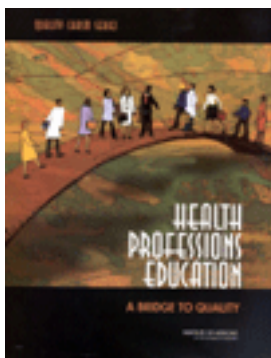


Health Professions Education: A Bridge to Quality



Ann C. Greiner, Elisa Knebel, Editors, Committee on the Health Professions Education Summit

ISBN: 0-309-51678-1, 192 pages, 8 1/2 x 11, (2003)

This PDF is available from the National Academies Press at:
<http://www.nap.edu/catalog/10681.html>

Visit the [National Academies Press](http://www.nap.edu) online, the authoritative source for all books from the [National Academy of Sciences](http://www.nap.edu), the [National Academy of Engineering](http://www.nap.edu), the [Institute of Medicine](http://www.nap.edu), and the [National Research Council](http://www.nap.edu):

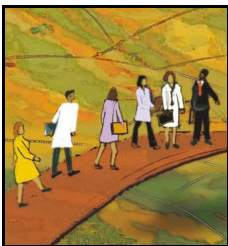
- Download hundreds of free books in PDF
- Read thousands of books online for free
- Explore our innovative research tools – try the “[Research Dashboard](#)” now!
- [Sign up](#) to be notified when new books are published
- Purchase printed books and selected PDF files

Thank you for downloading this PDF. If you have comments, questions or just want more information about the books published by the National Academies Press, you may contact our customer service department toll-free at 888-624-8373, [visit us online](#), or send an email to feedback@nap.edu.

This book plus thousands more are available at <http://www.nap.edu>.

Copyright © National Academy of Sciences. All rights reserved.

Unless otherwise indicated, all materials in this PDF File are copyrighted by the National Academy of Sciences. Distribution, posting, or copying is strictly prohibited without written permission of the National Academies Press. [Request reprint permission for this book](#).



Executive Summary

ABSTRACT

The 2001 Institute of Medicine report *Crossing the Quality Chasm: A New Health System for the 21st Century* recommended that an interdisciplinary summit be held to develop next steps for reform of health professions education in order to enhance patient care quality and safety. In June 2002, the IOM convened this summit, which included 150 participants across disciplines and occupations. This follow-up report focuses on integrating a core set of competencies—patient-centered care, interdisciplinary teams, evidence-based practice, quality improvement and informatics—into health professions education.

The report's recommendations include a mix of approaches related to oversight processes, the training environment, research, public reporting, and leadership. The recommendations targeting oversight organizations include integrating core competencies into accreditation, and credentialing processes across the professions. The goal is an outcome-based education system that better prepares clinicians to meet both the needs of patients and the requirements of a changing health system.

Education for the health professions is in need of a major overhaul. Clinical education simply has not kept pace with or been responsive enough to shifting patient demographics and desires, changing health system expectations, evolving practice requirements and staffing arrangements, new information, a focus on improving quality, or new technologies (Institute of Medicine, 2001):

HEALTH PROFESSIONS EDUCATION

- Health professionals are not adequately prepared—in either academic or continuing education venues—to address shifts in the nation’s patient population (Cantillon and Jones, 1999; Council on Graduate Medical Education, 1999; Davis et al., 1999; Grantmakers in Health, 2001; Halpern et al., 2001; Health Resources and Services Administration, 1999; Pew Health Professions Commission, 1995). Patients in America are becoming more diverse, are aging, and are increasingly afflicted by one or more chronic illnesses, while at the same time being more likely to seek out health information (Calabretta, 2002; Frosch and Kaplan, 1999; Gerteis et al., 1993; Mansell et al., 2000; Mazur and Hickam, 1997; Wu and Green, 2000). This changing landscape requires that clinicians be skilled in responding to varying patient expectations and values; provide ongoing patient management; deliver and coordinate care across teams, settings, and time frames; and support patients’ endeavors to change behavior and lifestyle—training for which is in short supply in today’s clinical education settings (Calabretta, 2002).
- Once in practice, health professionals are asked to work in interdisciplinary teams, often to support those with chronic conditions, yet they are not educated together or trained in team-based skills.
- These same clinicians are confronted with a rapidly expanding evidence base—upon which health care decisions should ideally be made—but are not consistently schooled in how to search and evaluate this evidence base and apply it to practice (American Association of Medical Colleges, 1999; Detmer, 1997; Green, 2000; Shell, 2001).
- Although there is a spotlight on the serious mismatch between what we know to be good quality care and the care that is actually delivered, students and health professionals have few opportunities to avail themselves of coursework and other educational interventions that would aid them in analyzing the root causes of errors and other

