of offerings for life-long learning, not to mention possible distortion of objectivity of CME content design and delivery.

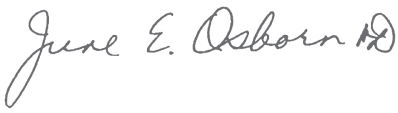
I became increasingly troubled as, over time, requirements by state licensing bodies to accumulate arbitrary hours of CME credit became virtually universal, and yet they could be satisfied rather randomly, or at least without any consistency or quality control as to format and content. The well-established PowerPoint presentation format had become nearly universal, and there was little evident impetus or support for other forms of learning, especially at points of care. All those worrisome trends in CME content, quality, and relevance to practice were evolving at a time when bench-to-bedside translational research was being promoted and when biomedical advances made the need for pertinent life-long learning experiences ever more urgent and important.

By happy chance, I got into a discussion of these concerns with Dr. Suzanne Fletcher early in 2006, at a time when I was trying to formulate plans for the final Macy Conference to be held prior to my retirement at the end of 2007. When I asked if she — with her long leadership of a large Harvard CME course — thought that would be a timely and useful topic for a conference, she endorsed the idea vigorously. Better yet when I began to plan, the first step — choosing a chairperson — fell neatly into place. Suzanne's enthusiasm was matched by her energy, and she agreed to chair the planning, convening, and subsequent monograph preparation.

This volume, then, is the product of the resultant Macy Conference, held in Southhampton, Bermuda from November 28 to December 1,

2007. In preparation for the conference, an excellent and hard-working planning committee delineated areas of need for newly commissioned papers, set an agenda for the conference over two-and-one-half days, and worked diligently to be sure that the professional and experiential range of the participants invited to contribute to the deliberations would provide as many pertinent voices as possible to assure a rich discussion. Given that all the health professions are facing similar or analogous problems to those of medicine, efforts were made to include nursing, in particular, and other professions' experience where possible. The resulting conference was remarkably stimulating and led to a broad consensus, expressed in the conclusions and recommendations presented in this monograph.

As Dr. Fletcher says eloquently in her Introduction, the resultant exploration of the facts, deficiencies, needs, and challenges for continuing education of health professionals is certainly timely. I hope it serves to move the health professions forward in their pursuit of optimal ways to provide and require continuing education throughout the professional lifetimes of their members.



President Emerita, Josiah Macy, Jr. Foundation

# Introduction


**Suzanne Fletcher, M.D., M.Sc.**
**Harvard Medical School**
**Chair**

In November, 1908 the Board of Trustees of the Carnegie Foundation authorized what many consider the seminal study of medical education in this country. Two years later Abraham Flexner published his report on medical education in the United States and Canada.[1] The report was so influential that most physicians in the United States continue to be educated according to Flexner's precepts.

One hundred years later, the Josiah Macy, Jr. Foundation convened a Conference on Continuing Education in the Health Professions. Our mandate was to examine continuing education in multiple health professions, not undergraduate medical education. So why bring up Flexner, who wrote his report many years even before the birth of the Macy Foundation? When I perused Flexner's report in preparation for our gathering, I was struck that, even now, many aspects of that nearly 100-year-old document remain remarkably relevant to our deliberations at this conference.

First, why is education in the health professions so important anyway?

The Carnegie Foundation undertook their study with two major interests in mind, or as President Pritchett put it, "first, the youths who are to study medicine and to become the future practitioners, and secondly, the general public, which is to live and die under their ministrations."[2] The planning committee for this conference came to a remarkably similar conclusion. At our very first meeting, Marc Nivet asked about the view from the trenches, and this question led to an important session in our conference. Later, when we were deep into thinking about the complicated educational approaches, financing, and structures involved in continuing education, June Osborn, who has stressed the public throughout her tenure as President at Macy, and Jordan Cohen brought it all into focus by reminding us that what makes these deliberations truly important is the need to improve the quality of healthcare. This broader social perspective separates education in the health professions from many other worthy educational endeavors.

The second reason why Flexner's report remains relevant is that he addressed the type and mode of education. He visited every one of the 150 medical schools in existence at that time to observe precisely what subjects were taught and how they were taught. He concluded that too often laboratory science and bedside teaching were neglected in favor of didactic lectures. He summed up his argument for the need for hands-on learning by quoting an earlier article by Cabot and Locke:

> Learning medicine is not fundamentally different from learning anything else. If one had one hundred hours in which to learn to ride a horse or to speak in public, one might profitably spend perhaps an hour (in divided doses) in being told how to do it, four hours in watching a teacher do it, and the remaining ninety-five hours in practice, at first with close supervision, later under general oversight.[3]

Today, how best to conduct continuing education so as to positively affect the health of patients and the public remains a challenge. That we have a ways to go is clear from many studies demonstrating large differences — a "chasm" according to the IOM report[4] — between what should be done and what is done in practice. Don

Moore presented a wonderful summary of what we know today about how clinicians learn. He pointed out that most formal continuing education programs continue to be made up of didactic lectures and very few — Don estimates 5 percent — on assessing competence and performance. What Flexner (and Cabot and Locke) said 100 years ago still applies.

Medical specialty boards are beginning to address this problem with the requirement of maintenance of certification programs. As Dan Duffy described in his presentation, these programs require clinicians to review the care they actually deliver in their own practices, compare the results with standards of excellence, and create a plan for improvement. This approach goes back to the 95-hour rule Flexner advocated so long ago.

Perhaps the most important issue in continuing education today is its financing. Robert Steinbrook pointed out that commercial support for accredited continuing medical education in the United States has quadrupled in less than a decade, and last year it reached a total of $1.5 billion—accounting for about 60 percent of the income for all of the accredited continuing medical education programs in the United States. No wonder we see a rising concern that commercial interests may be distorting the education of practicing clinicians. The U.S. Senate Finance Committee summed it up this way: "It seems unlikely that [a] sophisticated industry would spend such large sums on an enterprise but for the expectation that the expenditures will be recouped by increased sales."[5] The Senate Committee called for better oversight to ensure that continuing education programs are independent of drug company interests.

Flexner wrote his report 100 years ago, when very few effective drugs existed, when Osler advocated little more than morphine, nitroglycerin, iron, and quinine. How could Flexner have any relevance to this vexing modern problem? I think he does. Flexner often used the word "commercial" when describing the problems of the worst medical schools he visited. He pointed out that laboratory and patient-based education was expensive while didactic lectures were cheap, and so the schools that survived and profited only from fees tended to emphasize the latter. He challenged the fundamental assumption that medical education should be a business. He advocated the need for standards that, if adopted, clearly would adversely

affect the financial interests of some.

Today, it is increasingly clear that commercial financing has infiltrated the very fabric of continuing education. Last year *JAMA* published a paper, coauthored by David Blumenthal and Jordan Cohen, calling for academic medical centers to take the lead in eliminating conflicts of interest between physicians and industry. The authors proposed that manufacturers should not be permitted to provide support for any ACCME-accredited continuing education program and, further, that faculty should not serve on speakers' bureaus sponsored by drug companies.[6]

Results from a recent survey of medical school department chairs, published in *JAMA*, show just how difficult it will be to move this call from proposal to policy; 60 percent of the department chairs had some form of financial relationship with industry, as did two thirds of their departments.[7] Most chairs perceived no ill effects from these relationships, and most viewed them as helpful to the educational process. Our conference dealt squarely with this conundrum.

With regard to organizations that teach, Flexner recommended that medical education be linked closely with universities. He was convinced that such linkage would provide higher standards, better teachers, and more resources for students. He also recommended that teaching hospitals have close links to medical schools. Fundamentally, he was suggesting that organizational aspects of education should be set up to achieve the best possible education.

What about the situation today? Dave Davis has provided us with an overview of the organizations involved in and accrediting continuing education in medicine, pharmacy, and nursing; the landscape is crowded, with many different types of organizations involved—far more than for undergraduate and graduate education. Is this the best way? We devoted a session of our conference to this topic.

One area barely mentioned by Flexner is interprofessional collaboration, but today high-quality healthcare demands communication, collaboration, and teamwork among heath professionals. Several IOM reports on quality of healthcare in this country have stressed teamwork and systems changes. Maryjoan Ladden argued that continuing education of various health professionals together promotes collabo-

ration, decreases adverse health effects, and improves healthcare.

I found no comment about continuing education in Flexner's report. However, one of the giants of that age, William Osler, was acutely aware of its importance. He thought physicians had an obligation to keep learning about medicine from others, both through the literature and through subjecting their practices to the scrutiny of colleagues. He loved medical libraries and amassed a private library of approximately 8000 books. He summed up his feelings this way: "It is astonishing with how little reading a doctor can practice medicine, but it is not astonishing how badly he may do it."[8] One hundred years later, we still have a ways to go.

If Flexner had attended this conference, perhaps the most fascinating part for him would have been the discussion about the Internet and its effect on the ability of doctors and nurses to keep up with new information. Denise Basow and Don Lindberg both offered presentations describing the ways in which this wonderful new technology provides, really for the first time, just-in-time learning for all of us in the health professions, and, as Don pointed out, for our patients.

Flexner made major recommendations for change. This conference also has led to major recommendations, although we spent two and a half days together as opposed to Flexner's two years' effort. Also, David Leach reminded us about the efforts of other groups. What can one more report from a Macy Conference contribute?

I think there are at least two possibilities. First, our perspective cuts across health professions. Second, the participants in this conference were invited as leaders in the medical, nursing, and education professions, not as representatives of organizations involved in continuing education. As such, we had the opportunity to consider continuing education of the healthcare professions as it contributes to our professions and to society at large. By adopting this approach, our goal was that the description of a profession written many years ago in a legal opinion, and echoing Justice Brandeis' famous quote, continues to apply today:

> A profession is not a business. It is distinguished by the requirements of extensive formal training and learning, admission to

practice by qualifying licensure, a code of ethics imposing standards qualitatively and extensively beyond those that prevail or are tolerated in the marketplace, a system for discipline of its members for violation of the code of ethics, a duty to subordinate financial reward to social responsibility, and notably, an obligation on its members, even in non-professional matters, to conduct themselves as members of a learned, disciplined, and honorable occupation.[9]

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# Chairman's Summary of the Conference

Continuing education (CE) of health professionals is essential to the health of all Americans. With accelerating advances in health information and technology, physicians, nurses, and other health professionals must maintain and improve their knowledge and skills throughout their careers in order to provide safe, effective, and high quality healthcare for their patients.

Yet continuing education in the health professions is in disarray. Over the past decade, both professional and lay reports have identified multiple problems. CE, as currently practiced, does not focus adequately on improving clinician performance and patient health. There is too much emphasis on lectures and too little emphasis on helping health professionals enhance their competence and performance in their daily practice. With Internet technology, health professionals can find answers to clinical questions even as they care for patients, but CE does not encourage its use or emphasize its importance. And, while studies show that inter-professional collaboration, teamwork, and improved systems are key to high quality care, accrediting organizations have not found ways to promote teamwork or align CE with efforts to improve the quality of health systems.

Another significant problem is the growing link between continuing education and commercial interests. In 2006, the total income for accredited CE activities in medicine was $2.4 billion. Commercial support from pharmaceutical and medical device manufacturers accounted for more than 60 percent, about $1.45 billion, of the total. Over the past two years, the Senate Finance Committee has investigated pharmaceutical company support for continuing education

in medicine. Despite efforts to control improper influences, the committee concluded that the organizations providing continuing education could still accommodate commercial interests of sponsors and sponsors could still target their funding for educational programs likely to support sales of their products.

To address concerns about CE, the Josiah Macy, Jr. Foundation convened a conference on "Continuing Education in the Health Professions." Suzanne W. Fletcher, M.D., M.Sc., Professor of Ambulatory Care and Prevention, Emeritus, at Harvard Medical School, served as chair. The two-and-one-half-day conference, which was held in Bermuda in November of 2007, included 36 leaders in medicine, nursing, and education. Commissioned background papers covered a range of CE-related topics, including a review of how physicians and other health professionals learn, the role of information technology, financing, and certification.

Although much of the conference discussion was relevant to the continuing education of all health professionals, participants focused on accredited CE for medicine and nursing. They acknowledged that much professional learning takes place informally and outside accredited formats.

Conference themes were inter-related, for the methods used for continuing education are influenced both by the means of financial support and by mechanisms for accreditation. Unfortunately, participants found, current systems of CE do not meet the needs of health professionals as well as they should:

— Too much CE relies on a lecture format and counts hours of learning rather than improved knowledge, competence, and performance.

— Too little attention is given to helping individual clinicians examine and improve their own practices.

— Insufficient emphasis is placed on individual learning driven by the need to answer the questions that arise during patient care.

— CE does not promote inter-professional collaboration, feedback from colleagues and patients, teamwork, or efforts to improve systems of care, activities that are key to improved performance

by health professionals.

— CE does not make adequate or creative use of Internet technology, which can help clinicians examine their own practice patterns, bring medical information to them during patient care, and aid them in learning new skills.

— There is too little high-quality scientific study of CE.

Participants warned that the health professions, especially medicine, threaten the ethical underpinnings of professionalism by participating in a multi-billion dollar CE enterprise so heavily financed by commercial interests. This arrangement, which evolved over the years, distorts continuing education. It places physicians and nurses who teach CE activities in the untenable position of being paid, directly or indirectly, by the manufacturers of healthcare products about which they teach. At the same time, commercial support of CE places learners in an obligatory position because they are often given free meals and small gifts. Independent judgment of how best to care for patients is compromised. Bias, either by appearance or reality, has become woven into the very fabric of continuing education. The professions, themselves, must right this wrong.

In a free-market system, commercial entities, such as drug and device manufacturers, have a clear responsibility to shareholders to gain market advantage and generate a profit, while health professionals have a moral responsibility to provide safe, high quality care for their patients, based on valid scientific findings. The two responsibilities are fundamentally incompatible. Even if bias could be avoided, the potential, and the perception, are ever-present. Companies with billions of dollars at stake cannot be expected to be neutral or objective when assessing the benefits, harms, and cost-effectiveness of their products, for they are in the legitimate business of gaining market advantage and want clinicians to use and prescribe their products.

Yet, an objective and neutral assessment of clinical management options is precisely what is needed in continuing education. Participants emphasized that, regardless of the financial impact on for-profit companies, patient care must be based on scientific evidence and commercial interests should not determine the topics or content

of CE. Because of these underlying ethical issues, participants concluded that the commercial entities that manufacture and sell healthcare products should not provide financial support for the continuing education of health professionals.

Participants acknowledged that many major advances in healthcare, especially in the development of new drugs and devices, have come from careful collaboration between medical and commercial investigators. Too, corporations have made valuable donations to academic health centers to support professorships, scholarships, programs, and buildings, all of which contribute to the public good.

Despite recent changes in CE accreditation to reduce commercial influence, the problem persists and organizations with little professional expertise in healthcare, and supported almost entirely by commercial interests, provide accredited continuing education. At the same time, accrediting groups require all organizations providing CE to go through laborious, bureaucratic procedures to document that no inappropriate influence has occurred.

Participants pinpointed another serious failure with current accreditation mechanisms. At a time when inter-professional collaboration, teamwork, and improvement of systems are key to high quality healthcare, accrediting organizations for the various health professions still work in silos. Rather than promoting inter-professional collaboration and education, regulations and procedures for accreditation make inter-professional collaboration difficult. And, while systems of care have a major impact on the quality of healthcare delivered by clinicians, accrediting organizations have been slow to align their CE activities with quality improvement efforts by systems of care.

Participants identified a set of principles they believe should underlie and guide continuing education of the health professions:

— Integrate continuing education into daily clinical practice.

— Base continuing education on the strongest available evidence for practice.

— Minimize, to the greatest extent possible, both the reality and the appearance of bias.

— Emphasize flexibility and easy accessibility for clinicians.

— Stress innovation and evaluation of new educational methods.

— Address needs of clinicians across a wide spectrum, from specialists in academic health centers to rural solo practitioners.

— Support inter-professional collaboration.

— Align continuing education efforts with quality improvement initiatives at the level of health systems.

After two and a half days of discussion, participants agreed to the following conclusions and recommendations:

## CONCLUSIONS

### Continuing Education and the Public

The quality of patient care is profoundly affected by the performance of individual health professionals.

The fundamental purposes of continuing health professional education (CE) are:

— To improve the quality of patient care by promoting improved clinical knowledge, skills and attitudes, and by enhancing practitioner performance.

— To assure the continued competency of clinicians and the effectiveness and safety of patient care.

— To provide accountability to the public.

CE fulfills a critically important, indeed essential, public purpose. Given the accelerating pace of change in clinical information and technology, CE has never been more important.

## Responsibilities of Individual Professionals, Professional Teams, and Health Systems

Maintaining professional competence is a core responsibility of each health professional, regardless of discipline, specialty, or type of practice.

The individual clinician has been the principal unit of accountability for performance in the healthcare delivery system. Given that the performance of health systems also profoundly affects patient care, CE fails to take into account systems of care.

Effective patient care increasingly depends on well-functioning teams of healthcare professionals. Therefore, CE must address the special learning needs of collaborating teams.

Quality improvement efforts and CE activities overlap and ideally are mutually reinforcing.

## CE Methods

Traditional lecture-based CE has proven to be largely ineffective in changing health professional performance and in improving patient care. Lecture formats are employed excessively relative to their demonstrated value.

Professional conferences play an important role in CE by promoting socialization and collegiality among health professionals. Health professionals have the responsibility to help one another practice the best possible care. Meeting together provides opportunities for cross-disciplinary and cross-generational learning and teaching.

Practice-based learning and improvement is a promising CE approach for improving the quality of patient care. Maintenance of certification programs (in which clinicians review the care they actually deliver in their own practices, compare the results with standards of excellence, and create a plan for improvement) and maintenance of licensure programs are moving CE in this direction. Currently, most CE faculty are insufficiently prepared to teach practice-based learning.

Information technology is essential for practice-based learning by:

— Providing access to information and answers to questions at the time and place of clinical decision-making (point-of-care learning).

— Providing a database of clinician performance at the individual and/or group practice level, which can be compared to best practices and used to make plans for improvement.

— Providing automated reminder systems.

Interactive scenarios and simulations are promising approaches to CE, particularly for skills development, whether the skill is a highly technical procedure, history taking, or a physical examination technique.

Insufficient research is currently directed at improving and evaluating CE. There is no national entity dedicated to advancing the science of CE as there is for biomedical and clinical research.

**Financing CE**

The majority of financial support for accredited CME, and increasingly for CNE, derives directly or indirectly from commercial entities.

Pharmaceutical and medical device companies and healthcare professionals have inherently conflicting interests in CE. Commercial entities have a legitimate obligation to enhance shareholder value by promoting sales of their products, whereas healthcare professionals have a moral obligation to improve patient/public health without concern for the sale of products.

Commercial support for CE:

— Risks distorting the educational content and invites bias.

— Raises concerns about the vows of health professionals to place patient interest uppermost.

— Endangers professional commitment to evidence-based decision making.

— Validates and reinforces an entitlement mindset among health professionals that CE should be paid for by others.

— Impedes the adoption of more effective modes of learning.

No amount of strengthening of the "firewall" between commercial entities and the content and processes of CE can eliminate the potential for bias.

Academic health centers and other healthcare delivery systems are not sufficiently attentive, either to their roles in planning, providing, and assessing CE or to their responsibilities in managing their own conflicts of interest and those of individual faculty and administrators when paid by commercial interests for CE teaching.

### Accrediting CE

Current accreditation mechanisms for CE are unnecessarily complex yet insufficiently rigorous. Compared to earlier, formal stages of health professions education, the CE enterprise is fragmented, poorly regulated, and uncoordinated; as a result, CE is highly variable in quality and poorly aligned with efforts to improve quality and enhance health outcomes.

With the increasing need for inter-professional collaboration, accrediting bodies of the various health professionals need closer working relationships.

## RECOMMENDATIONS

### CE Methods

The CE enterprise should shift as rapidly as possible from excessive reliance on presentation/lecture-based formats to an emphasis on practice-based learning.

New metrics are needed:

— To assess the quality of CE. These metrics should be based on assessment of process improvement and enhanced patient outcomes.

— To identify high-performing healthcare organizations. The possibility of awarding CE credit to individual health professionals who practice in such organizations should be explored.

— To automate credit procedures for point-of-care learning.

Federal and state policymakers should provide financial support for the further development of information technology tools that facilitate practice-based learning and should strongly encourage all clinicians to use these tools.

The responsibility for lifelong learning should be emphasized throughout the early, formal stages of education in all health professions. Students should be taught the attitudes and skills to accomplish CE throughout their professional lifetimes.

A national inter-professional CE Institute should be created to advance the science of CE. The Institute should:

— Promote the discovery and dissemination of more effective methods of educating health professionals over their professional lifetimes and foster the most effective and efficient ways to improve knowledge, skills, attitudes, practice, and teamwork.

— Be independent and composed of individuals from the various health professions.

— Develop and run a research enterprise that encourages increased and improved scientific study of CE.

— Promote and fund evaluation of policies and standards for CE.

— Identify gaps in the content and processes of CE activities.

— Develop mechanisms needed to assess and fund research applications from health professional groups and individuals.

— Stimulate development and evaluation of new approaches to both intra- and inter-professional CE, and determine how best to disseminate those found to be effective and efficient.

— Direct attention to the wide diversity and scope of practices with special CE needs, ranging from highly technical specialties on the one hand to solo and small group practices in remote locations, on the other.

— Acquire financial resources to support its work and provide funding for research. Possible funding sources include the Federal government, foundations, professional groups, and corporations.

A concerted effort is needed to make the concept of a Continuing Education Institute a reality. To achieve this, The Institute of Medicine should convene a group to bring together interested parties to propose detailed steps for developing a Continuing Education Institute.

**CE Financing**

Accredited organizations that provide CE should not accept any commercial support from pharmaceutical or medical device companies, whether such support is provided directly or indirectly through subsidiary agencies. Because many professional organizations and institutions have become heavily dependent on commercial support for current operations, an abrupt cessation of all such support would impose unacceptable hardship. A five-year "phase out" period should be allowed to meet this recommendation.

The financial resources to support CE should derive entirely from individual health professionals, their employers (including academic health centers, healthcare organizations, and group practices), and/or non-commercial sources.

Faculty of academic health centers should not serve on speakers' bureaus or as paid spokespersons for pharmaceutical or device manufacturers. They should be prohibited from publishing articles, reviews, and editorials that have been ghostwritten by industry employees.

**CE Accreditation and Providers**

Organizations authorized to provide CE should be limited to professional schools with programs accredited by national bodies, not-for-profit professional societies, healthcare organizations accredited by the Joint Commission, multi-disciplinary practice groups, point-of-care resources, and print and electronic professional journals.

Existing accrediting organizations for continuing education for medicine (the Accreditation Council for Continuing Medical

Education) and nursing (the American Nurses Credentialing Center) should meet and within two years develop a vision and plan for a single accreditation organization for both nursing and medicine. The new organization should incorporate the guiding principles for CE and the recommendations laid out in this report where relevant. The American Academy of Nursing and the Association of American Medical Colleges should convene the two accrediting bodies for this purpose.

Academic health centers should examine their missions to determine how to strengthen their commitment to CE. They should help their faculty gain expertise in teaching practice-based learning and incorporate information technology, simulations, and interactive scenarios into their CE activities.

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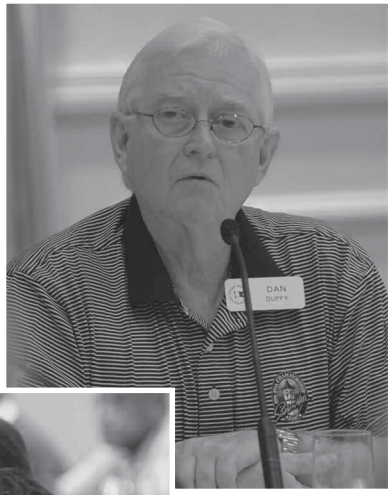
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# Approaches to Knowledge Development—What Works and What Does Not

# How Physicians Learn and How to Design Learning Experiences for Them: An Approach Based on an Interpretive Review of Evidence

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Researchers from multiple studies over the past several years have reported that there are distressing gaps between the healthcare services that patients receive and those that they could be receiving.[1,2] These studies show that many patients do not receive the best possible care, receive suboptimal care, or are victims of errors, despite the fact that approaches to care are improving and demonstrating enhanced outcomes. A variety of approaches have been suggested to address this gap.[3] Continuing medical education (CME) has been a longstanding suggestion. For many years, however, people have expressed concerns about the effectiveness of CME. As a result, confidence in the ability of CME to address the identified gaps in healthcare delivery was not high. But significant work over the past 20 years has demonstrated the effectiveness of CME, *if* it is planned and implemented according to approaches that have been shown to work.[4–6]

This interpretive essay reviews the evidence that describes how physicians learn and proposes six principles from that evidence and research from other fields that can be used to plan formal educational activities designed to facilitate physician learning. Next, the essay proposes an instructional design approach for designing effective formal CME activities. Finally, the essay briefly discusses assessment of formal CME activities. See Appendix A for a brief review of the evidence on how nurses and pharmacists learn.

## How Do Physicians Learn?

At any given time, physicians are engaged simultaneously in several different kinds of learning. Systematic reading, self-directed improvement at work, participation in formal CME courses, and consultation with colleagues are woven into the basic fiber of their professional lives to create an approach to learning that is unique to each individual physician. Studies on physician learning have revealed that the learning process consists of several stages. In general, these stages begin with a physician learner becoming aware of a problem or

challenge and end when all stages are completed, with that physician learner comfortably and confidently applying newly learned knowledge and/or skills *(Table 1)*.

Stage theories are used commonly in the social and behavioral sciences.[7] A stage theory describes a social or behavioral process

**Table 1. Stages of Learning**

| | Recognizing an Opportunity for Learning | Searching for Resources for Learning | Engaging in Learning | Trying Out What Was Learned | Incorporating What Was Learned |
|---|---|---|---|---|---|
| Studies on Physician Learning | | | | | |
| **Geertsma et al 1982**[15] | Priming | Focusing | Focusing | Follow-up | |
| **Schon 1983**[16] | Reflecting-in-action<br>Reflecting-on-action | Decision to pursue information | Develop learning project | | |
| **Means 1984**[17] | Awareness | Actively seeking a solution<br>Decision-making | | | Problem resolution |
| **Putnam, Campbell 1989**[18] | | Preparing to make a change | Making the change | Solidifying the change | Solidifying the change |
| **Garcia, Newsom 1996**[19] | Priming | Follow-up | Follow-up | Follow-up confirmation | |
| **Pathman et al 1996**[20] | Pre-awareness<br>Awareness | Agreement | | Adoption | Adherence |
| **Slotnick 1999**[21, 22] | Scanning | Evaluating | Learning | Gaining experience | Gaining experience |
| Studies on How People Learn | | | | | |
| **Rogers 1962**[23, 24] | Awareness<br>Felt need | Obtain knowledge about an innovation | Obtain knowledge about an innovation | Favorable opinion about the innovation<br>Decision to adopt or reject | Implementation<br>Confirmation |
| **Havelock et al 1969**[25, 26] | Felt need<br>Articulate a problem | Search for solutions | | Choice | Application of solution |
| **Havelock et al 1973**[25, 26] | Awareness | Information seeking<br>Interest | | Evaluation<br>Trial test | Adoption<br>Integration |
| **Prochaska 1983**[27-29] | Pre-contemplation<br>Contemplation | Preparation | Preparation | Action | Maintenance |
| **Kolb 1984**[30] | Experiencing<br>Reflecting | Conceptualization<br>Planning | Planning | | |

in terms of the collection of activities that an individual must pass through in order to successfully complete that process. Descriptions of learning as a process that includes several stages have been in the educational literature at least since the early 1950s.[8] Tough,[9–11] Knowles,[12] and Knox[13] have reported stage learning projects of adults who planned and directed the projects, consisting of multiple stages, for themselves.

There is a danger of oversimplification when describing a complicated process like learning as a straight line that "flows" from stage to stage. In fact, the process of learning is extraordinarily complex, and it is made even more complex because it is embedded in a social context. It is more dynamic, with many interactions among the stages and within the stages. The system dynamics model described by Hirsch and his colleagues[14] is probably a more accurate way to depict the process. For the purposes of this monograph, however, we use the more static approach because the studies we are reviewing were reported in that way, and while possibly oversimplified, this approach helps us understand the process at a very macro level.

The findings of seven studies that examined physician learning and five studies that examined how people learn are summarized in *Table 1*. These studies revealed that learning begins with an individual becoming aware of a problem or challenge and ends when all stages are completed, with that learner comfortably and confidently applying newly learned knowledge and/or skills. We propose a five-stage model that synthesizes the stages identified in the studies reviewed here. The five stages are reflected as the headings of *Table 1*: 1) recognizing an opportunity for learning; 2) searching for resources for learning; 3) engaging in learning to address an opportunity for improvement; 4) trying out what was learned; and 5) incorporating what was learned. It is a precarious endeavor to synthesize the results of studies conducted by others in an attempt to create a working theory. There are dangers of over-interpreting some studies and under-interpreting others. There is also a danger of making assumptions that the original researchers did not intend. In addition, each of the models presented has its own characteristics and features, which may be overemphasized or underemphasized in the synthesis. Furthermore, the stages proposed may contain part of a stage from one study and two stages from another study. The following paragraphs describe these stages in more detail as they relate to physician learning.

*Stage 1: Recognizing an opportunity for learning*

This is the initial stage of the process of physician learning. In this stage, a physician begins to sense that there may be something in his or her practice that is "not right" and may begin to consider learning as a way to address it. The term "scanning" describes the sometimes conscious, sometimes subconscious examination of a physician's practice and his or her professional environment that results in a state of dissatisfaction with some aspect of the practice or practice performance. Scanning may be passive, when a physician reacts to surprises in practice or "feels" that something may not be right, or it may be more active, when the physician is actively engaged in examining areas that he or she has identified as opportunities for improvement. The terms "reflecting-in-action" and "reflecting-on-action" describe what a physician does when he or she becomes "aware" that something is not right with the management of a patient or group of patients, or if there might be a better way to manage a patient. The product of reflection is an ongoing "articulation" of a problem that describes the feeling that something is not right as a difference between "what should be" and "what is"—what psychologists call "cognitive dissonance."[31] For physicians in practice, "what is" and "what should be" can be described in terms of performance in practice or patient outcomes. Dissonance is associated with discomfort that causes action to search for a solution to reduce the discomfort. In a physician, cognitive dissonance will create discomfort, which, in turn, will lead the physician to search for knowledge that will make it possible to reduce the discrepancy and the discomfort.[17,32,33] Another way to describe what happens during this stage is to say that a "teachable moment" emerges. A teachable moment is defined as the time when a learner's psychological readiness for learning is highest.[34] The strength and persistence of the teachable moment will determine whether a physician will move to the second stage.

What causes a physician to move from recognizing that there is an opportunity for learning to starting the process to pursue learning? The strength and persistence of cognitive dissonance, or the teachable moment, is important, but there are a variety of other issues and considerations that affect the decision to pursue learning.[35] In the general adult education literature, Cross[36] suggested that an individual is more likely to participate in an educational activity if he or she 1) possesses positive attitudes about education; 2) considers an educational activity relevant to his or her educational need; 3) sees

more opportunities than barriers to participate; and 4) expects to be successful in learning what he or she needs to learn to address the educational need (cognitive dissonance) that initiated the search for a learning opportunity. In the medical literature, Gorman suggests that physicians will pursue learning if they believe that there is something to be learned that might resolve the discrepancy at hand, but they are not inclined to seek answers when they do not believe that useful information exists.[37] Fox and his colleagues reported that if a physician perceives learning and the results of learning to be rational, relatively easy to achieve, and in the best interest of his or her patients, the physician would be more likely to pursue learning. If learning is coerced, however, by regulation or administrative requirements, a physician's participation would likely be minimal and grudging. Moore and colleagues saw the decision to participate in formal CME as part of information-seeking efforts and described a complex transactional process in which the costs and benefits of participation were compared at several levels.[38]

During this stage, questions may emerge for physicians like "Am I treating patients (in this disease area) correctly?" "How are my patients (in this disease area) doing?" "What are the acceptable standards of care (in this disease area)?" "Is there anything "new" in this disease area?" And, "What's important in all this information that I am hearing about this disease area?"[39]

### *Stage 2: Searching for resources for learning*

Practicing physicians seek to address problems they identify for themselves by starting a search for resources for learning, framed by these problems stated as questions, articulated at varying levels of clarity. A question could focus on any number of the components of patient management: pre-diagnostic evaluation, diagnosis, treatment, or follow-up. A physician seeking information in any of these areas might be concerned about declarative information (knowledge base) but is more likely concerned about procedural information (knowledge about how to use the knowledge base). In addition, a physician seeking information may be seeking that information as new knowledge to update his or her current knowledge or to reinforce current knowledge.[40]

During this stage, a physician prepares to make a change to address the problem he or she has articulated by trying to understand it

and estimating what would have to be learned to address it. The physician becomes aware of alternative approaches to address the identified problem, decides which approach to use, and selects resources to learn about that approach.

A physician begins to develop an image of the change in behavior that is necessary to address the problem identified during stage 1 and how learning will help accomplish that change.[41] Slotnick found that during this stage, a physician evaluates the problem or question to determine whether pursuing learning will be beneficial. Slotnick suggests that a physician determines the benefits by asking the following questions:

— *Does the problem likely have a solution?*

— *Are resources available to learn the solution to the problem?*

— *Will learning the solution change my practice in desirable ways?*

If a physician responds to these questions with positive answers, the next step will be to determine whether she needs to learn something to make a change. With the image of change in mind,[41] the physician will determine the extent to which he or she is able to make the change without learning (her capabilities are adequate) or the extent to which she will have to pursue learning (she feels that her capabilities are not adequate). A physician at this stage will assess her capabilities in a number of ways, including personal reflection, feedback, and interaction with colleagues, as well as personal, community, and professional expectations.[42] In addition, a physician may assess her capabilities *while engaged in CME activities, such as reading journals, attending a formal CME activity, and participating in a Web-based CME activity.* Slotnick suggests that the physician would ask the following questions:

— *What's important in all this information that I am hearing, reading, or viewing?*

— *What experiences have other physicians had doing what I am hearing about?*

— *What is the best way to learn?*

At the end of this stage, a physician has evaluated the problem or question that precipitated the search for learning resources, deter-

mined whether pursuing learning would be beneficial, and decided what type of learning to pursue.

*Stage 3: Engaging in learning*

During the entire five-stage process, a physician manages the pattern of formal and informal resources that he or she finds most effective to address the opportunity for learning that started the process.[43] Learning becomes more focused, intentional, and formal during this stage. Physicians learn informally as well as in formal settings.[44] Informal learning consists of (but is not limited to) casual journal reading, ad hoc conversations with colleagues, interactions with industry representatives, and attendance at grand rounds and other regularly scheduled conferences. Some informal CME focuses on specific patient problems and is more structured, such as consultations with colleagues and focused reading of journals or textbooks. Formal CME is usually planned in some detail and consists of CME activities planned by the physician learner or by someone else. Formal CME activities planned by the physician learner would include preceptorships in which educational activities are negotiated between the learner and the preceptor and learning projects like the Maintenance of Competence Program (MOCOMP) of the Royal College of Physicians and Surgeons of Canada, in which a physician identifies an opportunity for improvement, designs learning activities directed at the improvement, and assesses accomplishments.[45–49] Other educational activities planned by the learner are those in the maintenance of certification programs of specialty societies that are members of the American Board of Medical Specialties (ABMS).[50] CME activities planned by others include formal CME courses and enduring materials.

Questions that emerge during this stage include but are not limited to the following: "Is this educational activity addressing what I need to learn?"; Is the content based on evidence from research?"; "What do other participants think about what is being presented?"; How does what is being presented relate to my patients?"; "Is this all I have to learn?"; "Does what is being presented actually work?"; and "How will what is being presented change my practice?"

*Stage 4: Trying out what was learned*

In this stage a physician begins to use newly learned skills and knowledge to address the problem that precipitated the learning

process. During this stage a physician develops a favorable opinion about what she has learned and makes a decision to accept it or reject it. She experiments with what she has learned in her practice setting but not before confirming the benefits of what she has learned with colleagues. The stage begins with a physician being less than comfortable with her new skills and knowledge. As she progresses through the stage, however, she will become more skillful and confident with what she is doing. The stage is over when the physician is sufficiently comfortable with the newly learned skills and knowledge and they become second nature.

During this stage a physician is likely to rely more on her own reflections and conversations with colleagues than the other resources she used during the learning process.[51,52] Questions she might ask during this stage include the following:

— *How does what I have learned apply to my practice?*

— *What do I have to do in my practice to use what I have learned?*

— *Am I doing it right?*

— *Does it work?*

An important part of this trial and evaluation stage for a physician is determining not only how to use what she has learned but also whether it works in her setting. If the physician's practice uses an electronic medical record or other digital databases for monitoring performance and patient outcomes, she will be able to determine the effectiveness of the new learning. But it is more likely that she will "reflect-on-her-practice" after several "experiments,"[16] and if the new learning appears to be effective, will move on to the next stage. This stage raises interesting ethical issues. One might ask what the responsibility of a CME program is to ensure that every participant has the opportunity to practice until confident in an environment in which patients are not endangered by physician experimentation "until he or she gets it right."

### *Stage 5: Incorporating what was learned*

During this final stage, a physician integrates what he has learned into his daily routines; it will become a part of what he does when

managing patients. Questions that emerge in this stage include but are not limited to the following: What do I have to do differently in my practice to use what I have learned? How do I make what I have learned a part of my practice? What office routines have to be changed? What new procedures have to be introduced? What training does staff need? And, what do I have to do for my patients?

If the physician has not done so already in the previous stage, during this stage, a physician will have to make sure that office routines and procedures include not only what he has learned but also what he will need to implement what he has learned. Most important, he will need to train his staff in what he has learned.

## Principles for Facilitating Physician Learning in Formal CME

As the research summarized here suggests, physician learning is predominantly self-directed. Physicians engage in CME activities because they want to learn something that will help them provide the very best possible care to their patients, not because someone has told them what to learn. In most cases, physicians proceed on their own through the five stages of self-directed learning described here, consulting a variety of resources, but essentially planning and directing the learning project in which they are engaged on their own. In many cases, physicians choose to enroll in a formal CME activity that has been planned by someone else. The most effective formal learning experience for physicians would take into account where a physician is in his or her learning process (what stage) and what will help him or her accomplish learning goals. The principles summarized in the following paragraphs are drawn from the studies reviewed in the previous section of this monograph as well as from studies that have examined learning in general.

### *Principle 1: Planners of formal CME should consider physicians' stages of learning.*

Typically, CME planners asssume that all physicians who enroll in a CME activity are at stage 3, engaging in learning, and need information. In reality, a physician who enrolls in a formal CME activity could be at any one of the five stages of learning and would have questions related to his stage *(Table 2)*. To make the learning experiences of physicians more productive, CME planners should help physicians recognize what stage they are in and plan activities to

**Table 2. Questions Physicians Have at Each Stage of Learning**

| Recognizing an Opportunity for Learning | Searching for Resources for Learning | Engaging in Learning | Trying Out What Was Learned | Incorporating What Was Learned |
|---|---|---|---|---|
| Am I treating patients (in this disease area) correctly? | Is this a problem for me? | Is this educational activity addressing what I need to learn? | Am I doing what I am learning correctly? | What do I have to do differently to use what I have learned in my practice? |
| How are my patients (in this disease area) doing? | Does this problem have a solution that can be addressed by learning? | Is the content based on evidence? | How will I be able to do what I am learning in my practice? | How do I make what I have learned a part of my practice? |
| What are the acceptable standards of care (in this disease area)? | Are there resources available for learning the solution? | What do the other participants think about what is being presented? | Does what I am learning to do work? | What office routines have to be changed; what new procedures have to be introduced? |
| Is there anything "new" in this disease area? | Can I learn the solution? | How does what is being presented relate to my patients? | | What training does staff need? |
| | What's important in all this information that I am hearing about this disease area? | Is this all I have to learn? | | What do I have to do for patients? |
| What's important in all this information that I am hearing about this disease area? | What do I need to learn? | Does what is being presented work? | | What do I have to do for patients? |
| | What is the best way to learn? | How will what is being presented change my practice? | | |
| | What experiences have other physicians had with this problem? | How will what is being presented change my practice? | | |
| | How will learning the solution change my practice? | | | |

*Adapted from Slotnick* [39]

address the questions they have that are associated with that stage.

A physician would initiate the five-stage learning process for problems related to specific patients and for more generalized patient-related issues. The process that results for each is slightly different. For problems related to specific patients (Why is Mrs.