quality problems and in designing systemwide fixes (Baker et al., 1998; Buerhaus and Norman, 2001).

- While clinicians are trained to use an array of cutting-edge technologies related to care delivery, they often are not provided a basic foundation in informatics (Gorman et al., 2000; Hovenga, 2000). Training in this area would, for example, enable clinicians to easily access the latest literature on a baffling illness faced by one of their patients or to use computerized order entry systems that automatically flag pharmaceutical contraindications and errors.

While there are notable pockets of innovation—settings in which clinicians are being trained for a 21st-century health care system—these are by and large exceptions to the rule.

Building a Bridge to Cross the Quality Chasm

Numerous recent studies have led to the conclusion that “the burden of harm conveyed by the collective impact of all of our health care quality problems is staggering” (Chassin et al., 1998:1005). Errors lead to tens of thousands of Americans dying each year, and hundreds of thousands suffering or becoming sick as a result of nonfatal injuries. Other studies have documented pervasive overuse, misuse, and underuse of services (Chassin et al., 1998; Institute of Medicine, 2000; President’s Advisory Commission on Consumer Protection and Quality in the Health Care Industry, 1998a; Schuster et al., 1998).

Crossing the Quality Chasm: A New Health System for the 21st Century (Institute of Medicine, 2001) emphasizes that safety and quality problems exist largely because of system problems, and that browbeating health professionals to just try harder is not the answer to addressing the system’s flaws and future challenges. Quality problems are occurring in the hands of health professionals highly dedicated to doing a good job, but working within a system that does not adequately

prepare them, or support them once they are in practice, to achieve the best for their patients.

The *Quality Chasm* report concludes that reform around the edges will not solve the quality problem, and sets forth an ambitious agenda for redesign of the broken health care system to achieve six national quality aims: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. Implementing such an agenda has important implications for current and future health professionals. The *Quality Chasm* report provides initial guidance on what kinds of competencies clinicians would need to carry out this agenda, and emphasizes further study to better understand how the workforce should be educated for practice, how it should be deployed, and how it should be held accountable.

Health Professions Education Summit

The *Quality Chasm* report recommends that a multidisciplinary summit of leaders within the health professions be held to discuss and develop strategies for restructuring clinical education across the full continuum of education. The Committee on the Health Professions Education Summit was convened to plan and hold this summit—which was held on June 17–18, 2002—and to produce this follow-up report.

The committee organized a multidisciplinary summit involving allied health, nursing, medical, and pharmacological educators and students; health professional and industry association representatives; regulators and representatives of certifying organizations; providers; consumers; innovators in education and practice settings; and influential policy makers. Participants were asked to develop proposed strategies and actions for addressing the five competency areas recommended by the committee (described below) in health professions education: patient-centered care, interdisciplinary teams, evidence-based practice, quality improvement, and informatics.

Summit participants worked in small interdisciplinary groups using the Hoshin method (Counsell et al., 1999; Hyde and Vermillion, 1996; Platt and Laird, 1995), a structured facilitation process for gathering expert opinion and identifying, prioritizing, and implementing strategies. The ideas generated at the summit are included in this report in Appendix B. The committee conducted a literature review related to the core competencies and various recommendations that were considered. The committee also reviewed the over 200 ideas proposed by summit participants as part of its deliberations.

A New Vision for Health Professions Education

With the ideal 21st-century health care system described in the *Quality Chasm* report as a backdrop, the committee developed a new vision for clinical education in the health professions that is centered on a commitment to, first and foremost, meeting patients' needs. The committee believes that the following should serve as an overarching vision for all programs and institutions engaged in the clinical education of health professionals, and further that such organizations should develop operating principals that will allow this vision to be achieved.

All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.

The committee's vision is apparent in selected institutions—both academic and practice settings—around the country, but is not incorporated into the basic fabric of health professions education, nor is it supported by oversight processes or financing arrangements. Accordingly, the committee proposes a set of five core competencies that all clinicians should possess, regardless of their discipline, to meet the needs of the 21st-century health system. Competencies are defined here as the habitual and judicious use of communication,

HEALTH PROFESSIONS EDUCATION

knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice (Hundert et al., 1996).

- **Provide patient-centered care**—identify, respect, and care about patients' differences, values, preferences, and expressed needs; relieve pain and suffering; coordinate continuous care; listen to, clearly inform, communicate with, and educate patients; share decision making and management; and continuously advocate disease prevention, wellness, and promotion of healthy lifestyles, including a focus on population health.
- **Work in interdisciplinary teams**—cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable.
- **Employ evidence-based practice**—integrate best research with clinical expertise and patient values for optimum care, and participate in learning and research activities to the extent feasible.
- **Apply quality improvement**—identify errors and hazards in care; understand and implement basic safety design principles, such as standardization and simplification; continually understand and measure quality of care in terms of structure, process, and outcomes in relation to patient and community needs; and design and test interventions to change processes and systems of care, with the objective of improving quality.
- **Utilize informatics**—communicate, manage knowledge, mitigate error, and support decision making using information technology.

Many efforts have arisen in response to the need to prepare clinicians for a changing practice environment (ABIM Foundation, 2002; Accreditation Council for Graduate Medical Education, 1999; American Association of Medical Colleges, 2001; Brady et al., 2001; Center for the Advancement of Pharmaceutical Education [CAPE] Advisory Panel on

Educational Outcomes, 1998; Halpern et al., 2001; O'Neil and the Pew Health Professions Commission, 1998). To formulate the above core competencies, the committee examined the skills outlined in the *Quality Chasm* report, reviewed other efforts to define core competencies within and across the health professions, and reviewed the relevant literature.

The five competencies are meant to be core, but should not be viewed as an exhaustive list. The committee recognizes that there are many other competencies that health professionals should possess, such as a commitment to lifelong learning, but believes those listed above are the most relevant across the clinical disciplines; advance the vision in the *Quality Chasm* report; and overlap with recent, existing efforts to define competencies (Accreditation Council for Graduate Medical Education, 1999; Accreditation Council on Pharmaceutical Education, 2000). The committee also acknowledges that the core competencies will differ in application across the disciplines.

Next Steps

With some notable exceptions (O'Neil and the Pew Health Professions Commission, 1998; Pew Health Professions Commission, 1995), most current and past reform efforts have focused within a particular profession (Bellack and O'Neil, 2000; Christakis, 1995; Harmening, 1999; Jablonover et al., 2000). The committee believes the time has come for leaders across the professions to work together on the cross-cutting changes that must occur to effect reform in clinical education and related training environments, and that they should carefully consider the cultural changes necessary to support such reform efforts.

The committee believes that integrating a core set of competencies—one that is shared across the professions—into the health professions oversight spectrum would provide the most leverage in terms of reform of health professions education. A recent article synthesizing nine major reports on physician

competencies, focused on the important role oversight organizations can play, concluded that “without data about medical-education quality, accreditation is the most potent lever for curricula reform in our decentralized medical education system” (Halpern et al., 2001). Many participants at the IOM summit concurred with this conclusion. The two levers for change most often cited by the 150 participants were oversight approaches and changes to financing.

The committee also recommends pursuing other leverage points—such as the use of report cards that incorporate education-related measures and innovations in financial incentives—but the preponderance of its recommendations are directed at oversight organizations. This is the case in part because of the lack of education measures and the charge to this committee, which is focused on clinical education.¹ Also, health professions oversight processes, such as accreditation and certification, function at the national level, thereby affording a leverage point for systemwide change. The committee believes that such an approach will stimulate efforts on the part of educational institutions and professional associations.