Jones not responding to her hypertension medication?), a physician would likely use resources in his office (journals, textbooks, online resources) and local consultants in almost all stages. The physician would typically enroll in a formal CME activity for learning initiated by a more general patient-related problem (Why are the hemoglobin A1c levels of my diabetes patients consistently high?).[51]

With respect to a general patient problem, some physicians might be at stage 1, recognizing an opportunity for learning, or not yet at stage 1. These physicians would benefit from information that would help them recognize or create a teachable moment. Many physicians who are at stage 2, searching for resources for learning, may have difficulty articulating the opportunity for learning they recognize into questions that can lead to a productive search for information and an effective educational experience.[21,25,52–54] CME planners should design experiences that allow physicians to translate what they are feeling about their practice behavior into questions. Some physicians may find answers for the questions they develop as part of the CME activity, while for others the questions may remain. For the latter group, it is important for the CME activity to help with that search.

Other physicians may be at stage 3, engaging in learning. At this stage, a physician already has formulated questions. The CME activity should be designed to provide the conditions in which this physician can create the knowledge necessary to answer those questions. Physicians who are at stage 4, trying out what was learned, will benefit from an opportunity to practice using what they have learned. Practice in an educational setting will prepare them to transfer new learning when they return to their practice setting. If physicians at stage 5, incorporating what was learned, are enrolled in a CME activity, it is important to provide them with information or resources showing how to integrate new approaches into a practice.

Physicians may decide to discontinue activities within a stage or stop the entire learning process itself when they feel they have learned enough to pass on to the next stage or deal with the problem that precipitated the learning process, or they may decide that the benefits from learning are not worth the efforts.[55] Maintaining motivation is important if physicians are to persist in learning through all five stages and change their behavior based on that learning.

The physician was motivated to initiate the learning process because of cognitive dissonance. Frequent reminders are an important part of the educational activity to show that progress is being made in closing the gap between "what is" and "what should be" that created the cognitive dissonance. Linking feedback and motivation is the key to a successful educational experience.

***Principle 2: Formal CME activities should focus on clinical problems and should provide information that physicians can use in practice.***

Practicing physicians are in a more or less continuous search for information that they want to use to solve problems or address opportunities for improvement in practice.[56] They may be at any one of the five stages described earlier. Regardless of what stage they are in, physicians are interested in clinical issues, not necessarily a detailed description of the basic science or clinical research that led to the finding that has clinical implications.

When physicians select learning resources in their self-directed learning projects, one of the features that is important to them is a focus on clinical issues.[27,51,57–60] This is useful to consider when planning formal CME activities where physicians may be in any one of the five stages of learning.

***Principle 3: Formal CME activities should be organized to provide opportunities to obtain knowledge and develop skills in settings and applications that would normally involve the use of that knowledge and/or those skills.***

The ultimate goal of an effective formal CME activity is for the physician to apply what he or she has learned in the practice, and not just retain the facts. Like other learners, physicians are more likely to learn and change their behavior if the learning experience closely resembles the setting in which the learning will be used. Physicians learn in relation to what else they know, believe, and have experienced—the settings and applications that would normally involve that knowledge. They will transfer what they have learned in an educational setting to a work setting more readily when the educational setting is designed as an "authentic" work setting.[61] Physicians will learn more effectively in this setting by deriving insights from clinical practice with the help of CME faculty

who demonstrate how to reflect on a problem, identify the most feasible solution, use the solution in a real-world setting, and assess the effectiveness of the chosen solution. CME planners should work with faculty to create authentic settings that will engage the learner in complex, realistic, "messy," problem-centered activities and create a setting that will be familiar and in which physician learners can recognize what they need to learn and begin the process of transferring learning to their practice settings.

*Principle 4: Formal CME activities should provide opportunities for active learning.*

Like other learners, physicians learn best by doing.[21] Actively involving learners is more effective than simply disseminating concepts and principles. Teachers should function more as facilitators of learning than as disseminators of facts.[62,63] CME planners should not only provide an authentic setting in formal CME activities but should also provide physicians with opportunities to interact within that setting. Because the goal is for physicians to apply what they have learned in a formal CME activity in a dynamic social environment—the practice setting—a formal CME activity will be more effective in accomplishing this goal if it is planned as a social process dependent on transactions with others within a context that resembles as closely as possible the practice environment. Indeed, CME course design and materials should permit and encourage physicians to explore the new content, their own experience, and the experiences of other physician learners. The choice of a particular method is not as important as providing the opportunity for learners to practice what they have learned and to receive feedback on their efforts.

Active learning is more effective than passive learning for several reasons. First, it draws on the experience and previous knowledge of the learners. Second, it recreates the social environment within which the new information will be used. Third, it provides an opportunity for practice and feedback, two activities essential for learning and transferring that learning to action. Fourth, it permits the physician learners to engage at their own stage of learning.

Learning is more effective if the experience and previous knowledge of the learners is taken into account. Active learning formats in formal CME activities facilitate the incorporation of a learner's previous knowledge and experience into learning activities. Learning is a

social activity. Learning is intimately associated with an individual's connection with other human beings, including colleagues, teachers, peers, and family, as well as casual acquaintances, and physicians attend CME activities because doing so provides opportunities to talk with others sharing their interests.[1]

Learning requires both practice and feedback. Again, like other learners, physicians are more likely to learn if they are given an opportunity to practice and receive feedback. For effective learning to occur, there must be opportunities for practice as well as positive feedback when something is performed correctly, and negative feedback given constructively when something is performed incorrectly. In addition, practice provides opportunities to reflect on the task at hand as well as past experience — to understand not only what happened, but also why it happened.

In an active learning environment, physicians can feel vulnerable and resist participation because they fear being exposed for lack of knowledge or posing an incorrect solution to a problem encountered as part of an educational exercise. An individual must feel safe before effective learning can occur.[64] An important part of the andragogical approach developed by Malcolm Knowles is creating a climate comfortable for learning and the learners.[12] Permitting each participant to maintain his or her level of self-esteem is crucial to creating conditions for learning.

***Principle 5: Effective CME activities are more likely to consist of multiple educational activities that are organized according to an instructional design plan.***

The results of several systematic reviews suggest that physicians are more likely to learn and use what they have learned in their practices if they participate in multiple learning activities on a single topic.[65–67] A recent systematic review suggests, however, that this may not always be true.[3] The issue may not be so much how many activities, but rather how the activities are organized. Instructional design provides suggestions not only for what educational methods and techniques are most likely to result in desired learning outcomes but also how to organize them.[4]

Conventional approaches to planning CME, loosely based on the approach described by Malcolm Knowles,[68,69] focus only on the

stage of the learning process when a physician is "engaged in learning" (stage 3). See *Table 3*. Davis and colleagues[70,71] observed, however, that in effective CME, multiple educational activities were organized as *predisposing, enabling, and reinforcing*, following

**Table 3. CME Planning that is Responsive to Questions that Physician Have at Each Stage of Learning**

| CME PLANNING | | | | |
|---|---|---|---|---|
| **Recognizing an Opportunity for Learning** | **Searching for Resources for Learning** | **Engaging in Learning** | **Trying Out What Was Learned** | **Incorporating What Was Learned** |
| **PREDISPOSING** | | **ENABLING** | | **REINFORCING** |
| 1. How are my patients (in this problem area) doing? *(Stage 1)* | | 1. What do I need to learn? *(Stage 2)* | | 1. Does what I am learning to do work? *(Stage 4)* |
| 2. Am I treating patients (in this problem area) correctly? *(Stage 1)* | | 2. How will what is being presented change my practice? *(Stage 2)* | | 2. How do I make what I have learned a part of my practice? *(Stage 5)* |
| 3. What are the acceptable standards of care (in this problem area)? *(Stage 1)* | | 3. Is this educational activity addressing what I need to learn? *(Stage 3)* | | 3. What new procedures have to be introduced? *(Stage 5)* |
| 4. Is there anything "new" in this problem area? *(Stage 1)* | | 4. Does what is being presented work? *(Stage 3)* | | 4. What office routines have to be changed? *(Stage 5)* |
| 5. Does this problem have a solution that can be addressed by learning? *(Stage 2)* | | 5. Is the content based on evidence? *(Stage 3)* | | 5. What training does staff need? *(Stage 5)* |
| 6. What experiences have other physicians had with this problem? *(Stage 2)* | | 6. What do the other participants think about what is being presented? *(Stage 3)* | | 6. What do I have to do differently for patients? *(Stage 5)* |
| 7. Are there resources available for learning the solution? *(Stage 2)* | | 7. How does what is being presented relate to my patients? *(Stage 3)* | | 7. How will I be able to do what I am learning in my practice? *(Stage 5)* |
| 8. Can I learn the solution? *(Stage 2)* | | 8. How will learning the solution change my practice? *(Stage 2)* | | 8. What's important in all this information that I am hearing about this problem area? *(Stages 4 and 5)* |
| 9. What is the best way to learn? *(Stage 2)* | | 9. Am I learning? *(Stage 3)* | | |
| 10. What's important in all this information that I am hearing about this problem area? *(Stages 1 and 2)* | | 10. Is this all I have to learn? *(Stage 3)* | | |
| | | 11. Am I doing what I am learning correctly? *(Stage 4)* | | |
| | | 12. What do I have to do differently to use what I have learned in my practice? *(Stage 4)* | | |
| | | 13. What's important in all this information that I am hearing about this problem area? *(Stages 2, 3, and 4)* | | |

the *PRECEDE-PROCEED* framework developed by Green and colleagues.[72] This observation has been reinforced by positive findings in studies reported by Mann and colleagues,[73] White,[74] and Cantillon.[75] The *predisposing-enabling-reinforcing* paradigm appears to match well with the stage learning theories described by researchers investigating how physicians learn. *Predisposing* activities relate to stage 1 and most of stage 2; *enabling* activities relate to some of stage 2, all of stage three, and some of stage 4; and *reinforcing* activities relate to most of stage 4 and all of stage 5. Before engaging in learning, most physicians feel a need to learn (cognitive dissonance); they become *predisposed* to learn. While engaging in learning, physicians strive to learn what to do and how to do it so they become *enabled* to do what they did not know how to do before. And most physicians will seek *reinforcing* comments from peers or local opinion leaders after learning something new and trying it in practice.

***Principle 6: Learning is enhanced if content is organized in small units.***

Learning tasks should be organized in such a way that what is to be learned is presented in small amounts, so that each unit will be mastered before the next one is considered. Cognitive scientists have called this "chunking" and suggest that it improves the efficiency of working memory.[76] External information (sensory input) must first be processed by short-term memory. When short-term memory is overloaded, learning can be difficult. Overload can be eliminated by reducing or pacing sensory input. Designing formal CME activities in 15-minute modules would modulate sensory input and contribute to improved learning conditions.

## Designing Effective CME: A Proposed Instructional Design Approach

No single tested theory exists that CME planners and others could use as a guide for planning educational activities.[77] Several studies have contributed to an emerging theory of how physicians learn, some of which were reviewed in the first section of this paper. Other studies have suggested what contributes to effective CME, and additional studies have reviewed the effectiveness of various educational techniques in CME. However, the findings from these studies do not appear to have been combined, synthesized, hypoth-

esized, and tested in a way that would produce a theory on which instructional design decisions in CME could be confidently based. This section represents an attempt to combine and synthesize the material presented in previous sections into a proposed approach for CME instructional design.

Educational methods used in formal CME activities traditionally fall into three broad categories: presentation methods, interactive methods, and skill development methods *(Table 4)*. Presentation methods are used when learning objectives call for knowledge acquisition. Interactive methods are used when the intent is to increase understanding of educational content and improve the chances that it will be applied in the practice setting. The most common interactive method in medical education is teaching and learning from cases. Two formats are useful in CME: case presentation and case discussion. In a case presentation, information about the experience of managing a patient with a specific disorder is reported to the audience in a presentation format. Case discussion engages members of the audience in decision making about a case. *Skill development* methods are used to help learners develop and use a skill. These methods can be used to help learners develop cognitive skills, for example

**Table 4. Educational Methods in Formal CME**

| |
|---|
| **Presentation Techniques**<br>• Lecture<br>• Panel |
| **Interactive Techniques**<br>• Teaching and learning from cases<br>Case presentation<br>Case discussion<br>• Small group discussion |
| **Skill Development Techniques**<br>• Presentation<br>• Demonstration<br>• Practice<br>• Feedback |

deciding to prescribe an ACE inhibitor for patients with congestive heart failure; interpersonal skills, like obtaining a sexual history from an adolescent; or psychomotor skills, like performing flexible sigmoidoscopy or a new cardiac surgery technique. Merrill suggests that there are four components of effective skill development, referred to here as presentation, demonstration, practice, and feedback.[78]

Although presentation methods, such as lectures, panels, and printed materials, may not change physician behavior *when used alone*, they continue to be the most prevalent method for CME. When presentation methods are made more interactive through case presentations or group discussion, moderately large changes in professional practice can result. No systematic review of skill development methods has been performed, but evidence from the literature suggests that multiple CME activities focused on a single topic organized following the *predisposing-enabling-reinforcing* model are effective in changing physician behavior.

To make the learning experiences of physicians more effective, CME planners should use the *predisposing-enabling-reinforcing* framework to align learning activities with physician learning stages. At each learning stage, physicians have specific questions, some more conscious and articulated than others. In *Table 3*, the questions listed in *Table 2* under columns related to the stage of learning have been resorted and placed under columns labeled "Predisposing," "Enabling," and "Reinforcing." The instructional design approach described here involves identifying content to answer the questions and determining the best way to help physicians learn that content, drawing on what has been described about how physicians learn, principles that describe how to facilitate physician learning, and educational methods that have been effective in CME.

### *Planning predisposing CME activities*

As mentioned earlier, predisposing activities appear to relate to all of stage 1: *recognizing an opportunity for learning*, and part of stage 2, *searching for resources for learning*. As a result, the questions that need to be addressed to design predisposing learning activities are all of the questions in stage one and some of the questions from stage two. See *Table 5* for a list of the questions, the content that could address the questions, and suggested educational methods for each question.

### *Planning enabling CME activities*

Enabling CME activities appear to relate to all of stage three, engaging in learning; parts of stage 2, *searching for resources for learning*;

**Table 5. Planning Pre-disposing CME Activities**

| QUESTION | CONTENT | EDUCATIONAL METHOD |
|---|---|---|
| 1. How are my patients (in this problem area) doing? | Results of audit that focus on patient health status and outcomes in the problem area and information about those results. | Lecture and group discussion<br>Academic detailing |
| 2. Am I treating patients (in this problem area) correctly? | Results of audit that focus on physician performance in the problem area and information about those results. | Lecture and group discussion<br>Academic detailing |
| 3. What are the acceptable standards of care (in this problem area)? | Local or national clinical practice guidelines (CPGs) in the problem area. | Lecture and group discussion<br>Academic detailing |
| 4. Is there anything "new" in this problem area? | Findings from studies recently published in peer reviewed journals and vetted for level of evidence. | Lecture and group discussion<br>Academic detailing |
| 5. Does this problem have a solution that can be addressed by learning? | Separation of educational from non-educational components of CPGs. | Lecture and group discussion<br>Academic detailing |
| 6. What experiences have other physicians had with this problem? | Stories of other physicians. | Panel<br>Group discussion<br>White space on schedule for informal interactions among participants. |
| 7. Are there resources available for learning the solution? | Information about enabling activities that have been or will be designed to address this problem area. Enabling activities can be part of a single activity that follows predisposing activities or part of a series of activities that occur at another time. | Recruitment material<br>Handout<br>Lecture (testimonial) |
| 8. Can I learn the solution? | Information about the enabling activities that have been developed that demonstrates that they are convenient, accessible, and will not be an unreasonable burden. | Recruitment material<br>Handout<br>Lecture (testimonial) |
| 9. What is the best way to learn? | Information that shows that the enabling activities that have been or will be designed to facilitate physician learning, and that there will be activities to reinforce it. | Recruitment material<br>Handout<br>Lecture (testimonial) |
| 10. What's important in all this information that I am hearing about this problem area? | Regular reference to the gap between current and actual and how what is being presented relates to reducing the gap. | All methods |

and stage four, *trying out what was learned.* As a result, the questions that need to be addressed to design enabling learning activities are all of the questions in stage 3 and some of the questions from stages 2 and 4. *(Table 6).*

**Table 6. Planning Enabling CME Activities**

| QUESTION | CONTENT | EDUCATIONAL METHOD |
|---|---|---|
| 1. What do I need to learn? | Specific behaviors that potential participants would be expected to perform after participating in the enabling activity, e.g. learning objectives. | Recruitment materials<br>Handout<br>Lecture |
| 2. How will what is being presented change my practice? | Description (in general) of the implications of what will be learned during the enabling activity for practice organization and the people that work within the practice. | Handout<br>Lecture<br>Group discussion<br>Teaching and learning from cases |
| 3. Is this educational activity addressing what I need to learn? | Regular reference to the gap between current and actual and how what is being presented relates to reducing the gap. | All methods |
| 4. Does what is being presented work?<br>5. Is the content based on evidence? | Summaries of CPGs or the findings of studies that demonstrate the efficacy of what is being presented, i.e., what is being presented actually produces desired results. In addition, summaries should include the level of evidence. | Skill development (presentation) |
| 6. What do the other participants think about what is being presented? | Opinions of other participants. | Skill development (presentation)<br>• Panel<br>• Group discussion<br>White space on schedule for informal interactions among participants. |
| 7. How does what is being presented relate to my patients? | Description of patients in the studies reported. Comparison of study patients with participant's patients. | Skill development (cases)<br>• Demonstration<br>• Practice |
| 8. How will learning the solution change my practice? | Description of the practice organization in the studies and what the people in those practices did as part of the study. | Skill development (cases)<br>• Demonstration<br>• Practice<br>• Action plan |
| 9. Am I learning?<br>10. Is this all I have to learn?<br>11. Am I doing what I am learning correctly?<br>12. What do I have to do differently to use what I have learned in my practice? | Summary of the criteria of performance, highlighted during the demonstration and coached during practice. Information about how the learner(s) performed the criterion components of the skill and how to improve to criterion. | Skill development (cases)<br>• Practice<br>• Feedback<br>• Action plan |
| 13. What's important in all this information that I am hearing about this problem area? | Regular reference to the gap between current and actual and how what is being presented relates to reducing the gap. | All methods |

### *Designing reinforcing CME activities*

Reinforcing CME activities include part of stage 4, *trying out what was learned* and all of stage 5, *incorporating what was learned.* As a result, the questions that need to be addressed to design reinforcing learning activities are some of the questions in stage 4 and all of the questions from stage 5 *(Table 7).*

## Assessing CME Activities

At the beginning of this paper, the gap between the healthcare that most Americans are receiving and the healthcare that they could be

**Table 7. Planning Reinforcing CME Activities**

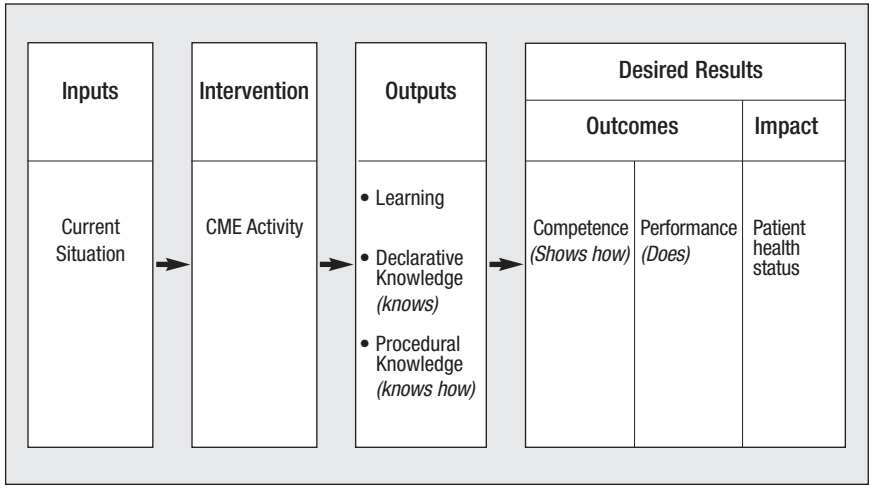
| QUESTION | CONTENT | EDUCATIONAL METHOD |
|---|---|---|
| 1. How will I be able to do what I am learning in my practice? | Summaries of CPGs or the findings of studies that demonstrate the efficacy of what is being presented, i.e., what is being presented actually produces desired results. In addition, summaries should include the level of evidence. | Skill development<br>• Action plan<br>Reminders<br>Commitment to change |
| 2. Does what I am learning to do work? | Results of audit that focus on physician performance in the problem area and information about those results. | Lecture and group discussion<br>Academic detailing |
| 3. How do I make what I have learned a part of my practice?<br>4. What new procedures have to be introduced?<br>5. What office routines have to be changed?<br>6. What training does staff need?<br>7. What do I have to do differently for patients? | • Summaries of CPGs or the findings of studies that demonstrate the efficacy of what is being presented, i.e., what is being presented actually produces desired results. In addition, summaries should include the level of evidence.<br>• Description of patients in the studies reported. Comparison of study patients with participant's patients.<br>• Description of the practice organization in the studies and what the people in those practices did as part of the study. | Skill development (cases)<br>• Action plan<br>Group Discussion<br>Reminders<br>Commitment to change |
| 8. What's important in all this information that I am hearing about this problem area? | Regular reference to the gap between current and actual and how what is being presented relates to reducing the gap. | All methods |

receiving was identified as a significant problem. CME, designed according to the model presented here, is one approach to address the gap. This section offers suggestions on how to determine the effectiveness of CME activities planned according to the suggested approach.

"Effective" is a term used to describe an activity that has accomplished an intended or desired result or outcome. Something that is effective is considered to have value. Assessment is the act of judging something in terms of its worth or value. Assessment can be done at three levels: the individual physician learner; a single educational activity; or a program of educational activities that might represent all of the offerings of an institutional CME provider. At each of these levels, an educational activity represents an intervention in a situation to improve it by producing something (outputs) that, when introduced into the situation, will result in outcomes (competence and performance) that represent improvements (the desired results), and an impact (enhanced health status of a group or population of patients). See *Figure 1* for an overview.

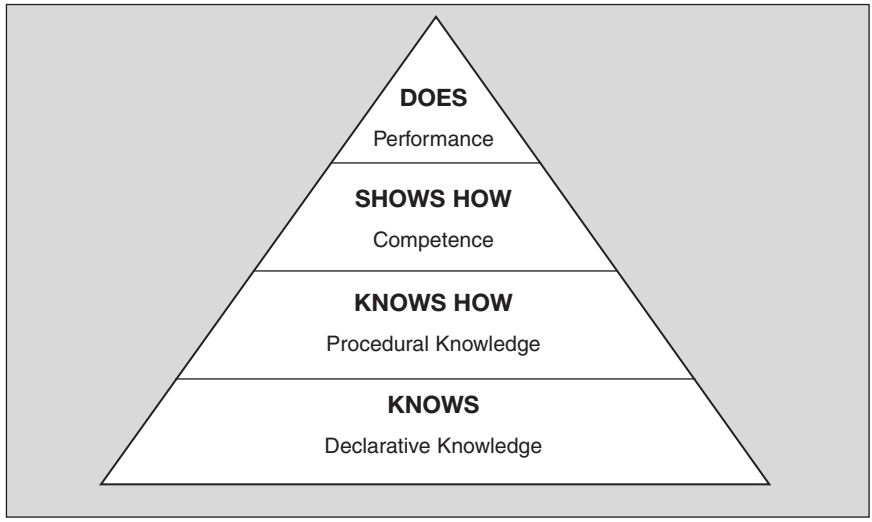
A CME activity can produce two potential types of output. The first is *declarative knowledge*. An example of declarative knowledge would be a physician *knowing what to do*, for example, to manage the complications of type 2 diabetes. After a CME activity, the physi-

**Figure 1. Systems Overview of CME as an Intervention**



cian would also be able to state what to do, for example, to examine the feet of all patients with diabetes (*Figure 2*). The second type of output is *procedural knowledge*. An example of procedural knowledge would be for the physician to *know how to* manage the complications of type 2 diabetes. The physician could describe how to do it. For example, after participating in a CME activity, the physician should be able to describe how to examine the feet of

**Figure 2. Levels of Physician Learning and Assessment**




Adapted from Miller [79]

patients with diabetes. Furthermore, if a physician learns procedural knowledge, four types of desired results are possible: two outcomes (competence and performance) and two impacts (improved health status of a group or population of patients). To demonstrate a competence outcome, it would be necessary for a physician to *show how* he or she would manage complications of type 2 diabetes, for example, by examining the feet of a patient with diabetes *in the educational setting*. To show a performance outcome, a physician learner would then be expected to demonstrate what he or she has learned to his or her associates in the *job setting*, for example by examining the feet of all the patients with diabetes in the practice. The impact of a CME activity or program can be ascertained by measuring the *health status* of a group or population of patients, for example decreased rates of amputations for patients with diabetes.

When planning to assess a CME activity, it is important to remember that measurement of competence outcomes should occur *in the educational setting*, whereas performance outcomes should be measured *in the practice setting*. Impact should be measured *in the practice or community setting*. In many cases, it is difficult for a CME planner to gain access to data or develop instrumentation to collect objective data. In these cases, data can be obtained through self report. Self-report data are usually the opinions or perceptions of individuals and may reflect their biases or "socially acceptable" responses. Observational methods produce more objective data from systematic observation and recording of those observations. Data from self-report methods are not scientifically rigorous, but they are useful for making judgments about outcomes, especially if the alternative is no data.

Currently most assessment in CME focuses on outputs: self-reports of knowledge gained in declarative or perhaps procedural knowledge. It is difficult to know precisely what percentage of CME assesses outcomes at the level of competence or performance. The recently released revised Accreditation Council for Continuing Medical Education criteria will require assessment of competence, performance, and health status. Until then, a conservative guess would be less than 5 percent. Many CME providers do not have access to practice or community settings where the measurement of performance and patient health status alluded to in the previous paragraph can be accomplished. It may be, therefore, that the most realistic outcome for most providers will be competence, where measurement can occur in the educational setting.

In the approach described here, a CME activity that is designed to be effective in accomplishing a competence outcome will provide learners with an opportunity to practice the skill in which competence is desired and receive feedback on their level of competence. While practice and feedback are considered "formative assessment" for the purposes of planning opportunities for learning, they could also be considered "summative assessment" for the purposes of determining if desired results (outcomes) have been attained.

One approach that would create the most realistic setting for a CME activity to accomplish competence outcomes would be to use simulated and standardized patients. CME faculty could observe

physician learners practicing the skill (cognitive, interpersonal, or psychomotor) with simulated patients and provide feedback to them as formative assessment to help them understand the level of competence they were functioning at and what they needed to do to reach the target level. The faculty would then observe the learner in a final exercise with a standardized patient to confirm that the target level has been reached.

Not all CME programs have the resources for simulated and standardized patients. Planners associated with these programs could consider observing physician learners in live CME activities working through authentic case scenarios using an audience response system (ARS) embedded at key decision or observation points in the case. This would give CME planners a sense of a group's level of competence. To determine an individual learner's level of competence, one-on-one sessions could be arranged with CME faculty after group activities are completed. A similar approach could be used for Webcasts and video or audio conferences. In a Web-based CME activity, the interactivity and multimedia capability of the Web provide an opportunity to develop truly authentic case scenarios. Information technology associated with the Web can function in a similar way to an ARS.

Many physicians participate in CME through print enduring materials, like monographs or journal CME. It is challenging to design a CME activity to achieve competence outcomes in the print enduring material format. A blended approach might be one in which learners would read an article or monograph from which they would be directed to access a site online, where there would be opportunities for them to assess their competence level. A less desirable approach would be to develop a paper-based scenario and multiple choice test that learners could fax or mail to the CME provider.

The preceding paragraphs described how CME activities might be designed to facilitate the development and assessment of competence. If a CME activity designed to accomplish competence outcomes is effective, two questions should be asked: 1) What should be measured to determine if a physician is competent; and 2) How should it be measured?

The example of foot care in diabetic patients will help us understand what needs to be measured to demonstrate that physician

learners have accomplished the desired level of competence. The competence outcome would be *showing how* to examine the feet of patients with diabetes so that neuropathy and vasculopathy might be detected and amputation prevented or delayed. According to the American Diabetes Association, a "competent" provider would be expected first to demonstrate the correct techniques for the physical examination of the feet. The following would be among the important items to be checked: pulse; skin temperature; skin appearance (ulcerations and/or infections); sensation to vibration or slight pain; proprioception (sense of body position); muscle strength; and presence of abnormalities (eg, bunions). Second, the learners would be expected to detect, based on observations, if neuropathy or vasculopathy is present and show how they would confirm a diagnosis. Finally, the learners would be expected to develop a management plan that included follow-up.[80] An observation checklist, adapted for each of the settings described here, might be the best way to collect the data.

## Concluding Thoughts

This paper has reviewed a wide range of literature on physician learning, instructional design, and assessment. Physicians engage in learning in response to problems and opportunities for improving their practices. A five-stage learning process was developed to describe the efforts of physicians to address problems encountered in practice, understand what they need to learn to address those problems, learn what they need to know and do, experiment with it, and incorporate it into practice. An approach to instructional design was proposed as a way to help physicians learn by determining what content and which instructional methods are most appropriate for the questions they have at each stage of their learning. The *predisposing-enabling-reinforcing* model is one approach to organize learning activities. An approach to assessment in educational activities designed to achieve competence outcomes was suggested in which a summative assessment grew out of formative assessment that was designed as part of the learning experience.

Recently published work recognizes that CME, no matter how well planned, cannot produce changes in physician performance and patient health status by itself.[81] Rather, as the research in CME and other fields has matured, it has become clear that there are as many approaches to deal with the many forces acting on physicians and

patients in and around the clinical encounter as there are forces, and maybe more. The hope of many people in many fields is for collaboration among the proponents and implementers of these approaches. Richard Grol and his colleagues have made an important start by developing a taxonomy in which they categorize these approaches into two major groups: those that emphasize internal processes and those that emphasize external influences, reflecting assumptions about human behavior and how groups or organizations function.[3] Approaches that emphasize internal processes include educational, epidemiological, and marketing approaches. Approaches that emphasize the influence of external approaches include external influences, social interaction, managerial approach, and control and compulsion. In addition, theory-driven evaluation, using the logic model,[82,83] and the newly emerging intervention science may provide the tools to understand how the collaboration will work *(http://www.implementationscience.com/)*.

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## APPENDIX A:
## How Nurses and Pharmacists Learn

At the time of this writing, I have not found an exact replica of the model developed in this monograph for physicians in the nursing or pharmacy literature. CME has the largest and most robust body of evidence examining professional learning and effectiveness of programming. However, I have found interesting and intriguing parallels in the nursing literature.

Almost all the articles I reviewed mentioned that nurses function in a complex healthcare environment where social, technological, and medical changes present them with challenges and that self-directed learning plays a vital role in ensuring that they respond to these challenges in appropriate ways.[1]

In a small qualitative study ($n$=24), Daley explored the different ways that novice and expert nurses learn. The learning of expert nurses was more "self-directed;" the learning of novice nurses was more "other-directed." Daley suggested that as nurses become more "expert," their meta-cognition skills become more developed, that is, they begin to understand better how they learn.[2] While not stated explicitly in the study that Daley reported, the need reduction and integration into work approach described in this monograph is usually associated with self-directed learning projects.[1] It may be that nurses follow the same five stage process as physicians, but Daley's study provides an interesting perspective on the differences between novice and expert practitioners.

Scanlon and Weir suggest that reflection and self-directed learning can be facilitated by clinical supervisors who focus on the developmental needs of nurses rather than disciplinary requirements established by administration. This is necessary because, according to Scanlon and

Weir, the culture of nursing practice for the most part has become routinized and automatic. A clinical supervisor, however, could develop a more reflective nursing practice by helping nurses "reflect-on-practice," which they believe would lead eventually to "reflection-in-practice" becoming part of how a nurse learns from work.[3]

Johns suggested that clinical supervisors could help nurses frame their learning through structured reflection using Carper's "fundamental ways of knowing in nursing" as a heuristic device.[4] Carper's fundamental ways are empirical, personal, ethical, and aesthetic knowing.[5] Empirical knowledge is systematically organized into general laws and rules that describe, explain, and predict clinical phenomena. Personal knowing is knowing oneself in the clinical environment. Knowing of self involves three inter-related factors: recognizing feelings and prejudices; managing feelings and prejudices in order to respond properly; and managing anxiety and sustaining the self. Ethical knowing is knowing what is right or wrong and being committed to act on this basis. Aesthetic knowing involves perceiving the nature of a clinical situation, interpreting this information, envisioning desired outcomes, and subsequently determining if the outcomes were effectively achieved. According to Carper, the aesthetic way of knowing is the core way of knowing in practice, informed by the empirical, personal, and ethical.

This framework resembles the first stage of the stage model described in this monograph for physicians, recognizing the need to learn. Both Scanlon and Weir and Johns state that the purpose of reflecting is to identify, confront, and resolve contradictions between what practitioners aim to achieve and actual results (cognitive dissonance), with the intent to achieve more effective work and desirable outcomes. In their review of literature on continuing nursing education, Furze and Pearcey state that several studies have found that the primary reasons for nursing participation in continuing nursing education are to improve professional knowledge and skills and increase competence.[6] Because this reflecting occurs in the context of an interaction between a clinical supervisor and a nurse, learning to reduce cognitive dissonance can begin almost immediately.

In general, Daley found in her study that that novice nurses tend to learn through more formal mechanisms, including review of policy or procedures, attendance at continuing education programs, and reading of journals. Experts seem to use more informal approaches,

such as consulting with peers and other healthcare professionals. Novices appear to learn through concept formation while experts seem to construct a knowledge base for themselves in the context ßof their practice.[2]

Studies in nursing education suggest that Kolb's cycle of learning (concrete experience, reflective observation, abstract conceptualization, active experimentation) is a valid and useful model to conceptualize learning in nurses.[7]

I have not been able to locate articles at the time of this writing that contain overwhelming evidence that nurses pursue learning in a way that resembles the five-stage process described in this monograph. I am convinced, however, by the information summarized above, along with the information in the studies describing how people in general learn (*Table 1* in main text), that nurses generally follow the same stages.

There is less explicit evidence in pharmacy. While there is a sense that pharmacists follow a similar stage process, there are no studies that specifically describe the steps.[8]

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# Transforming Continuing Medical Education Through Maintenance of Certification

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## Competency-based Education and Evaluation

Over the past 15 years, ideas about the qualities and competencies of physicians have changed. The Association of American Medical Colleges' Medical School Objectives Project (MSOP), the CanMEDS 2005 Physician Competency Framework reports, the American Medical Association Council on Ethical and Judicial Affairs reports, and the UK General Medical Council's *Good Medical Practice* reflect the medical profession's search to describe essential attributes of physicians.

Building upon these initiatives, the Accreditation Council for Graduate Medical Education (ACGME) revolutionized residency education and evaluation through its Outcomes Project in Graduate Medical Education. Their aims were to improve GME by encouraging programs to measure their educational outcomes based on the competencies of their graduates and to accredit programs based on their use of these measures.[1] To establish a framework for physician competence, ACGME solicited the help of the larger medical community. On the basis of this feedback, they identified six core physician competencies: medical knowledge, professionalism, communications and interpersonal skills, patient care, systems-based practice, and practice-based learning and improvement.[2]

At the same time, the American Board of Medical Specialists (ABMS) revised its policy for member boards' certification and recertification through a new program called Maintenance of Certification (MOC).[3] Adopting the ACGME framework, the ABMS boards issued time-limited certification following residency and required physicians to maintain certification through a four-part program. In MOC physicians provide their boards with the following documentation: Part-1) evidence of professional standing (unrestricted medical license and appropriate staff credentials); Part-2) evidence of lifelong learning and periodic self-assessment of knowledge and skills; Part-3) evidence of cognitive expertise by passing a secure examination; and Part-4) assessment of performance and improvement in practice. ABMS initiated this program based on growing evidence that many

physicians fail to remain current in their practices.[4] Likewise, patients expect their physicians to keep up with new developments in the field and would welcome more frequent evaluation by medical boards and other peer groups to achieve this end.[5]

The idea of demonstrating continuing competence has spread. The Federation of State Medical Boards (FSMB) established the Physician Accountability for Physician Competence Initiative to engage the medical community in a dialogue about the future of healthcare in the United States, with the ultimate goal of answering the following question: How does the medical profession identify, measure, and evaluate the ongoing competence of its members to assure the public of its commitment to accountability?[6] One of the outcomes of this initiative is the US version of *Good Medical Practice*, which is modeled after a UK General Medical Council document and organized according to the competencies framework. The FSMB, Osteopathic Boards, National Board of Medical Examiners, American Medical Association, Association of American Medical Colleges, ACGME, ABMS, and other groups are contributing to this work in progress.

The Joint Commission issued hospital accreditation standards for granting privileges and evaluating physician performance. This evidence-based process goes beyond review of technical competence and includes an ongoing evaluation of the six core competencies. As with MOC, periodic evaluation of performance in practice is incorporated into the process.[7]

The adoption of a common framework for educating and evaluating physician competencies evolved within a culture of intense public scrutiny of the quality of medical care in the United States.[8,9] Many authors have addressed problems with healthcare safety and quality.[10,11] Others have proposed strategies for improvement in these areas. Examples of the latter include the Six Sigma or Lean Production methods adopted by other industries.[12] Improvement science has been introduced into medical care and has begun to transform the quality agenda from one of searching for and eliminating poor performance into one for overall quality improvement.[13] MOC embraced this approach.

In the 1990s, the National League for Nursing established a competency framework for education and evaluation that included outcome

criteria.[14] A comprehensive nursing curriculum focused on Competency Outcomes and Performance Assessment (COPA) was recommended for development, implementation and assessment of initial and continuing competence in nursing.[15] In addition, the American Board of Nursing Specialties now certifies nurses based on their knowledge, skills, and experience in over 25 specialties assessed by examination along with documented evidence of specialized training.[16] Pharmacists have a national certifying board that provides specialty certification in nutrition support pharmacy, pharmacotherapy, psychiatric pharmacy, nuclear pharmacy, and oncology pharmacy.[17] Most board-certified pharmacists and pharmacies appreciate the value of this specialty certification; unlike board-certified physicians, however, board-certified pharmacists are not widely recognized outside or even within the pharmacy profession.[18] As of 2007, nothing comparable to MOC existed for either nursing or pharmacy, although most states require continuing education for license maintenance in both professions.

## The Significance of MOC's Requirement for Lifelong Learning, Self-Assessment, and Practice Improvement

The Maintenance of Certification concept of lifelong learning and practice improvement expands the definition of education from passively learning new knowledge from experts to actively learning from measurement and experimentation in one's own practice. We learn about new treatments and methods by reading, attending lectures, participating in skills development workshops, and reflecting on how they apply to us. Guided self-assessment helps physicians determine their level of understanding of the new information or skill in performing new techniques and protects us from the self deception that convinces us we know more than we do.[19] These elements are included in MOC Part-2: lifelong learning and periodic self-assessment. But some of the most important learning occurs when physicians examine the outcomes of their work and learn how to change system processes to improve outcomes. This type of learning is promoted in MOC Part-4: assessment of practice performance and improvement.

Recognizing the role of active learning in the continuing development of physicians, the American Medical Association modified its AMA PRA Category 1 Credit [20] to permit accredited CME providers

to grant credit for Internet searching and learning, test item writing, manuscript review, and performance improvement activities, in addition to live activities (including some committee work), enduring materials, and journal-based continuing medical education. The Accreditation Council for Continuing Medical Education (ACCME) now permits accredited CME providers to provide learning activities based on performance improvement projects. In structured and long-term projects, a physician or group of physicians can 1) learn about specific performance measures (ie, a mechanism that enables the learner to quantify the quality of a selected aspect of care by comparing it to a criterion); 2) retrospectively assess their practice; 3) apply these measures prospectively over a useful interval; 4) enhance their knowledge or competence as necessary; 5) modify practice as warranted; and 6) re-evaluate performance.[21] The Practice Improvement Module used in the American Board of Internal Medicine's MOC program is an example of how these principles can be applied to learning from practice.

As our concept of physician competencies expanded to include systems-based practice, our ideas about competence in professionalism were updated. The American Board of Internal Medicine (ABIM) Foundation, the American College of Physicians (APC) Foundation, and the European Federation of Internal Medicine created the *Physician Charter: Medical Professionalism in the New Millennium*.[22] This document reaffirms the principles of putting patient welfare first and respecting patient autonomy; however, it adds a new principle of social justice. The charter affirms traditional physician commitments to update scientific knowledge and to maintain trust by managing conflicts of interest, being honest with patients, maintaining patient confidentiality, and maintaining appropriate relationships with patients. It adds the physician commitments to maintain professional competence, improve the quality of care, improve access to care, and manage finite resources.

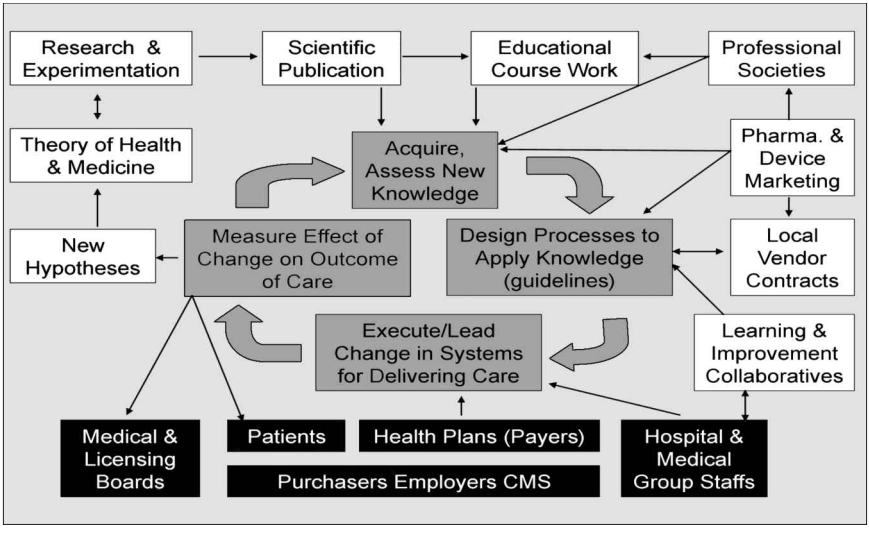
Accountability for continuing competence is a newly articulated commitment of medical professionalism; however, consumer and employer groups also are urging physicians to report quality measures to the public with the expectation that the quality of practice will improve. This is what happened when public reporting led to improved quality of hospital care for patients with cardiovascular diseases.[23] Many insurers, health plans, the Center for Medicare and

Medicaid Services (CMS), and self-insured employer groups (eg, Bridges to Excellence) are enticing physicians to engage in quality measurement, reporting, and improvement activities through pay-for-performance programs. For example, the Bridges to Excellence program rewards physicians who have achieved recognition from the National Committee on Quality Assessment (NCQA) in diabetes care and heart stroke prevention care and who have established high performing medical practice systems.[24] CMS has launched the first phases of the Physician Quality Reporting Initiative, through which physicians are encouraged to report additional codes on claims forms from which performance measures can be calculated. Physicians may receive additional payment if they report measures on 80% of patients for whom the measures are applicable.[25]

## Integrated Model for Systems-based Practice, Learning, and Improvement

How does all of this activity link MOC with CME and stimulate a transformation in physician learning? *Figure 1* shows a model for understanding the interrelationship in the competencies of system-based practice, practice-based learning and improvement, and professionalism. It also shows how these qualities are measured and how CME influences changes in practice.

**Figure 1. Model of System-based Practice, Learning, & Improvement**



The model incorporates three interrelated processes: 1) creating and disseminating new medical knowledge, methods, or technology (shown in *white*); 2) translating innovations into practice to produce measurable improvements in the outcomes of care (*gray*); and 3) demonstrating accountability for producing valued medical care to patients and the healthcare marketplace (*black*). Through this third process the medical licensing boards and specialty certifying boards stimulate improvement and provide a conduit for public accountability of physician quality.

The process for developing new medical knowledge, products, and services begins with formulating new hypotheses based on measurement of care. These hypotheses reshape theories of medicine, which can be tested in scientific research or in local practice-based experimentation. Authors report research results in scientific journals and publish consensus guidelines that distill these findings.

Professional societies, educational institutions, and medical staffs convert the scientific research and guidelines into "how-to" courses that help physicians and practice managers redesign systems to incorporate new knowledge, products, and methods into actual practice. Empiric evidence demonstrates that the CME most effective in changing practice outcomes involves "how-to" learning experiences.[26] Pharmaceutical and device companies are another source of information through the materials and activities they offer to physicians describing new medications, processes, and technologies.

The items in the *black boxes* in the diagram have little direct influence on CME; they represent the objectives for physician accountability, which can be provided directly to patients through public reporting and indirectly by reporting performance measures as a part of maintaining certification or obtaining a medical license. Employers demand that health plans provide evidence of the quality of the healthcare they are purchasing. Through payment policies, health plans influence the quality of care by providing capital needed for implementing new technologies in practice. Some individual physicians and medical groups actively manage the inner (*gray*) cycle of practice-based learning and improvement to redesign systems in order to eliminate waste, reduce variation, increase reliability, and generally improve the quality of healthcare.

The *gray* cycle in the center of the model describes physician tasks in practice-based learning and improvement. The first task, *acquiring and assessing new knowledge*, involves point-of-care learning, traditional CME, learning from product detailing, and practice-based learning. Point-of-service learning involves skill in retrieving information to solve problems in delivery of care. Traditional CME involves reading scientific publications and participating in continuing medical education courses. Information delivered by pharmaceutical or device marketing and education divisions provides knowledge applicable to improving care; however, marketing techniques unconsciously distort physician judgment when information is associated with gifts or favors. Therefore physicians must carefully avoid conflicts of interests.[27] Acquiring and assessing new knowledge is both the first step and the last step in the *gray* cycle of practice-based learning.

Moving clockwise through the cycle, the second task is *designing practice processes to apply new knowledge*. Physicians may know the right thing to do but fail to reliably do what they intend. Learning from practice changes that deficiency because it promotes frequent experimentation and learning from mistakes. Industrial engineers such as Demming and Juran have developed methods for translating new knowledge and innovations into business, service, and manufacturing operations.[28] The ACGME and ABMS competencies of systems-based practice and practice-based learning and improvement adapted this approach to medical care. The model shows the relationship among medical societies, learning collaboratives, pharmaceutical and device manufacturers, and local vendors in providing education and information to help physicians re-design practice to incorporate new drugs, products, and technologies. Examples of educational programs are the ACP's Closing the Gap project, the American Academy of Family Practice TransforMed, and the Robert Wood Johnson Foundation–funded Improving Performance in Practice project.

The third task in the *gray* cycle is *executing/leading change in systems for delivering care*. This task requires the application of practice management skills, negotiating with vendors, structuring personnel policy, training staff, and implementing technology. This body of knowledge and skills challenges traditional approaches to medical education and evaluation, and it may seem more like business school than medical education. For many physicians, the "system"

is an Orwellian organizational monster that can neither be understood nor managed. Traditional ideas about physician autonomy place value on rugged individualists who work around the system for the benefit of their patients. The new model of medical professionalism recognizes the disruption to systematic care of unbridled physician autonomy and espouses physician competence in systems-based practice, improvement of care, and just distribution of scarce medical resources.[29] Today, physician competence includes capability to manage or influence the management of clinical work processes; develop teamwork habits, communication and interpersonal skills; and understand the principles of human resources and business management. Although not all physicians must achieve expertise in system management, all must understand that system management is essential for high-quality medical practice.

The fourth component of competence in systems-based learning and practice improvement is *measurement of practice performance*. Quantitative and qualitative measurement of the outcomes and processes of care is the lynchpin that holds together systems-based practice, practice-based learning and improvement, and the new professionalism. Measurement is essential for improvement: "We improve what we measure." Through measurement we acquire knowledge about how practice works and the outcomes it produces; this knowledge informs re-design of work processes; and re-measurement determines if the change improved care. Measurement leads to creating new knowledge; by reflecting on the meaning of measured results we generate new hypotheses about the theories of health, medicine, and medical practice that can be tested in empiric experiments to advance the theory and the evidence base for improving patient care. Moreover, measurement is essential for public accountability. Reporting performance measures to payers, consumers, and purchasers gives them information they need to purchase the highest-quality care. Measurement of practice performance is central to providing the evidence of continuing competence for maintenance of board certification, and the act of reporting is a powerful motivator to change.

## How Is MOC Changing CME?

MOC creates an obvious demand for CME board review courses and durable study materials to prepare for the secure examination. Because most boards require passing an examination demonstrating

cognitive expertise every 6 to 10 years, a steady demand exists for "brush-up" education before the test.

The desire to align the MOC requirement for lifelong learning and periodic self-assessment with periodic hospital staff re-credentialing and re-licensure has prompted many boards to build 2-year or 3-year milestones for self-assessment of knowledge or skills focused on recent advances in the field. Commonly, these CME exercises contain multiple choice questions appended to durable learning materials on a particular topic. These modules have been developed by boards and by medical societies, and they provide guided self-assessment and focused learning on recent advances. Examples of self-assessment programs are the ACP MKSAP (Medical Knowledge Self-Assessment Program), ACCP-SAP, Nephrology-SAP, and American Board of Family Medicine SAM (Self-Assessment Module).

The internal medicine CME community has developed group learning sessions in which 10 to 200 physicians work with faculty on a self-assessment module. Audience response technology makes it possible to include a display of the participants' answers to questions, and the wide variation in answers permits the faculty to clarify the issues contained in the question and answers. This type of course is fun, challenging, and informative, and a popular addition to annual meetings.

The MOC requirement for physicians to assess themselves and make changes in their practice systems to improve their performance is arguably the most important innovation driving changes in CME. As of 2004, few physicians had adopted formal learning and improvement experiences in their practices.[30] For family physicians and internists, completion of the MOC Part-4 (assessment of practice performance and improvement) was the first personal experience with systematically reviewing medical records to calculate performance measures, receiving feedback from patient surveys about their experience of care, and reflecting on the practice processes and systems that produce the care. This was the first objective of practice performance measurement for most, and lower than expected performance called for action to improve. Some physicians had difficulty understanding how this activity could help them to learn based on their more narrow view of learning and certification being a test of their medical knowledge. They could not imagine that

knowledge gained from examination and experimentation could improve their practice. Others found the exercise tremendously informative, were surprised by their performance, and felt motivated to take remedial action but lacked the knowledge and skill to do so. Others made simple changes in their practice, such as adding a flow sheet or changing the tasks medical assistants performed, and they re-measured to determine if the change led to improvement. Although they did not necessarily fully understand the theory behind the "plan, do, study, act cycle," of quality improvement, these physicians learned that measurement is necessary for knowing the quality of practice, and that in measuring quality, they could begin to change the practice. These physicians acquired deeper knowledge about their own practice than could be achieved through more traditional learning experiences.

The ABIM Part-4 MOC exercises are called Practice Improvement Modules (PIM).[31] Each PIM focuses on an aspect of practice, such as diabetes, asthma, preventive cardiology, or comprehensive care. One PIM allows physicians to use measures provided by health plans or medical groups. Three PIMs focus on physician and practice communication skills, and another uses the hospital measures reported to CMS. All of the PIMs include a self-assessment of the practice systems, and all guide physicians through reflection on the measures, design, and testing of an idea for improving at least one measure. Each PIM also provides the opportunity for physicians to reflect on the ways in which learning from a small experiment can lead to improvements in practice.

After completing their assessment of practice, physicians report a variety of learning and improvement outcomes. Nearly all are surprised to find that their level of performance was lower than expected. Many select a particular PIM to validate their anticipated high performance and are surprised at the room for improvement. Because the physicians themselves collect the data for calculating the measures, they believe the results. Many connect the dots between practice structure and processes and the outcomes of care; they begin to develop a theory of systems-based practice. They see the holes in their understanding and the skills they need to change their systems of care. Some physicians learn the importance of team-work and begin to understand that the roles and responsibilities of practice staff can be changed to achieve more reliable care. Many

begin to understand the value of information management, electronic records, and prescribing and test tracking systems. Some commit to adopting these technologies based on this exercise, and others have been motivated to activate technologies they already possess but have not used. For a minority of physicians, completing Part-4 MOC is a frustrating experience: Their conclusion after completing it was that they must "learn more and work harder." No response could be further from the the mark. This type of self-assessment is about the social learning that is essential for innovations and improvement in medical practice.

Certifying boards now understand that their MOC programs' Part-4 innovations are changing the learning experience of physicians. The exercise engages physicians in measuring performance in patient care, communications and interpersonal skills, systems-based practice, and practice-based learning and improvement. But this is the barest beginning. The next step is a robust CME program to meet the urgent learning needs uncovered through the self-assessment of practice performance. A theory of practice needs to grow, and new learning activities that involve practice teams are needed. Some early examples of learning collaboratives have been organized by the Institute for Healthcare Improvement and projects like the Robert Wood Johnson–funded AAFP, AAP, and ABMS Improving Performance in Practice.

Although Part-4 MOC was developed to provide guided self-assessment of practice performance and improvement, the data obtained also enhance accountability for the quality of performance to patients, payers, and purchasers of the care. ABMS boards have developed agreements with multiple insurers and health plans to use participation in MOC and completion of an assessment of practice performance as measures of quality for pay-for-performance and other recognition programs.[32] Boards who use the data in this way must add an audit of a sample of physicians to assure the veracity of the self-reported measures. In pursuit of the goal to reduce redundancy in performance assessment, the ABMS boards are working with the FSMB to align MOC with maintenance of licensure and with the American Hospital Association to help hospitals use MOC as evidence for meeting the joint requirements for evaluating physician competencies in their credentialing processes.

## Conclusion

First, MOC provides physicians and the medical education community with objectives and standardized measures of learning and practice performance that can be used for guided self-assessment and summative evaluation of the effectiveness of learning outcomes. Moreover, voluntary participation in MOC sets in motion self-imposed requirements for meeting 2-year to 3-year milestones for self-assessment of knowledge about recent advances and assessment of the outcomes and improvement of care delivered in the practice.

MOC is driving a new curriculum for physician education at all levels. Systems-based practice calls for developing information and skills in teamwork and people management, assuring consistent value for patients through improving internal systems management, and negotiating with purchasers and payers of medical care to assure that we can meet the commitments of the new professionalism.

The self-assessment of practice provides a deeper understanding of practice systems and the needs of the patients seeking care in the system. This assessment will reveal the need for more training and education in communication and interpersonal skills to help patients from particular cultures and social groups. The performance assessment will guide selection of education in how to change clinical methods. Instead of focusing education on the curriculum devised by experts, continuing education will be driven by patient demographics and patient care needs uncovered by the self-assessment of individual practices.

Most importantly, MOC provides evidence of physician performance that can be used to meet our social contract for accountability to the public. Board certification and the MOC milestones provide one way for physicians to reclaim their role in assuring and improving the quality of medical care.[33]

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## DISCUSSION HIGHLIGHTS

### Knowledge Development Approaches

CE must demonstrate effectiveness in terms of improving the performance outcomes of health professionals. CE must help clinicians accomplish practice-based learning and improvement. It should focus on clinical problems and knowledge that can be used in practice, using questions that clinicians have in practice to determine content.

If instruction really consists of presentation, example, practice, and feedback, we do the presentation and example pretty well, but we don't give our attendees the opportunity to practice what we've told them they should do, or offer expert consultation and feedback.

At the ABIM, almost 20,000 internists have completed self-assessment of their practices and practice-based learning, and have begun to demonstrate some improvement. The uniform comment that people give back is "This was the best CME I ever took," and they weren't in any CME environment doing it. But about 60 percent of them also say, "Help. Help me. I don't know how to improve my performance."

The ABMS Boards have provided as many options as possible for recertification in allowing self-directed learning to take place, but they do not allow the *avoidance* of self-directed learning to take place.

When the ABIM had voluntary recertification, it had a five percent uptake. Regulation is important for keeping up. Continuing education can and should be linked to recertification.

An important area of continuing education, especially in the surgical specialties, is learning and maintaining skills. The American College of Surgeons has begun accrediting education institutes, which are simulation centers to provide support for skill acquisition, often in collaboration with other professionals working in the ORs, ICUs, and so forth.

The ACCME has injected the phrase, "practice-based learning and improvement" into our vocabulary. We are talking about a gigantic culture change among physicians and CME providers, and all health-care providers as a group, to make CME actually relate to practice. It would not be out of the question to end every sentence with "and we are doing this because it's about improving patient care." It may

be obvious, but many CME providers never have made a conscious association between CME and improving patient care, and a lot of physicians haven't made the association, either.

One of the strongest motives for improving patient care through continuous professional development is the inherent desire of physicians, indeed of all health professionals, to do a better job, if only they knew what they were doing and how it compared with benchmarks. Measuring performance and feeding it back to physicians, irrespective of whatever else we may add on as continuing education around that, can be a powerful agent for change.

The motivation for continuing education, from the perspective of the public, has been a deficit model—we must find out what our deficits are and make sure they get plugged so we don't harm patients. But continuing education is also about professionalism and the ability to grow in our professional development. We tend to lose sight of that because of the pressing nature of clinical care problems.

The problem with our general concept of CME, which is conferences and random reading, is that it depends on memory.

We need to get away from the idea that it is only about knowledge. It really is about behavior and our ability to do complex tasks that we refer to as competencies. These involve knowledge, skills, attitudes, behaviors, and communication.

Medical practice has two components: doing what you know and knowing what you do. Performance assessments shouldn't be the only thing; knowledge assessment also is essential. But too often, performance is left out of CE.

Studies show doctors are more likely to change when learning is initiated by a patient-based clinical question, not by a vague desire to keep up. Continuing education ought to be learning from what the patient brings.

The fundamental problem with CME is the total dominance of courses. The use of hours is a misplaced metric. Also, there is an over-reliance on numbers of attendees. People judge the effectiveness of a CE offering by how many show up.

Continuing education is not only about expanding expertise, it's also about continuing to have your basic expertise intact.

We should not forget the importance of understanding in medicine. Technical competence is not enough; plenty of technically competent surgeons do the wrong operations on the wrong patients.

The current system has two flaws: first, lectures are ineffective, except for passing on new information, and are opened to biased information, or the perception that information could be biased; and, second, their "entitlement mentality" signals to the public that physicians are "for sale."

**The Need for Feedback and Evaluation**

It is difficult for physicians to provide feedback to other physicians. In one example, a physician caring for a patient with HIV made five mistakes, yet the physician who identified the mistakes wondered if the physician who made the mistakes should be notified. The physician was reluctant to say that evidence-based practices had not been followed. Physicians are not trained early either to give or receive this kind of feedback. In other professions feedback is part of the practice. Architects don't just design and build; they submit designs to colleagues first. How can physicians be trained to expect this kind of feedback?

Lessons might be learned from other professions. For instance, pilots are comfortable with the idea that someone will sit with them on a regular basis to assess their performance. Pilots recognize this lifelong learning as part of their professional responsibility while physicians tend to think they are finished when they complete their training.

The airlines, in addition to relying on another person for pilot certification, also rely on computerized tests. Pilots sit in a simulator with a real pilot and a third person dials in problems. Nothing in medicine begins to compare. The only thing that even comes close is simulation in surgery.

Perhaps there needs to be legal protection, an exemption from "discovery" when mistakes are uncovered during evaluation and feedback.

In the UK, general practitioners are encouraged to have a peer mentor who meets with them every six months or so to review charts. In Ontario, Canada, randomly selected physicians undergo an audit by a peer physician every seven years. The peer reviewer goes through 25 or 50 charts, and then writes a review that is shared with the assessed physician. Based on that, some of the physicians are then further assessed with low-tech simulations involving standardized patients.

A group practice experimented with ways to give feedback so physicians view it as an improvement opportunity, not as a punitive exercise. With blinded data, everyone tended to migrate toward the mean. When the data were unblinded, they tended to migrate to people they respected, regardless of whether that had anything to do with good quality of care. Now feedback is combined with recommendations on what the evidence shows is the best practice, followed with opportunities for the team to figure out how to do better.

What group or party determines what outcomes are important? The physician? The practice? Hospitals? Regulatory boards? There's not much opportunity for outside feedback. The ready reliance on markers, or things that are easily measured, does not necessarily relate to meaningful patient outcomes.

One way to measure or help competence is with a computer and simulation, with a different problem each time. The process depends on actually doing it, getting feedback, and reflective thinking afterwards.

Sociability, companionship, and collegiality are pretty important in education, and the opportunity to discuss actual practice data with colleagues is quite valuable. Hospitals, group practices, specialty and county societies should be able to offer these opportunities.

Two areas are involved: education and training, and certification and verification of skills. The two are related but different. Skill virtuosity requires thousands of hours of deliberative practice. It is amazing that we give the practice, but little in the way of feedback.

**Lectures**

While conferences and courses should not dominate, they still have a place. Lectures play an important role in helping people keep up with what's new and what's interesting.

Lectures can be made better, for example with interactivity, case discussions, and small-group breakouts. Even groups of 5000 can use these techniques.

Lectures may not be the best way to learn, but the reason so much money is put into for-profit lectures is that they are marvelous propaganda and advertisement. In some continuing medical education courses you get a real expert, someone highly respected, to talk about the use, maybe off label, of a drug. That's powerful, but it may it not be good education. It is, however, good advertisement.

CME providers are allowed to focus on educational objectives, such as knowledge updates, that can be accomplished by lectures. There is no specific requirement that, to be accredited, they spend a certain percentage of time providing and promoting educational activities that focus on competence and performance in practice, as well.

Think of a learning portfolio as a bucket into which you put things like self-assessment of learning needs, performance measures that are required, and audits done by peer assessors, as well as competency exams, maintenance of certification and licensure. Where do lectures fit in?

Academic detailing creates an environment that permits people to identify, on their own, opportunities to improve without the sense that change is being imposed.

# Internet Continuing Education

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An increasing number of physicians now use the Internet to obtain medical information. The number of physicians using the Internet specifically for continuing education is also rising. Potential benefits of continuing education delivered via the Internet include convenience, flexibility, reduced travel time and expense, multimedia format, and possibly adaptability to different learning styles.

This review begins with a description of the current landscape for continuing medical education and the role of the Internet within that larger context. What follows is a discussion of the ways in which continuing education delivered via the Internet relates to our current understanding of adult learning. An additional topic is the current state of research on the effectiveness of online continuing education in reaching its goals of increased knowledge and improved patient outcomes.

Most of the literature that addresses the influence of the Internet on continuing education limits its focus to physicians, but various groups of healthcare professionals have established their own terminology. For this review the term "continuing education" (abbreviated henceforth as CE) refers to the educational activities of all of these groups.

## CE Requirements

American Medical Association (AMA) Physician Recognition Award (PRA) Category 1 credit is awarded by accredited providers to physicians who participate in educational activities that are certified as meeting educational goals set forth by the AMA.[1] Every US state requires physicians to earn AMA PRA Category 1 credit for medical licensure, although the amounts vary by state.

Most medical societies also recognize AMA PRA Category 1 credit as evidence of an ongoing commitment to learning, although some specialties have variations. As an example, the American Academy of Family Physicians (AAFP) requires that their members earn both "prescribed" and "elective" credit, but members can only use AMA PRA Category 1 to cover elective credits. Similarly, the American College of Obstetrics and Gynecology (ACOG) requires that its

Fellows earn a number of credits designated as "ACOG Cognates," and the American Academy of Pediatrics (AAP) requires specific CE activities for members who want to be recognized as Fellows of the Academy. Most non-physician medical providers, including nurses, nurse practitioners, physicians' assistants, and doctors of osteopathy, also recognize AMA PRA Category 1 credit but require additional types of CE for maintenance of licensure, society membership, or recertification.

Outside the United States, with the exception of Canada, CE is generally less well structured, although that is changing. The European Accreditation Council for Continuing Medical Education, for example, only began operation in the year 2000. In some countries, CE is essentially an ethical and moral obligation, while in others it is required by the profession, insurance, or other bodies involved in healthcare.[2] Italy has a well developed system regulated by a government body that encompasses all professions related to healthcare and not physicians alone. The AMA recently established an agreement with the European Union of Medical Specialties to mutually recognize CE credit.[3]

**Internet Point-of-care CE**

The AMA recognizes many activities as eligible for AMA PRA Category 1 credit.[1] The newest activity to be recognized is Internet point-of-care CE, defined as structured, self-directed online learning on topics relevant to a physician's practice. To earn Internet point-of-care credits, physicians must complete a "learning cycle" that includes reviewing the original clinical question, identifying the relevant sources of information, and describing the application of these findings to practice. The last component of the learning cycle, which has also been termed "reflection," is based on the idea that reflecting upon one's clinical practice is an essential component for the development of expertise and therefore should be a component of the educational process.[4] However, what constitutes reflection, and whether this reflective process affects patient outcomes, is not clear.[5]

Frequently, clinicians consult resources that award Internet point-of-care CE to answer questions that arise during patient encounters. This type of CE has the potential to be extremely vital, given results from studies demonstrating that physicians often have important questions (questions that could affect outcomes) during the patient

encounter that are left unanswered.[5–7] In one study, physicians only pursued answers to 55 percent of questions that arose during the patient encounter.[6]

Internet point-of-care CE does not describe all CE done over the Internet. "Live" Internet teleconferences, online case presentations with questions and answers, and a variety of other online activities might fall into different categories of CE. The wide variety of activities that fall under the umbrella of Internet CE makes it difficult to know what activities investigators are considering when they study the utility of the Internet to provide CE.

The distinction between Internet point-of-care CE and other types of CE delivered via the Internet has several implications:

1. In an effort to address the lack of quality standardization of the plethora of CE activities available over the Internet, the AMA and AAFP have limited the number of providers of Internet point-of-care CE; currently this list includes ACP PIER, DynaMed, UpToDate, and InfoRetriever. However, this list continues to evolve.

2. The AAFP limits the number of credits that physicians can earn from Internet point-of-care CE to 20 prescribed credits per year.

3. Although activities that fall into the realm of Internet point-of-care CE are usually understood to be those that are used during patient encounters, the documentation process mandated by the AMA (completion of the learning cycle) has made it difficult to complete these activities during the course of a busy clinician's day. While a number of groups, including the AANP, the AOA, and the AAP, offer credit for the same activities, only the AMA and AAFP require the potentially limiting documentation process.

It is too early to fully understand the implications of #3. Some point-of-care providers have tried to simplify the documentation process by "prefilling" a number of items on the required forms with information that can be gleaned from the search itself. Although physicians have not responded negatively to this process, it remains unclear whether these activities fulfill the goals set out by the AMA for the reflective component of the learning cycle.

**Availability and Usage of Internet CE**

It is difficult to ascertain the number of websites that deliver Internet CE. According to one estimate, 300 sites offered more than 16,000 courses and more than 26,000 credits as of December 2006,[8] but this is likely an underestimate. Sources for Internet point-of-care CE are more scarce.

The Physicians' Preferences in CME Study is the longest running longitudinal study of its kind, albeit with a small sample size.[9] For the 2006 survey, data were collected between September 28 and November 2. Surveys were mailed to 1200 US-based physicians; 148 usable surveys were returned, for a response rate of 12.5 percent. These were the key findings:

— About 26 percent of respondents said they planned to use Internet point-of-care CE during the next 12 months.

— Of those who used the Internet to obtain CE, Internet point-of-care CE was most popular (62 percent used Internet point of care, versus 21 percent using enduring Internet activities).

— Respondents earned the largest percentage of their CE credits by attending out-of-town meetings, but that amount was only 32 percent, the lowest in the 14-year history of the survey (with the exception of 1998, when it was also 32 percent). Men were more likely to travel than women (34 versus 21 percent).

— Internet point-of-care activities were more popular with women than men (39 versus 20 percent) and with physicians over the age of 55.

These findings suggest that Internet CE activities have become more popular than attendance at out-of-town meetings, and that physicians tend to use Internet point-of-care activities.

These results mirror trends in physicians' overall use of the Internet and in the availability of CE on the Internet. In a 2001 AMA survey of 997 physicians in the United States, 78 percent said they used the Internet in their practices, compared with 20 percent in 1997.[10] About half of the physicians said that the Internet had a major impact on the way they practiced medicine. In a 2003 survey of

3347 US physicians, more than half reported daily (23 percent) or weekly (37 percent) use of the Internet for clinical information; 28 percent reported accessing online CE several times a year.[11]

Similarly, data from the Accreditation Council for Continuing Medical Eduation suggest substantial growth in physician use of the Internet for CE between 1998 and 2005. In 1998, 37,879 physicians (0.5 percent of those receiving CE) accumulated 3436 hours of credit (0.5 percent of total credits awarded) from Internet CE.[12] By comparison, in 2005, over 1.3 million physicians (18 percent) earned almost 37,000 credits (5 percent) via the internet.[13]

**Outcomes of Self-directed Learning**

In consideration of how physicians learn and how this learning can affect change, "optimal" CE has been described as "highly self-directed with content, learning methods, and learning resources selected specifically for the purpose of improving the knowledge, skill, and attitudes that physicians require in their daily professional lives that lead to improved patient outcomes".[14] Malcolm Knowles,[15,16] a professor of adult education with an interest in how adults learn, developed a theory of "andragogy," which emphasizes the following four points:

— Adults need to be involved in the planning and evaluation of their learning.

— Experience provides the basis for learning.

— Adults are most interested in learning when it has immediate relevance to their job or personal life.

— Adult learning is problem centered rather than content oriented.

These observations are consistent with results from CE studies. The data demonstrate that exclusively didactic types of CE, such as lectures, do not improve physician performance or patient care, while interactive and sequenced learning has been associated with a positive impact.[17]

Internet CE, particularly point-of-care CE, takes advantage of this concept of self-directed learning. A physician with a question that

arises in clinical practice who searches for an answer and then applies the information to patient care has satisfied all four points cited in the previous text. The search for that answer may occur in a number of ways, but easy accessibility to online resources makes the Internet an ideal source for this type of learning.

Although only a few randomized controlled trials have compared Internet-based CE interventions with traditional CE, a number of controlled trials have compared online CE with no intervention and reported changes in nonbehavioral measures, such as knowledge, attitudes, confidence, and satisfaction, as summarized below:[18–23]

— In one study, 643 practicing pathologists from around the world took a pretutorial quiz on pathologic images of prostate carcinoma specimens and then viewed an online tutorial with text describing the Gleason grading system.[18] The tutorial significantly improved Gleason grading in 15 of 20 specimens; on average there was a 12 percent increase in assigning the correct Gleason score.

— Researchers in a study involving 354 physicians evaluated an online CE program focusing on identification of pigmented lesions. They assessed the performance of the physicians using a pretest, a tutorial, and an identical posttest.[19] Completing the CE tutorial was associated with significant improvements in physician confidence, correct answers to a knowledge test (52 versus 85 percent correct), and correct answers to a clinical skills test (81 versus 90 percent correct).

— A randomized crossover trial of physicians, pharmacists, advanced practice nurses, and dietitians evaluated an Internet case-based curriculum on herbs and dietary supplements.[21] Participants were randomly assigned to an immediate intervention group or a waiting list and were surveyed about their knowledge, confidence, and communication related to herbs and dietary supplements on enrollment in the study and after both groups completed the curriculum. Scores improved significantly in all three areas for the immediate intervention group compared with the waiting list group; after the latter group completed the program the scores in the two groups were similar and significantly improved from baseline.

— A randomized trial of primary care physicians evaluated the

effect of four CE modules released at 3-month intervals on screening for *Chlamydia* infection.[22] Physicians completed an average of 2.4 modules, with each module requiring an average of 12 minutes to complete. Both groups demonstrated declines in *Chlamydia* screening rates during the study period. Nevertheless, despite this modest intervention, the physicians in the intervention group had significantly lower declines in screening compared with the control group.

A number of studies have demonstrated that Internet-based CE programs are at least as effective as traditional CE methods for improving knowledge.[24] For example, a study of 358 physicians in British Columbia compared four interventions to improve physicians' knowledge about the management of workplace injuries.[25] Physicians selected whether to receive intervention through an online learning program, videoconferencing, traditional lectures, or face-to-face small group outreach programs. The Internet and videoconferencing programs were as effective as more traditional CE approaches in terms of enhancing physician knowledge.

The literature examining whether Internet CE leads to behavioral change or increased knowledge is limited. The only randomized trial that looked at these outcomes compared an Internet-based CE intervention that could be completed over multiple sessions over 2 weeks to a single "live," small-group interactive CE workshop.[26] The results from the comparison group indicate that this type of interactive CE affects performance, compared with purely didactic CE.[17] The investigators made the following observations:[26]

— Similar to other studies of Internet CE, both interventions resulted in significant and similar knowledge gains.

— The Internet-based CE resulted in objectively measured changes in behavior and improved adherence to treatment guidelines, compared with "live" CE.

The authors hypothesized that the behavior change associated with Internet-based CE could be attributed to several factors, including completing the activity over multiple sessions rather than one workshop and the ability of the physicians to structure their own learning by moving freely throughout the website.

Other data on the effect of Internet CE on patient outcomes are limited to results from observational studies and self-reported physician behavior. In one study that evaluated a variety of online CE programs to enhance physician knowledge, a retrospective survey of physicians participating in online CE found that physicians reported changes in practice based on CE participation.[27] Similarly, UpToDate, an online resource designed to answer clinical questions at the point of care and a provider of Internet point-of-care CE, has done multiple subscriber surveys, with results suggesting that physicians change behavior when they consult UpToDate to answer questions.[28] These behaviors range from changes in diagnostic testing and management decisions to avoiding specialist referrals. In addition, investigators in an observational study of hospitals that subscribe to UpToDate found that, compared with nonsubscribing hospitals, hospitals that used UpToDate had significantly fewer adverse events and shorter duration of patient stays (personal communication). Although the last report is limited by its observational nature, the results are supported by the observation that these effects were greater with increasing use of UpToDate at any given hospital; that is, there was a "dose effect."

**Summary**

Internet use, including use of Internet CE opportunities, is increasing rapidly. Accreditation councils in the United States and elsewhere and across all healthcare professions recognize this method of CE as valid. Acquiring CE via the Internet makes sense based on our understanding of the importance of self-directed learning. However, although a substantial amount of data suggest that Internet CE activities enhance knowledge to an extent that is equivalent to improvements with other types of CE, data on whether Internet CE alters the behavior of clinicians and improves patient outcomes are scarce. Thus, more studies are necessary to evaluate the effect of Internet CE on patient outcomes.

Another question is whether Internet point-of care CE leads to results that are equivalent to those from other types of Internet CE. This question is particularly important given our knowledge that physicians often do not answer questions during the patient encounter despite the availability of point-of-care resources that can provide the information they need. In addition, although the AMA

and such specialty societies as the AAFP have promoted point-of-care CE opportunities over the past couple of years, potential obstacles, including the documentation process, may actually limit the routine use of these activities.

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## Informatics Skills Needed!

**Donald A. B. Lindberg, M.D.**
**National Library of Medicine**

The information technology employed in continuing education for health professionals cannot reasonably be less revolutionary than the information technology that is quickly reshaping biomedical research and clinical treatment. Information technology is also revolutionizing the provision of scientific clinical guidance to patients, families, and the public.

The best biomedical research increasingly shares scientific results in publicly free electronic sources, publishes peer-reviewed analytical results speedily and freely, and complies with governmental and ethical obligations for voluntary clinical trials, including registration of trials and public reporting of results. Physicians and healthcare facilities are increasingly part of regional or national configurations.

Consequently, learning and continuing education, both for health science students and for the best advanced practitioners, absolutely demands understanding of and regular access to computer-based systems that can provide the following four basic functions:

A. Fairly effortless access to traditional publications in the peer-reviewed biomedical literature

B. Fairly effortless access to modern interactive biomedical publications

C. Comprehension of elementary database structure of the latest genome/phenome whole genome database systems, along with understanding of the procedures to contribute findings for one's patients, and understanding of the rules for proper access to the accumulating combined wisdom

D. Technical capability for participation in medical information systems for disaster management

This all may sound a bit like “overkill.” Please let me illustrate with some examples of these existing systems:

1. Patients and the public access MedlinePlus.Gov about a million times each day. They are urged to bring their questions to the

doctor, and they do! I have found practitioners to be full of praise, especially for the tutorials that have been designed to increase one's understanding of medical diagnoses or procedures. About 25 percent of the use of MedlinePlus is now from physicians.

2. Over 2 percent of each year's 900,000 new Medline articles are interactive. That is, the message is contained in video attachments and/or data tables with which the reader can interact to see "the data behind the table," or can learn online to do procedures—even endoscopic surgical ones.

3. Db Gap is a new system from the National Institutes of Health for storing and selectively providing genomic and phenomic data from prospective population studies that include genome-wide analyses (GWAS). These data will include (after appropriate individual patient consent) populations such as the National Heart Lung and Blood Institute Framingham studies and the Genes and Environment study. Access to the summarized studies and resulting data will be generally available. Individual patient results will be available to research team participants and others authenticated through Institutional Review Boards. These developments represent a new and powerfully important approach to top quality medical practice—and to participation in new large clinical research projects. These studies will supplement reports from traditional clinical trials.

4. In interpreting both traditional clinical trials results—and especially the GWAS work—it is essential to have mastered the rudiments of statistical, especially Bayesian, calculation of significance. Why? Because most traditional clinical trials are way too small; that's why authors present us with force-fit meta-analyses that combine multiple too-small studies.

   The GWAS studies are exciting new probes into the genomic unknown, but they will demand much care in interpretation. Otherwise, there is the danger of almost hopelessly underspecified statistical fishing expeditions: 500,000 SNP (snapshot) files, for example, and 400 cases!

5. The details of healthcare professional participation in disaster management are not yet in their final form, but it is already certain that we must have a prominent role. The communication systems of the past cry out for improvement, and local and regional advanced planning, triaging, and team play are essential. So here,

too, old fashioned continuing education aimed at individual skills and test-passing abilities without care for the larger health-care organizational framework will no longer be acceptable.

**Remarks by David C. Slawson, M.D.**
**University of Virginia**

We got involved in developing an "Information Mastery"[1-3] curriculum for two reasons. The first is that, basically, primary care doctors guess at answers for about 70 to 80 percent of the information questions that they have.

The second is that only three factors influence about 95 percent of their decision-making.[4] Number one is what a patient asks for. Forty percent of the time that patients ask for something by name, they get it from their doctor. Number two is what the pharmaceutical reps recommend. And Number three, and this influences them most of all, is their local, expert-based continuing medical education. All three of these factors are almost completely paid for by the pharmaceutical industry. So, basically you have a system where doctors are guessing and what they do is based on what they get from drug reps and their continuing education, both paid for mostly by industry. If Oprah Winfrey knew what it was like right now, the public would be in an uproar.

The last 100 years of medicine have been based on the biomedical approach, basically breaking the body down into its components and figuring out how each works. Information Mastery is the exact opposite. It is based on the probability approach to medicine: What evidence out there has the highest probability of helping us do the "right thing" for the patient? The "right thing" means doing more good than harm, but knowing that you can't always win. That is probability. No matter how good you are, you can't always win. Our challenge is to find the best, most likely probability.

The goal of Information Mastery is to answer 90 percent of physicians' questions in 30 seconds to 60 seconds. John Ely's work has shown that doctors in busy clinical practice won't look up a question if they think it will take more than a minute to find the answer.[5] That means we've got to do it in less than a minute, and it must be the

highest-quality information. Quality matters.

Unfortunately, the perception of quality matters more. Our job is to teach physicians how to tell the difference between true quality and the perception of quality. The way we do that is to use what's called the "Information Mastery Usefulness Equation." That means the usefulness of information depends upon three variables: How relevant is that information, how valid is that information and, inversely, how much work does it take to get that information. If the best answer takes ten minutes, it's too long. If I turn and ask someone who is practicing right next to me what to do and what he gives me is neither relevant nor valid, it is a useless answer because of the equation: zero times anything is still zero and divided by anything is still zero.

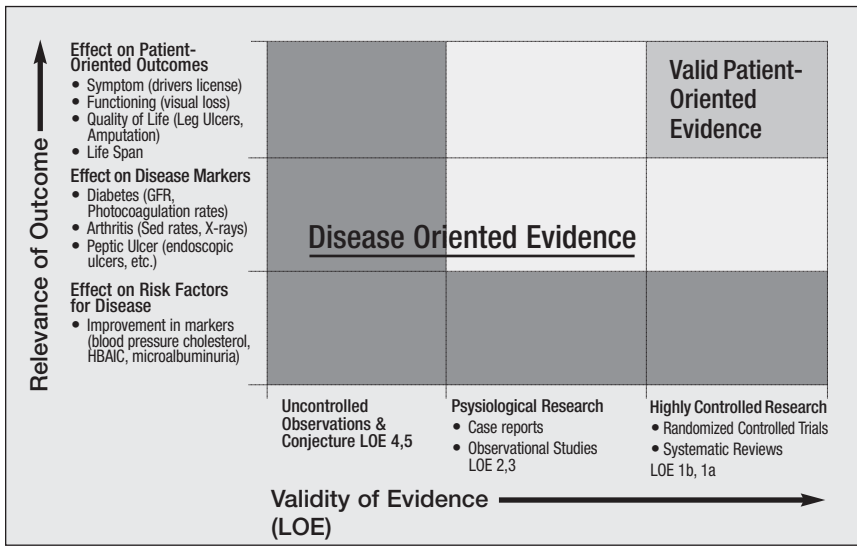
We recognize four levels of information mastery proficiency. Level zero is where most clinicians are today, where they do not base their information decisions on the highest-quality information. Our goal is to get every physician — and not just physicians, but dentists, veterinarians, nurses, chiropractors, everyone — to Level 1, which is where they make decisions based on the highest-quality information that exists at that point in time. The way to do that, we believe, is using what we call "specialty-specific comprehensive coordinated hunting and forging tools." A forging tool is basically a team of people at Level 2, which involves less than one percent of those in each specialty in each discipline. These people survey all of the journals and find the 10 to 20 important articles each month for their discipline or specialty. We call these important articles POEMs, or Patient Oriented Evidence that Matters, and we make sure that everybody gets the POEMs each month. They say, "Hey, this is new information that's important. This is the kind of information that has the potential to change what I do every day."