The committee would like to highlight its definition of “oversight processes” and underscore that it includes the efforts of both private – and public – sector organizations:

Oversight processes include accreditation, certification, and licensure. Educational accreditation serves as a leverage point for the inclusion of particular educational content in a curriculum. Licensure assesses that a student has understood and mastered formal curricula. Certification seeks to ensure that a practitioner maintains competence in a given area over time. Organizational accreditation also may influence practitioners’ ongoing competency.

The call for accrediting and certifying organizations to move toward a competency-

based approach to education is in response to growing concerns about patient safety (Institute of Medicine, 2000), the persistent and substantial variation in patient care across geographic settings that does not relate to patient characteristics (O'Connor et al., 1996; Wennberg, 1998), and the related desire on the part of public payers and consumers for increased accountability (Leach, 2002; Lenburg et al., 1999). Competency-based education focuses on making the learning outcomes for courses explicit and on evaluating how well students have mastered these outcomes or competencies (Harden, 2002). The evidence base on the efficacy of various educational approaches is slim. However, the limited evidence that does exist points to improvements, such as better performance on licensing exams, associated with the use of competency- or outcome-based educational approaches (Carraccio et al., 2002).

A competency-based approach to education could result in better quality because educators would begin to have information on outcomes, which could ultimately lead to better patient care. Defining a core set of competencies across educational oversight processes could also reduce costs as a result of better communication and coordination, with processes being streamlined and redundancies reduced. Integrating core competencies into oversight processes would likely provide the impetus for faculty development, curricular reform, and leadership activities.

Common Language and Adoption of Core Competencies

Before steps can be taken to integrate a core set of competencies into oversight processes, an interdisciplinary group that includes leaders from the professions, educational institutions, and oversight organizations will need to define common terms. A number of studies have shown that any collective movement to reform education must begin by defining a shared

¹ A current Institute of Medicine study addressing academic health centers is considering financing questions.

HEALTH PROFESSIONS EDUCATION

language (Halpern et al., 2001; Harden, 2002). Such an effort can help set in motion a process focused on achieving a threshold level of consensus across the disciplines around a core set of competencies.

The lack of consensus across the professions around language and terms related to the core competencies may be undermining their integration into oversight processes. For example, with respect to evidence-based practice, leaders in the field have worked to expand the definition of evidence so it includes qualitative research and to dispel the myth that such practice ignores clinical experience and expertise (Guyatt, 1992). Despite these efforts, a review of the literature suggests that misconceptions regarding the definition of evidence persist (Ingersoll, 2000; Marwick, 2000; Mazurek, 2002; Mitchell, 1999; Satya-Murti, 2000; Woolf, 2000). A review of the literature related to teaching interdisciplinary team skills reveals differing terminologies as an obstacle: faculty struggle to understand other professions' core concepts and content, which leads to conflict when they teach interdisciplinary courses (Lavin et al., 2001; Pomeroy and Philp, 1994). The committee believes that an interdisciplinary group, created under the auspices of the Department of Health and Human Services (DHHS), should be charged with developing a common language across the health disciplines and achieving consensus around a core set of competencies.

Recommendation 1: DHHS and leading foundations should support an interdisciplinary effort focused on developing a common language, with the ultimate aim of achieving consensus across the health professions on a core set of competencies that includes patient-centered care, interdisciplinary teams, evidence-based practice, quality improvement, and informatics.

Integrating competencies into oversight processes

The extent of integration of competencies into existing oversight processes varies. Any effort at further integration would be strengthened if predicated on a core set of competencies—competencies with universal definitions shared across the professions. The committee recognizes that these competencies are by no means exhaustive, but represent an important core of what health professionals need to know to practice in a 21st-century health system.