The hunting tool basically takes all of that and puts it together in a database where it's accessible in less than one minute. Then, for instance, I can say to somebody, "There's a new study that says Riboflavin 400 milligrams once a day works better than just about everything else for migraine headaches at one-tenth the cost." Five months from now, a doctor may remember there is a vitamin but won't remember Riboflavin 400 milligrams. But with the hunting tool and "MIG-go"— even if the doctor can't remember whether the i comes before the a or the a before the i with migraine — at least

the MIG finds that article for them. That's the coordinated tool that makes it work.

We've done work in the U.K., where doctors have been taught to read the literature critically since the late 1980s. Their data show, for example, that if there is an article about a particular drug, as time goes on, use of that drug gets higher and higher. If, at a later time, a major article in *JAMA* says that drug should NOT be used, their data show that the use keeps going up and the article has no effect at all. The bottom line is that practicing doctors do not have time to read the literature. The approach must be to find another way to be sure that they get the information and they know it is important.

**Figure 1. Inter-relationship Between Relevance of Medical Outcomes and Validity of Medical Evidence**




Everything that we use is based on what we call the X and Y-axis (*Figure 1*). The X-axis is how valid the information is, starting with expert opinion and ending with homogeneous systematic review of well done randomized controlled trials. The Y-axis is how relevant is this information. The lowest relevance is what effect does it have on my blood sugar. The highest relevance is will this information, or these outcomes, make me live longer or better. The only thing patients care about, in the end, is am I going to live longer or better, so the most useful medical information is both valid and relevant.

We need clinicians to make their decisions based on the highest relevances that exist and use the lowest the least, but realize that over time those positions may change. And over time we have to keep them up to date with any changes. We want to get everybody at Level 1. We have training teams and we're starting with cardiology and with gastroenterology so that those specialties will have a team to Level 2 to survey the literature, find those important valid "POEMs" for that specialty, and make sure that they are available to everyone.

As for point of care learning, Michigan State has developed a tool to provide CME credit. Based on where the doctor looks for an answer to a question, the prompt will ask, "Do you want CME for this," and if the answer is "yes," then the prompt will ask, "Is this your clinical question?" Based on whether the doctor looked in the diagnosis section or the treatment section, the program can actually create the question and ask, "Is this your question?" If the answer is "yes," then the next prompt asks, "What are you going to do now as a result of this information?" The doctor may answer, "I'm going to change my diagnosis," or whatever. At the end it asks, "Do you want to send CME?" If so, in less than ten seconds, it sends to their accrediting agency something that says, "This was the question and this was the reference that was used and this was the impact on practice," and they send that report automatically. The AMA has been very excited about that work as this is the type of point of care CME that can actually improve practice and patient outcomes.

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## DISCUSSION HIGHLIGHTS

Three of four components that should be included in practice-linked CE involve IT: a practice database, so physicians can know what they are doing; access to information at the time and place of patient care (point of care); and a reminder system to help avoid errors of omission. The fourth component of practice-linked CE is the opportunity to discuss what has been done and why.

We should think in terms of the entire management of the patient, not just the decision-making of the physician. We should develop a database that includes every member of the team and that answers the needs of every professional that is involved with the care of the patients.

Technical competence is probably the core attribute of a profession. One of the core capabilities that defines technical competence in today's world is the ability to search and use all resources at your disposal. You can't be a competent provider of care unless you use electronic technologies in real time to manage your patients. You can't be a truly competent clinician unless you are fully interactive. It is part of the practice and part of the delivery system, and the delivery system owes patients a workforce that can use technology. Why is it then, that in the U.S. only 10 to 20 percent of primary care physicians has electronic records where in most of Western Europe virtually 100 percent of physicians do?

There's a clear link between the efficiency of our educational agenda and our ability to take advantage of electronic technology. The electronic revolution will happen in good time, but now about 40 percent of large medical groups and only six percent of solo practitioners have an electronic record. The numbers are going up faster among groups than individuals, but physicians working in areas like the Mississippi delta need help to become part of a wired healthcare system. Many states are doing better in supporting the electronic infrastructure for continuing education than is the federal government. The electronic health record is fundamental and whatever the barriers have been are starting to erode, but too slowly.

Generational differences and cultural variance in learning and relationships to technology should be considered. I'm not sure people in the age group 18 to 22 think about the Internet the way older

people do. I just watch our faculty working with PDAs, as contrasted with the ways our students work with PDAs night and day. Some healthcare professionals are going to need more training in information and other hands-on activities so it doesn't seem like a big project and they can see it can be done in real time.

Doctors should be excited about point of care learning because they would be getting credit for what they are already doing, with a little bureaucratic requirement. One payback would be a self-directed learning report in which they could see all their questions, the topic areas, the resources they used, what was helpful and what changed their practice.

Healthcare providers also need to become informed consumers of their resources. Clinicians must be able to appraise information resources since they are predigested summaries.

Since physicians tend to consult multiple resources for their questions, maybe the on-line resources could be centralized for quicker access. Clinicians don't have the time or capacity to read multiple studies and put all the information together. Centralization is going to be critical because physicians practicing medicine don't like using lots of resources. They don't have the time, so there's got to be what amounts to one-stop shopping. The question of which resources physicians should be using is still up in the air. Also, more study is needed to determine if the learning during point of care is surface or deep.

Some physicians have said being able to find answers to clinical questions on the Internet has "put the fun back into medicine." It is fun to learn new things and the Internet and point-of-care resources give them the answers that help them provide better medical care.

Studies show doctors are more likely to change when learning is initiated by a patient-based clinical question, not by a vague desire to keep up. Even though AMA now gives credit for that type of learning, many doctors find the documentation requirements too burdensome. That is something that needs to be worked on.

One reason physicians won't take the extra step to do point of care documentation is they don't need to. They can get credit a million different ways and do no work at all.

It is good to improve the ways people use the Internet to obtain information, regardless of whether credit is associated with it, but the credit part could be less bureaucratic.

If you want to get information to people quickly, format is an issue.

Doctors have more access than they realize, and they are not aware that many resources are free or relatively inexpensive. Look at what the National Library of Medicine gives for free and there's also the possibility of partnering with academic centers.

IT offers a huge opportunity to do lifelong learning and continuing education, as well as early education, across the professions. We all have the opportunity to get the same information but we use it in a different way. Physicians are primarily in private offices, nurses in hospitals, but IT can bring them together.

The Internet is changing medical information for patients, their families and the public. Thirty percent of searching on Medline Plus is done by consumers. Now patients show up at the doctor's office with a bunch of printouts, which is completely different from the way we practiced medicine 40 years ago. Medline Plus has an information prescription project in which the doctor is encouraged to write a prescription for the patient to look at Medline Plus for some information.

# II.

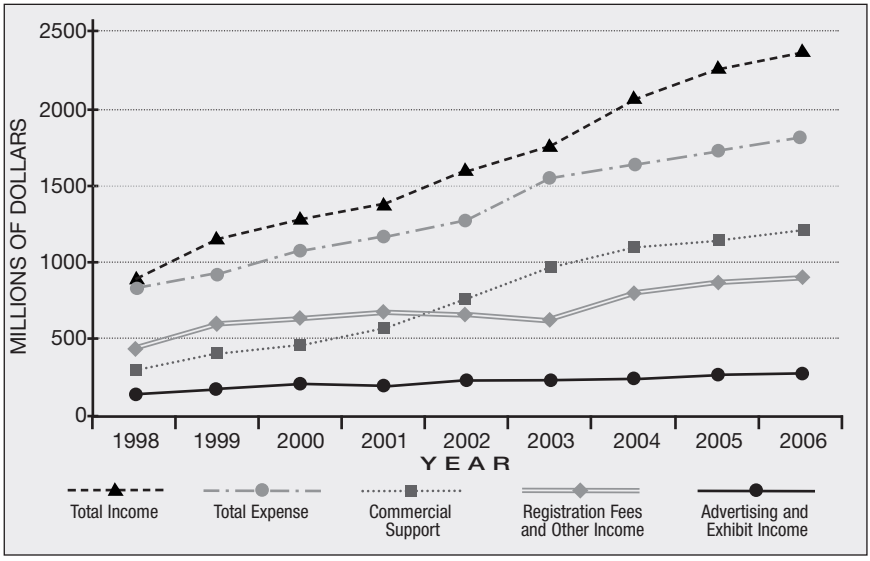
# Financing Continuing Education: Who, How, and Why

# Financial Support of Continuing Education in the Health Professions

**Robert Steinbrook, M.D.**
**New England Journal of Medicine**

Continuing education in the health professions is a multibillion-dollar-a year industry. In 2006, the total income from continuing medical education (CME) in the United States for activities presented by providers accredited by the Accreditation Council for Continuing Medical Education (ACCME) was $2.4 billion (*Figure 1, Table 1*).[1] A decade ago, the total income was less than $1 billion, and the majority of support came from the registration fees of CME participants or funds from the parent organization of a program's sponsors. Since 2003, however, the majority of income has come from industry.[2]

**Figure 1. Income and Expenses for Accredited Continuing Medical Education in the United States, 1998–2006**




Does the commercial funding of continuing education distort medical practice away from what is best for health professionals and patients? Should changes be made to the funding and existing safeguards against financial bias and conflict of interest? This paper provides background for the discussion of these and related questions. Although all sources of financial support are discussed, commercial support—the focus of current controversy—is emphasized.

**Table 1. Income and Expenses for Continuing Medical Education in the United States, 1998–2006**

| YEAR | ACCME Accredited Organizations | Total Income | Commercial Support | Advertising & Exhibit Income | Registration Fees & Other Income | Total Expense | Profit Margin |
|---|---|---|---|---|---|---|---|
| **1998** | 632 | $888.5 million | $302 million | $125.9 million | $457.7 million | $842.1 million | 5.5% |
| **1999** | 655 | $1.11 billion | $388 million | $148.2 million | $574.6 million | $920.9 million | 20.5% |
| **2000** | 680 | $1.27 billion | $467 million | $168.9 million | $635.4 million | $1.05 billion | 20.6% |
| **2001** | 674 | $1.39 billion | $569 million | $160.0 million | $665.2 million | $1.18 billion | 18.1% |
| **2002** | 686 | $1.60 billion | $746 million | $187.3 million | $662.9 million | $1.33 billion | 20.3% |
| **2003** | 697 | $1.77 billion | $971 million | $183.3 million | $620.1 million | $1.54 billion | 15.2% |
| **2004** | 716 | $2.05 billion | $1.07 billion | $197.0 million | $784.5 million | $1.61 billion | 27.4% |
| **2005** | 716 | $2.25 billion | $1.12 billion | $235.7 million | $899.2 million | $1.72 billion | 31.0% |
| **2006** | 729 | $2.38 billion | $1.20 billion | $244.9 million | $940.3 million | $1.82 billion | 31.0% |

Data are from the 2006 annual report of the Accreditation Council for Continuing Medical Education. Of the 729 ACCME accredited providers, 718 reported data on total income, 601 on commercial income, 446 on advertising and exhibits, 650 on registration fees and other income, and 721 on total expense. Data on providers that are accredited by state medical societies are not included (see text).

Commercial support for CME quadrupled between 1998 and 2006—from $302 million to $1.2 billion. Nearly all of this money was from firms that manufacture products that are regulated by the US Food and Drug Administration (FDA). Support doubled from other sources. Advertising and exhibit income—the ACCME tabulates this separately—increased from $126 million to $245 million. Registration fees and other income increased from $458 million to $940 million. In 1998, commercial support represented 34.0 percent of total CME income. In 2003 it represented 54.7 percent. In 2006, it represented 50.3 percent, and the combined for-profit support for CME—com-

mercial support, advertising, and exhibits income — represented 60.5 percent of total income. Although comparable data are not available for continuing education in nursing and pharmacy, similarities are likely, in part because some programs are accredited for multiple professions. In 2006, an industry magazine noted in its annual medical education report: "For continuing education to continue, commercial funding must remain healthy. The future of CME depends on it."[3]

CME is also profitable. Income has grown faster than expenses. In 1998, the profit margin for accredited providers was 5.5 percent. In 2006, it was 31.0 percent. The three main types of providers are physician member organizations, publishing/education companies, and medical schools. In 2006, their overall CME profit margins were 46.3 percent, 34.7 percent, and 20.7 percent, respectively *(Table 2)*. Of course, nonprofit entities, such as physician member organizations and medical schools, often use CME revenues to subsidize other activities.

There is long-standing concern that continuing education is often a marketing activity that promotes sales of newer and more lucrative medical products, including their off-label use, notwithstanding the various safeguards against conflict of interest and commercial bias discussed below.[2,4–9] Patients and payers ultimately pay the bill, through increased spending on prescription drugs and other products. In August 2002, an industry magazine asked the question, "What's [return on investment] got to do with CME?" Noting that "in the commercial world, large investments of company resources have to be justified; there has to be a tangible return," the article concluded that marketing professionals "must demand data that demonstrates the worthiness of their [continuing education] investment, and they must invest in programs that change physician practice patterns."[10]

There are multiple reasons for this concern about the commercial aspects of CME. First, the public perceives that many gifts and payments to physicians and other health professionals from industry amount to bribery or kickbacks, even if they are entirely legal.[11] Commercial support for CME is just one more physician-industry relationship. Many of the physicians who are invited to speak at CME events or to organize them have extensive financial relation-

**Table 2. Financial Support of Continuing Medical Education for Different Types of Organizations, 2006**

| ORGANIZATION TYPE | Number | Total Income | Commercial Support | Advertising & Exhibit Income | Registration Fees & Other Income | Total Expense | Profit Margin |
|---|---|---|---|---|---|---|---|
| Government/ Military | 16 | $73.5 million | 5.7% | 0.5% | 93.9% | $74.4 million | (1.3%) |
| Hospital/Health-care Delivery System | 93 | $110.6 million | 52.4% | 4.3% | 43.3% | $110.9 million | (-0.3%) |
| Insurance Company/ Managed Care | 14 | $2.8 million | 9.2% | 1.4% | 89.4% | $7.1 million | (-39.6%) |
| Non-profit (Other) | 34 | $122.8 million | 40.3% | 8.2% | 51.5% | $96.7 million | 27.0% |
| Non-profit (Physician Member Organization) | 267 | $783 million | 23.0% | 25.5% | 51.5% | $535.2 million | 46.3% |
| Not Classified | 29 | $54.2 million | 51.5% | 1.7% | 47.0% | $41.3 million | 31.4% |
| Publishing/ Education Company | 154 | $818.8 million | 75.8% | 1.9% | 22.3% | $608.0 million | 34.7% |
| School of Medicine | 122 | $418.9 million | 61.9% | 3.2% | 34.9% | $347.1 million | 20.7% |
| **TOTAL** | **729** | **$2.38 billion** | **50.3%** | **10.3%** | **39.4%** | **$1.61 billion** | **27.4%** |

Data are from the 2006 annual report of the Accreditation Council for Continuing Medical Education. Publishing/Education Company includes for-profit medical education and communication companies (MECCs). Non-profit (Other) includes foundations, public health organizations, and voluntary health organizations, such as the American Cancer Society and the American Heart Association. Non-profit (Physician Membership Organizations) includes specialty societies, the American Medical Association and other non-specialty societies, and state medical societies. About 85 percent of the organizations in this category are specialty societies. Financial data are available for overall categories, but not for sub-groups, such as MECCs or state medical societies. Data on providers that are accredited by state medical societies are not included (see text). Totals may not sum to 100% due to rounding.

ships with industry, and drug companies have paid them to give other presentations. The material presented may overlap with promotional events and CME courses.[2] The off-label promotion of gabapentin (Neurotonin), which was originally developed for the treatment of epilepsy, is a well-documented example of commercial influence on continuing education.[12]

Second, the drug company sponsorship of continuing education may lead to an overemphasis on topics that are beneficial to commercial interests — such as programs about drug treatment or the use of medical devices or diagnostic tests, thereby biasing "the overall 'curriculum' of topics."[9] Too few programs relate to other aspects of care, regardless of their importance to improving patient care.[13]

Third is the accreditation of medical education and communication companies (MECCs).[14] An array of such companies exists, and they have various lines of business. For example, they may organize and manage meetings, find speakers, assess educational needs, develop written educational materials, provide public relations services, or prepare advertising campaigns, among other activities. Some are primarily education companies; others are primarily communication companies. In 2006, the 154 accredited publishing and education companies, a category that includes MECCs, represented about a fifth of all accredited organizations. Publishing and education companies receive about three quarters of their CME income from commercial support, a higher percentage than any other type of organization. In 2006, publishing and education companies had a combined income of $819 million, or 34.4 percent of all CME income. They had more income than any other type of organization *(Table 2)*.

Finally, extensive financial relationships exist between some other large providers of CME — professional societies, medical schools, and academic medical centers — and industry.[5,9,15,16] Industry provides a substantial part of the budget for many specialty societies; it pays for national meetings, medical journals, and the development of clinical practice guidelines.[17] If commercial support were to cease at a medical society that was heavily supported by industry, programs would be cut and staff would lose their jobs. Physicians or others with ties to industry may run these organizations. Some of the financial relationships are significant enough that it may be impossible for these providers — and their personnel directly involved with CME — to be independent of industry. Accreditation of MECCs raises the same issue.[18]

From 2005 to 2007, the U.S. Senate Finance Committee investigated drug company grants to fund continuing education, including allegations that grants were being used for improper purposes. The Committee's report, released in April 2007, concluded: "It seems

unlikely that this sophisticated industry would spend such large sums on an enterprise but for the expectation that the expenditures will be recouped by increased sales. Press reports and documents exposed in litigation and enforcement actions confirm these suspicions in some instances. There is also evidence from ACCME that some accredited CME providers still allow commercial sponsors to exert improper influence on educational activities that are supposed to be independent from commercial interests."[19]

The report noted that although "major drug companies have adopted corporate policies that, on their face, do not allow educational grants to be awarded for unlawful purposes," the policies "still allow this industry to walk a fine line between violating rules prohibiting off-label promotion and awarding grant money in a manner likely to increase sales of their products, including sales for off-label uses."

According to the Senate committee, much of the industry funding for CME follows this pattern. A MECC submits a grant proposal. The drug company funds "a program on a general topic (eg, treatment of a specific condition—and the condition is one for which at least one of the sponsoring drug company's products is used), but the specifics of the content are determined by the [MECC]." Pharmaceutical company documents reveal no "explicit agreement that the CME program will favorably discuss a company product. However, it is possible that both parties reasonably expect that to be the result."[19]

**Industry Activities and Expenditures on Promotion**

Commercial support for continuing education occurs in the context of spending for the promotion of drugs and other medical products. Overall expenditures on pharmaceutical promotion in the United States grew from $11.4 billion in 1996 to $29.9 billion in 2005, accounting for 14.2 percent and 18.2 percent of sales, respectively.[20] In 2005, the spending included $4.2 billion for direct-to-consumer advertising, $18.4 billion for free samples, $6.8 billion for detailing, and $0.4 billion for journal advertising. For leading therapeutic classes of drugs, between 7 percent and 24 percent of promotional spending was for professional meetings and events.

Based on information provided by drug companies, the Senate Finance Committee estimated that "75 percent of the total educational grant funding is used to support accredited educational grant programs."[19]

Many of these grants are awarded to MECCs.

A national survey conducted in 2003 and 2004 of physicians in six specialties found that relationships between physicians and industry are common and vary according to specialty, practice type, and professional activities.[21] For example, 26 percent of respondents reported receiving reimbursements for admission to CME meetings (free or subsidized), and 15 percent reported reimbursements for meeting expenses (eg, travel, food, and lodging, although the question did not distinguish between CME events and other meetings); 18 percent reported payments for consulting, and 16 percent reported payments for speaking engagements or for serving on a speakers' bureau. Cardiologists were significantly more likely to receive payments than anesthesiologists, family practitioners, pediatricians, and surgeons, but not internists.

Another national survey, conducted in 2006, found that in the past year 65 percent of clinical departments had received industry funds to support CME "administered by your department" and that 62 percent of the chairs of these departments had one or more personal relationships with industry, including 26 percent who had received "personal compensation (such as honoraria) from industry for participating as faculty/speaker in CME activities."[22] More than half of the chairs whose departments had relationships with industry felt the support had "an overall positive effect on their ability to provide educational offerings." Few perceived negative effects of either relationships between departments and industry or department chairs and industry.

Verispan, an independent medical information company in Morristown, NJ, collects data about physician meetings and events by surveying a panel of about 3400 physicians in 19 specialties. Once a month, the panel members report on all invitations they receive, regardless of the sponsor or whether they attended the event. Physicians are compensated for participating. Among other questions, panel members are asked if a pharmaceutical company was associated with the event and if CME credit was offered. Verispan codes events into eight types: videoconferences, teleconferences, symposia (held in a convention center for longer than 4 hours with more than 20 attendees or at least 50 attendees), small meetings with a pharmaceutical representatives (less than 21 attendees), small group meetings (held

in a restaurant or with less than 21 attendees or shorter than 3 hours with unspecified number of attendees), third-party events (conducted by a moderator), large group meetings (more than 20 attendees or longer than 2 hours with unspecified number of attendees), and other (primarily market research activities). The results are projected to a "universe" of about 375,000 physicians in the 19 specialties. To estimate expenditures, Verispan "benchmarks" the cost of different

**Table 3. Panel A.**
**Continuing Medical Education Credit for Physician Meetings and Events for 19 Specialities, 2000–2006**

| Year | Events | No CME Credit | CME Credit | Not Specified |
|---|---|---|---|---|
| 2000 | 313,605 | 83.6% | 13.7% | 2.7% |
| 2001 | 370,341 | 86.1% | 12.3% | 1.6% |
| 2002 | 402,881 | 86.3% | 12.5% | 1.2% |
| 2003 | 453,481 | 79.4% | 11.2% | 9.4% |
| 2004 | 536,428 | 86.6% | 12.7% | 0.7% |
| 2005 | 511,275 | 88.6% | 10.0% | 1.4% |
| 2006 | 497,470 | 89.7% | 8.8% | 1.5% |

**Table 3. Panel B.**
**Estimated Expenditures in Physician Meetings and Events for 19 Specialities, 2000–2006**

| Year | Expenditures | No CME Credit | CME Credit | Not Specified |
|---|---|---|---|---|
| 2000 | $1.87 billion | 73.4% | 24.5% | 2.1% |
| 2001 | $2.16 billion | 76.7% | 21.8% | 1.5% |
| 2002 | $2.18 billion | 75.4% | 23.5% | 1.1% |
| 2003 | $2.44 billion | 67.6% | 22.2% | 10.2% |
| 2004 | $2.85 billion | 76.0% | 23.2% | 0.8% |
| 2005 | $2.71 billion | 78.4% | 20.4% | 1.2% |
| 2006 | $2.64 billion | 79.5% | 19.1% | 1.5% |

Data are from Verispan

activities; a symposium or a large group meeting is assigned a greater cost ($50,000) than a small group meeting ($5000) or a teleconference ($2500).

Between 2000 and 2006, CME credit was available for less than 15 percent of physician meetings and events; these activities accounted for about one fifth of expenditures *(Table 3)*. In 2006, CME credit was available at a smaller percentage of meetings and events — an estimated 8.8 percent — than in prior years, and the activities for which credit was offered accounted for a smaller percentage of expenditures.

In 2006, an estimated 497,470 physician meetings and events took place, with expenditures of $2.64 billion for the Verispan "universe." CME credit is most commonly available for symposia and large group meetings. In 2006, this category accounted for an estimated 2.1 percent of events and 19.2 percent of expenditures. Credit was available for about two thirds of symposia and large group meetings. By comparison, credit was available for about 7 percent of small group meetings. Such meetings represented an estimated 81.1 percent of all events and 70.6 percent of expenditures.

In 2006, pharmaceutical companies were associated with an estimated 89.1 percent of physician meetings and events. Of such meetings and events, CME credit was offered for an estimated 8.9 percent, not offered for 89.6 percent, and not specified for 1.5 percent. Of an estimated 9449 symposia and large group meetings associated with pharmaceutical companies, CME credit was offered for 67.9 percent, not offered for 30.9 percent, and not specified for 1.2 percent. Of an estimated 649 symposia and large group meetings not associated with pharmaceutical companies, CME credit was offered for 72.6 percent, not offered for 18.5 percent, and not specified for 8.9 percent.

Verispan surveys a separate physician panel of about the same size from the same specialties to gather information about electronic promotional activities. These include online events (a self-guided CME program, a symposium, a Web conference), "video detailing" (real-time online communication with a pharmaceutical sales representative), and "virtual detailing" (a self-guided online non-CME activity).

In 2006, there were an estimated 3.2 million electronic promotional activities and expenditures of $329.4 million for the Verispan "universe." CME credit was available for about one tenth of electronic promotional activities; all were online events. Online events accounted for 17.3 percent of the activities, and credit was available for about two fifths of them. Although activities with CME credit accounted for only about 3 percent of expenditures on electronic promotion, they accounted for about half of expenditures for online events. An estimated 79.4 percent of CME events were associated with a pharmaceutical company and 6.2 percent were not; for 14.4 percent of events, this information was either not known or not specified.

## Funding for CME

Each year, providers accredited by the ACCME submit information about their CME programs, including the number and type of activities, and some financial data, including total income, commercial support, advertising and exhibit income, registration fees and other income, and total expense. The data are self-reported, based on terms and definitions provided by the Council. Although the information is not audited, it is considered reliable. The ACCME defines commercial support as "financial, or in-kind, contributions given by a commercial interest, which is used to pay all or part of the costs of a CME activity. *Advertising and exhibit income is not considered commercial support*" (emphasis in original source of quote).[1] A "commercial interest' is "any entity producing, marketing, re-selling, or distributing healthcare goods or services consumed by, or used on patients," according to the expanded definition adopted in August 2007.[18] The ACCME compiles the information and publishes an annual report, most recently for 2006.[1]

Selected financial data from recent ACCME annual reports are shown in *Tables 1, 2,* and *4*. In addition to the data highlighted previously about overall income, commercial support, and profit margins, and the income and commercial support for publishing and education companies, there is noteworthy information:

1. Between 1998 and 2001, income from commercial support increased by about $90 million a year; from 2001 to 2003 it increased by about $200 million a year, and from 2003 to 2006 it increased by about $75 million a year (*Table 1*).

**Table 4. Changes in the Financial Support of Continuing Medical Education for Five Types of Organizations, 2004–2006**

| Organization Type | Total Income | Commerecial Support | Advertising and Exhibit Income | Registration Fees and other Income | Total Expense |
|---|---|---|---|---|---|
| Hospital/Healthcare Delivery System | +18.8% | +10.1% | +2.1% | +33.8% | +23.0% |
| Non-profit (Other) | +24.7% | +47.2% | +63.2% | +7.7% | +16.0% |
| Non-profit (Physician Member Organization) | +11.2% | +2.0% | +13.4% | +11.3% | +12.8% |
| Publishing/Education Company | +17.3% | +17.7% | +64.0% | +13.3% | +15.2% |
| School of Medicine | +7.2% | +1.9% | +31.5% | +16.4% | +8.2% |
| All | +16.2% | +12.0% | +24.3% | +19.9% | +12.9% |

Data are from the 2004 and 2006 annual reports of the Accreditation Council for Continuing Medical Education. Percentages are changes over two years.

2. In 2006, following publishing and education companies, which received 34.4 percent of total CME income, physician member organizations received 32.1 percent of total income, and medical schools received 17.6 percent. Thus, the other types of organizations combined accounted for only 15.1 percent of CME income (*Table 2*).

3. In 2006, following publishing and education companies, which received 75.8 percent of their CME income from commercial support, medical schools received 61.9 percent and hospitals/healthcare delivery systems received 52.4 percent. Physician member organizations received 25.5 percent of their CME income from advertising and exhibits, which represented about three quarters of all advertising and exhibit income for CME. They received 23.0 percent of their income from commercial support and 51.5 percent from registration fees and other income. Total for-profit support for CME — commercial support and advertising and exhibits income combined — was 77.7 percent for publishing and education companies, 65.1 percent for medical schools, and 48.5 percent for physician member organizations.

4. Between 2004 and 2006, overall CME income increased by 16.2 percent to 12.0 percent for commercial support, 24.3 percent for advertising and exhibits, and 19.9 percent for registration fees

and other income (*Table 4*). Publishing and education companies increased their income by 17.3 percent.

The ACCME also collects data on providers that are accredited by state medical societies. In 2006, there were 1684 such providers. These providers had a total income of $134.5 million and expenses of $136.4 million, as compared with the $2.38 billion in income and $1.82 billion in expenses for providers accredited by the ACCME. Of the income earned by providers accredited by state medical societies, $39.4 million (29.3 percent) was from commercial support, $10.2 million (7.6 percent) was from advertising and exhibits, and $84.9 million (63.1 percent) was from registration fees and other income.

## Federal Laws and Regulations

The FDA issued guidelines for industry-supported scientific and educational activities in 1997.[23] The guidelines specified that programs and materials about therapeutic products regulated by the FDA that are prepared by, or on behalf of, the companies that market the products are subject to the labeling or advertising provisions of the Food, Drug, and Cosmetic Act. However, "truly independent and nonpromotional industry-supported activities" are not subject to FDA regulation. According to the Senate Finance Committee, "it is legal for independent third parties to run educational sessions that recommend these products for off-label uses, so long as the educational program is independent and the decision to favorably discuss the off-label use cannot be attributed to the drug company".[19] Factors that the FDA considers include the control of content and selection of presenters and moderators, disclosures of company funding and connections to speakers, the focus of the program, the relationship between the CME provider and the supporting company, the involvement, if any, of the CME provider in sales or marketing of a company's product, and a provider's failure to meet standards for other programs.[23] "Beyond this guidance, the FDA does little to ensure that educational grants are used for bona fide educational purposes. Nor does the FDA have a system in place to monitor educational programs."[19]

The US Departments of Justice and Health and Human Services, through the Office of the Inspector General, enforce the anti-kickback statute and the False Claims Act.[24] Pharmaceutical manufacturers have been prosecuted for illegal off-label promotion. One example

is the $430 million that Warner-Lambert paid in 2004 to settle claims about the promotion of gabapentin. Another is the $704 million that Serono paid in 2005 to settle claims about the promotion of somatropin (Serostim), which is a human growth hormone.[19]

The Office of the Inspector General identified educational grants from drug companies as a risk area for fraud and abuse. In 2003, they offered guidance to reduce the risk.[25] Risk-reduction measures include separating grant making from sales and marketing within pharmaceutical companies, establishing objective criteria for awarding grants that do not take into account recipients' purchases, and funding only bona fide activities. The manufacturer should have no control over the speaker or the content of educational activities. Conference organizers should not improperly compensate physicians, for example, by paying them to attend a conference. Many pharmaceutical manufacturers have voluntarily adopted this guidance and implemented internal "firewalls" to separate research grants from marketing and sales. For example, firms may have a formal policy, a centralized support structure, and not fund individual physicians or group practices. Sales and marketing representatives may no longer have authority to solicit grant requests or award funds.[3,24,26,27]

Of course, a pharmaceutical company decides what events to sponsor and chooses the CME provider. In addition, we do not know the effectiveness of internal "firewalls" and other measures in preventing problematic activities. The Senate Finance Committee found that major drug companies "have limited the direct involvement of field sales representatives and sales and marketing departments in the educational grant-making process" and that "the overt use of educational grants to provide kickbacks to physicians who attend educational programs has decreased over time."[19] However, the Committee cautioned, "it is difficult to quantify the risk of kickbacks related to industry-sponsored education where companies overpay high-prescribing physicians as "consultants" or "speakers" for minimal work to develop educational material or teach at educational programs."

### Pharmaceutical Industry and American Medical Association Policies

In 2002, the Pharmaceutical Research and Manufacturers of America (PhRMA), the leading trade association representing drug companies, issued a "Code on Interactions with Healthcare Professionals."[28] The

code is voluntary; it establishes no procedures to identify violations or enforce policy.

The PhRMA code allows member companies to sponsor CME and other educational, scientific, or professional events that are organized by third-party providers. The sponsorship is for overall program costs. Payments to non-faculty healthcare professionals, such as for travel, lodging, or time spent attending the meeting, are not allowed. Financial support for "modest" meals or receptions may be provided. The event should "further [attendees'] knowledge on the topic(s) being presented" and be "primarily dedicated, in both time and effort, to promoting objective scientific and educational activities and discourse." When firms "underwrite medical conferences or meetings other than their own, responsibility for and control over the selection of content, faculty, educational methods, materials, and venue belongs to the organizers of the conferences or meetings in accordance with their guidelines." Nothing should be provided or offered "in exchange for prescribing products or for a commitment to continue prescribing products" or "in a manner or on conditions that would interfere with the independence of a healthcare professional's prescribing practices."

In May 2007, in response to public criticism about the influence of drug company money on medical practice, Eli Lilly & Co. began posting online (https://www.lillygrantoffice.com/grant_registry.jsp) all of its educational grants and charitable contributions to healthcare-related organizations in the United States; the information is updated quarterly.[29,30] Many of these grants are for CME activities. In the first 6 months of 2007, two of the largest recipients of Lilly's grants were the Pri-Med Institute, a Boston-based MECC ($1,676,978 for programs related to depression and pain, diabetes, and erectile dysfunction), and the psychiatry department at Massachusetts General Hospital ($1,650,000 for the 2007 Psychiatry Academy, a program with multiple sponsors). Lilly is considering disclosing information globally, and other drug companies are considering similar disclosures.

The ethical code of the American Medical Association (AMA) permits "subsidies to underwrite the costs of continuing medical education conferences or professional meetings." According to the Council on Ethical and Judicial Affairs of the AMA (Opinion E-8.061), "any subsidy should be accepted by the conference's sponsor who in turn

can use the money to reduce the conference's registration fee." Payments "should not be accepted directly from the company by the physicians attending the conference" and "subsidies from industry should not be accepted directly or indirectly to pay for the costs of travel, lodging, or other personal expenses of physicians attending conferences or meetings, nor should subsidies be accepted to compensate for the physicians' time."

## ACCME Policy and Standards for Commercial Support

The ACCME has seven member organizations—the American Board of Medical Specialties, the American Hospital Association, the AMA, the Association for Hospital Medical Education, the Association of American Medical Colleges, the Council of Medical Specialty Societies, and the Federation of State Medical Boards of the United States. It has a staff equivalent of 12 full-time employees and an annual budget of about $3.5 million.

According to the ACCME, CME "is professional education created for the medical profession by the medical profession or its agents."[31] The Council's "Standards for Commercial Support" were approved in 2004.[32,33] The six standards are 1) independence; 2) resolution of personal conflicts of interest; 3) appropriate use of commercial support; 4) appropriate management of associated commercial promotion; 5) content and format without commercial bias; and 6) disclosures relevant to potential commercial bias. CME "must promote improvements or quality in healthcare and not a specific proprietary business interest of a commercial interest." Presentations "must give a balanced view of therapeutic options."[32]

A CME provider must ensure that the following six decisions are made free of the control of a commercial interest.[32] They are 1) identification of CME needs; 2) determination of educational objectives; 3) selection and presentation of content; 4) selection of all persons and organizations that will be in a position to control the content of the CME; 5) selection of educational methods; and 6) evaluation of the activity. A commercial interest cannot specify how these requirements are met. The standards notwithstanding, a commercial sponsor can currently designate the topic or type of activity and, if the provider requests, suggest specific topics or speakers, discuss the content with the provider, and furnish data, including information about off-label uses.

The ACCME will not accredit entities that are commercial interests or that are "owned or controlled" by a commercial interest. Providers of clinical service directly to patients, including physician organizations, medical groups, and academic medical centers, are not considered commercial interests. Previously, the ACCME has not considered MECCs to be commercial interests. However, under the expanded definition of the term ACCME adopted in August 2007, more entities, including some accredited MECCS, are likely to be considered commercial interests. For example, advertising agencies that do promotional work for pharmaceutical companies and companies that resell drugs or devices are now considered commercial interests. Some of these firms have divisions that are accredited CME providers. Such firms must spin their CME units off as separate companies by August 2009 or withdraw from accreditation. An accredited provider "can be owned by a firm that is not a commercial interest" or have a 'sister company' that is a commercial interest, if there is "an adequate corporate firewall in place to prohibit any influence or control by the "sister company" over the CME program."[18]

Under the standards, relevant financial relationships within the past 12 months must be disclosed, and conflicts of interest must be resolved before the educational activity occurs. The ACCME defines financial relationships as "those relationships in which the individual benefits by receiving a salary, royalty, intellectual property rights, consulting fee, honoraria, ownership interest (eg, stocks, stock options or other ownership interest, excluding diversified mutual funds), or other financial benefit."[33] The Council has not set "a minimum dollar amount for relationships to be significant" because "inherent in any amount is the incentive to maintain or increase the value of the relationship."[33] The requirements apply to planners, speakers, and authors with "both a current financial relationship with a commercial interest and the opportunity to affect content relevant to products or services of that commercial interest."[33] In general, there are four ways to resolve conflicts of interest: 1) find another speaker, author or meeting planner; 2) assign the speaker or author a different topic; 3) have an effective peer review of the content of a presentation or written material so that unsubstantiated or promotional content is eliminated; or 4) change the overall activity so that there is no longer a conflict. Conflicts of interest are usually resolved through peer review or by changing the overall activity.

Compared to the CME industry, the ACCME has a small staff and a small budget. It lacks "proactive and real time oversight" of adherence to its standards for commercial support, for example by placing monitors in the audience at meetings.[19] Based on information provided by the ACCME, companies have exerted improper influence over the content of CME programs. The Senate Finance Committee noted that 18 of 76 CME providers that were reviewed in 2005 and 2006 "did not comply with at least one of the standards meant to ensure independence."[19] The Senate Committee also noted that "based on ACCME policies, it can take as long as 9 years from the date of a non-compliant educational activity for an educational provider to lose accreditation." Moreover, systematic data are lacking on the frequency of adherence. According to the Senate Finance Committee: "Compliance with ACCME standards still allows CME providers to accommodate the business interests of their commercial sponsors and affords drug companies the ability to target their grant funding at programs likely to support sales of their products. The full extent to which drug companies influence the content of putatively independent CME programs cannot be estimated from the information we currently have."[19]

### Financial Support for Continuing Nursing Education and Continuing Pharmacy Education

The American Nurses Credentialing Center (ANCC), a separately incorporated subsidiary of the American Nurses Association, accredits continuing nursing education (CNE). About half the states mandate CNE. The Accreditation Council for Pharmacy Education (ACPE) accredits continuing pharmacy education (CPE). All states mandate CPE.

The ACCME, the ANCC, and the ACPE have a unified application that a continuing education provider can use to seek accreditation from two or three organizations. ANCC has accredited 225 providers of CNE, including about 34 organizations with triple accreditation. The ACPE has accredited about 408 providers; about a third have multiple accreditations. Both the ANCC and the ACPE have adopted the ACCME standards for commercial support.

There are no overall statistics for the funding of CNE. Although the ACPE does not systematically collect information on funding, some

data are available. In April 2007, the ACPE conducted an anonymous survey of commercial support for pharmacy continuing education providers.[34] The Council received 214 responses (response rate, 53 percent). Of the respondents, 28 percent reported no commercial funding in 2006, 59 percent reported that such funding provided 25 percent or less of their annual income, 19 percent reported that it provided more than 75 percent, and 11 percent reported that it provided 100 percent. Another study found that "approximately 86 percent of providers and 43 percent of programs received commercial support" and that "although the [ACPE] requires that providers review instructional content and materials for commercially supported programs before delivery, only 43 percent always did so."[35] This study concluded, "Commercial support of continuing education is widespread, affects continuing education programs, and is perceived to have significant educational and noneducational consequences."

**Financial Support for Continuing Legal Education**

In contrast to the situation in the health professions, tuition payments by individual attorneys and their firms provide most of the financial support for continuing legal education (CLE). About 40 states require CLE, typically an average of 10 to 15 hours annually; the requirements and accreditation are state-based and vary. Programs may be accredited by multiple states. Conferences may receive income from sponsors and exhibitors, such as vendors of legal software or legal publishers, but such payments provide limited revenue. Typically, the speakers are not paid, although their travel expenses may be reimbursed. Speakers agree to such arrangements for various reasons. For instance, they may become better known in their legal fields, and the exposure may attract new clients and referrals.

Because there is no central source of information about the financial support of CLE, I spoke to officials at three leading providers—the American Bar Association Center for Continuing Legal Education in Chicago, the American Law Institute-American Bar Association in Philadelphia, and the Practicing Law Institute in New York City. All of these groups provided the same information. CLE has grown rapidly. The funding differs from that for the health professions. There are no external sources of funds that are analogous to funding in the pharmaceutical industry. Payments from sponsors and advertisers

are small, compared with tuition income. Members of a sponsoring organization may receive tuition discounts.

## Recent Developments

The Senate Finance Committee report on the use of educational grants by pharmaceutical manufacturers focused attention on the ACCME. In an April 2007 letter to the Council, the Senate Committee chair and ranking member urged greater "oversight to better ensure that the content of continuing education programs is independent from the business interests of the drug companies who fund the programs."[36,37] In its August 2007 response, the ACCME stated its commitment to "ensure the validity of the CME enterprise."[38] The Council identified five areas for attention, including enhanced data collection, such as establishing a monitoring system that would allow "independent decisions about compliance with [ACCME] requirements," changes in the administration of the standards, such as procedures for more rapid responses to serious problems, and expanded education and outreach programs." The Council also said that it would review "the management of commercial support across the CME enterprise including funding models and the role of industry in CME. Alternate funding models will be considered (eg, pooled funding, limits, sources) including discussions on the value, or impact, of no commercial support." Also in August 2007, the ACCME announced several new policies.[18]

In June 2007, the Senate Special Committee on Aging held a hearing on the relationship between doctors and the drug industry, entitled "Paid to Prescribe?"[39] The Committee chair, Senator Herb Kohl (D-Wisconsin), stated, "these gifts and payments can compromise physicians' medical judgment by putting their financial interest ahead of the welfare of their patients."[40] Kohl proposed a national registry that would require disclosure of payments and gifts. Separately, Senator Charles Grassley (R-Iowa) proposed that drug manufacturers make public any payments to doctors who bill the Medicare or Medicaid programs, which includes almost all practicing physicians.[11] In September 2007, Senator Grassley, Senator Kohl, and four cosponsors introduced legislation to require manufacturers of drugs and medical devices to report publicly nearly all payments and gifts to physicians.[41] The federal government would make the information available on "an Internet website that is easily searchable, downloadable, and understandable." The information would include "a

description of the nature of the payment," such as "participation in a medical conference, continuing medical education, or other educational or informational program or seminar, provision of materials related to such a conference or educational or informational program or seminar, or remuneration for promoting or participating in such a conference or educational or informational program or seminar." Minnesota and Vermont already require similar but less comprehensive disclosures. Maine and West Virginia have enacted legislation to do so.[42]

## Questions for Consideration

The conference should initially consider whether or not commercial support distorts continuing education and medical practice in ways that are bad for health professionals and patients. It should then consider whether to recommend changes to the financial support of continuing education.

At least six approaches are possible: 1) no commercial support; 2) limiting the percentage of commercial support that is permitted for a provider or activity; 3) withdrawing the accreditation of MECCs or other providers that are dependent on commercial support; 4) eliminating direct or indirect commercial support of ACCME-accredited programs but allowing contributions to a central repository, which would provide funds to approved programs; 5) tightening the ACCME's standards for commercial support and monitoring compliance; and 6) increasing public information about the funding of CME, for example by establishing a comprehensive searchable online registry of commercial and other support for providers and activities. A registry of CME funding could also include information on industry's gifts and payments to speakers, authors, event planners, and officials of provider organizations.

Pooling commercial support for continuing education has recently been advocated.[43] Contributions might be made to a designated office at a medical school, academic medical center, or medical society, which would in turn disburse the contribution to ACCME-approved programs. Thus, the ultimate recipient of funds would not be subject to the influence of any one donor. At present, a single commercial entity supports many continuing education programs. An analogy would be the support of medical journals by multiple advertisers, with a firewall between advertising and editorial content. Another analogy would be medical journal supplements; supplements

sponsored by a single pharmaceutical company often have promotional attributes and may be of lower quality than other journal content.[44]

Many of these approaches are not mutually exclusive. Some, if not all, might reduce funding for continuing education. All continuing education providers have strong vested interests in maintaining their income sources, as well as their eligibility for accreditation. If commercial support were to decrease or stop, some continuing education programs would be cancelled, some people would lose their jobs, some providers would change their operations or go out of business, and many of the remaining providers would be less profitable. The effects on educational offerings and quality are a matter of conjecture. Health professionals or their employers, however, would pay more of the true costs of continuing education.

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**Remarks by Jordan J. Cohen, M.D.**
**Association of American Medical Colleges**

I think the issue that we're dealing with is really a key issue in terms of how we articulate our values. This conference is occurring at a very pregnant moment in the history of our profession. I think we have an opportunity to change the paradigm, given all the things we've heard and what we know is happening already in the world of continuing medical education. I think we are on the verge of something significantly transformative in terms of how we are going to be doing this in the future. If we take the opportunity to come up with some well-targeted and strong recommendations, they will be received in a way that could have some significant impact.

I want to frame my editorial comments about the financing in a broader context. First of all, I think we all acknowledge that maintaining one's professional competency throughout a lifetime of work is really a key element of professionalism. It's highlighted in a physician charter which speaks to physicians, but I think it is true for all healthcare professionals that this is an absolutely core component of what we do as professionals. We maintain our competence and are accountable for that to the public.

It is also clear from what we know that the fundamental purpose of continuing education, be it for medical or other health professionals, is ultimately to improve the quality of patient care by changing clinician behavior. The whole notion is that we are trying to modify behavior that is documented to be insufficient to meet whatever standard or whatever benchmark one is seeking, and we're trying to change that behavior in the direction of improving the ultimate outcome.

What does that tell us about the current mode of continuing education? It seems to me it's got two fundamental flaws that are not unrelated. One is that what has traditionally been thought of as continuing education, the presentations, the courses, the large lectures and so forth, is largely ineffective. There is some utility to the lectures, certainly in passing on new information and keeping people abreast of new developments, so I wouldn't entirely discount the value of large lectures and presentations, but in terms of improving quality, it has not proven to be an effective modality. So that's the first flaw: It is an ineffective way of achieving the end that we're looking for.

The second major flaw is that it is funded predominantly by commercial entities with self-interested motives. Commercial entities are defined by the ACCME as entities that produce, market, resell, or distribute healthcare goods or services consumed by or used on patients. The fact that we have allowed the system to become so dependent on the funding from sources that have an ulterior motive, that is clearly related to their self interest and not in the ultimate interest of the continuing education enterprise, is what we are talking about.

How did we get to a point where we've allowed so much of this core responsibility of ours to be funded by external forces that have other interests in mind? It reminds us of the parable of the frog in boiling water: It has happened gradually. Obviously the ramping up in recent years has been quite dramatic, but over the past several decades this has been a gradual process. We've been immersed in this gradually warming boiling water to the point where we haven't really sensed the changes that have occurred or sensed how close we are to the fatal boiling point.

On the other hand, if you put a frog in boiling water immediately, it dies instantly. And that's what our students perceive when they come into our system. They get it. It's not a surprise, and not difficult for the students to recognize, that they are in a system that really doesn't make any sense. One bit of evidence to support that is what the American Medical Student Association (AMSA) has done with "no free lunch." They actually request students to sign a pledge that they will not accept any gifts or any support from any commercial entities. If we tap into their perceptions of what is really correct and right and appropriate, we will have done a good deal of our job.

The next question I would ask is why should we be concerned about the commercial entity supporting so much of our education? I think that tolerating commercial intrusion into one of our core responsibilities, namely educating ourselves as professionals, is opening ourselves to biased information. I'm not suggesting that all of the information that emanates from commercial sources is, ipso facto, biased, but certainly there is the perception that it could be and there is no doubt that there are instances where it flagrantly is. So, there is no question about the fact that the information that

is ultimately supported by these sources has that very unwanted consequence.

That raises the question about how our vow to place patients' interests uppermost is really being maintained. It belies our commitment to evidenced-based information, undermines our commitment to cost-effective prescribing, and validates and reinforces an entitlement mentality. One thing that we have to be cognizant of is how our current system so generates the sense of entitlement on the part of our graduates and practicing physicians that they feel that they have an entitlement to other people helping them do their job. It also signals to the public that we are, in fact, for sale. Any sort of knowledgeable public person looking at what we're doing certainly would raise the question of why we are willing to sell ourselves for a price.

There are opportunity costs here as well. The extent to which we devote energy and administrative activities to garnering and managing this commercial support takes time and effort away from doing the core mission of education. Another reason for being concerned is that these commercial courses and commercially supported education are so seductive that it impedes the adoption of more effective continuing educational activity. To the extent that this is seen as the easy, the very seductive road it diverts people's attention from actually doing what we now are recognizing as more effective kinds of continuing education.

The next question, and I think it is an obvious one, is why does the industry support medical education? In theory, one could argue, it is in gratitude for all of the hard work that doctors and nurses do. This is a sustainable hypothesis, but, of course, the fact is that industry's support is clearly in the hope of garnering a favor for its products. This is an openly avowed objective by the industry. They make no bones about it. This is no secret among the industry. They admit it openly.

Then the question is, if the industry is supporting education for reasons of trying to garner a favor, does it in fact work? Again, the answer is obvious. Prescribing behavior and other behaviors are clearly influenced. The documentation for that is overwhelming, so I don't

think we need to debate whether or not what the industry or commercial entities do in supporting education is effective. One doesn't need any other evidence than the fact that they are spending billions of dollars doing it. Obviously they are not spending money because they don't think it's effective. Clearly we are in a situation where we are opening ourselves to the biased influences of the commercial entities that have these other negative consequences as well.

If you accept all that, could we still enjoy the financial support if we could erect a sufficiently impermeable firewall between the industry support and the educational activity? This, it seems to me, is what the Accrediting Council for Continuing Medical Education, ACCME, has been trying to do. I give them credit. I think they have tried hard to develop policies that would ensure that commercial influences are minimized in the educational activities that they accredit. The most recent modification of their guideline has strengthened that firewall considerably. But, given the strong and legitimate motivation of industry to market its goods to doctors, there is no firewall that we could conceivably construct that they wouldn't be able to find a way around and still have the influence that they desire.

I think there are a lot of things we can criticize about the way the industry tries to influence physician behavior, but, in the final analysis, it seems to me that we can't quarrel with their fundamental motivation. This is a capitalist society. They are obligated to return rewards to their shareholders, so they market their activities to those individuals who have most influence over the financial success of their operations. To put the entire blame on commercial entities, I think, is totally wrong. The burden is really on us, on the profession. We have, in my judgment, failed to construct sufficiently robust policies and procedures to prevent the unwanted influence of commercial entities that are simply doing what any of us would do were we in their place, and that is trying to influence our colleagues.

We know that doctors rationalize their acceptance of industry support. When you ask doctors whether they are influenced by the gifts and the support that they receive, they say of course not. "I'm not influenced, but she is for sure influenced." So there's an acknowledgment that the influence is there, it just isn't touching them personally. They argue that other business people get perks, too, giving rise to the notion that medicine is just another business, which

again is one of the major consequences of the commercialization of what goes on in medicine today. Medicine is not just another business. It is a calling. It is a profession. It has different values.

It seems to me that what we need to do is to regain control of our medical education from these commercial entities and deposit it where it belongs, namely firmly within the profession itself. That raises the question of whether physicians can afford to pay for their own continuing education. Of course they can. No other profession depends upon vendors of their activities to support their continuing education. There is a fundamental obligation of professionals to support their own continuing professional development and to pay whatever is required to do that.

My final thoughts are these: We recognize that we are witnessing a paradigm shift in continuing professional development and we recognize that the paradigm we have lived with, with all of this commercial support, is not effective. It is certainly not sufficiently effective to warrant the kind of investments that we're making presently. We have new modes of continuing professional development, particularly practice-based learning, that are more effective, more efficient, and a much more targeted way of ensuring that we achieve the goals of continuing professional development.

Given the fact that we've got this new mode that is much more effective and is going to enjoy the benefits of the information technologies and is on the threshold of becoming the dominant mode, and we've got this archaic, commercially supported mode, it seems to me that we are in a very good position to say let's get rid of that old mode. We're not going to give up much of anything by abandoning the commercial support for this outmoded, ineffective way of continuing education.

But I would argue that we need to be very careful if we move towards a more practice-based learning mode of continuing education. We have to be very cognizant that commercial entities are going to want to get into that area, just as they have invaded the traditional area of CME, so we've got to protect it. We can't repeat the mistakes of the past and let the new mode of continuing education also become dominated in a decade or two by commercial intrusion. How we go about doing that, I don't know. But I think caution is essential, that

we need to be careful not to repeat history as we move to this new mode of continuing education.

My recommendations would be that, first of all, we strongly endorse the obligation of health professionals to provide for their own continuing professional development. This is a variation on the theme of "doctor, heal thyself." Secondly, we ought to prohibit all commercial interests, as defined by the ACCME, from making any contribution to continuing professional development. Perhaps we would want to put a timeline on that, by 2025 or some definite period of time. We need to recognize we simply cannot ignore the fact that we have a heavy dependence on the financial support that's coming from these sources. We can't ignore that reality and say that we ought to stop this cold in its tracks while institutions need an opportunity to somehow modify their activities to accommodate this. It seems to me that it would make sense to recognize that some kind of phase out period may be necessary, and maybe, in the interim, some mechanism of pooling. I think the likelihood of commercial entities being willing to pool their support at a level that would really make sense, namely at the institutional level, is unlikely to yield any significant financial support, so I don't think we ought to be lulled into a sense of security about that. If we wanted to have an interim position to allow for some continued commercial support, it seems to me the only way in which we could do that, and be dutiful to the professional values, would be to ensure that it is pooled in such a way that it is clearly more than an arm's length away from the actual distribution of those funds.

## DISCUSSION HIGHLIGHTS

Although there is a great deal of commercial support of accredited continuing education programs (estimated at about $1.5 billion in 2006), this pales in comparison to commercial support of unaccredited continuing education, which is estimated to be anywhere from $20 to $60 billion annually.

An entire enterprise outside of the ACCME umbrella offers physicians and surgeons courses in the use of new devices, yet many are not accredited by anybody. They are run by industry over weekends and physicians return home to try out these devices on their own or

with minimal help. That's a big problem.

**Effects of Commercial Support**

A lot of concern is about the conflict of interest commercial support may be causing. The International Committee of Medical Journal Editors points out that conflict of interest doesn't have to exist to cause a problem; it just has to be clearly possible.

It is not only clinicians who profit from commercial support. Continuing education providers enhance their bottom line by working with commercial providers. They don't have to do a lot of work because industry is happy to do the entire planning of an activity. When we banned commercial support for planners, providers suddenly had to start planning their own activities but didn't have a clue how do that because, even though they had been "planning" for years, they didn't pick the topics or the speakers, and they didn't set objectives or measure outcomes. All they did was show up and put their names on it.

I cannot understand how we can call ourselves professionals if we sell our educational souls for a commercial pot of porridge, which is usually not specific to our patients' needs or our educational needs and is dictated by commercial self-interest needs.

As primary care doctors, and probably this is true for others, we guess 70-80 percent of the time and 95 percent of the decisions are directly or indirectly influenced by the pharmaceutical industry, not by best practices.

Most pharmaceutical influence is below the radar and physicians don't even realize it's there. The evidence says the more that people think they're not influenced, the more they actually are. As educators we have to recognize that and work hard to overcome it, realizing we have to overcome what's below the radar and help people to become more aware of it.

While a number of companies, based on guidance from the Inspector General of the Department of Health and Human Services, have divorced their continuing education operations from marketing, they are still positioned to promote the fields of medical inquiry and the

areas of work that the company's line of products naturally come upon. As long as doctors are writing prescriptions and companies are selling for profit products that are the object of those prescriptions, the companies will find legal ways to seek to influence the judgments and choices of those who are writing the prescriptions. We are not going to eliminate that reality. But there should be serious recommitment to developing a fire walled entity that would be an intermediary between the companies and recipients of the direct support for education.

Any medical school will say they are training for life-long learning, but they need to recognize that just training doctors how to critically read the primary literature is not going to work for them. We have to train them how to evaluate secondary sources, have specific tools to evaluate secondary sources, and make sure those sources are put together carefully without either commercial or non-commercial bias. And as much as we try to stop students or residents from undue influence from pharmaceutical reps during their training, when they go into practice they will be exposed to them. We have to train future practitioners how to deal with pharmaceutical reps.

At least one study has shown that commercial support of continuing education narrows the focus of courses primarily to new therapies, often therapies that include recent FDA approval of a product manufactured by the commercial supporter. Whole areas of practice are ignored. Bias may not be so much in individual talks as in the overall spectrum of what is covered.

When there is a gift, even a small gift, there's an inescapable sense of obligation that comes with it. This has been well documented.

Sadly, commercialism has developed within our specialties, which see their knowledge and skills as proprietary, not to be shared with other members of the profession. We need to minimize the conflict of interest which doesn't come only from pharmaceutical companies. Academic conflicts may be more pervasive and difficult to measure than financial conflicts of interest.

The physicians who teach continuing medical education are the same ones who teach residents and medical students and are doing research. Several studies show the extent to which those at the

highest levels and in the greatest position of influence in academic medicine personally profit from their relationships, and the extent to which solvency and discretionary dollars within a departmental budget come from these sources. These relationships affect the content and topics of research, as well as whether research findings can even be disseminated. These relationships affect teaching at every level, not just in continuing education.

The issue of fraud and abuse is important for people at the front lines. As an example, you organize a conference, you recruit participants who pay a registration fee, and then you send a letter to the referring physicians who are invited to attend for nothing. For instance, you have a new gamma knife and get a CME provider to put on a conference. Then you invite the physicians who could refer patients for the procedure to tell them about the gamma knife, and they get the whole thing for free.

Industry funding is less of an issue in nursing, but it is growing. This is particularly true for advanced practice nurse continuing education, when nurse practitioners can prescribe.

### The Roles and Responsibilities of Industry

The industry has to be responsible for ethically responsible dissemination of its information in ways physicians will understand. Industry has to be more responsible for post-marketing surveillance and for comparative effectiveness studies.

A huge public good comes from the interaction between academia and industry in terms of promoting the transfer of new discoveries into useful products and services, but that produces a different set of conflicts, such as protecting patients who are subjects of human investigation. I would draw the line in terms of involvement with education, not with research.

Not all pharmaceutical influences are bad. A lot of great things have come through research grants with money that was at arm's length. The pharmaceutical industries provide new drugs and new cures and, because of them, we've had substantial advances in medicine.

It would be a mistake to exclude commercial exhibits from continuing education, particularly in the nursing arena with national conferences.

The exposure during exhibit times is a form of learning.

I'm against commercial support but I have to say that the pharmaceutical companies have certainly changed the lives of people with asthma, hypertension, coronary artery disease, osteoporosis and infectious disease, plus many others. Those have been the bulk of what a number of the conferences have been around and that's been a good thing.

Not all commercial funding is bad. Samples save patients time and money. Free pads and pens save money that can go to patient care. A free clinic had to close when it was told it could take nothing.

**Who Should Finance Continuing Education**

Why should we seek support of any kind in any model from commercial entities to educate ourselves to maintain our competence? That is part of our core professional responsibility.

Funding for continuing education should come from us, or our employers, so we can control the destiny of our education. Once commercial groups, governments, or foundations become involved, the patient is no longer the focus.

We should pay for it ourselves. Education is a personal responsibility. If it is system-based responsibility, other elements will come in to support it.

While philosophically it makes sense for the profession to pay for continuing education, one could make a case that it would be in the enlightened self-interest of the government, through what it already pays directly and indirectly, to promote better care. That would be a net savings in the long run, if you look at a big enough picture.

When the government gets involved, ideology and politics, especially if somebody is being adversely affected, often do too. An example about a decade ago was the AHRQ-sponsored recommendation about back pain, and the effort of politicians supporting the spinal surgeons to zero-budget the agency. Currently, there is a big lobbying effort regarding reimbursement for erythropoietin treatments in oncology and nephrology patients.

If we pursue the purity of elimination, how would we set a boundary so that any organization in healthcare would be able to provide continuing education? If a school has a corporate gift, does that make it ineligible? If you are a professor whose chair has been funded by a company, does that make you ineligible? What the goal ought to be is to eliminate the distortion by neutralizing and pooling, and by public disclosures.

Though some would love to paint the industry as being responsible, it has been with the willing collusion of physicians and continuing medical education providers who have created an atmosphere where physicians have come to expect that continuing medical education will be free or low cost, that they will not have to do any work, that they are just going to sit in a dark room and listen, that it will include food, and will mainly be updating their knowledge.

Many doctors have a sense of entitlement, the idea that someone else should pay for their continuing education. They see it as a bureaucratic burden rather than a moral obligation. This is a vastly neglected aspect of undergraduate and graduate medical education. We have to start early and change the culture so doctors view their continuing education as a professional obligation.

Do you think of professionalism as lettuce or potato? Lettuce rots from the outside in, potatoes rot from the inside out. So is commercial contamination, contamination of education, and promotion, a slimy brown leaf of lettuce that can be removed, or is there a deeper lesion? I think it's an interesting question.

Continuing education and lifetime learning is a form of higher education. This is a public good. Two funding sources for continuing education have been eroded. One is federal and state support, which funded AHECs that played a phenomenally important role in educating community clinicians. The other is the ability to use dollars that come into academic health centers for continuing education.

We need to model what the future would look like under revised rules. What would happen if commercial support went away completely, 50 percent, 25 percent? We also need to create the vision of an alternative form of continuing education that might be smaller.

The enterprise might be smaller in its measurable size, fewer lectures, etc., but the amount of education might be the same or larger, using new technology.

If you take away commercial support, you are going to eliminate a vast majority of the people who now provide continuing education. It would be appropriate to look at what might be the unintended consequences, and trying to address those in advance instead of trying to pick up the pieces later.

If you look at hours of instruction by provider category, state medical societies and schools of medicine are at the top, but state medical societies get very little commercial support.

Without industry, someone has to play a larger role, maybe state professional associations, or groups like Kaiser and the VA system that are interested in quality of care. That applies to medicine, nursing and everybody else. Kaiser has already stopped commercial support of its continuing education programs.

It is possible that physicians would under invest in their own education because they don't think they get sufficient return on that investment. One problem in medicine is that it is an imperfect system for rewarding good performance, for there is no good way of measuring quality at the individual physician level. But if physicians under invest, there must be a societal investment that might come from many sources, from corporations, from insurance companies, from individual health organizations.

Top journals take ads from many companies to provide a pooling of resources. They also build a firewall so that the advertising staff does not know what is happening editorially. This may be a model for funding CE.

We always talk about the cost when we should be talking about the investment, but until we can demonstrate the return on investment, we may not be able to make the business case.

If you separate everything immediately, there will be a huge vacuum and lack of support for continuing medical education. If there's no support, what happens to physicians in remote areas, who work hard and have no time off? Perhaps the profession should find a

way to help those members.

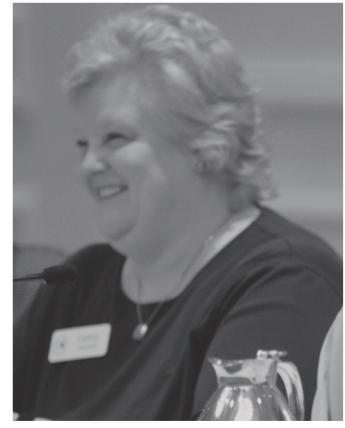
A common plea in community practice is that physicians don't have access to resources, that they're too expensive. It is almost seen as justification for getting their continuing medical education from drug reps who visit their offices. This is a real issue that needs to be addressed. If we pay for our stethoscopes, we should pay for information we need. It is the job of the profession at large to help doctors who don't have the access.

A lot of department chairs will be absolutely petrified at the idea that the slim profit margins they get from their continuing medical education courses might go away. Institutions that are doing this in a very profitable way are not going to want to give up that profit if they can hang on to it.

I don't have any problem with commercial people putting funding into a pool and the only recognition is that they be listed along with all the foundations and the government and other sources of revenue.

One approach could be to establish an independent commission or some other entity that would be empowered to receive money from any source and to promote improved patient care through education and improvement in practice, that would reach across professions, capitalize on the electronic capabilities, and represent an enterprise for learning and improving the quality of care through lifelong practice.

The government ought to have a major role in funding for research in continuing education and funding for the development and acquisition of IT capability by providers, The funding of continuing education, per se, ought to reside with the profession in some form, individually, by employers, or by professional organizations.



# III.

# Designing Systems for Lifelong Learning to Improve Health

# Continuing Health Professional Education Delivery in the United States

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This report focuses on the scope and delivery of continuing medical education (CME) for physicians with respect to regulatory policy, research, and data collection. There is less information available for continuing education for nursing and pharmacy professionals; continuing education for these professions is addressed in Appendix A and Appendix B, respectively.

## Background

### *The History of CME*

The history of CME has been marked by two distinct areas of development. The first is the development, production, and delivery of CME activities and events themselves; the second is the CME credit movement, leading to certification, membership in specialty organizations, and licensure.

Developing and Producing CME Programs and Activities. How old is CME? Although the self-education of physicians has probably existed for as long as the profession itself, the first formal reference to continuing education for physicians came in the early 1900s, when Sir William Osler articulated the importance of physician education and urged the profession toward a position that recognized clinical advances and sought methods to deliver them to practicing physicians. Along with other advice, he urged the profession toward a position in which it recognized clinical advances and sought methods to deliver them to its member physicians.

The ensuing century brought with it many changes, including the following:

— Changes in the model or delivery mode of CME from early outrider programs to large conferences and medical update sessions

— A clear understanding of adult learner theory and its application to the CME process

— Adaptation of Tyler's model of program design and evaluation to CME [1]

— A rapid increase in the number of courses and conferences following World War II, brought about by new advances in the biomedical sciences and physicians returning to practice

The last half of the twentieth century has been marked by the following developments:

— The establishment and application of accreditation principles to CME program design and delivery

— The use of information and distance education technology

— A focus on research and outcomes, leading to a stronger emphasis on clinical performance and healthcare outcomes

— The growing presence of commercial interests in CME

Requiring CME for Licensure and/or Recertification. Almost concurrently, there were movements in the licensure and expectations of physicians about the "amount" of CME they might need in order to maintain their competence. The first to reify CME "hours," the American Academy of Family Physicians (AAFP; then General Practice), stipulated a 150-hour/3-year membership requirement in the late 1940s, using the terms "formal" and "informal" CME. The AAFP replaced this nomenclature in 1955 with the terms Category 1 and Category 2 to recognize these two forms of learning. Subsequently, the American Medical Association (AMA) Physician's Recognition Award (PRA) was created, requiring a similar number of hours of credit and consolidating, in 1985, several categories of learning into two, following the lead of the AAFP.[2]

Several changes in the credit system have evolved over the subsequent years. First, while formal CME can be conveniently measured in hours, informal and self-directed activities cannot. Thus, "credit," as opposed to "credit hours," has become the preferred term. Second, given the self-reporting and immeasurable qualities of self-directed learning, credit regulators have chosen to place caps on these latter activities. Although it was not initially intended for this purpose, CME credit has been used to meet the need for establishing or guaranteeing practice competence. As a consequence, a robust movement has arisen over the past three decades to link these credits to other regulatory and membership requirements.

First, licensure is strongly linked to CME participation. In 1971, the state of New Mexico adopted a policy of relicensure based on CME participation.[3] Many states have followed suit. Currently, CME participation is mandated by the majority of state medical boards.[4] Within these policies, however, there are wide variations: Some of the boards require that these credits be all or partly from the AMA Physician's Recognition Award system, and the number of hours required ranges from 20 hours a year to 50 hours a year.

Second, the role of the medical specialty boards in assuring the competence of their members is a long and familiar story. Physicians who have met the (re)certification requirements of an American Board of Medical Specialties (ABMS) member board receive an AMA Physician's Recognition Award certificate. Following its efforts to standardize methods to ensure competence in the trainees of graduate programs, the ABMS has undertaken the creation of an extensive Maintenance of Certification program, with several elements, including 1) professional standing; 2) lifelong learning and self-assessment; 3) demonstration of cognitive expertise; and 4) practice performance assessment.[5]

Third, the AMA Physician's Recognition Award certificate meets the CME requirements of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) related to hospital accreditation.

### *Accreditation Bodies*

Because most of the data in this report are derived from CME accreditation sources, and these sources are important in the delivery of CME, we outline some of the history and background related to the accreditation processes.

The Accreditation Council for Continuing Medical Education (ACCME) is the accrediting body for institutions and organizations administering and accrediting CME programs used by physicians. ACCME was established in 1981, taking over the accreditation process from the AMA. Accreditation of CME providers in medicine has been the subject of consideration and action for nearly four decades. In the 1960s, under the rubric of a "coordinating committee" for medical education, initiatives were launched that led to the creation of "liaison committees" for undergraduate, graduate, and continuing medical education. In CME, the Liaison Committee on

Continuing Medical Education (LCCME) operated until 1978, when it disbanded. Subsequently, the five major parents groups (AAMC, AMA, Federation of State Medical Boards, American Hospital Association, and American Board of Medical Specialties) joined with the Council on Medical Specialty Societies and the Association for Hospital Medical Education to form ACCME. Initially ACCME was a small and voluntary organization with support from the AMA, but ACCME has evolved to more robust and independent status, with clear regulatory authority for the accreditation of CME providers in the United States. In particular, its position on commercial support and CME is widely regarded as the clearest statement about the permissible nature and extent of such support in the United States.

ACCME is the most complex and detailed of the accrediting bodies, and it is important to understand it fully. All providers, according to ACCME standards, must have a clear mission, purpose, and scope; have an organizational structure and business process appropriate for its purpose; engage in a planning process that identifies learning needs, states objectives, and presents CME in a way that complies with clear commercial support standards; and evaluate the effectiveness of programming for individual activities and for the program as a whole.

### *Definitions*

Shaped in large part by these historical and regulatory forces, CME can be seen as a huge "enterprise," comprising the production of large numbers of courses, conferences, rounds, and other activities, and led by the need to acquire credit hours. In this report, we use the acronym CME to refer to the last and longest phase of education undertaken by physicians. CME consists of any activity undertaken to enhance competence, increase learning, and provide better care for patients. It does not include master's or doctoral level work leading to an additional degree, and further, does not encompass non-clinical learning, for example, education in the areas of business management. More definitions are included in Appendix C. Other definitions commonly used throughout this report include the following:

— CPD, Continuing Professional Development: term used to describe advancement by members of professional associations to maintain, improve, and broaden the knowledge and skills

required by their profession; CPD may be seen as broader than "CME" in the sense that it might encompass all forms of learning and personal development, not just clinical education

— CEU, Continuing Education Unit: measurement used in continuing education programs to define hours of participation in qualified instruction

## Methods

First, we looked for data reported in the United States produced by the accreditation bodies of continuing education providers and by other providers or provider organizations. Second, we made a concerted effort to contact key informants in each discipline to determine and validate our search strategies and to indicate other data sources where available. Third, we searched and reviewed the literature, using the key words "accreditation of continuing education providers"and similar terms, to round out our findings and to provide a perspective that would be helpful in generating comments for the paper's conclusions. We augmented this process with a Google search on relevant key words and on the websites of professional associations and authorities in five countries. Key words used to elicit results were accreditation, CME/CNE/CPE accrediting body, continuing medical education, continuing nursing education, and continuing pharmacy education, as well as their respective acronyms.

In each discipline, we developed a series of questions and compiled the responses we found. For results dealing with continuing education in the nursing profession see Appendix A, and for results dealing with the pharmacy profession, see Appendix B.

## Results

I. *Using the most recent data available, what are the major categories of CME providers?* A wide variety of CME providers exists in the United States, and these providers are categorized variously across the disciplines. The ACCME employs the following categories of CME providers:[6]

1. *Government/military* (e.g., Centers for Disease Control and Prevention; US Food and Drug Administration Center for Drug Evaluation and Research; and National Institutes of Health Foundation for Advanced Education in the Sciences)

2. *Hospital/healthcare delivery system*, including consortium/alliance (e.g., Advocate Healthcare; Children's National Medical Center; and Georgetown University Hospital)

3. *Insurance company/managed care company* (e.g., American Physicians Assurance; America's Health Insurance Plans; and Medical Mutual Group)

4. *Nonprofit*, including not-for-profit foundation, voluntary health association (e.g., American Cancer Society; BioSymposia, Inc.; and Brain Trauma Foundation)

5. *Nonprofit*, including physician membership organization and specialty physician member organization (e.g., Academy of Psychosomatic Medicine; Alliance for Continuing Medical Education; and American Academy of Allergy Asthma and Immunology)

6. *Not classified/other* (e.g., American Academy of Medical Management; American Board of Quality Assurance and Utilization Review Physicians; and American Society of Health-System Pharmacists)

7. *Publishing/education company*, including communications company, education company, and publishing company (e.g., The Academy for Continued Healthcare Learning; Academy for Healthcare Education, Inc.; and Advanced Health Education Center)

8. *School of medicine* (e.g., Albany Medical College; Baylor College of Medicine; and Boston University School of Medicine)

9. *State medical societies*

The ACCME provides two avenues of accreditation: accreditation as a provider and accreditation of an organization as an approver. The first eight categories listed above are accredited by the ACCME as providers of CME. In contrast, state medical societies are accredited as *approvers* of CME. The state medical societies then accredit

organizations within their own states as providers of CME. In 2005, the AACME reported 2322 separate providers, only a slight increase from 2003, in which they reported 2295 providers (no data available prior to 2003). State medical society–approved providers comprised 69 percent of providers offering CME.

The publishing/education company category includes medical education and communication companies (MECCs). This is a heterogeneous category, comprising entities that are public or private, profit or not for profit, and focused on publications or other forms of CME that provide medical education and information to healthcare professionals. These bodies provide CME mostly in the form of courses, enduring materials, Internet activities, and journals. Courses comprise almost half (48 percent) of the CME activities provided by the publishing/education companies; they contribute 12 percent of all CME course activities offered by CME providers. The Alliance for Continuing Medical Education (ACME) and North American Association of Medical Education and Communication Companies (NAAMECC) are two organizations advocating for these companies; the former group provides membership through a section (the Medical Education/Communication Company Alliance, MECCA). The NAAMECC provides advocacy and education for its member companies. It represents 87 member organizations, of which 47 percent are accredited by the ACCME as providers of CME.

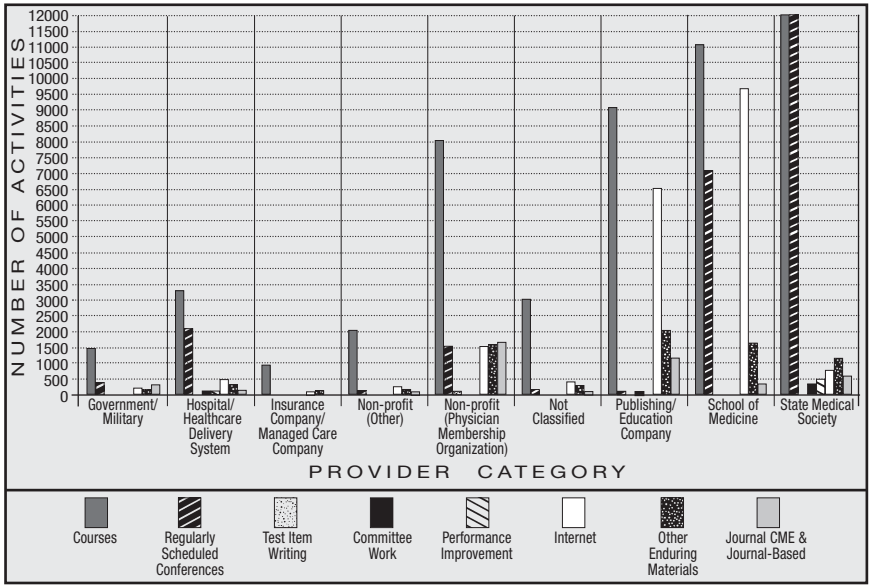
In addition to those findings recorded under "medicine" are the activities reported by the American Osteopathic Association and its accrediting body. In 2003, 162 provider organizations were accredited by the American Osteopathic Association. In this instance, provider organizations included affiliates (nonpractice and practice) (1), colleges (19), foundations (6), hospitals (53), military (1), professional associations (1), and societies (81). In 2004 through 2006, a total of 14.1 million credit hours were recorded by the American Osteopathic Association over a 3-year cycle. This number is a slight increase from the previous 2001 to 2003 cycle with a value of 13.1 million total credit hours.[7] The American Osteopathic Association establishes the accreditation policy for sponsors of osteopathic CME, but the Council on Continuing Medical Education has been given the authority to monitor the osteopathic CME by the American Osteopathic Association Board of Trustees.[8]

The role of the states in accrediting CME providers seems, if not particular to medicine, then certainly a striking feature in that discipline: it is by far the largest accrediting category. Finally, a number of educational companies and pharmaceutical companies or commercial interests produce accredited CME, often for profit.

II. *What are their "activities"? To what extent do they list and describe the courses and other learning formats (e.g., self-assessment programs, quality assurance/improvement, etc.).* The following activities are listed as major categories of CME activities from the ACCME:

1. Courses
2. Regularly scheduled conferences
3. Test item writing
4. Committee work
5. Performance improvement
6. Internet

**Figure 1. Accreditation Council for Continuing Medical Education 2005 Annual Report Data Depicting the Breakdown of Number of Activities by Provider Category**

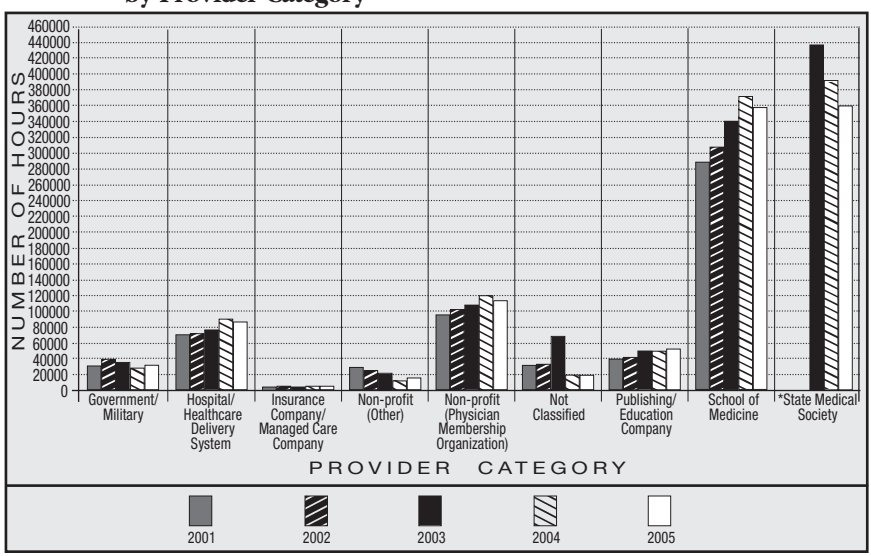


7. Other enduring materials
8. Journal CME and journal-based manuscript review

Overall, CME activities are focused on courses, regularly scheduled conferences (the current name for rounds and other regular conference such as tumor boards), and activities through the Internet. Courses comprise 57 percent of the activities offered by providers, followed by regularly scheduled conferences at 19 percent and Internet activities at 15 percent. *Figure 1* shows the number of CME activities reported in the Council's 2005 annual report. Here again, we see that the largest number of accredited providers were state medical societies, and as expected, these societies delivered a large portion of the activities. The state medical societies provided all of the activities listed under the major categories. Sixty-seven percent of their approved offerings were described as courses; regularly scheduled conferences generated 26 percent of their activity.