During the last decade, competencies have begun to redefine accreditation, particularly in pharmacy and medicine. The competencies that these disciplines have defined overlap with the core competencies recommended by the committee. In 1997, the American Council on Pharmaceutical Education (ACPE) adopted accreditation standards focused on 18 professional competencies (American Council on Pharmaceutical Education, 2002). In 1999, the Accreditation Council for Graduate Medical Education (ACGME) and the organization of certifying boards, the American Board of Medical Specialties (ABMS), endorsed six general competencies as the foundation for all graduate medical education, and these competencies are currently being phased in (Accreditation Council for Graduate Medical Education, 2002). Until they are fully incorporated and evaluated, it remains to be seen what effect these competencies will have on pharmacological and medical education. In nursing, the two accrediting organizations also have defined competencies—which do not fully overlap with the core competencies defined here—but differ in whether they require demonstration of such competencies (Commission on Collegiate Nursing Education, 2002; National League for Nursing Accrediting Commission, 2002). Finally, the curricula for the selected allied health professions examined in this report vary in the extent to which they incorporate the five competencies outlined above (Collier, 2002).

The competency movement, however, does

not have as much of a foothold in licensure and certification processes. Requirements for maintaining a license vary considerably, as do requirements for those who pursue recognition of clinical excellence. Further, research has raised questions about the efficacy of continuing education courses, the most common way to demonstrate ongoing competency (Cantillon and Jones, 1999; Davis et al., 1999).

Efforts to incorporate a core set of competencies across the professions into the full oversight framework—accreditation, licensing, and certification—would need to occur on the national, state, and local levels; coordinate both public- and private-sector oversight organizations; and solicit broad input. Again, the involvement of DHHS, and specifically the Health Resources and Services Administration, would be important in getting this effort off the ground, in helping to establish a process for soliciting input from professional associations and the education community, and in identifying linkages and synergies across the various oversight groups within and across professions.

It is imperative to have such linkages among accreditation, certification, and licensure; it would mean very little, for example, if accreditation standards set requirements for educational programs, and these requirements were not then reinforced through testing on the licensing exam. All processes must be linked so they are focused on the same outcome—the ability of professionals to provide the highest quality of care.

Recommendation 2: DHHS should provide a forum and support for a series of meetings involving the spectrum of oversight organizations across and within the disciplines. Participants in these meetings would be charged with developing strategies for incorporating a core set of competencies into oversight activities, based on definitions shared across the professions. These meetings would actively solicit the input of health

professions associations and the education community.

Strategies for incorporating the competencies into oversight processes would necessarily differ across the oversight framework based on history, regulatory approach, and structure. In all cases, the oversight bodies should proceed with deliberation, with efforts made to solicit comments on draft language, and initial testing of new requirements, such as through the use of provisional standards. Processes should also be established to monitor and evaluate new requirements to ensure that they are useful and not overly burdensome.

The experiences of ACPE and ACGME provide some guidance on how accrediting bodies could incorporate competencies into their processes. Both ACPE and ACGME undertook an intensive, decade-long process of rethinking how they were preparing professionals for practice. They concluded that fundamental change was necessary, and that they needed to move away from approaches that had become increasingly precise, prescriptive, and burdensome (Byrd, 2002; Batalden et al., 2002, Leach, 2002).

What has not yet occurred is coordination across accrediting bodies of the various professions in defining a core set of competencies and related standards and measures. Such coordination would obviate the need for each accrediting body to reinvent the wheel, promote synergies, and enable better communication and working relationships, as well as more consistent integration of the core competencies across schools. This sort of coordinated effort would also help ensure that educational innovators would not be stifled by outdated accreditation requirements. Organizational accreditors—such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the National Committee for Quality Assurance (NCQA)—should likewise consider more fully how clinicians maintain competency in the core set of competencies outlined above.

HEALTH PROFESSIONS EDUCATION

Recommendation 3: Building upon previous efforts, accreditation bodies should move forward expeditiously to revise their standards so that programs are required to demonstrate—through process and outcome measures—that they educate students in both academic and continuing education programs in how to deliver patient care using a core set of competencies. In so doing, these bodies should coordinate their efforts.

With the exception of patient-centered care, which is consistently included in examinations across the professions, licensing exams for health professionals vary considerably in whether they test for competency in the core areas (National Association of Boards of Pharmacy, 2002; National Council of State Boards of Nursing, 2001; United States Medical Licensing Exam, 2002). This situation also needs to be addressed and could be the focus of a subset of the oversight organizations described in recommendation 2.