The state medical society category includes all data by all providers approved by these societies. These accredited providers produced 41 percent of the CME activities for medical education in 2005. In 2005, state society–accredited providers produced courses, regularly scheduled conferences, test item writing, committee work, perform-

**Figure 2. Accreditation Council for Continuing Medical Education 2001 through 2005 Annual Report: Accredited Hours of Instruction by Provider Category**



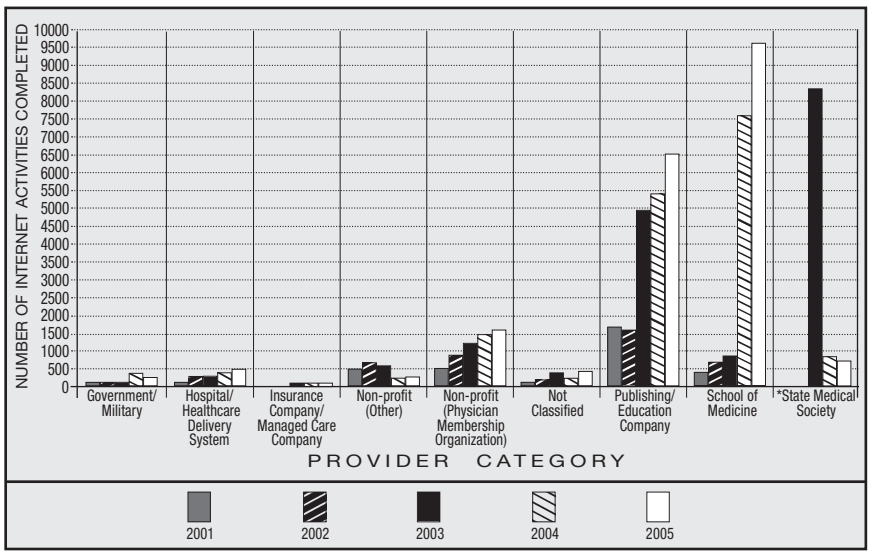
ance improvement, Internet activities, enduring material, and journal-based activities with courses and regularly scheduled conferences comprising 94 percent of the activities delivered.

III. *What trends can be observed over time?*

The data reveal several trends over the 5-year period covered by this report, primarily from ACCME data from 2001 to 2006, augmented by data from the Society for Academic CME (SACME) in 2006.

General trends. *Figure 2* shows accredited hours of instruction from 2001 through 2005, obtained from the ACCME annual report. Hours of instruction have increased gradually (along with an increase in the number of accredited providers, from 674 [2001] to 2322 [2005]). Because data were not available for 2001 and 2002 for state medical societies, we used data from 2003 through 2005. A slight downward trend can be observed in the reporting of the number of hours of state medical society accredited provider activities from 2003 to 2005. In contrast, and with the additional exception of the non-profit category, all providers appear to have increased production of their activities. Several of these providers report a peak in 2004 and slightly less production in 2005, although overall the trends are upwards. Clearly the production of 360,000 hours of accredited CME

**Figure 3. Number of Internet Activities by Provider Category, 2001–2005**



activity by medical schools continues to lead the field among single-provider entities.

Self-study Activities (Internet and Media-based Programs). Internet activities, including live activities, searching and learning, online, and Web-based enduring materials, have increased dramatically over the past 3 years, a trend we observed especially among the publishing/education companies and schools of medicine (*Figure 3*).

Since 2001, the ACCME data show a rise in the use of online courses, online use of enduring materials, and accessing information using the Internet for most of the providers. The largest increase occurred for publishing/education companies beginning in 2003, and for school of medicine providers, who significantly increased their Internet-enabled activities in 2004. Harris et al.[9] studied the use of online programs for CME and discovered that younger physicians and women physicians appear to be using online programs at a faster rate than their male, older counterparts. In 2003, state medical society–approved providers first reported data on Internet-based CME to the ACCME. The first year there was a spike of Internet activities followed by a dramatic decrease in the number of activities for 2004 and 2005. Explanations for this spike include the reporting of a backlog of activities launched prior to 2003 and adjustments to the ACCME activity category titles.

In contrast, the use of the Internet for conferences or self-study activities, as recorded by a biennial survey of the Society for Academic CME (SACME), has not increased. In 2006, the SACME noted that only 9 percent of the schools reported using the Internet to broadcast conferences, a slight increase from 1998 at 5 percent. Internet self-study activities reported for 2004 and 2005 remained at 68 percent, essentially unchanged from other comparative data (2002–2006) but much greater than the 25 percent reported in 1998. Self-study CME in some format (Internet, written, audio, and video) has increased slightly from 74 percent in 1998 to 80 percent in 2006.

Based on data from the SACME, four of five medical school CME divisions offer self-study activities: over two thirds offer Internet courses, 56 percent offer print-based materials, 51 percent provide computer-based learning, and about a quarter offer video- or audio-based resources.

Courses and Regularly Scheduled Conferences. Courses continue to be the main area of CME activity for all ACCME-approved sponsors and state medical societies. Whereas the percentage of courses produced has declined (from 57 percent of all activities in 2001 to 49 percent in 2005), their total number has risen.

Over a 5-year period, we noted a clear downward trend in the number of regularly scheduled conferences, from 40,000 to less than 15,000 since 2003. This phenomenon may be accounted for in part by the rise in the number of Internet activities, course activities, audio and video activities, and Web-based learning.

Conferences conducted by hospitals, healthcare delivery systems, and state medical societies have dropped in number by 50 percent since 2003. It appears that these providers have shifted to course activity. In contrast, accredited regularly scheduled conferences conducted by schools of medicine remain a large and rather fixed component of their activity, based on data from the SACME.

Courses remain a high percentage of the CME reported by the SACME. In the 2006 survey data, 36 percent of the medical schools reported more than 100 courses being offered. This is an increase from 1998, when only 21 percent of the medical schools reported more than 100 courses.

Performance and Quality Improvement. In 2004 the AMA and AAFP approved performance improvement as a CME activity, following calls for such activity on the part of other specialty societies, the Accreditation Council for Graduate Education,[10] and clear directions from the research literature about the efficacy of more direct, point-of-care educational interventions based on performance and other objective data. The response, however, has been lukewarm. In their annual survey, the SACME reported in 2006 that only one quarter of the responding medical schools provided between one and 20 performance improvement activities. A further 5 percent offered Internet point-of-care learning activities. In addition, while over 80 percent of schools had full affiliations with hospitals, less than a third were “somewhat” or “a lot” linked with hospital programs geared toward education or quality improvement.

ACCME began reporting on performance improvement activities in

2005. In 2005, performance improvement activities constituted less than 1% of the total number of activities provided by CME sponsors and state medical societies. These numbers were unchanged in 2006.

Commercial Support. In 2005, accredited providers reported a total income of $2,250,468,669 to the ACCME. Of this amount, $1,115,597,071 was income from commercial support, or slightly under half of the total income. This overall figure is identical to that reported by the SACME in 2006 and similar data from the same year developed by the ACCME; however, the ACCME data indicate about 60 percent of commercial support. In contrast, in 2001, 41 percent of the income was reported as emanating from commercial support. In 2005, the hospital/healthcare delivery systems, publishing/education companies, and schools of medicine received more than 50 percent commercial income. Commercial income reported by the state medical society providers is reflected in the commercial total in 2003 and 2004 and does not include the income total for comparison. The total commercial income reported by state medical society providers has declined from $51,775,737 to $37,588,680 since the first year of reporting in 2003.

The categories of publishing/education companies, non-profit (physician membership organization), and schools of medicine

**Figure 4. Accreditation Council for Continuing Medical Education 2001 through 2005 Annual Commercial Income by Provider Category**

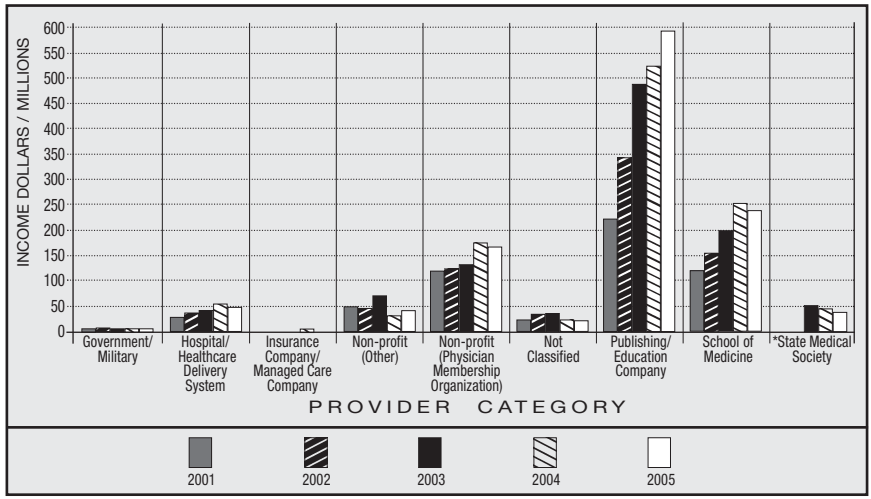


exhibit an increase over time in the amount of commercial support for CME activities (*Figure 4*). In 2005, all categories declined in the amount of commercial income except the publishing/education companies, which increased their commercial support by almost $70 million. Commercial income for publishing/education companies also increased in 2006.

Based on the 2006 biannual report of the SACME, more than 60 percent of medical schools reported that commercial support for their CME activities was increased by more than a third. These figures showed an increase from 1994 to 1995, when only 6 percent of medical schools reported more than 60 percent of commercial revenue. In addition, 15 percent of the medical schools indicated that more than 20 percent of courses were supported by only one commercial company. This is an increase from 1994 and 1995, when 15 percent of the medical schools reported support from one commercial company.

The SACME summarizes this issue by indicating that commercial support forms the largest source of income for their medical school members. A useful way to express this is to describe the "typical" (or median) medical school. Based on the same report, the "typical" medical school produces 83 courses per year, generating over 700 hours of credit and attracting nearly 3000 physicians and 1500 other professionals. Of these courses, slightly over half, or 45 courses, were sponsored by commercial interests. This support is sufficiently robust that an average of 11 courses/year would be cancelled if it were not for the financial aid provided by commercial entities. Further, of these 45 courses, two, on average, were supported by only one company.

## Forces Affecting the CME Enterprise

Apart from the need to maintain competence, we see several major forces, challenges. or directions which form integral parts of the picture of CME in the United States.

### *Accreditation of CME Providers*

Along with the credit system, another movement in CME has led to the accreditation of CME/CPD providers. ACCME was the first organization in the United States, and perhaps the world, to develop

standards for CME. Providers seeking this accreditation status must demonstrate that their programs have met the standards, referred to as the Essential Areas and Elements (including the Standards for Commercial Support) and Accreditation Policies, developed by ACCME. Accreditation is awarded for a period of 4 to 6 years. CME providers maintain compliance during the term by voluntarily continuing to meet the ACCME standards and are required to submit annual reports to maintain accreditation. Recognition as an accreditor is awarded to state medical societies, which subsequently accredit providers within their state.

There is a strong dependence on formal CME, such as courses, conferences, and similar live, face-to-face meetings. None require content-specific learning objectives to be met, though two groups specify discipline-based content in family medicine (AAFP) and osteopathic medicine (American Osteopathic Association). In all these programs,

— "Other" categories form an eclectic mix. They can include teaching or preceptoring activities; attaining credit at the master's or graduate level or subspecialty certification; writing/publishing in the medical literature; poster presentations; and advanced degrees, self assessments, and research (American Medical Association CME Physician resources for CME, 2005).

— There exists a clear movement away from exclusively formal CME to acknowledging participation in a wide range of educational activities, now including Web-based learning, although these activities are still considered voluntary.

— While clearly linked to quality in the description of categories, there is no or little specific mention of quality improvement or peer-reviewed programs in the materials produced by the appropriate organizations, for example, the AMA Physician's Recognition Award materials. Pilot programs have been documented,[11] but where such initiatives are mentioned, they are considered optional.

We identified some unique elements among the programs, including the following:

— Recognition of excellence: the American Osteopathic Association offers a certificate of excellence, and fellowship in the College of Family Physicians of Canada is awarded based on extra work of a reflective, or performance-based nature, leading to extra credits in a program called Mainpro-C.

— Specific content: certain associations (American Academy of Family Physicians, American Osteopathic Association) distinguish between those programs designed for and by their members, or with their membership in mind, and those accredited programs accredited or developed by other organizations.

— The Royal College of General Practitioners in the UK is the first program to remove the requirement for "credit" entirely. The requirement in this program — the formal annual peer appraisal process — is unique among its peer programs in medicine.

In medicine, parallel to the accreditation process for CME, the Accreditation Council for Graduate (residency) Medical Education (ACGME) has also made a sizable impact on the training of residents and the expectations of their programs. In particular, we note the advent of the ACGME competencies, which articulate new dimensions of care and learning. These competencies are instructive not only at this level of training but also at the CME level. They include systems-based practice, which focuses on the healthcare system; the judicious use of resources and other matters related to the practice environment and its constraints and resources; and practice-based learning and improvement.

A listing of continuing education requirements for medicine by state is available at the website of the American College of Emergency Physicians.[12]

### *Professionalization and Training for CME Providers*

A further force for change in the context of CME/CPD has been the drive toward certification and increased training on the part of CME providers. Coming from a wide variety of backgrounds — conference management and planning, adult education, educational psychology, medicine and allied fields, business management — such providers have formed two professional associations in North America. The first of these is the Alliance for CME (ACME), an

organization with over 2000 member groups comprising CME/CPD professionals in medical schools, hospitals, private organizations, communication companies, and other commercial interests. Much smaller, at a tenth the size, the SACME has its roots primarily among medical school deans and directors of CME and focuses less on the technology and broad scope of CME (the primary interest of the Alliance) and more on its research and development interests. Both organizations, now in their third decade, have grown in size and importance in the number and type of training programs offered to expand the professional repertoire of CME providers.

In addition, the *Journal of Continuing Education in the Health Professions* and the *Journal of Continuing Nursing Education* provide scholarly work to drive this provision, based in adult education, informatics, quality improvement, and other disciplines.

### *Commercialization of CME*

We note the strong influence of pharmaceutical (and increasingly) technology-based companies, evident in the reports from the ACCME and in the survey data from the SACME. Concern about the extent to which such influence might drive the CME/CPD "agenda" or its curriculum has given rise to clear statements from ACCME and other organizations about creating firewalls and reducing bias in presentations or content. Nonetheless, concerns remain, and increasing pressures (as recently as this summer, from the Senate Finance Committee about the question of oversight in this area) may well affect this picture. The picture of commercialization of CME has also been marked by an increased presence of medical education and communication companies, originally constituted as a section within the ACCME, and now represented by NAAMEC, the North American Association of Medical and Education Companies. Initially construed as publishing companies, these organizations now provide a wide range of educational activities, are of a profit or not-for-profit nature, and are heavily subsidized in many instances by commercial interests. There has been some debate as to whether these companies should be considered legitimate purveyors of CME.

### *The Methods of Continuing Education: Outcomes and Options*

Increasing attention has been paid to the "outcomes" of CME, with examples including competency-based assessment, performance, and

healthcare outcomes. Competency-based assessments of skills or knowledge are commonplace in CME. Examples include self-assessment programs and tests of knowledge frequently mounted by the specialty societies. Increasing emphasis on simulation techniques (post-course testing of resuscitation skills on mannequins, for example) has made this process simpler and more ubiquitous and may drive some of the CME agenda in future years. Further, emphasis has also grown on the performance of physicians in the work or practice setting, giving rise to consideration of performance measures and their utility to measure such outcomes. Finally, patient outcomes—though somewhat distal to the CME or CPD activity, are also key to any discussion about the future of CME. It is clear that the "clinical practice gap," expressed by the Institute of Medicine[13] and Rand reports,[14] is a product of some failures on the part of the CME enterprise to transfer knowledge in a way that is timely and useful.

Results from studies of the effectiveness of CME, especially in medicine, shape the discussion of the future of CME. While not the focus of this paper, these studies lend themselves to an observation of the mismatch between "what is" (a situation in which less than effective didactic lectures and conferences dominate the CME delivery picture) and "what should be" (using methods such as academic detailing, reminders, or feedback, which have a larger effect, relative at least to physician performance improvement). This is not to say that formal conference-based CME should cease to exist, but rather that it has a purpose (the dissemination of new information, for example) that would be useful at least to some clinicians but that must be carefully tailored and matched to learning and course objectives and the practical and clinical learning needs of all professionals considered the target of an educational intervention.

Commensurate with our understanding of the delivery of educational interventions and their effect—or lack of it—has grown an increased awareness of the lack of self-assessment abilities. As summarized by Davis and colleagues,[15] it appears as though in many situations, and across many disciplines, professionals have difficulty judging their past performance, current learning needs, or future competencies without some form of benchmarking or feedback.

Finally, while the research in this area is still descriptive, it appears that the technology of CME/CPD is changing rapidly. New vehicles

to "deliver" educational content include information and communication technology, represented by personal digital assistants (PDAs), audio- and video-casting, Web-casting, and computer-based programs. Despite its wide variety of modalities, such technology holds both the promise and the reality of bringing informational resources to the practice setting, addressing the need for "just in time" learning. To the extent that such learning is therefore more useful and can directly affect patient care, and that it might provide the clinician with more feedback or benchmarking, we imagine that these technologies will be more effective and widespread.

### *Social, Contextual, and Practical Issues Shaping CME*

Many forces for change arise from the current practice environment. First among these is the nature of the environment itself, which is marked by increased demands on time, the pressures of generalism, the advent of new biopsychosocial pathologies, and the social implications of disease and its management. Second and added to this complex picture is the heavy information burden that challenges all health professionals, described as the "drinking from a fire hose" phenomenon. Compelling reasons for changing the system also come from a heightened awareness of gaps in the delivery of healthcare, with a gap between what is known in prevention, disease management, or treatment and what is actually done.[13,14] Finally, we note the issue of social accountability for physicians and the need to assure the public of the safety of their practices. In this process of advocacy, perhaps the most compelling voice is that of the patient. Norcini[16] suggests that patients believe that revalidation is necessary, focusing on performance in practice.

## Summary: Certain Challenges, Possible Solutions

This report focuses on the numbers of clinicians participating or the numbers of courses. Little if any attention is paid—either in the report or the data from which it is derived—to the content or method of educational delivery, the site of this "delivery," or its effect on the patient or the healthcare system. Thus, it is evident to us that what we portray here—the numbers and types of courses and other offerings, the history and processes of accrediting bodies, and the processes of producing education—operates at a level removed from the actual delivery of care or even the delivery of education. Further, these elements operate in ways that appear to be at odds with what is currently known about physician learning and change.

Examination of this complex structure reveals a heavy dependence on at least two major premises on which these systems are built, and on which their linkages to competence, performance, and healthcare outcomes are maintained. The first is the dependence on the physician's ability to self-assess learning needs and to direct his or her attention to meeting them; the second is the heavy dependence — despite attempts to augment this category of learning or add new independent learning methods to it — on formal CME or similar educational activities, such as clinical meetings, rounds, and conferences.

We do not wish to say that any aspects of this system are broken or irreparable, or that the system has not been based on a strong and expressed intent to monitor quality. Instead, we end this report with a summary of each of the areas we have looked at along with suggestions for consideration of possible solutions.

### *The Physician*

Among the major issues this report identifies is the extent and pervasive nature of commercial interests in the production of CME. While some have called for a complete disengagement of commercial funding from accredited CME, it is clear that such influences will remain—whether in accredited formats or otherwise. Further, it appears from the literature that self-assessment of professionals is limited — despite its use in determining learning needs — and is at least to some extent contingent on benchmarking and feedback.

A more coherent solution to the issues of bias in content and less-than-adequate self-determination of learning needs may involve the training and assurance of competency for physicians in the domains of evidence-based healthcare and in appraising their own performance. Including these measures as requirements of CME professionals may ensure that these groups are better equipped to critically appraise the research literature, judging for themselves the effect of medications, weighing management strategies, and making rational, evidence-based decisions. Further, training in self-assessment and critical reflection based on objective feedback appear to be important elements in training from undergraduate to graduate education and certainly beyond. We note the introduction of "required" instruction in certain elements mandated by some states and suggest that courses on evidence-based medicine also be considered in this manner.

### *The Educational System: Methods and Means*

Despite a large and growing body of literature indicating that didactic conferences appear to be less than optimally effective in changing provider performance, the CME enterprise continues to concentrate its efforts in the production of courses and regularly scheduled conferences. This is not to say that there are no examples of other interventions, such as academic detailing or reminders at the point of care, but these appear not to be generated by CME providers, or at least not documented in the activity profiles of CME providers.

In this light, we suggest that CME providers, led by an active and evidence-based accreditation process, move to a more comprehensive understanding of the literature of CME and to incorporation of its results into the production and delivery of educational interventions. Further, we urge providers to document these changes in a way that makes tracking more readily achievable. Such a process may be enabled by stronger and more explicit accreditation criteria in these areas.

### *Accrediting Educational Systems*

Our investigation has shown a wide variety in accreditation and reporting customs in the United States. Medicine has developed a robust and detailed process leading to the accreditation of its providers. Other developed nations appear to have much less need for such accounting and rarely report these activities. These models permit us to imagine a world with several possibilities:

— No CME accreditation system except for that provided by the health systems and health professionals themselves to monitor their own competence and performance. Such systems appear to be much more commonplace outside the United States. We would argue against such "deregulation" for two reasons. First, accrediting educational competency appears to be a tall order for the more clinical accrediting bodies to undertake. Second, such a process might permit serious irregularities in the delivery of educational interventions and puts too much weight on the consumer-clinician-learner to judge the value of all educational materials. Finally, the lack of an accrediting body leaves a void, allowing no one to act as spokesperson or to lead the professions toward a posture of best educational practice.

— An accreditation system that is less individualized and less focused

on the specifics of the programs and content, allowing for more focus on establishing standards or structural criteria to show a provider the right path for developing a CME program. Here for example, ACCME or an equivalent body would set high standards or guidelines that organizations could adopt and implement in their set of accreditation standards/processes. To some extent, this has already occurred at the state medical society level.

— A more robust and rigorous accreditation system, including the following features:

  – Increased attention to making essentials and standards match the principles of effective CME delivery.

  – Heightened capacity to measure and provide feedback to CME providers at a more detailed practice-based level to ensure compliance with standards and essentials. Such feedback would not preclude the use of accreditation processes as educational.

  – An increase in measuring performance or outcomes rather than and in addition to numbers of activities, hours, and providers.

  – Increased attention to the content of CME interventions, stressing adherence to best evidence (and downplaying the more negative approach to reducing commercial interests). Such a process would allow for encouragement and tracking of the incorporation of new competencies, such as those proposed by the Accreditation Council for Graduate Medical Education.

  – The possibility of co-locating CME, CNE, and CPE data, allowing for common terminology, agreed upon across systems, as well as certification, transportability, clarity, and observability.

Strong movements toward more focus on accreditation provide an argument for increased measurement of performance or outcomes. First, an international commitment to improving quality medical education began in 2004 when the World Health Organization (WHO) and the World Federation for Medical Education (WFME) developed the WHO/WFME Guidelines for Accreditation of Basic Medical Education. These guidelines or recommendations provide

assistance for providers and institutions in developing best practices and an accreditation system. The Guidelines, which are accessible at http://www.wfme.org/, consist of fundamental requirements of an accreditation system, the legal framework, organizational structure, standards and criteria, the process of accreditation, main elements in the process of accreditation, decisions on accreditation, public announcement of decisions, and benefits of accreditation. Second, in healthcare and business, examples of this movement toward quality and accreditation include the Baldridge Awards, Toyota's lean principles, and the International Organization of Standardization.

We urge support for a stronger and more evidence-based accreditation system of CME. Such a process would meet the goals we have outlined and help to close the gap in clinical care.

### *Certifying the Competence of the Learner-Clinician and the Healthcare System*

In the clinical realm, two major regulatory forces exist: the accreditation of hospitals and healthcare systems and the licensing of physicians by state medical boards and their certification by specialty boards. The Joint Commission (until 2007 called the Joint Commission on Accreditation of Healthcare Organizations [JCAHO]) develops standards and provides evaluation and accreditation services for healthcare organizations and programs in the United States.[17] The Joint Commission uses surveyors who conduct onsite surveys at healthcare organizations to evaluate their operational practices and facilities.

Here we note the clear disconnect between the degrees to which clinician competencies are determined in undergraduate and graduate health professional training versus CME. In CME, competency is determined by the proxy measure of total number of hours spent in lectures, the equivalent of awarding a medical degree based on class attendance.

In this area, we note several findings from other jurisdictions and studies of relevance to a discussion about improving the CME "system" and its role in healthcare:

— Appraisal and the learning portfolio: The UK has developed a system of peer appraisal using a learning portfolio for its general practitioners, who comprise 50 percent of the physician popula-

tion. Here a senior, trained physician meets on a yearly basis with a colleague and reviews a file of performance and competency data, along with a list of CME activities. Such a process recognizes the complex layering and dimensionality of physician competence and performance and "triangulates" self-learning and self-identified needs, competency, and performance. In such systems, strict adherence to the science (ie, reliability, validity, and generalizability) of measurement should be incorporated along with principles of adult learning.

— The concept of relative value, as described by Davis and Willis.[2]

— Applied principles of quality improvement, such as METRIC (Measure, Evaluate, Translate Research into Care), developed by the AAFP.

— Finally we note the advent of 360-degree assessments of clinician performance adapted from the business world. Here measurements of performance are made by questionnaire or survey of colleagues and patients.[18]

We urge a more complete understanding of CME requirements and their role in the assurance of competency and quality, both individually and collectively in the healthcare system. Such an understanding may come from convening separate meetings to address this question across disciplines, or in providing support for the work of one or more national groups already engaged in this process.

**Acknowledgments**

The data collection efforts of this report were the responsibility of Trina Loofbourrow, employed as an intern by the Association of American Medical Colleges in 2007. In addition, we recognize the significant help and input of Dr. Murray Kopelow, Laure Perrier, Paul Mazmanian, Anne-Marie Sesti, and Marian Taliaferro.

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## APPENDIX A:
## Continuing Education in the Nursing Profession

The earliest continuing nursing educational activities date back to the late 1800s, when alumnae associations sponsored continuing education (CE) activities for their members. In 1899, the Teachers College at Columbia University, Department of Domestic Science, offered a course in Hospital Economics—the first that would correspond to what we currently consider CE.[1] At the time, nursing education took place through hospital apprenticeship, and physician education was moving toward the university. Nursing education, including postgraduate work, grew substantially in the 1900s, but nurses' salaries remained very low. The concept of a "free" course evolved, wherein nurses would trade work in order to attend a course. In the 1920s, the American Nurses Association (ANA) and the National League for Nursing Education (NLNE) began offering "institutes" or short courses, and the Teachers College at Columbia University began offering free CE.

In the 1960s, federal legislation (Title VIII in 1964 and the Medicare Act in 1965), along with the establishment of the first coronary care unit, laid the groundwork for federally funded CE efforts, in turn leading to increased support at the university and college level. The growing movement toward nursing specialization led to further CE opportunities to establish certification in specialty areas. In 1976, the American Nurses Association established the first accreditation system for providers of nursing CE, and hospitals began sponsoring CE programs for staff and non-employees through colleges, universities, and outside consultants. Professionalism in nursing remains an important topic. Decreased government funding for CE and a call to reduce non–bachelor degree nurses will reduce the number of nurses requiring CE. One emerging area for nurses is in home care, which will require a new form of CE focusing on home care techniques and technologies.[1]

State boards of nursing were established over 100 years ago to ensure safe nursing practices. Requirements for maintaining licensure vary by state. A summary of nursing requirements organized by state is available online at *http://www.allnursingschools.com/faqs/boards.php*. The renewal period may be yearly or bi-yearly and varies from state

to state, as do contact hour requirements, which may be specific for one topic, such as a 4-hour course on infection control every 4 years (New York State Board of Nursing), or constitute a general requirement, such as 30 contact hours per renewal period (California State Board of Nursing).

## Methods

First, we looked for data reported in the United States produced by the relevant accreditation bodies. Second, we made a concerted effort to contact key informants to determine and validate our search strategies and to indicate other data sources where available. Third, we searched and reviewed the literature, using the key words "accreditation of CE providers" and similar terms to round out our findings and to provide perspective helpful in generating comments for the paper's conclusions.

## Accrediting Bodies

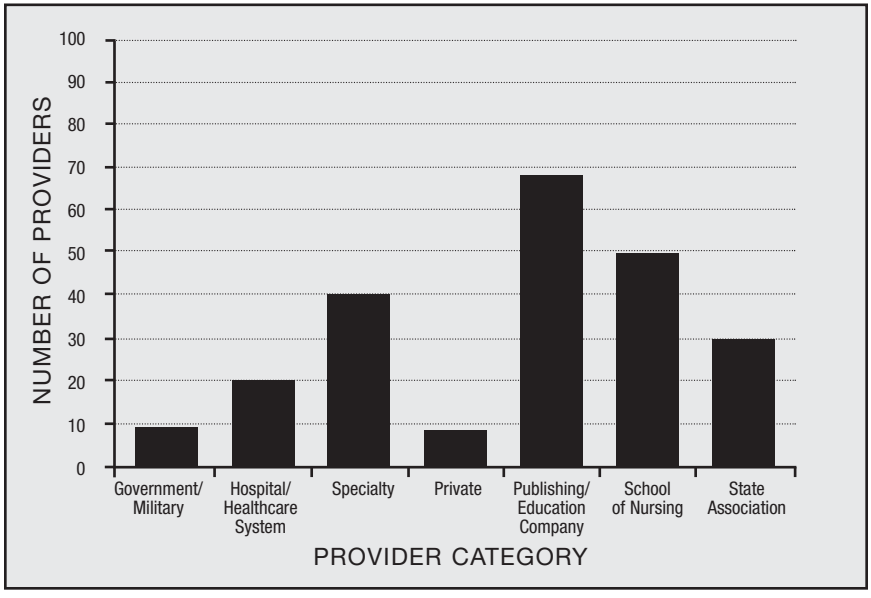
The American Nurses Credentialing Center (ANCC) is a subsidiary of the ANA tasked with managing its accreditation and certification programs. The ANA established a voluntary accreditation system in 1974 for continuing nursing education. The governing organizations of the accreditation system formed a National Accreditation Board, and its five regional accrediting committees (RACs) accredited the first program in 1976. Since that time, the governing bodies have been consolidated into three regional committees, and in 1984, the National Accrediting Board changed its name to the Board on Accreditation. In 1988, the governance permitted the designations of provider and approver accreditation. The new system provided two common pathways for organizations seeking accreditation: through the Board on Accreditation or through an accredited approver. The ANA Center for Credentialing Services incorporated itself as a separate entity called American Nurses Credentialing Center (ANCC) in 1991. The ANCC takes on the additional roles of examinations and certification renewals through the Certification Program. The Center is accredited by the American Board of Nursing Specialties and the National Commission for Certifying Agencies.

## Categories of CE Providers

Similar to its colleagues in medicine, The ANCC employs the following categories of CE providers:

1. *Government/Military* (e.g., Centers for Disease Control and Prevention; Naval Medical Education and Training Command; and Joint Commission Department of Education)
2. *Hospital/Healthcare Delivery System* (e.g., Albany Medical Center Hospital; Allina Hospitals and Clinics; and Children's Hospitals and Clinics)
3. *Private* (e.g., American College of Cardiology Foundation; Annenberg Center for Health Sciences at Eisenhower; and Audio-Digest Foundation)
4. *Publishing/Education Company* (e.g., Allegra Learning Solutions, LLC; American Academy of CME, Inc.; and Anderson Continuing Education)
5. *School of Nursing* (e.g., Georgetown University School of Nursing; Indiana State University School of Nursing; and Indiana University School of Nursing)
6. *Specialty* (e.g., American Association. of Occupational Health Nurses; American Association of Critical Care Nurses; and American Association of Diabetes Educators)

**Figure 1. The Number of American Nurses Credentialing Center Accredited Providers of Continuing Nursing Education in Each Provider Category for the Year 2005**



7. *State Association* (e.g., Alabama State Nurses Association; American Holistic Nurses Association; and Arizona Nurses Association)

In order to draw a comparison with physician data, we assigned a provider category to each of the 224 providers based on the ACCME categories. A large proportion of accredited providers for nursing CE are publishing/education companies, at 30 percent, and schools of nursing, at 22 percent *(Figure 1)*. These percentages differ from those for CME, in which the state medical societies comprise most of the accredited providers.

### Activities and Commercial Support

Searching the professional organizations' websites and contacting key individuals failed to yield data or statistics for recent or comparative years on continuing nurse education activities and commercial support. We learned through correspondence with the ANA that they do not collect data from accredited providers, and previously collected data were distributed only to those who were accredited.

### Accreditation of Continuing Education Providers

Providers seeking ANCC accreditation must demonstrate that their programs have met the Commission on Accreditation (COA) criteria developed by the ANA. Continuing nursing education programs are either accredited as providers for a 6-year term or by an Approver, called a Constituent Member Association (CMA), for a 3-year term. CMA-approved recognition is only available for ANA constituent member associations, nursing specialty organizations, and federal nursing services. CE activities approved by a CMA are only valid for 2 years.

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## APPENDIX B:
## Continuing Education in the Pharmacy Profession

In the 1940s, about 35 schools of pharmacy began offering some form of continuing pharmacy education.[1] After World War II, workers returning to the pharmacy profession found a need for refresher courses, and by the 1970s healthcare workers were encouraged at the federal level to continue education in their field. Florida and Kansas were the first states to establish regulations of minimum CE for renewal of the pharmacist license. These regulations stimulated new programs and concern for development of standards and assessing results.[1] Currently, all states have legislation mandating pharmacy CE for re-licensure. These requirements are available in summary form online at (*http://www.acpe-accredit.org/pdf/2006StateBOPRequirements.pdf.*)

### Methods

First, we looked for data reported in the United States produced by the relevant accreditation bodies. Second, we made a concerted effort to contact key informants to determine and validate our search strategies and to indicate other data sources where available. Third, we searched and reviewed the literature, using the key words "accreditation of CE providers" and similar terms to round out our findings and to provide perspective helpful in generating comments for the paper's conclusions.

### Accrediting Bodies

The Accreditation Council of Pharmacy Education is a national agency accrediting professional degree programs and providers of continuing pharmaceutical education. In 1932, the American Association of Colleges of Pharmacy helped establish the American Council on Pharmaceutical Education as an accrediting body setting standards initially for pharmacy baccalaureate degree and doctor of pharmacy programs. The formal accreditation process replaced the earlier practice of school visits. The Accreditation Council for Pharmacy Education expanded in 1975 to establish standards for CE providers, and in 2003 the American Council on Pharmaceutical Education changed its name to the Accreditation Council of Pharmacy Education.

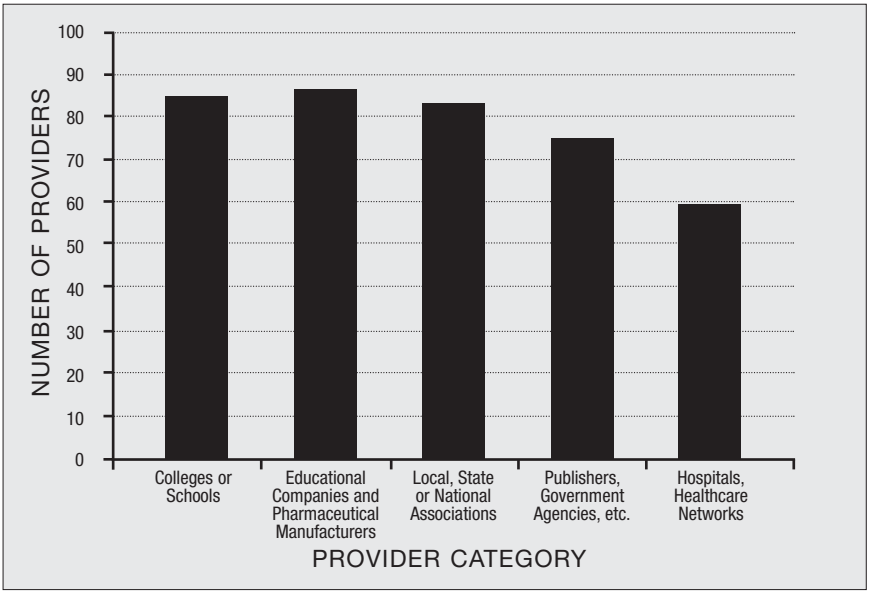
## Categories of Continuing Education Providers

The Accreditation Council for Pharmacy Education (ACPE) employs the following categories of CE providers in its reports.

1. *Colleges and Schools*
2. *Education Companies and Pharmaceutical Manufacturers* (Pharmaceutical manufacturers were no longer accredited as of July 2005 and did not supply data)
3. *Local, State or National Associations*
4. *Publishers, Government Agencies, etc.*
5. *Hospitals, Healthcare Networks*

*Figure 1* shows the breakdown of number of providers by provider category for the year 2005 year. The distribution of the 388 providers is spread evenly among all the categories. Educational companies and pharmaceutical manufacturers; colleges or schools; and local, state, and national societies show the highest number of CE

**Figure 1. The Number of Accreditation Council for Pharmacy Education Accredited Providers of Continuing Pharmacy Education in Each Provider Category for the Year 2005**



providers.

We compared the ACPE 2005 data to data they published in 1985. Colleges, schools, and associations remain the largest providers, although, as is the case for continuing medical education, the number of medical education companies has increased.

### Activities

The following activities are listed as major categories from the ACPE:

1. *Live Activities*
2. *Home Study Activities*
3. *Combined Activities* (activities that contain both live and home study or mediated components)
4. *Computer/Internet Activities*

The total number of activities accredited in 2005 was 22,876. The number has remained relatively stable since 1985. Live CE activities composed almost two thirds (59 percent) of the total for 2005, a percentage unchanged over time (in 1985 this figure was 54 percent). Home study CE activities comprised 39 percent, and Internet activities 16 percent.

### Accreditation of Continuing Education Providers

Providers seeking ACPE accreditation must demonstrate that their programs have met a published set of standards, and accredited programs can apply to the ACPE if they wish to grant ACPE certification to their participants.

## REFERENCES

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## APPENDIX C:
## Definitions and Acronyms

DEFINITIONS

*Categories of credit*:[1]

— Category 1: Activities such as publishing articles, poster presentations, medically related advanced degrees, and independent learning. Examples include the American Medical Association Physician's Recognition Award Category 1 (AMA PRA Category 1), developed by the AMA as a method of assigning credit for CME activities provided by approved CME providers and American Osteopathic Association (AOA) method of assigning credit for formal (A) and less formal (B) osteopathic CME activities.

— Category 2: Activities such as consultation with peers and medical experts, small group discussion, self assessment activities, medical writing and teaching residents. Examples include American Medical Association Physician's Recognition Award Category 2 (AMA PRA Category 2), developed by the AMA as a method of assigning credit for CME activities provided by approved CME providers and American Osteopathic Association (AOA) method of assigning credit for formal (A) and less formal (B) non-osteopathic CME activities.

- *Committee Work*: involvement in formal committees of hospitals or professional organizations

- *Computer-based, Instructional Program*: accessed on a CD-ROM or other computerized modality

- *Conference*: live, audio- or video-mediated, face-to-face or web-based meeting of people planned in order that learners acquire knowledge and/or discuss a topic

- *Course*: generally a live instructor-led session planned on a one-by-one basis with learner participation in person

- *Credit*: the designation used to assign a value to continuing education classes or time performed by the learner; in general,

credit is referred to in hours, as in hours of credit obtained

- *Enduring Materials*: learning resources used by clinicians, generally printed, recorded or computer-based

- *Internet or Web-based Activity*: a CE experience available online (e.g., live, enduring material, searching and learning)

- *Journal CME and Journal-based*: reading of an article, a provider stipulated/learner directed phase (include reflection, discussion, or debate about the material contained in the article) and requirement for the completion by learner of a pre-determined set of questions or tasks relating to the content of the material as part of the learning process

- *Manuscript Review*: participation in pre-publication review process of a journal article

- *Performance Improvement*: physician identifies an educational need through a measure of performance in practice, engages in educational experience, integrates into patient care and then re-evaluates performance

- *Regularly Scheduled Conferences (RSC)*: planned, ongoing series of sessions, generally involving members of a staff or organization (e.g., hospital rounds)

- *Regularly Scheduled Series (RSS)*: previously described as RSCs, these have a series with multiple sessions occurring on an ongoing basis, primarily planned and presented by an accredited organization (e.g., Grand Rounds, Tumor Boards)

- *Self Study*: educational materials provided in paper, video, or web-based to be completed at the learner's convenience, often accompanied by self-assessment examinations or other tests of knowledge and skill acquisition

- *Test Item Writing*: participation in pre-publication development and review of test items (e.g., multiple choice questions)

- *Video and Audio*: media used to assist with learning activities, often used to assess clinical-decision making

- *Workshop*: live face-to-face meeting marked by the instructor-led presentations of concepts and principles followed by real-time application, such as the presentation of cases, to generate discussion, analysis, and demonstration of knowledge

## ACRONYMS

- AAFP, American Academy of Family Physicians
- ACCME, Accreditation Council for Continuing Medical Education
- ACPE, Accreditation Council for Pharmacy Education
- AMA, American Medical Association
- ANA, American Nurses Association
- ANCC, American Nurses Credentialing Center
- AOA, American Osteopathic Association
- CACME, Committee on Accreditation of CME
- CFPC, College of Family Physicians of Canada
- MOC, Maintenance of Certification
- RCPSC, The Royal College of Physicians and Surgeons of Canada
- SACME, Society for Academic Continuing Medical Education.