In addition, geographic restrictions on licensure and separate and sometimes conflicting scope-of-practice acts need to be examined to determine whether they are a serious barrier to the full integration of the core competencies into practice, and if so, how to modify them so that all clinicians can practice to the fullest extent of their technical training and ability. Although beyond the scope of this report, the committee believes that this matter deserves further examination because licensure and scope of practice influence how clinicians are deployed, which in turn affects decisions about education. For example, licensure restrictions might hamper a rural hospital's ability to consult a specialist because she happened to be located in another state and licensed to practice only there (Phillips et al., 2002). Similarly, scope-of-practice restrictions in one state might prohibit a nurse practitioner who was part of an interdisciplinary diabetes care management team from prescribing medications, while another state might allow

such activity—even though both practitioners worked for the same national health plan (Phillips et al., 2002). These restrictions make less and less sense as health care organizations and health professionals cross state lines.

Finally, the committee believes that there should be a focused effort to integrate a core set of competencies into oversight processes focused on practicing clinicians. Such an effort would require coordination among an array of public- and private-sector licensing and certification organizations, within which there is currently little uniformity in approach across the professions or within a given profession across the states. At present, many boards require only a fee for license renewal (Swankin, 2002b; Yoder-Wise, 2002), and many others view continuing education courses as evidence of competence, even though, as noted above, this has not been shown to be a reliable measure of such ability (Davis et al., 2000; O'Brien et al., 2001).

To begin with, state legislatures would need to require state licensing boards to insist that their licensees demonstrate competence, not just pay a license renewal fee, to maintain their authority to practice. To date, state legislators have not insisted upon such a requirement, in part because there is disagreement about what constitutes evidence of competency, how often it should be demonstrated, and who should judge. Licensing boards also would need to consider clinician competency at varying career stages. For example, a veteran intensive care nurse or physician subspecialist should be expected to have a higher level of competence than a new graduate in either profession.

The committee believes that all health professions boards need to require demonstration of continued competency, and that they should move toward adopting rigorous tests for this purpose. Beyond licensure examinations, there is evidence to suggest that structured direct observation using standardized patients, peer assessments, and case- and essay-based questions are reliable ways to assess competency (Epstein and Hundert, 2002; Murray et al., 2000).

Recommendation 4: All health professions boards should move toward requiring licensed health professionals to demonstrate periodically their ability to deliver patient care—as defined by the five competencies identified by the committee—through direct measures of technical competence, patient assessment, evaluation of patient outcomes, and other evidence-based assessment methods. These boards should simultaneously evaluate the different assessment methods.

There is more uniformity among certifying organizations as compared with professional boards, in that nearly all require some means of demonstrating continuing competence. The vast majority allow for two or more approaches, and many also consider competency at various career stages. Moreover, in response to the paucity of evidence that taking continuing education courses improves practice outcomes, some certifying organizations are beginning to emphasize alternative measures that are more evidence based (American Board of Medical Specialties, 2000; American Nurses Association/NursingWorld.Org, 2001; Bashook et al., 2000; Board of Pharmaceutical Specialties, 2002; Federation of State Medical Boards, 2002; Finocchio et al., 1998; National Council of State Boards of Nursing, 1997-2000; Swankin, 2002a). Although such efforts are challenging to implement and often costly, certification bodies should only recognize continuing education courses as a valid method of maintaining competence if there is an evidence-based assessment of such courses; if clinicians select courses based on an assessment of their individual skills and knowledge; and if clinicians then demonstrate, through testing or other methods, that they have learned the course content.

The committee recognizes that there is a monetary and human resource cost to moving to evidence-based assessment, whether it is related to licensure or certification. Consequently, such assessments may need to be phased in, or less

costly assessment methods identified. The committee also recognizes that increased investment in computer-based clinical records would provide the kind of rich clinical data necessary to fully realize this approach.