## REFERENCES

1. Accreditation Council for Continuing Medical Education. Accessible at http://www.accme.org/index.cfm/fa/index.cfm/fa/home.home/home.cfm (Access date: April 4, 2008).

**Remarks by Pamela H. Mitchell, Ph.D, M.S., B.S.**
**University of Washington School of Nursing**

I appreciate David Davis's paper because when I was asked to provide some information about CE from nursing, I wondered where I was going to get that information. His paper confirmed that we don't have the same kind of information in nursing as is available in medicine. However, we do have a substantial amount of continuing education in much the same formats and courses as medicine, most of which are accredited by The American Nurses Credentialing Center (ANCC). It is useful to spend a bit of time talking about the providers in nursing because most of our discussions have been specific to continuing medical education.

As in medicine, several groups provide continuing nursing education. Historically, university programs in nursing have been involved in continuing education. In the 70s and 80s, specialization began through the HRSA programs. (Nursing has Title 8 and medicine has Title 7.) The two together, were part of what started specialization.

I would group the six categories in the Davis paper into four for nursing. First are the schools of nursing. These include university based schools of nursing that target primarily people who have been prepared at the bachelors level or the advanced practice level, such as nurse practitioners who are now doctors of nursing practice. The community college programs are aimed primarily at the beginning level and provide basic refreshers. Practice-based education in hospitals is driven largely by requirements of the Joint Commission and is aimed at point-of-care certification, maintenance of skills, and development of new skills, with some team-based work. The nursing specialty organizations are another major force, and specialized nursing programs are analogous to medicine. Finally, some state nursing organizations are involved in CNE.

For the specialty organizations, maintaining and upgrading skills in a particular nursing specialty certification that doesn't require an advanced degree often drives continuing education. That is probably the area where commercialization is most evident in continuing nursing education. If you go to the critical care nurses' annual meeting, with the big exhibits and all of the monitoring devices, many of the exhibitors are also providing CE independent of the CE that is being provided in the courses.

I don't think the state organizations for nursing are as prominent as they are in medicine, although I am from a state that does not have mandatory continuing education, so our state nurses association does relatively little. Those states with mandatory continuing education have more active state nursing associations. Whether you have mandatory continuing education or not drives the CE effort. In my state we briefly had mandated CE, but then the state board of nursing realized that it didn't have the money to monitor a program, so it cancelled it. So we are basically on our own as to whether or not to do continuing education.

All the accreditation of providers is through ANCC. ANCC doesn't collect data about the number and categories of courses, but it does accredit providers on the basis of whether the planning committee knows something about the topic, the same sort of thing as in medical education. We have not gone as far as medicine has in terms of the competencies and practice based provision and assessment, and those are areas where we can learn a great deal.

In nursing, everybody and nobody is responsible for CE. Everyone has some stake as an individual, namely his or her own accreditation. But the accreditation authority does not set the standards for what CE should look like. There are simply standards for whether you are documenting appropriately, who planned it, how long each session is, and whether it is a lecture, but not whether it is interactive.

There has been some work on outcomes and whether CE really changes practice, but not to the extent that we see in continuing medical education.

My guess is that commercialization is probably about the 10 percent of what was shown in Robert Steinbrook's graph, but it is mostly the vendors who help support the conference. Some of the vendors also provide some CE but most don't. If we ask is there a model for what it would look like if we had to pay for our own continuing education, CNE is one model because such a small percentage is paid for commercially. That is not because we are purer than everybody else. It is an accident of history that we haven't been prescribing as long and only a small part of the nursing workforce prescribes. However, in hospitals and in some of the specialty organizations, nurses do influence what gets bought in terms of specialized beds

and monitoring equipment and the like, so that is where you see the opportunity for commercialization to bias the education. In states where CNE is mandatory, nurses themselves and their employers pay for CE and we have good continuing education, so I think it is entirely possible to do it without 60 percent of it being funded by commercial sources.

Another question that I would ask is whether we should have a more centralized set of expectations about what is appropriate CE. That gets to the topic of lifelong learning, which is not the same thing as delivering CE. My personal belief is that we ought to start with the expectation that we must learn throughout our lifetime of professional practice from the very date we start professional education. We should be educating ourselves together around those things where we have common interests with the expectation that we will continue to do it and not simply with a set of CE offerings. It should be a habit of professionalism that we should expect of ourselves, and of our students. I think that we should be doing a great deal more of this together across the professions. Nursing and medicine have much more in common than we have separately. In particular, when we are talking about team-based performance, we should be having some team-based learning, and that means that we should have common sets of expectations for the lifelong learning and for that which is accredited.

Formalized credit does drive what becomes part of continuing education. In nursing what is counted has been far more the conference, the continuing education hours of lecture because it is easier to count; self-learning doesn't count as much. We need to rethink that, and this is a prime opportunity to rethink it together. I think we could blow it up and try all over again.

## DISCUSSION HIGHLIGHTS

The evidence base for what works or is needed for continuing education must be fairly flimsy, given the range of requirements state by state. For instance, osteopaths in Vermont must be three and a half times more effective than physicians in New Hampshire because they have to take that many more hours.

It makes no sense for states to have such different requirements. The continuing medical education community needs to define what is important to deliver the best care and then go to the Federation of State Medical Boards.

The status quo means that marketing products is the major incentive of CME, not improving the quality of healthcare. It is time to develop a system that cleans up the wildness of the status quo. Both undergraduate and graduate medical education are structured and regulated and produce a standard product, with a guarantee that most graduates have a comparable set of competencies. It is time for continuing medical education to have a system with some kind of institutional oversight, curriculum design, a focus on quality and outcome measurements, and no conflict of interest. We need a faculty that can do that, using modern methods, and practice-based learning based on patient needs and outcome evaluation.

The incompetencies of physicians to teach are striking. Will new competencies be required to provide the kind of help people are asking for, or will excellent models be lost because of the absence of education for the educators in this new kind of education? Already many institutions have established teaching academies utilizing excellent faculty educators to help faculty improve the way they teach.

The purpose of continuing education is to assure competence and provide accountability. We should be open to radically different systems that can provide that assurance. One way might be a system that rewards high performing organizations. Why should individuals who are part of such organizations have to undergo continuous competency assessment? The organization has demonstrated it produces a good product and takes responsibility for the competency of people who work there. Or, if individuals maintained certification through a demanding and intense process, that should substitute for continuing education requirements. What we need is to accredit systems and groups that perform on a reliable basis and produce high quality healthcare, but because we lack measures for that kind of performance, we have to look at the individual.

In hospitals, it is amazing how much linking reimbursement and publicly provided quality information has focused attention on qual-

ity improvement. For example, at our institution, influenza vaccination rates were especially low; suddenly, groups of professionals came together to address this issue and came up with solutions. Mobilization of the system became much easier and vaccination rates went up. Contrast that with the more traditional approach in which you test a clinician on the criteria for vaccination—what age group, comorbidities, etc.

How much responsibility should academic medical centers have for CE? We clearly are responsible for undergraduate education, nursing, allied health, medicine, public health, etc. Every school of medicine has infrastructure for GME and graduate nursing education, but that is not necessarily true for CME. System CE is beyond most academic medical centers. Maybe we can provide the support for the educational part, but we cannot reformat whole health systems. Our role should be to support the educational piece.

In North Carolina, practice-based networks link pediatric practices to the medical school, so that the practices can continuously improve their performance. That is one way academic medical centers can support healthcare systems.

We need a consistent approach to collect CE information across professions. Sixty percent of states now require CNE, but we have few details about it. Also, CNE is too often influenced by "disease-of-the-month" state legislation.

Regularly scheduled accredited conferences are decreasing in frequency because it is too difficult to get accreditation, especially now with the new requirements about conflict of interest. Medical education and communication companies do not offer regularly scheduled conferences because they don't fit their business model.

We've had conversations, at least among continuing medical education providers, that sounded like this for 30 years, but nothing ever came of them, For the first time in three decades, we have the opportunity to take these ideas and work them into something tangible and workable.

# Learning to Work Together to Improve the Quality of Healthcare

**Maryjoan D. Ladden, Ph.D., R.N.**
**Harvard Medical School**

Reports from the US Institute of Medicine have highlighted the fact that almost 100,000 people die each year due to medical errors.[1,2] These reports have focused national attention on the quality and safety of healthcare. In addition, they have generated a considerable amount of research on the causes of medical errors, strategies for improving the quality and safety of care, and redesigning the healthcare system.

According to the Joint Commission,[3] communication failure was the cause of over 70 percent of the errors or sentinel events reported to them in the 10 years between 1995 and 2005. Several factors contribute to communication failures. These include early training that teaches nurses and physicians to communicate differently, historical power differentials between the health professions that prevent patients from speaking up, and lack of standardized communication procedures to help create a shared mental model.[4] Many of the Joint Commission's 2008 Patient Safety Standards are aimed at structuring and improving communication between health professionals.

The Institute of Medicine reports led researchers to develop and test strategies for improving communication, collaboration, and teamwork. Researchers have also explored links between effective communication, teamwork, and improved quality and safety. Jain et al.[5] found that implementing four key system changes in the intensive care unit (ICU) — including interdisciplinary rounds and a focus on team decision making — had a significant impact on nosocomial infection rates, the number of daily adverse events in the ICU, average length of stay, and average cost of an ICU episode. Between baseline and re-measurement periods, nosocomial infection rates declined for ventilator-associated pneumonia (from 7.5 to 3.2/1000 ventilator days, $P = 0.04$) and bloodstream infections (from 5.9 to 3.1/1000 line days, $P = 0.03$), with a downward trend in the rate of urinary tract infections (from 3.8 to 2.4/1000 catheter days, $P = 0.17$). The researchers also observed a strong downward trend in the rates of adverse events in the ICU and in the cost of an average length of stay per episode (from $3406 to $2973). The authors concluded that

a systematic approach, including implementation of multidisciplinary teams and the use of evidence-based bundles, improved communication and patient outcomes.

The US Department of Veteran's Affairs (VA) has also focused on enhancing communication, interprofessional collaboration, and teamwork to decrease adverse events and improve patient outcomes within the VA system. From 2003 to 2007 they implemented a VA Medical Team Training program in 43 VA medical centers across the United States.[6] The program, which is based on aviation principles of crew resource management, includes a full-day interactive learning session, administration of pre-and post-intervention safety attitudes questionnaires, and follow-up semi-structured interviews.

## The Reality of Collaboration and Teamwork in Practice

Every day in practice, health professionals must work together to address a patient care issue or solve a systems problem. In some situations (ICU, operating room), an explicit structured interprofessional approach is necessary. In others, health professionals may come together once or twice around a specific patient or clinical issue and then return to their independent work. Both of these examples require a team, defined as two or more individuals who have specific roles, perform interdependent tasks, are adaptable, and share a common goal.[7]

Most clinicians learn about teamwork on the job. Health professionals are educated on improving relationships between patients and healthcare providers. However, enhancing communication, collaboration, and teamwork among health professionals is rarely included in educational curricula. Effective communication and teamwork are not a consequence of grouping health professionals together in the same location or designating them as a team. Teamwork requires knowledge of and respect for the skills and contributions of others as well as positive attitudes toward collaboration.[8]

In its 2003 report on education in the health professions, the Institute of Medicine included "work in interdisciplinary teams" as one of the five core competencies to be required by all healthcare professionals to meet the needs of the 21st century healthcare system.[9] These recommendations have been embraced by healthcare organizations, the health professions, and accreditors.[3,10–13]

## Preparing Health Professionals for Teamwork and Collaboration

Despite the recommendations and the evidence that effective teamwork is necessary for high-quality, safe care, health professionals have few real opportunities to learn how to work together. Most health professional education in the formative years remains in discipline-specific silos. Didactic instruction occurs in separate buildings, and even though medical and nursing students may share the same site for their clinical training, they (and their faculty) do not know each other or work together — even if they are caring for the same patient.

### *Education in the Formative Years*

Many individuals have suggested that exposure to other disciplines early in the professional education continuum will foster respect for one another's skills and positive attitudes toward collaboration, leading to improved communication and teamwork. Since the 1960s, interprofessional education, defined as when healthcare professionals learn together, learn from each other, and learn about each others' roles, has been promoted as a way to stimulate collaboration. However, in the formative years of professional training, interprofessional education is often stymied by such factors as scheduling logistics, mismatch in learner's age and educational level, and academic policies.[14]

The results of early interprofessional education efforts have also been mixed. Anecdotally, educators report positive changes in attitudes toward collaboration. However, in 2001, Zwarenstein et al.[15] concluded in a Cochrane meta-analysis that evaluation studies lacked the methodological rigor to show the impact of interprofessional education in the formative years on professional practice and/or healthcare outcomes.

Some might still argue that, because the formative years in professional education are an impressionable time, this period represents the best opportunity to instill the values and skills required for effective teamwork and collaboration. Interprofessional teaching and learning efforts during these years are necessary, but they are not sufficient to assure successful collaboration and teamwork after graduation. Once in practice, health professionals experience a

healthcare system that supports a discipline-specific focus and upholds the norms and attitudes that deter collaboration.[16] They also often see their colleagues modeling behaviors and attitudes that do not support collaboration.[17–19]

### *Education in the Practice Years: Using Continuing Education to Improve Collaboration and Teamwork*

The early training years are just the beginning of a long continuum in professional education. In most states, continuing education (CE) is required for re-licensure. CE is also one component of professional certification. Medicine has developed a professional competency framework, with its Maintenance of Certification program, that encourages life-long learning and practice improvement. Nursing is not far behind in the competency movement.

Over the course of their career, health professionals spend more years in continuing professional education, both formal and informal, than they do in their early professional training. The audience for most CE programs, from small office-based activities to large auditorium conferences, is already often interdisciplinary. Physicians and nurses learn side by side about best practices in clinical care management.

How can we use CE to foster collaboration and teamwork values and skills and improve the quality of the care we deliver? In their re-analysis of the Zwarenstein et al.[15] findings on interprofessional education, Koppel et al.[20] identified three factors that make CE an ideal venue for teaching and learning interprofessional skills and values. These factors are the duration of the program, the location of the program, and the developmental stage of the learner. Koppel et al.[20] found that programs that engage interprofressional learners over a longer time period are more likely to generate behavior change in the individual (provider or patient) or organization. Many CE programs are held over several days, with content presented in a variety of learning formats. In these programs, interprofessional concepts and skills could be (and should be) integrated with the clinical content to demonstrate interprofessional management of acute and chronic conditions.

Teamwork and collaboration could be presented in a didactic case-based format and then reinforced over the next few days in smaller

discussion groups, active exercises using real-life patient scenarios, and skill-based workshops with feedback. Likewise, simulations of common team management situations or resource management principles would be useful interprofessional additions to a clinical CE program. Because many clinicians attend the same professional meeting each year, a curriculum could be developed to reinforce and then expand interprofessional concepts, teamwork, and collaboration skills over time.

In terms of location, Koppel et al.[20] found that CE programs at the practice site are more likely to produce behavior change in the clinician, patient, and organization. Small CE programs at a practice site or hospital draw clinicians who are already working together. Interprofessional concepts and skills could easily be integrated into clinical case presentations, as well as into other venues, such as team meetings and quality and safety rounds. Because the clinician audience is generally stable, new knowledge and skills can also be tested and reinforced over time.

To be successful, interprofessional education and practice efforts need strong administrative and political support from clinical and organizational leaders. Programs at the practice site are highly visible and can easily engage both groups as faculty. In the era of pay-for-performance and other financial practice incentives, political capital can also be generated by linking CE programs promoting collaboration and teamwork with improvements in quality and safety. These improvements are more likely to occur when all the clinicians responsible for a patient group or service come together to share knowledge and experiences and then plan for and test practice changes.[21]

Koppel et al.[20] also found the learner's developmental stage to be an important factor in the success of interprofessional education. Interprofessional education interventions early in professional training had a positive impact on attitudes and knowledge, but these effects did not last over time or translate into behavior change in practice. However, when interprofessional education was used in CE with practicing clinicians, it was more likely to produce individual and organizational behavior change. Perhaps experienced clinicians, because they have a broader world view, can more quickly recognize the relevance of new knowledge and skills and integrate them

more easily into their practice repertoire.

Professional socialization plays an important role in how health professionals approach collaboration and teamwork. Socialization begins prior to and continues during professional training.[22] Attitudes are often difficult to change until health professionals have the opportunity to get to know each other in real-life practice situations. Until that happens, stereotypes prevail and there can be only a superficial understanding of other health professionals' skills and contributions to practice.

Health professional learners and practicing clinicians learn best when new knowledge and skills are presented within the context of their work and they can immediately recognize the applicability to patient care. Presented outside the appropriate clinical context, collaboration and teamwork can easily be seen as theoretical and "nice to know" rather than practical and "need to know." Quality and safety are powerful incentives for health professionals. Educational programs that link collaboration and teamwork with high-quality, safe, and effective patient care may have the best chance of success.[23]

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**Remarks by Carol Havens, M.D.**
**Kaiser Permanente Health Center**

If we think of interdisciplinary education as simply putting people from different disciplines in the same room so they all hear the same thing, we're wasting an opportunity to get the best that we can out of the opportunity of educating team members to work together.

I was fortunate in my training as a family practice resident at UC Davis, where they had an NP training program. As residents, we were paired in teams with the NP and PA students. In the clinic, we had a team with a resident paired with a PA student or an NP student paired with a clinic nurse and a medical assistant. In this way, we had the opportunity, as residents, to discover the highest and best use of all the people on that team with the patients we were seeing. Challenging complex patients fascinated the PA student I was paired with and I liked well baby checks, so she had all the really difficult patients and I took all the well baby checks.

As long as we are going to blow up this continuing education system and start over again, I'd like to put in a plug for another step in the process. Don Moore talked about establishing activities based on the need—the gap between what is and what could be—and designing your activities with that end in mind, so that you know what you want to get out of the activity as you are planning it. I'd like to add as a next step what is the process to get there and who needs to be involved in that process, and then what is the best way to educate for that. Then we can start looking at this team, this group of people taking care of patients, and who should be providing what part of care.

That's not unlike the collaboration between primary care providers and specialists. I'm a primary care provider and I'm also a specialist so I get to do both ends. There's always that challenge between when is it no longer a primary care problem and at what point should I refer, and then who is going to do the follow up EKG after we've done the CABG? If it's not clear who's going to do that, either things don't get done, or things get done twice and lead to unnecessary duplication. It's really important that we look at the process of care and I think it's great that we're talking about systems of care, because that is where it's going to happen. We should be looking at the whole process, at who should be responsible for what part and at what point that hand off occurs.

We talked about culture change, and this is another culture change. We talked about the Lone Ranger physician in the United States, and it's interesting when I talk to my colleagues in a variety of practice settings about team based care and the opportunities to work together, they're all for it. They think it's a great idea. But, when you get down to the nitty gritty, such as who is going to call back patients with normal labs, the answer is always the physician, because that's my job and the buck stops with me. No matter what the job, the physician should be doing it. I never quite understood the concept of team care when the physician is supposed to be doing everything. That's not true for everybody, but a lot of physicians still feel that way. Just getting them even to think about the team process, and what the opportunities are and who could be doing what, is going to be a challenge.

I am going to describe what we have done at Kaiser around the issue of interdisciplinary education. The concept of team based care, I think, is one that's easier to understand in the practice than it is in the theory. Our greatest successes have been in two areas. One centers around patient safety, particularly around things like critical events practice where we actually train teams and physicians to deal with critical events. This is the process: First we explain your role, then show this is where your role changes to this role, and how you hand it off, and, finally, we actually have them practice. We do simulations; we record who did what and we ask questions. How did it happen? How did the hand offs work? Did anything fall through the cracks? And, by the way, how did the patient do?

The other has been in chronic conditions management, where we've had some success, and that's very much team based care. It follows the same process of looking at where we are with chronic conditions and where we want to be, also what could be and what we need to do to get there. Clearly, physicians are not going to be able to do this all by themselves; they have a role. Nurses can't do it all by themselves; they have a role. We have the opportunity to look at what's the best way to provide the care for these patients with chronic conditions. We ask who should be responsible for what and how do we set it up so that everything happens as smoothly and as easily as possible so that we get the best use of everybody involved, and we make sure that the patients get the best care possible.

All that was done with the end in mind, with a clear picture of how we wanted those teams to function and what the roles were of everyone on the team. Everybody agreed to what those roles were. And our hope is that we can start building on those successes and start demonstrating the opportunities and the advantages of both team based care and training as teams so that people will start looking for other opportunities and other places where that approach might also be a success.

## DISCUSSION HIGHLIGHTS

We need to think in a broader perspective about continuing education. We fail if we fail to think of the continuing professional development of all the health professionals with whom we are working.

Nurses and physicians follow a different path; physicians focus on a specialty right after their residency while nurses tend to be prepared as generalists and then either may stay generalists or may focus on a specialty. One thing continuing education providers in nursing do is role development because a nurse who is a good clinician and then becomes a manager doesn't necessarily have management skills. The same is true with administration.

The whole staff development function is more characteristic of nursing than medicine, partly because most nurses are "staff," but also because staff development is embedded in the culture of nursing. These programs are not well organized or systematic. Some are accredited, some are not, but a lot of money goes into this work and it isn't looked at in any systematic way.

Maybe where we should do this together is where we come together in places like hospitals, ambulatory care clinics, and home health. There we come together around staff development and learning is practice based.

If we really believe that teamwork and cross-disciplinary and specialty and professional training are critical and important, we ought to recommend increasing the credit value of learning in a team rela-

tive to learning in solo or isolation. That would be an incentive that would make people pay attention.

The American Association of Colleges of Nurses (AACN) and the American Association of Medical Colleges (AAMC) meet at the same time of the year, every year, yet they never meet together. AAMC seems more involved with CME than AACN with CNE. Bringing these organizations together to think about the continuum of education could help.

We need to create measures to count what is valued. We are not counting the right things now. One measurement is how well a team works together.

The idea of a whole system that links all the health professions together in a way that directly affects outcome makes sense, but how do rural primary care practices get linked into a system? Those have nurse practitioners and pharmacists who are providing care and they, too, need to be linked into a system somehow.

Health professionals work together so why shouldn't they learn together? We need to get state and national accrediting boards to agree. We need to find ways to give credit for that kind of learning.

Are things changing with respect to teamwork? The composition of specialty teams seems to be changing. More and more nurses are PhDs; how will this change teams? Does good teamwork enhance payment? Perhaps it should.

In the UK, there are inter-, multi- and trans-disciplinary activities. This is creating a huge research agenda.

The doctor does not have to be captain of the team. In our practice, the team leader changes. The office nurse is team leader for OSHA issues. The diabetic nurse leads us for diabetes. Also, we find we need a good deal of cross training to make teams work.

The ACGME requires evaluations of residents by nurses. Perhaps that approach should be built into CE.

# IV.

# Reaction from the Trenches

## Reaction from the Trenches

**Remarks by Grant S. Fletcher, M.D., M.P.H.**
**University of Washington School of Medicine**

My topic is CME from the trenches. My first thought on hearing this topic was that I don't know anything about CME. Having only recently completed my training, I have never submitted any credit for CME, so I did a little investigative work and asked a colleague what he does for CME. He said that, when the time arises, it consists of going to a website at an academic medical center the night before, cramming all night, and completing his credits. And that was that. It sounded scary to me. Through this conference I've gotten a better appreciation of what we're talking about, and it depends on how you define CME.

In the context of CME as continued learning, as a recent graduate of the medical education system, I think about how we keep that fund of knowledge and expand on it afterwards. For me, this perspective comes from several sources. Before going to medical school I had public health training and looked at decision analysis and cost-effectiveness analysis. I felt I had some tools, but not the questions, going into medicine. I thought a lot about how we acquire knowledge and then use it. In medical school, I had my antenna up to understand how it's done there. I went to nine different institutions during my medical training. They ranged from community medical centers to academic health centers, to tertiary private centers and the VA system, so I saw how I was taught from a lot of different perspectives. After my medical education, I spent a couple of years as part of a group that formed a hospitalist program in a community hospital, so I saw how it was done in the community as well, and then, in more recent times, I have come back to an academic medical center.

I found a lot of interesting contrasts in these various settings. In my medical training, one of the interesting things was what we were taught and what we were not taught so well. I acquired some skills and knowledge, I saw a great diversity of patients and I think professionalism was instilled during that time. However, I think the actual learning to learn beyond the residency and medical school suffered greatly. I think, for the most part, we're not taught much about the learning process. During medical school, you are inundated with facts and you have to pare it down, get very quick information, and move on. What that means, often, is the path of least resistance,

and that means looking to fellow residents, students, attendings, and specialists, asking them what they think, and then looking up very composite references. You're not doing an idealized sifting through the evidence and reasoning through multiple sources of evidence. It is quick and dirty, but that's the learning habit that I think is instilled at the time.

When I went to the community hospital after my medical education, what struck me first of all are the sources of information that people use. They have their limitations and their advantages, but I don't think it is anywhere near the idealized view of strictly evidence based and thinking through it on your own. And second, I was struck by the lack of access I had to information. I took access for granted during my medical education, but suddenly I was having very limited access. I had an UpToDate subscription, and I kept that going, but beyond that, I was used to going to various journals to read more. Access to journals was available in the academic medical center, but what was available in the community hospital was paltry. In thinking about ongoing education, access to information always is important, not just in the formal settings but in self development as well.

Then, when I went from a community setting back to the academic setting, it struck me how much easier it is to acquire information within the academic center. You feel like you're on an island in the community center, especially if you're in a small group. I had this visceral sense that my knowledge and skills would be decaying and it would be a struggle to keep those up, whereas with an academic center, you can take some shortcuts because of the questions that are raised. If there's a new set of guidelines and people are talking about them, you automatically keep abreast of some of the latest information. You can always go to the guidelines later. Just knowing that there are developments out there is helpful to begin with. A lot of our discussion has been around academic medical centers or large practices, whereas I think it's much more difficult to access information in the very large number of small, isolated practices that we have in this country.

Another area that I like but had very little of in community practice, was actual feedback on what I was doing. I can recall receiving only one feedback report in the two and a half years that I was in com-

munity practice. The report was looking at whether I prescribed the appropriate antibiotic. They sampled four patients and I had not given the appropriate antibiotics to one. They didn't know which patient this was and there was no connection to the records, so I had to go through multiple hoops to get the information to learn the specifics of the case. That was only one report in the entire two and a half years. If we really want to know how we're doing, having some sort of regular formalized feedback would be ideal.

I believe being instilled with professionalism during medical training is absolutely key. It is my impression that many situations that arise during practice are far beyond quality measurement. In these situations, medical education instills an internal professionalism motor to go to the trouble to find the correct clinical answers. It is very important to keep that motor running when physicians are out in practice. We often talk about guidelines but these are very general approaches for medical conditions that you see again and again. The reality is, in practice, you see many clinical problems that do not lend themselves to guidelines and easily measured outcomes.

I'm not sure if there's an easy way to measure how well a clinician has developed these habits and has that sense of professionalism. For example, I was consulting on a neuro-surgery patient who had an inferior vena cava filter placed for a deep venous thrombosis. The patient had been bounced around to many teams and had a very complicated hospital course. I was being consulted for something else and noticed that this IVC filter had been in for eight weeks. It was a retrievable filter that was supposed to come out at six weeks. I called around, but nobody seemed to know whether six weeks was set in stone, what would happen after the six weeks, or what were the consequences of keeping the IVC filter in place. That was well beyond a 30 second info button question. These kinds of clinical questions arise all the time, so I'm not sure how you would measure the quality of care in that patient. I could have taken the easy route, say somebody said just leave it in, and be done with it. There may be no information about what is the correct thing to do, but sometimes even discovering that there's no information is difficult and time consuming.

I had very little exposure to simulations during my training, but I

think it's an excellent idea, if done in a realistic fashion. Another difference between the academic center and the community is that we're often sheltered from financial pressures in an academic center. As a practitioner, that's very much in the forefront. Trying to take into account time and cost imperatives, and rewarding clinicians for doing the right thing is very important.

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**Remarks by James A. Clever, M.D.**
**Marin County, CA**

First, about the title, "From the Trenches." That's a military term. The only other kind of trench I can think of is when the public works department is digging up the sewers and the water lines, but I think it is a military term and that goes along with the rubber hitting the sky when you're sending up a recognizance balloon to see what's going on. Furthermore, trench warfare is way passé; later on, I will say more about the military terms that pervade our profession and some things that need correction.

I'd like to say a bit about motivation as far as continuing education is concerned because that it is really important. A little story about motivation: Jerry Reinsdorf, who owns the Chicago Bulls, was having a conversation with Phil Jackson, who was the coach of the Bulls during the time that Michael Jordan was playing for them, and they were the outstanding team in the NBA for several years. They were talking about motivation of players, and Reinsdorf said that what motivates people is fear and greed, and Phil Jackson said, "Jerry, you've got it all wrong. It's pride and love." I think that all four of those things actually motivate people. I dislike people being motivated by greed and fear, but fear is important for professionals to keep up, fear of being sued, fear of not being re-licensed or re-certified. If practitioners take on a new project—for instance, a primary care internist might learn how to shave moles or something like that, and charge enough for that to be equal to a couple of hours of regular work—that probably is of some importance. But I think pride and love are the real things, love of the profession, love of your patient. You can love your patients but you have to take good care of them as well. And having some pride that you are practicing well and get feedback that is good is also an important motivator for continuing education.

We haven't talked about what I see as an increasing lack of collegiality among professionals. We touched on collegiality in the teamwork situation between physicians, nurses, pharmacists, students, and house staff, but the profession of medicine has lost a great deal of collegiality. Twenty years ago, we had an annual dinner dance and a lot of staff would come, black tie and nicest gowns, and we had a great time. We've lost that. Now maybe 20 people show up at quarterly staff meetings; that's out of an active medical staff that must be about 600 or 700. For medical grand rounds, it seems like the majority of the people in the audience are retired physicians, like myself, and all too few house staff come, in part because morning report is probably better education and a better use of their time, but we miss that collegiality. Furthermore, I don't think there ever was very good collegiality between physicians, nurses, and other hospital personnel and that's something we need to do better.

Now the military aspect, and this comes back to what I think is detrimental. Doctors write the orders and other people carry out the orders, just as it's done in the military, and I think that is wrong. I don't know what the medical legal consequences would be if we changed orders to suggestions, or to advice, but the most effective way of taking care of the orders situation would be that every time doctors input the orders into the computer, and maybe even before those orders are put in, they discuss it with the nurses, in a team way, to decide what is the best way to do things. Another part of the military attitude is no fraternization with the enlisted. We shouldn't treat the nurses and everyone else as enlisted people; they are our colleagues.

**Remarks by Susan W. Wesmiller, M.S., R.N.**
**University of Pittsburgh Medical Center**

Some interesting things are happening in nursing. When you talk about who pays for continuing education, in nursing it is mostly the nurse or the employer. We actually budget for 16 hours a year of continuing education for every single staff nurse. That doesn't sound like a lot, but it's certainly better than zero. It is something that we've continued, even though we know that we need to pull each staff nurse off her assignment at least two full days a year to make sure that, at least, competencies, are maintained. In addition, we pay the

entire way for anyone who is speaking at a conference, whether it is a regional conference or a national conference, so if a nurse shows professionalism and writes an abstract and has that abstract accepted, then we support that nurse by paying those expenses. Because we realized that everybody can't write an abstract that very first year, we started a system where staff nurses can write an application, an essay about why they need continuing education and why they should go to a conference, and get some help. You talked about conferences being passé, but a lot of socialization occurs for young staff nurses, for young professionals to be able to network with their peers across the country. I'm glad that we're supporting that.

Is the nursing shortage having an effect on continuing education and nursing? We'd all like to say no, but the answer is yes. It becomes increasingly difficult for us to pull nurses off a schedule to send them anywhere when we are just trying to cover the schedule. It's sometimes hard to get them to ACLS or CPR, let alone send them to a conference. That is something we continue to struggle with. We don't have the nursing shortage in Western Pennsylvania that the coasts have, but you definitely can see changes. We have more nurses retiring from bedside nursing positions than I have seen before. We might have six or seven retirement parties a month for nurses leaving bedside nursing at 65 or 66 years of age.

We heard about team building and about the importance of simulation. We've combined those two and have all our code training in the simulation lab. We have a wonderful simulation lab and we send nurses, respiratory therapists, pharmacists, and physicians in teams to do simulation. They are assigned their roles for the team and given three different scenarios. Then they are videotaped. The debriefing and the discussion that follows the videotaping are where learning takes place. But again, it's hard to get our staff nurses down there, though we're working on it.

We also talked about the influence of generations and I don't think we should forget that. For the first time in the history of the United States, we have four generations in the workplace, side by side. If any of you think that millennials are going to put up with what worked for baby boomers, think again. They don't want lectures in the traditional ways. They want a lecture on their iPod so that they can listen to it while they're on the treadmill. Or they want to do

experiential learning. They are techno savvy. We don't have to worry about their technical competence because they come with it. We just need to make sure that they know how to think critically. One of my reactions to the discussion about technical competence versus understanding is that I can see it both ways. Our new nurses are so techno savvy that they don't need us to show them how to use a computer, but our older staff nurses need help, and we need to help them get to that technical competence.

We have a wonderful nursing grand rounds program that we give monthly. It's offered live, but we also Web cast it so that anybody can catch it 24/7. That is available as continuing education for anyone, whenever they're working. We had a 100 percent increase in the number of people who watched grand rounds when we eliminated paper paychecks and people had to go online to see their paycheck. If you want to know how much you made, you have to go online and find your paycheck. All of a sudden, everybody was on the computer because everybody wanted to know their paycheck, and while they were there, they saw You Learn and Grand Rounds. It's really interesting to see how we drove that change. Unintended consequences.

We talked about SBAR (Situation/Background/Assessment/Recommendation) training. We are adding to SBAR a line called "I Need Clarity." That is going to be our code—nurse to nurse, nurse to physician, nursing assistant to physician, nursing assistant to nurse—to say, "Please stop. I don't understand what you are asking me to do and I need some help." We are starting an across the board education program for everyone, to teach us how to work together, but we needed that code. We needed something to say to the physician, "please just stop what you're doing right now and help me because I don't understand this. I need some clarity." I hope it works. We've done a lot of SBAR training so I think our staff nurses understand those steps, but they needed something more and the physicians needed to know that when they hear "I need some clarity" that they should stop what they're doing.

My final reaction goes back to what we talked about at the beginning of this conference, and that was the idea of a clean slate, of starting where we would like to end. I thought wouldn't it be wonderful if we could waive all the regulatory, mandatory education

that takes up so many resources, or if we could demonstrate that we're a top tier hospital in outcomes and they could say, "If you are top tier and you are meeting all of your outcomes, you don't have to do regulatory education this year." Imagine how many more resources we'd have for providing good patient care.

**Remarks by Regina Benjamin, M.D., M.B.A.**
**Bayou Clinic, Inc., Bayou La Batre, AL**

Most of you around the table are from large institutions or represent large groups. I would submit to you that most practices, and most physicians, maybe one in two doctors, are more like me than not like me. I'm in solo practice. I've been in solo practice for 18 years, but I now have a PA. My town has 2,500 people, mostly uninsured, and the demographics are 60 percent white, 30 percent Asian—Vietnamese, Cambodian, Laotian—and 10 percent black and other. I do house calls, and I know my patients and they know me. I go to their funerals. In fact, recently we were listed on the program, in the thank you portion. So we get to know each other and it's a little different from what I've been hearing.

I've been asked to react to the conversation over the past two days, and I think that it's very fearful. I'm sure I'm speaking for many other doctors out there. The question I face is how can I improve my skills and stay current and give the best care that I can to my patients. And then I ask how can I possibly do all those performance measures, every measure that you can think of and still have time to see patients. That's very scary.

I guess the risk I see is that physicians will start to do things to look good on paper and not necessarily to take care of patients. I can make my HEDIS score look great and never do anything to improve my practice per se. That's a risk that we have getting ready to re-certify for boards. Physicians are stressed out, nervous, cramming to take a test when they're going to test me again on the Krebs cycle and how many times I use the Krebs cycle. I need to know what it was about, but I don't need to re-certify on it.

People learn in different ways. We still have our quarterly medical society meetings, and we still have the CME, but it's more social

now so the topics are not as didactic as they used to be. I learn a lot in our doctors' lounge. I don't know if many people around the country are still doing that, but our hospital just renovated the lounge so that we have our breakfast and our lunch there. There's a lot of interaction. We talk to other doctors. We consult with the specialists, and they ask us questions. A lot happens in that breakfast lounge and during lunch. I'm 30 miles from the hospital, but when I go there, I try to go around those times when I know the docs will be there and I can talk to them.

Lectures are important because they tell us what's new out there. I can ask myself questions and I can go ask consultants, but I don't know what the new things are. I thought about where I learned the most things that made me actually change things in my practice. I used to serve on an underwriting committee for a malpractice insurance company. Every month we'd meet and I'd see how things would happen there, and I'd come back to my office and make a change. Those were things like how to follow up on labs or do a sticker file. That brings me to the idea of service learning, and we don't have a way to measure that. Service learning is what we are starting to teach kids in high school and in college, but we should be doing it with physicians as well. And if we can measure it, how can we evaluate it or how can we get credit for it?

I want to tell you a bit about what I would like to have. I need to tell you about Katrina. Two-and-a-half years ago, Katrina hit our town; we got 25 feet of water. Out of 2,500 people, 2,000 had no homes and I lost my clinic. We lost our medical records. We were able to rebuild and renovate our building and, thanks to the Institute of Medicine, we were able to get back. We were going to open on the day after New Years, but on New Year's Eve, the building burned down, so we lost all those records again. Needless to say, my staff said we don't want to do any more paper records. We need an electronic record. We got an electronic health record system and that's been great. I think the prices will come down, and, as the costs come down, more people will get it.

I have a program on the computer so I can look up and see right then the interactions of drugs. That really helps. I'd like to have UpToDate and things like that integrated in the patient record, so that when I have a question and I look something up and get the

answer, I can document that answer in the record. That documentation will be there two years from now if I go back to that record, so I don't have to go back and look it up again. Those are the kinds of things I think would help. We don't have a lot of time in the office, so anything that would make it more efficient would be better.

The other thing I'd like would be simulation or an interactive game, a virtual game, where you could do whatever you want. I'd like to see, for example, what would happen if I give this patient with congestive heart failure a meal with salt in it, or if I changed the diet or if I didn't change the diet. Or, if I gave a diabetic a pill but then the diabetic exercised, what would happen? That's the kind of game I think would help me a lot, just being able to play it on my own time.

We talked about CME funding and I think the comments were very much on point, but I don't share the level of vilifying the industry that I heard from some. I don't feel like I'm a bad person because I take a drug pen or notepad. The clipboards might have a drug company's name. Advertising is advertising, and if you know it is advertising, you know that's what it is. I've asked patients if it bothers them to see these things and they'll tell me they don't care, that it's just advertising. Those notepads and pens save me about $100 a month in supplies, and for us that's almost our entire electrical bill. I can put that money towards treating people who don't have insurance, versus buying some pens and paper. The other thing is the drug samples. We didn't talk about the samples but they serve a major role. These pharmaceutical companies aren't taking me out to $200 dinners because I'm not treating the patients that they want, but they provide samples and we use them a lot. There's a prescription-in-need program, but it takes 30 days to get those back. You have to fill out the paper work and then wait. Why do that when you can have samples? A student run free clinic on the East Coast had to close because the medical school said no gifts from industry, so they didn't get samples anymore.

The idea about the single pool of money sounds good. I do have one concern, and that's that it would become like NIH. At NIH, the large institutions with great grant writers who have the wherewithal and the means can get the funding, but the small ones can't. The individual doctor may not have a role so I'd have to see the details.

As for the role of the academic health center in CME, I just caution you that in many parts of the country a town and gown problem persists. The community and the academic health center don't always see eye to eye and it may be a real challenge to get them to do so. The few practice-based research networks that are around are working really well, but they're what we call the early adapters. It will be a while before we can change some of those other cultures.

## DISCUSSION HIGHLIGHTS

Doctors need to get rid of the idea that they are launched into practice with everything they need to know. They need to see continuing education as an opportunity to improve the quality of care. How do we bring evidence that matters to the bedside? How do we stop doing what doesn't work and do what does?

Most people think of continuing education as a Holiday Inn experience, where a bunch of doctors look at a screen, nodding occasionally, but continuing medical education is truly every bit of learning from what the patient brings to the office to formal presentations.

Many physicians look at CME courses as something they have to do, not something that will provide benefit.

I hear lots of community physicians say they don't have enough access to information resources. I think this is a real issue that we have to confront. Some of these resources can be provided by medical societies. They can both assess and provide information resources for their members.

A lot of questions in practice are almost impossible to anticipate, so I don't think any one information resource should have a monopoly. We should make the access as broadly based as possible for community practitioners.

Conferences serve useful roles beyond CME. I think they help community physicians in professional development, recharging the batteries, and networking. They definitely shouldn't go away.

How many clinicians in practice have mentors? A major way one learns and is guided is through collegial mentorship. Maybe mentorship ought to be formalized a little more for practicing clinicians because it is one way we learn an awful lot.

A lot of good things have been happening in journals over the past decade to help practitioners — publishing systematic reviews and articles about how to appraise evidence and evaluate diagnostic testing. But the down side is that more and more is being published, which is intimidating. It makes it hard to keep up.

If CE requirements just are add-ons to what clinicians are already doing, it will be very scary. The ideal situation would be that CE and certification and licensure requirements are tied almost completely to the electronic medical record, so that the evidence of acquisition of knowledge and keeping up and quality performance are automatic and just part of the clinician's work.

In my view, the perfect CE experience for practitioners is broken down into thirds. One third comes from examining one's practice and sitting down with the practice team to say, how are we doing and what do we need to do differently. One third is point-of-care learning during the course of patient care. Then, I would reserve a third for course work. I don't mean lectures necessarily, but getting together with peers and colleagues different than my practice team for the infusion of new ideas and skills. This is where I would get my collegial fix and connection to professionalism.

The patient's role in all this is important. We need to figure out some way to measure communication skills and some way to involve patients in that.


DAVID
LEACH

# V.

# Moving Towards the Future

# Continuing Medical Education: Some Important Odds and Ends

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This paper summarizes three important initiatives that have emerged from the medical profession and will affect continuing medical education (CME) in the near future: the National Alliance for Physician Competence, the Trusted Agent, and the Conjoint Committee on CME. These three initiatives, each self-organized and still emerging, have engaged committed people and organizations in conversations in which they seek to clarify the purpose and principles of CME, the assessment of physician competence, and the use of technology in facilitating these goals. Each aims to strengthen the relationship between the profession and society and each member of the profession with the whole. This paper focuses on medicine; however, the need for relevant lifelong learning applies to all health professions. Perhaps these models from medicine will inform the larger effort.

## The National Alliance for Physician Competence

On March 24 and 25, 2005, 45 participants representing 34 organizations met in Fort Worth, Texas to improve medical care in the United States by supporting consistency in the definition and assessment of physician competence.[i] The first meeting was convened by the Federation of State Medical Boards (FSMB), but very quickly the National Alliance became a coalition of organizations with the collective goal of assuring the public of physician competence. At that first meeting the group reviewed historical trends for the past 100 years, projected likely trends that might characterize the future, and created several scenarios. For each of the scenarios the group explored answers to the question: *How would/should the healthcare*

i In addition to the Federation of State Medical Boards the participants included: the Association of American Medical Colleges (AAMC), National Board of Medical Examiners (NBME), Accreditation Council for Continuing Medical Education (ACCME), Accreditation Council for Graduate Medical education (ACGME), American Osteopathic Association (AOA), American Medical Association (AMA), American Board of Internal Medicine (ABIM), Educational Commission for oreign Medical Graduates (ECFMG), American Hospital Association(AHA), the American Academy of Family Physicians (AAFP), Harvard School of Public Health, the Council of Medical Specialty Societies (CMSS), Blue Cross/Blue Shield Association, Physician Insurers Association of America, Harvard Medical International, the Milbank Memorial Fund, Robert Wood Johnson Foundation, five state licensing boards, some certifying boards from the Osteopathic community, some State Medical Societies, and Columbia Law School. Subsequent meetings have attracted the participation of the American Association of Retired People (AARP) and Consumer Union as well.

*community determine and measure physician competence over the career of a physician for the purpose of assuring the public?* The dialogue was enabled and invigorated through exploration of alternative futures and their impact on trust, data availability, changing needs, and other important variables. Together, the group members created five scenarios.[1] The exercise helped participants envision the healthcare environment in which physician competence would be assessed.

A second summit, held in December 2005, produced a draft definition of physician competence, leading to the document that came to be known as *Good Medical Practice–USA*[2] — and a concept of the organizational model for the National Alliance for Physician Competence. During a third summit in June 2006, participants continued to develop the *Good Medical Practice–USA* document, created a basic plan for the Alliance, and proposed concepts for a portfolio tool that physicians could use to provide information about and to reflect on their competence and performance. A fourth summit, held in January 2007, refined the document and developed possible models for assessment of competence. A discovery summit in August 2007 introduced new models of complex adaptive systems, the use of positive deviance, and the use of technology to foster distributed decision making and learning communities. The group also reviewed various not-for-profit organizational models and outlined basic strategies for managing change. Experts joined the group for these topics.

The mission of the National Alliance for Physician Competence is to assure the public and the healthcare community that individual physicians are competent to provide safe medical care of the highest quality. Through partnership and collaboration, the Alliance will 1) advocate continuity in the definition, measurement, and determination of physician competence across the continuum of education, training, and practice; 2) support seamless collaboration among organizations that contribute to physicians' pursuit of lifelong learning and improvement; and 3) seek ways to enable reform of the system of physician self-regulation so that it is efficient and effective.[3]

The *Good Medical Practice–USA* document[2] organizes physician competence around the six general competencies: patient care, medical knowledge and skills, practice-based learning and improvement,

interpersonal and communication skills, professional behavior, and systems-based practice. It clarifies patients' expectations for their doctors and doctors' expectations of themselves.

The Alliance is self-funding, with each organization responding to requests for donations as needed. The Alliance's main product has been the ability to maintain a dialogue about physician competence. The conversations have been substantive, civil, and professional. Participants are held together by common purpose and principles.

The Alliance has also developed a concept paper about a Physician Learning and Continuous Improvement System (PLACIS). The purpose of PLACIS is to support lifelong learning, self-assessment, reflection, and continuous improvement as specified by the principles of the "Good Medical Practice" document and also to support external reporting requirements. PLACIS is used to describe a system that provides a broad range of educational, developmental, and administrative support. If supplied with appropriate data, PLACIS could greatly simplify how physicians respond to the increasing demand for information by various stakeholder groups. Such data could include scores on standardized examinations, certification status, hospital privileges, measures of practice performance, results of self-assessments, and other related data.

**The Trusted Agent**

While not directly related to CME, the "Trusted Agent" concept, a brainchild of Bob Galbraith, M.D., co-head of the National Board of Medical Examiners (NBME) Center for Innovation, may facilitate a more coherent approach to lifelong learning. The concept describes a system in which secure data from multiple sources can be temporarily compiled and displayed for such purposes as licensure, credentialing, and maintenance of certification. The data could, upon request and with the permission of the physician, be obtained from multiple sources ("Trusted Agents"), displayed and viewed, and then, like a sand mandala, all traces are removed. The original data would continue to reside on the Trusted Agents' servers.

This concept is now being tested in three states and among three organizations: the NBME, the FSMB, and the individual state boards. In the test, a physician applying for licensure in one of the three states gives permission, and with such permission, data from the

FSMB's Federation Credentials Verification Service (FCVS) and from the NBME are transmitted in a temporary display to the relevant state for verification of credentials. Verification in the test states (including assembling relevant documents, such as medical school transcripts, residency experiences, and board scores) used to take 6 months; now the process takes 6 minutes from permission to completion.

The concept and the successful pilots have demonstrated the power of temporary data displays to reduce the burden of and enhance accountability to regulatory bodies. The ability to accommodate data about CME remains untested but is a compellingly attractive feature of the system. Most records of CME now reside on paper in the individual physician's files. No national database exists that can link continuing education with a given physician's educational and practice needs. Successful deployment of this system will encourage development of such a database, which in turn, will allow individual physicians to maintain a portfolio of experiences relevant to their needs.

The Accreditation Council for Graduate Medical Education (ACGME) has developed a "learning portfolio" for residents. The learning portfolio, which is currently in alpha testing, is an electronic, Web-based tool that supports resident learning, evaluation, and professional development. The portfolio is centered around the learner, allowing residents to chronicle their learning experiences and to seek feedback on these experiences. It contains preloaded evaluation tools that are competency based, and tools can be created easily from a pool of evaluation items. Residents entering their programs frequently have had experience with learning portfolios in college or even in grade school. To date, they have expressed great enthusiasm for the portfolio as a way to catalog and reflect on their experiences. The residents are using the system as an interactive tool for ongoing physician development. It is not yet clear what will happen when these residents graduate. The data exist and are stored on ACGME servers. The larger community of organizations would probably govern the principles and function of physician portfolios after this test group graduates from residency. In that case ACGME could become a Trusted Agent and at the request of the physician could contribute data about the physician's experiences in residency to larger data displays or could, alternatively, contribute to the development of a learning portfolio for lifelong physician development.

## The Conjoint Committee on Continuing Medical Education

In October 2002, representatives of 16 major stakeholder organizations in CME[ii] began to meet and have since met regularly and voluntarily to explore and propose changes in the existing system of CME.[4] This group, the Conjoint Committee on Continuing Medical Education (CC-CME), drafted a document entitled "Reforming and Repositioning Continuing Medical Education".[5] The document describes perceived inadequacies of the current system of CME, in particular that it has not consistently accommodated diverse learning styles; applied advances in educational research; supported practice performance assessment; and facilitated rapid integration of new knowledge and skill; and that it has relied excessively on commercial support.

The CC-CME has stated that effective CME for physicians should 1) enhance quality care, 2) support professional activities, 3) assess professional educational needs, 4) evoke professionalism, 5) motivate learners, and 6) produce measurable outcomes. The Committee agreed that the six competencies (and a seventh from the American Osteopathic Association) should serve as the framework for CME.

The CC-CME recommended the following changes: reinforcement of the continuum of medical education by all relevant organizations; improved physician self-assessment of the competencies and lifelong learning; development of specialty-specific core curricula for each specialty and subspecialty; evidence-based valid content for all patient care recommendations in educational programs; continuous improvement in the evaluation of CME's effectiveness; metrics to measure and recognize physician learning and behavioral change; and convening a "blue ribbon" panel to propose proper ways of funding CME. The recommendations were assigned to the relevant organizations, and the work has begun.

ii ACCME, ACGME, the Alliance for Continuing Medical Education (ACME), the American Academy of Family Physicians (AAFP), the American Board of Medical Specialties (ABMS), the American Hospital Association (AHA), the American Medical Association (AMA), the American Osteopathic Association (AOA), the Association for Hospital Medical Education (AHME), the Association of American Medical Colleges (AAMC), the Council of Medical Specialty Societies (CMSS), the Federation of State Medical Boards (FSMB), the Joint Commission, the Liaison Committee on Medical Education (LCME), the National Board of Medical Examiners (NBME), and the Society for Academic Continuing Medical Education (SACME). The Journal of Continuing Education in the Health Professions also participates.

A white paper published in 2007 recommended that each specialty society and corresponding certifying board reach consensus on the competencies of the physicians in that specialty using the six competencies as a framework.[4] A continuum from novice to master was also proposed.

**Summary**

These three examples provide evidence that many in organized medicine are thinking about and engaging in significant efforts to reform CME. A common vocabulary about physician competence and its assessment; inclusion of the perspective of patients in the expectations of competence; the opportunities afforded by technology; and further consensus about core expectations by specialty have all been identified as important needs.

All efforts have developed organizational models to accommodate the fragmented house of medicine. ACGME has 44 nominating organizations that select review committee members and participate actively in graduate medical education. The National Alliance for Physician Competence attracts between 35 and 45 organizations at its summits. The Conjoint Committee on Continuing Medical Education convenes representatives from 16 organizations at each meeting. The Trusted Agent fully expressed may involve over 70 state licensing jurisdictions and several more suppliers of data.[5]

Dee Hock[6] would call these organizational models chaordic. They are organized around common purpose and principles rather than by command and control hierarchical structures. Hock would argue that this approach may be a more effective way of coping with complex problems. Chaordic models function at the interface of chaos and order and are designed to enable both fidelity to purpose and intelligent adaptation to particular microenvironments. The reform of CME and lifelong learning for physicians is certainly a complex problem. As specialties and subspecialties adapt to particular needs, a common language, common assessment expectations, and intelligent use of technology can foster coherence as well as accountability. Improving patient care by improving the professional development of health professionals remains the overriding goal.

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## DISCUSSION HIGHLIGHTS

### A Set of Principles

When systems need to be changed, it is good to think of the principles upon which you want to base the new system. Canada followed that approach when the Canada Health Act was developed. Five primary principles were chosen. Several principles have come up in these discussions, but maybe they should be made explicit and listed.

I like the idea of developing foundational principles. One should be simplicity. Others are inter-professional CE and evidence-based CE. Another is practicality.

Some of the principles conference participants have pointed out include minimizing bias, flexibility, burdens aligned with values, integrating CE into practice, stressing innovation and evaluation, addressing needs of practitioners from a broad spectrum—from specialists in academic health centers to solo rural practitioners—and aligning CE with quality improvement and health systems improvements.

### An Institute for Continuing Education

There is need for a national public/private entity to explore, consider, evaluate and experiment, to keep the continuing education agenda on the front burner so it is not scattered among the current

groups around the country. The public should support an organization that would allow us to explore policy and outcomes.

The purpose of a national authority or institute would be to improve patient care and health outcomes through enhancing professional knowledge, skills, practices, teamwork and decision-making. It ought to be independent. It ought to be governed predominantly by the relevant professions, not as representatives of groups but rather as individuals coming together to form this body for this purpose. It should be grounded by the principles we've been articulating about what we want continuing education and life long learning to be in the professions, including the notion that it would stress innovation and evaluation as well as the ideas of flexibility and outreach to accomplish all of the needs from the academic health centers to solo practitioners in the rural community. It should have, perhaps, a way of putting some seal of performance or quality on those entities that met certain standards. It has to obtain its support from government agencies, foundations, or interested professional groups. If it were independent and managed by professionals, and had all these attributes, you could legitimately accept corporate sponsorship in addition to other sources if it were redirected and merged in a non-specific way with no one company supporting any one project.

I see the new entity as an exciting way to push forward the science of continuing education, just as the NIH pushed forward the science of basic science and clinical medicine. In the long run, continuing education isn't going to go far unless we have a better science base. Over and over again in these discussions, we have pointed out the lack of information bases and the lack of rigorous studies of innovations.

I'm looking for an enterprise that will have a capacity to innovate, to experiment, to evaluate, to disseminate, to bring together the kind of forward thinking we've had here in a regular way that could be implemented. A national entity that would be a research entity could explore broader policies and expand the science of education and quality improvement.

A national entity responsible for continuing education should propose and promulgate and investigate standards for continuing education.

### An Umbrella Organization for Accrediting Inter-professional CE

We need an accrediting mechanism that incorporates all of the relevant health professionals so there is an opportunity to reconcile the differences and commonalities involved in the continuing education of healthcare professionals. The ACCME and other accrediting organizations ought to come together or a task force should be formed to do this. We need a timeline to create an accrediting mechanism that represents all the health professionals.

The ANCC and ACPE both have adopted the ACCME's conflict of interest requirements this year, so there is movement to align the accrediting requirements of the three organizations. We should encourage more rapid progress and movement to an approach that makes it easier to provide accredited inter-professional CE.

We ought to get the ACCME and other accrediting organizations to work together, or get a task force to facilitate the discussion, with a timeline, to create an accrediting mechanism that represents all the health professionals and that operates with these principles.

The current accrediting process, with ACCME and the ANCC and the other organizations, can meet the principles and concepts we've outlined, if given a deadline of two years and impetus to make that change.

We ought to be very specific about a timeline. I'd like to go for a two-year timeline that people need to meet and come up with something, and the people who need to meet are the people who see themselves as currently having responsibility for this. One characteristic of being a professional is that we are voluntarily self-regulating and we have established a set of standards by which we accredit and certify ourselves, and in many cases license ourselves in conjunction with a public jurisdiction. We need to hold that mechanism accountable, so there should be a timeline.

# Conference Conclusions and Recommendations

After two and a half days of discussion, participants agreed to the following conclusions and recommendations:

## CONCLUSIONS

### Continuing Education and the Public

The quality of patient care is profoundly affected by the performance of individual health professionals.

The fundamental purposes of continuing health professional education (CE) are:

— To improve the quality of patient care by promoting improved clinical knowledge, skills, and attitudes, and by enhancing practitioner performance.

— To assure the continued competency of clinicians and the effectiveness and safety of patient care.

— To provide accountability to the public.

CE fulfills a critically important, indeed essential, public purpose. Given the accelerating pace of change in clinical information and technology, CE has never been more important.

### Responsibilities of Individual Professionals, Professional Teams, and Health Systems

Maintaining professional competence is a core responsibility of each health professional, regardless of discipline, specialty, or type of practice.

The individual clinician has been the principal unit of accountability for performance in the healthcare delivery system. Given that the performance of health systems also profoundly affects patient care, CE fails to take into account systems of care.

Effective patient care increasingly depends on well-functioning teams of healthcare professionals. Therefore, CE must address the special learning needs of collaborating teams.

Quality improvement efforts and CE activities overlap and ideally are mutually reinforcing.

**CE Methods**

Traditional lecture-based CE has proven to be largely ineffective in changing health professional performance and in improving patient care. Lecture formats are employed excessively relative to their demonstrated value.

Professional conferences play an important role in CE by promoting socialization and collegiality among health professionals. Health professionals have the responsibility to help one another practice the best possible care. Meeting together provides opportunities for cross-disciplinary and cross-generational learning and teaching.

Practice-based learning and improvement is a promising CE approach for improving the quality of patient care. Maintenance of certification programs (in which clinicians review the care they actually deliver in their own practices, compare the results with standards of excellence, and create a plan for improvement) and maintenance of licensure programs are moving CE in this direction. Currently, most CE faculty are insufficiently prepared to teach practice-based learning.

Information technology is essential for practice-based learning by:

— Providing access to information and answers to questions at the time and place of clinical decision-making (point-of-care learning).

— Providing a database of clinician performance at the individual and/or group practice level, which can be compared to best practices and used to make plans for improvement.

— Providing automated reminder systems.

Interactive scenarios and simulations are promising approaches to CE, particularly for skills development, whether the skill is a highly technical procedure, history taking, or a physical examination technique.

Insufficient research is currently directed at improving and evaluating CE. There is no national entity dedicated to advancing the science of

CE as there is for biomedical and clinical research.

**Financing CE**

The majority of financial support for accredited CME, and increasingly for CNE, derives directly or indirectly from commercial entities.

Pharmaceutical and medical device companies and healthcare professionals have inherently conflicting interests in CE. Commercial entities have a legitimate obligation to enhance shareholder value by promoting sales of their products, whereas healthcare professionals have a moral obligation to improve patient/public health without concern for the sale of products.

Commercial support for CE:

— Risks distorting the educational content and invites bias.

— Raises concerns about the vows of health professionals to place patient interest uppermost.

— Endangers professional commitment to evidence-based decision making.

— Validates and reinforces an entitlement mindset among health professionals that CE should be paid for by others.

— Impedes the adoption of more effective modes of learning.

No amount of strengthening of the "firewall" between commercial entities and the content and processes of CE can eliminate the potential for bias.

Academic health centers and other healthcare delivery systems are not sufficiently attentive, either to their roles in planning, providing, and assessing CE or to their responsibilities in managing their own conflicts of interest and those of individual faculty and administrators when paid by commercial interests for CE teaching.

**Accrediting CE**

Current accreditation mechanisms for CE are unnecessarily complex yet insufficiently rigorous. Compared to earlier, formal stages of

health professions education, the CE enterprise is fragmented, poorly regulated, and uncoordinated; as a result, CE is highly variable in quality and poorly aligned with efforts to improve quality and enhance health outcomes.

With the increasing need for inter-professional collaboration, accrediting bodies of the various health professionals need closer working relationships.

## RECOMMENDATIONS

### CE Methods

The CE enterprise should shift as rapidly as possible from excessive reliance on presentation/lecture-based formats to an emphasis on practice-based learning.

New metrics are needed:

— To assess the quality of CE. These metrics should be based on assessment of process improvement and enhanced patient outcomes.

— To identify high-performing healthcare organizations. The possibility of awarding CE credit to individual health professionals who practice in such organizations should be explored.

— To automate credit procedures for point-of-care learning.

Federal and state policymakers should provide financial support for the further development of information technology tools that facilitate practice-based learning and should strongly encourage all clinicians to use these tools.

The responsibility for lifelong learning should be emphasized throughout the early, formal stages of education in all health professions. Students should be taught the attitudes and skills to accomplish CE throughout their professional lifetimes.

A national inter-professional CE Institute should be created to advance the science of CE. The Institute should:

— Promote the discovery and dissemination of more effective methods of educating health professionals over their professional lifetimes and foster the most effective and efficient ways to improve knowledge, skills, attitudes, practice, and teamwork.

— Be independent and composed of individuals from the various health professions.

— Develop and run a research enterprise that encourages increased and improved scientific study of CE.

— Promote and fund evaluation of policies and standards for CE.

— Identify gaps in the content and processes of CE activities.

— Develop mechanisms needed to assess and fund research applications from health professional groups and individuals.

— Stimulate development and evaluation of new approaches to both intra- and inter-professional CE, and determine how best to disseminate those found to be effective and efficient.

— Direct attention to the wide diversity and scope of practices with special CE needs, ranging from highly technical specialties on the one hand to solo and small group practices in remote locations, on the other.

— Acquire financial resources to support its work and provide funding for research. Possible funding sources include the Federal government, foundations, professional groups, and corporations.

A concerted effort is needed to make the concept of a Continuing Education Institute a reality. To achieve this, The Institute of Medicine should convene a group to bring together interested parties to propose detailed steps for developing a Continuing Education Institute.

**CE Financing**

Accredited organizations that provide CE should not accept any commercial support from pharmaceutical or medical device companies, whether such support is provided directly or indirectly through subsidiary agencies. Because many professional organizations and

institutions have become heavily dependent on commercial support for current operations, an abrupt cessation of all such support would impose unacceptable hardship. A five-year "phase out" period should be allowed to meet this recommendation.

The financial resources to support CE should derive entirely from individual health professionals, their employers (including academic health centers, healthcare organizations, and group practices), and/or non-commercial sources.

Faculty of academic health centers should not serve on speakers' bureaus or as paid spokespersons for pharmaceutical or device manufacturers. They should be prohibited from publishing articles, reviews, and editorials that have been ghostwritten by industry employees.

**CE Accreditation and Providers**

Organizations authorized to provide CE should be limited to professional schools with programs accredited by national bodies, not-for-profit professional societies, healthcare organizations accredited by the Joint Commission, multi-disciplinary practice groups, point-of-care resources, and print and electronic professional journals.

Existing accrediting organizations for continuing education for medicine (the Accreditation Council for Continuing Medical Education) and nursing (the American Nurses Credentialing Center) should meet and within two years develop a vision and plan for a single accreditation organization for both nursing and medicine. The new organization should incorporate the guiding principles for CE and the recommendations laid out in this report where relevant. The American Academy of Nursing and the Association of American Medical Colleges should convene the two accrediting bodies for this purpose.

Academic health centers should examine their missions to determine how to strengthen their commitment to CE. They should help their faculty gain expertise in teaching practice-based learning and incorporate information technology, simulations, and interactive scenarios into their CE activities.

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# Biographical Sketches and Statements of Potential Conflicts of Interest of Conference Participants

**Barbara Atkinson, M.D.**, one of the country's 13 women medical school deans, serves simultaneously as Dean of the Medical School and as Executive Vice Chancellor at the University of Kansas Medical Center. In those roles, she oversees the Schools of Medicine and Nursing and Allied Health, with more than 2,700 students and 780 faculty members, and leads the medical school's curriculum change which is designed to ensure that students are learning basic and clinical sciences from faculty members on the leading edge of advancing medical knowledge. She reports no potential conflicts of interest related to continuing education in the health professions.

**Denise Basow, M.D.**, who trained in internal medicine at Johns Hopkins and practiced in Boston, joined UpToDate as Deputy Editor in 1996. Since then she has progressed to the position of Executive Editor, where she supervisors the Deputy Editors, plans new specialties, and provides overall vision for UpToDate. She has been involved with the CME accreditation process at UpToDate and has experience with online CME. She reports a potential conflict of interest related to continuing education in the health professions because UpToDate is a CME provider and she owns UpToDate stock.

**Regina M. Benjamin, M.D., M.B.A.**, is founder and CEO of the Bayou La Batre Rural Health Clinic in Bayou La Batre, Alabama. As a former associate dean at the University of South Alabama College of Medicine, she administered the Alabama-AHEC program and USA Telemedicine Program. She is a past president of the American Medical Association Education and Research Foundation and serves as vice-chair of the AMA Council on Ethical and Judicial Affairs. Other positions include the Council of Graduate Medical Education and the NIH Committee on Minority Health and Health Disparities. Dr. Benjamin reports no potential conflicts of interest related to continuing education in the health professions.

**David Blumenthal, M.D., M.P.P.**, is Director of the Institute for Health Policy at the Massachusetts General Hospital/Partners HealthCare System, Samuel O. Their Professor of Medicine and Professor of Healthcare Policy at Harvard Medical School, and Director of the Harvard University Interfaculty Program for Health Systems Improvement. His research interests include the dissemination of health information technology, quality management in healthcare, and the extent and consequences of academic-industrial relationships in the health sciences. He reports no potential conflict of interest related to continuing education in the health professions.

**James A. Clever, M.D.**, retired in 2005 after 35 years in private practice in general internal medicine in San Francisco. He was elected to a four-year term on the Marin Healthcare District Board of Directors in 2006. His CME continues to include one national and several regional meetings each year, attending 35 to 40 grand rounds, and reading some 200 journal publications. He reports no potential conflicts of interest related to continuing education in the health professions.

**Jordan J. Cohen, M.D.**, currently Professor of Medicine and Public Health at George Washington University, is President Emeritus of the Association of American Medical Colleges. During his tenure at AAMC, Dr. Cohen led Association efforts to strengthen its programs for medical students, residents, and constituents and its data gathering, communications, and advocacy capabilities. He also introduced initiatives to improve medical education, research, and patient care. Dr. Cohen reports no potential conflicts of interest related to continuing education in the health professions.

**Ellen M. Cosgrove, M.D.**, is Senior Associate Dean for Education and is responsible for undergraduate, graduate, and continuing medical education at the University of New Mexico School of Medicine, where she is also a professor of internal medicine. Both the Accreditation Council for Continuing Medical Education and the Alliance for CME, where she has held leadership positions, have honored Dr. Cosgrove for her long-time commitment and service to continuing medical education. She reports a potential conflict of interest related to continuing education in the health professions because UNM is an accredited CME provider.

**Linda Cronenwett, Ph.D., R.N.**, is Dean and Professor of the School of Nursing at the University of North Carolina at Chapel Hill as well as the Associate Chief Nursing Officer for Academic Affairs at the University of North Carolina Hospitals. Her other commitments include: principal investigator for a national initiative on Quality and Safety Education for Nurses funded by the Robert Wood Johnson Foundation; the board of directors of the Institute for Healthcare Improvement, and national advisory committee for Robert Wood Johnson's Transforming Care at the Bedside initiative. Dr. Cronenwett reports a potential conflict of interest related to continuing education in the health professions because UNC is an accredited CE provider.

**David A. Davis, Jr., M.D.**, is Vice President for Continuing Healthcare Education and Improvement at the American Association of Medical Colleges and founding director of the University of Toronto's Knowledge Translation Program at St. Michael's Hospital in Toronto. As the author of numerous articles and editor of two major books on CME, Dr. Davis is widely recognized for his contributions to the

field. These include the application of problem-based learning principles, the use of innovative needs assessment and evaluation techniques, the use of standardized patients, and a systematic, outcomes-based focus on CME. He reports potential conflicts of interest related to continuing education in the health professions because of funding by Merck Canada and occasional speaking and consultancy to medical schools, commercial interests, and specialty societies, with all funds transferred to the CME research fund at the University of Toronto.

**Catherine D. DeAngelis, M.D., M.P.H.**, is Editor-in-Chief of Scientific Publications and Multimedia Applications, and oversees the Journal of the American Medical Association (JAMA) as well as nine Archives publications. She is also Professor of Pediatrics at Johns Hopkins University School of Medicine. She is author and editor of 11 books on pediatrics and medical education and has published more than 200 original articles, chapters, editorials, and abstracts in those fields. Recent works have focused on women in medicine, conflicts of interest in medicine, and on medical education. Dr. DeAngelis reports no conflicts of interest related to continuing education in the health professions.

**Lyn (Lynore) DeSilets, Ed.D., R.N.-B.C.**, is Assistant Dean of the Villanova University College of Nursing, where she has served as Director of Continuing Education in Nursing and Healthcare for 28 years. The program is a nationally accredited provider of CNE by the American Nurses Credentialing Center Commission on Accreditation. She also serves as an appraiser for ANCC's Commission on Accreditation, is a member of the Continuing Education Review Panel for the Pennsylvania State Nurses Association, and is an associate editor for the Journal of Continuing Education in Nursing. Dr. DeSilets reports potential conflicts of interest related to consultancies for the American Public Health Association, the ANCC, and the Pennsylvania State Nurses Association.

**F. Daniel Duffy, M.D.**, is Senior Advisor to the President of the ABIM and Adjunct Professor of Medicine and director of the community health track at the University of Oklahoma College of Medicine-Tulsa, where he heads a program to integrate a safety-net primary care system in the region. At the American Board of Internal Medicine, he introduced a new maintenance of certification process based on evaluation of practice performance. He is a member of the Ambulatory Measures Steering Committee of the National Quality Forum, the Performance Measurement Committee of the National Committee for Quality Assurance, and the Board of Directors of the American Board of Medical Specialties. Dr. Duffy reports potential conflicts of interest related to continuing education in the health professions relating to his work with ABIM.

**Harvey V. Fineberg, M.D., Ph.D.**, is currently President of the Institute of Medicine, a position he assumed in 2001 after serving as Provost of Harvard University from 1997 to 2001 and, for the previous 13 years, as Dean of the Harvard School of Public Health. His academic career focused mainly on the fields of health policy and medical decision making. At IOM, he has chaired and served on a variety of panels dealing with health policy issues, ranging from AIDS to vaccine safety. Dr. Fineberg reports no potential conflicts of interest related to continuing education in the health professions.

**Grant S. Fletcher, M.D., M.P.H.**, is an attending physician in the Consultation and Hospitalist Medicine Program at the University of Washington's Harborview Medical Center in Seattle. He completed his masters in public health at the University of North Carolina-Chapel Hill and helped to start the hospitalist program at a Salt Lake City hospital. His research interests include developing and assessing clinical decision support tools with the electronic medical record, and clinical research on hospital care. Dr, Fletcher reports no potential conflicts of interest related to continuing education in the health professions.

**Suzanne W. Fletcher, M.D., M.Sc.**, is Professor Emerita of Ambulatory Care and Prevention at Harvard Medical School, Adjunct Professor of Epidemiology at the University of North Carolina School of Public Health, and Adjunct Professor at the UNC School of Medicine. At Harvard, Dr. Fletcher served as director of the CME course for primary care clinicians given at PRI-MED. The course was held each year in five cities, with total attendance of more than 200,000. She also serves as co-editor of primary care for the electronic text, UpToDate, on the International Advisory Board for The Lancet, and as associate editor of the Journal of the National Cancer Institute. She was founding co-editor of the Journal of General Internal Medicine, has served as co-editor of the Annals of Internal Medicine and, in 1995, organized the conference that led to the formation of the World Association of Medical Editors. She chaired the committee that developed the first MOC module at the American Board of Internal Medicine. Dr. Fletcher reports potential conflicts of interest related to continuing education in the health professions because Harvard Medical School and Harvard Pilgrim Healthcare are accredited CME providers, and because of honoraria from the American Board of Internal Medicine, Susan G. Komen Foundation, Research Triangle International, Josiah Macy, Jr. Foundation, The Lancet, and several medical schools for visiting professorships. She receives royalties from Lippincott Williams & Wilkens, Wolters Kluwer, and UpToDate.

**Melvin I. Freeman, M.D**., is Emeritus Director of Continuing Medical Education at the Virginia Mason Medical Center in Seattle, where he currently is a research scientist in ophthalmology. Previously in private group practice, he was head of ophthalmology at Virginia Mason Clinic and Medical Center and is Emeritus Clinical Professor of Ophthalmology at the University of Washington School of Medicine. He is Vice Chair of the Washington State Medical Association's Continuing Medical Education Committee, a surveyor for the Accreditation Council for Continuing Medical Education, and for the American College of Surgeons Program for Accreditation of Educational Institutes and past president of the Alliance for Continuing Medical Education. Dr. Freeman reports potential conflicts of interest relating to continuing education in the health professions due to honoraria from ACCME and the American College of Surgeons, and royalties from Elsevier/Mosby Publishers and Slack, Inc.

**Michael Green, M.D., M.Sc.**, is Associate Professor of Medicine and Associate Director of the Primary Care Residency Program at Yale University School of Medicine. His interests include curriculum development, evaluation of clinical competence, evidence-based practice, and lifelong self-directed learning in medicine. He has developed an Internet-based "Point of Care Clinical Question" module and is collaborating on research with ABIM to define the characteristics of physicians' information needs and information seeking behavior, and the association of self-directed learning with self-directed learning "readiness" evaluation instruments. Dr. Green reports potential conflicts of interest related to continuing education in the health professions because of his employment, and his funding as a Kimball Scholar at the American Board of Internal Medicine.

**Carol Havens, M.D.**, is Director of Clinical Education for Northern California Kaiser-Permanente and a practicing physician in addiction medicine. At Kaiser-Permanente, she has been involved in CME for 22 years and has served as regional director of clinical education for the past 14 years. She is chair of the California Medical Association CME Committee, a member of the Accreditation Review Committee for the ACCME, and a member of the CME committees for the Permanente Federation and Audio-Digest. She has been involved in a variety of educational interventions, including live programs, video conferences, and academic detailing training and evaluation. Dr. Havens reports potential conflicts of interest related to continuing education in the health professions due to employment with the Permanente Medical Group, honoraria from the California Academy of Family Physicians and CMA's Institution for Medical Quality, and royalties from Wolters-Kluwer.

**Paul C. Hébert, M.D., M.H.Sc**., is Editor-in Chief of the Canadian Medical Association Journal, a critical care physician at The Ottawa Hospital, and clinical researcher at the Ottawa Health Research Institute. He is also professor in the department of medicine with cross appointments in the departments of anesthesiology, surgery, epidemiology, and community medicine. Dr. Hébert's research has focused on transfusion practice, including alternatives to transfusion, blood conservation, and resuscitation fluids. His groundbreaking trial on critical care transfusion requirements, published in the New England Journal of Medicine, changed the way clinicians throughout the world approach transfusion. Dr. Hébert reports no potential conflict of interest related to continuing education in the health professions.

**Maryjoan D. Ladden, Ph.D., R.N.**, Assistant Professor in Ambulatory Care and Prevention at the Harvard Medical School, is a pioneer in developing inter-professional education and practice models to improve the quality and safety of healthcare, and to enhance collaboration between nurses and physicians. She is a course director of Current Clinical Issues in Primary Care, PRI-MED, which is the largest inter-professional primary care continuing education program in the world. Dr. Ladden reports potential conflicts of interest related to continuing education in the health professions due to her work with MJ Ladden & Associates, a consulting firm, honoraria as co-director for Current Clinical Issues in Primary Care and the National Medical Advisory Board Take Care Health System, and royalties from UpToDate.

**David C. Leach, M.D.**, Immediate Past Executive Director of the Accreditation Council for Graduate Medical Education, has focused on how physicians acquire competence and become practitioners of the art, science, and craft of medicine. Grants from the Robert Wood Johnson Foundation and the Pew Charitable Trusts supported his work to develop innovative curricula for both medical students and residents. His current interests include the teaching of improvement skills, aligning accreditation with emerging healthcare practices, and the use of educational outcome measures as an accreditation tool. Dr. Leach reports no potential conflicts of interest related to continuing education in the health professions.

**Donald A.B. Lindberg, M.D**., has been director of the National Library of Medicine, the world's largest biomedical library, since 1984. Prior to his NLM appointment, he was Professor of Information Science and Professor of Pathology at the University of Missouri-Columbia. His work has enhanced the role of information and computer technology in medical diagnosis, artificial intelligence, and education programs. He was the first President of the American Medical Informatics Association and serves on numerous boards, including the Computer Science and Engineering Board of the National Academy of Sciences, the National Board of Medical Examiners, and the Council of the Institute of Medicine. He has written three books on the use of

computers and medical information systems and more than 200 articles and reports. Dr. Lindberg reports no potential conflicts of interest related to continuing education in the health professions.

**Phil R. Manning, M.D.**, Paul Ingalls Hoagland Hastings Professor of Continuing Medical Education and Professor of Medicine Emeritus at the Keck School of Medicine, University of Southern California, is founding president of the Society of Medical College Directors for Continuing Medical Education. He has been a governor, regent, and vice president of the American College of Physicians and serves on several educational committees of the American College of Cardiology. He is also co-editor of Medicine: Preserving the Passion in the 21st Century and author of 46 peer-reviewed publications. Dr. Manning reports potential conflicts of interest related to continuing education in the health professions because of honoraria from the National Library of Medicine.

**Paul Mazmanian, Ph.D.**, serves as Associate Dean for Continuing Professional Development and Evaluation Studies at the Virginia Commonwealth University School of Medicine, where he is also a professor in the Department of Family Medicine with a joint faculty appointment in the Department of Epidemiology and Community Health. His research interests include learning and change in physician performance. For the past eight years, he has been Editor of the Journal of Continuing Education in the Health Professions and also has served on study sections or as a consultant to the Agency for Healthcare Research and Quality, the National Cancer Institute, The National Heart, Lung, and Blood Institute, and the Institute of Medicine. Dr. Mazmanian reports no potential conflicts of interest related to continuing education in the health professions.

**Pamela H. Mitchell, Ph.D., M.S.**, holds numerous positions at the University of Washington, where she is Associate Dean for Research, Professor of Biobehavioral Nursing and Health Systems, and the Elizabeth S. Soule Distinguished Professor of Health Promotion at the School of Nursing, and is Adjunct Professor of Health Services at the School of Public Health and Community Medicine. She also is founding director of the Center for Health Sciences Inter-professional Education and Research, past chair of the American Academy of Nursing's expert panel on quality care, and president-elect of the American Academy of Nursing. Dr. Mitchell reports potential conflicts of interest related to continuing education in the health professions because of her employment (a self-supporting unit of the School of Nursing that provides CNE) and honoraria for numerous speaking engagements for non-commercial conferences and symposia that provide CE credit, including the Washington State University Research Symposium, Washington State Nurses' Association, and the Association for Prevention Teaching and Research.

**Donald E. Moore, Jr., Ph.D.**, directs the Division of Continuing Medical Education at the Vanderbilt University School of Medicine, where he is also Professor of Medical Education and Administration. For more than 25 years, Dr. Moore has held positions in medical schools, hospitals, and the government, where he helped to develop and coordinate continuing medical education for physicians and hospital staff, worked on faculty development, managed an educational technology center, and established a diabetes care education and research program. His research interests include practice-based CME, evidence-based medicine, the role of CME in physician change, and the impact of CME on healthcare outcomes. Dr. Moore reports potential conflicts of interest related to continuing education in the health professions due to his employment, research funding from Wyeth Pharmaceuticals, and consultancies with Wyeth, Rockpointe Communications, The Chatham Institute, Fortis-Spectrum Communications, the Pennsylvania Consortium for Academic CME, and Yale University School of Medicine.

**June E. Osborn, M.D.**, served as the President of the Josiah Macy, Jr. Foundation from 1996 until she retired at the end of 2007. Trained in pediatrics as well as virology and infectious diseases, she previously served as Associate Dean of the Graduate School for Biological Sciences at the University of Wisconsin-Madison and as Dean of the School of Public Health at the University of Michigan. She has served in many advisory roles for federal health agencies, private foundations, and the World Health Organization, particularly on issues relating to virology, vaccines, infectious diseases, and public health. She chaired the National Commission on AIDS from 1989-1993 and was a member of WHO's Global Commission on AIDS. Dr. Osborn reports no potential conflicts of interest related to continuing education in the health professions.

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Editors: Mary Hager, Sue Russell, and Suzanne W. Fletcher, M.D., M.Sc.
Design & production: David Klaboe, Klaboe Design, NYC
Conference photos: Ernest McCreight, Bermuda
Cover photos in montage from Corbis, Getty Images, Masterfile, and iPhoto
Printed in USA by Cinnamon Graphics, Inc., New York

*The Josiah Macy, Jr. Foundation is a private philanthropy dedicated to improving the health of individuals and the public. Since its establishment in 1930, the Foundation has focused its support principally on projects and conferences designed to enhance the education of health professionals, especially physicians.*

ISBN 0-914362-49-6