Recommendation 5: Certification bodies should require their certificate holders to maintain their competence throughout the course of their careers by periodically demonstrating their ability to deliver patient care that reflects the five competencies, among other requirements.

Training Environments

Education does not occur in a vacuum; indeed, much of what is learned lies outside of formal academic coursework. A “hidden curriculum” of observed behavior, interactions, and the overall norms and culture of a student’s training environments are extremely powerful in shaping the values and attitudes of future health professionals. Often, this hidden curriculum contradicts what is taught in the classroom (Ferrill et al., 1999; Hafferty, 1998; Maudsley, 2001).

Consequently, the committee believes that initial support should be provided for existing exemplary practice organizations that partner with educational institutions, and are already providing the interdisciplinary education and training necessary for staff to consistently deliver care that incorporates the core competencies. Further, the committee believes that these leading organizations should be identified as training models for other organizations, and should be given the resources necessary to open their doors to students, clinicians, and faculty from other organizations, as well as support for testing alternative approaches to providing curricula that integrate the core competencies. Given that faculty shortages and lack of preparedness are a barrier to implementing some of the core competencies (Griner and Danoff, 2000; Halpern, 1996; Weed

HEALTH PROFESSIONS EDUCATION

and Weed, 1999) attention should be given to faculty development as well as instruction of students.

These learning centers could test various approaches for incorporating the core competencies into education for students, clinicians, and faculty, and provide guidance to practice and educational organizations about key operational issues. Is problem-based learning the best approach to teaching these competencies? Should the teaching of these competencies be infused into other courses, or should they be stand-alone? In terms of staging, when should these competencies be taught? These learning centers should also consider how, after an initial investment, they could become self-sustaining in 3–5 years. Such a model might include provision of health care services or require outside clinicians and faculty to pay for training.

There is precedence for focusing on learning centers that span occupations. For example, in health care there are selected examples of area health education centers (AHECs) training a broad range of professionals with support from the HRSA, while in other sectors, such as the airline industry, there are more comprehensive interdisciplinary training efforts (O'Neil and the Pew Health Professions Commission, 1998). Such organizations could provide centralized locations for information technology infrastructure, which would be an efficient way of aggregating costs across many organizations.

Recommendation 6: Foundations, with support from education and practice organizations, should take the lead in developing and funding regional demonstration learning centers, representing partnerships between practice and education. These centers should leverage existing innovative organizations and be state-of-the-art training settings focused on teaching and assessing the five core competencies.

There are many barriers to incorporating the five competencies into the practice environment, where medical residents and new graduates in allied health, nursing, and pharmacology obtain initial training that leaves an important imprint on their future practice (Partnership for Solutions, 2002). In addition to the barriers of time constraints, oversight restrictions, resistance from the professions, and absence of political will, the overall health care financing system is a large impediment to integrating the core competencies into practice settings. Therefore, the committee believes steps must be taken to explore alternative ways of paying clinicians so as to foster such integration.

The lack of a supportive financial incentives structure becomes abundantly clear when one considers, for example, the kinds of services from which the chronically ill elderly would benefit and what Medicare fee-for-service pays for. Currently, Medicare fee-for-service does not generally pay for clinician time spent providing education that enables, for example, patients with diabetes and heart disease to make necessary lifestyle and behavioral changes, or for time spent helping such patients by teaching them how to actively manage their condition with the support of technology. Medicare fee-for-service also does not pay for the work involved in coordinating and integrating the various services such patients need across teams and settings (Institute of Medicine, 2002). Consequently, the financing system often undermines integration of the five competencies into practice, despite evidence that patients who are actively involved in managing and making decisions about their care have better quality and functional status outcomes at lower cost (Gifford et al., 1998; Superio-Cabuslay et al., 1996; Von Korff et al., 1998; Wagner et al., 2001).

As the largest payer, Medicare has a major effect on the system when it innovates (Institute of Medicine, 2002). Moreover, the committee believes that patients with chronic conditions—a sizable proportion of whom are covered by Medicare—would benefit greatly from

integration of the five competencies into practice. There are a number of different options that could serve as models for these payment experiments, including capitation, bundled payments, bonuses, withholds, and various ways to share risk and responsibility between clinicians and payers (Bailit Health Purchasing, 2002; Guyatt et al., 2000). The committee encourages other payers to follow suit.

Recommendation 7: Through Medicare demonstration projects, the Centers for Medicare and Medicaid Services (CMS) should take the lead in funding experiments that will enable and create incentives for health professionals to integrate interdisciplinary approaches into educational or practice settings, with the goal of providing a training ground for students and clinicians that incorporates the five core competencies.

Research and Information

Along with oversight changes and supportive training environments, the committee believes that evidence of the efficacy of an educational intervention can be a catalyst for change. To this end, evidence related to the link between clinical education and health care quality needs to be better developed, as does evidence about various teaching approaches.

In a review of 117 trials in continuing education, fewer than 20 percent were found to use health care outcomes as their measure of effectiveness (Davis et al., 2000), and a review of 2,000 papers on continuing education showed that only about 5 percent assessed the relationship between course content and clinical outcomes (Jordan, 2000). Teaching itself is dominated by intuition and tradition, which do not always hold up when submitted to empirical verification (Tanenbaum, 1994; van der Vleuten et al., 2000). For example, studies have shown that lecture-based teaching of isolated

components, the most common means of imparting information in both academic and continuing education settings, fails in that it does not provide a way for students to integrate or apply the information provided (Wass et al., 2001).

Although there is significant public funding of health professions education, limited public and private resources are available for research that could help in determining whether the dollars are being well spent. In addition, much of the research that does exist is discipline-specific and therefore does not reflect the current practice environment.

The committee believes the time has come to focus energy and resources on developing a more robust and compelling evidence base about what educational content matters for patient care and what works in teaching clinicians so that educators, payers, and regulators can assess objectively what needs to be emphasized in the health professions curricula and what should be eliminated. The research should also span disciplines.

Recommendation 8: The Agency for Healthcare Research and Quality (AHRQ) and private foundations should support ongoing research projects addressing the five core competencies and their association with individual and population health, as well as research related to the link between the competencies and evidence-based education. Such projects should involve researchers across two or more disciplines.

The committee believes that incorporation of education-related measures into quality-reporting efforts and ongoing monitoring will be required to realize the vision articulated in this report. The lack of standardized information about the quality of clinical education makes the job of leaders seeking to reform such education more difficult. The lack of standardized measures also sets clinical education apart from

HEALTH PROFESSIONS EDUCATION

the broader health care quality movement. A ranking—by NCQA regarding health plan quality or by *U.S. News and World Report* regarding hospitals, for example—forces leaders to focus their attention on improving performance on a given set of comparable metrics (National Committee for Quality Assurance, 2002; U.S. News and World Report, 2002). The National Healthcare Quality Report Card, anticipated for release by AHRQ in 2003 and annually thereafter, will likely further standardize quality measurement and focus attention on the strengths and weaknesses of the current system. Yet no education-related measures are anticipated for inclusion in this first annual report (Agency for Health Care Research Quality, 2002).

A focused effort to develop education-related measures must begin now, given the amount of time required to develop and test prospective measures before they can be incorporated into report cards. The committee recognizes that initially there will be a small number of measures ready for public reporting.

Recommendation 9: AHRQ should work with a representative group of health care leaders to develop measures reflecting the core set of competencies, set national goals for improvement, and issue a report to the public evaluating progress toward these goals. AHRQ should issue the first report, focused on clinical educational institutions, in 2005 and produce annual reports thereafter.

Providing Leadership

Significant reform in health professions education is a challenge to say the least. The oversight framework is a morass of different organizations with differing requirements and philosophies, now under considerable pressure to demonstrate greater accountability (Batalden et al., 2002; Finocchio et al., 1998; Leach, 2002; O'Neil and the Pew Health Professions

Commission, 1998). In academia, deans, department chairs, residency directors, and other leaders face a stream of requests for adding new elements to a curriculum that is already overcrowded. Shortages of key professionals, such as nurses and pharmacists, are another significant challenge. Moreover, funding for some academic health centers has been under pressure, and states are facing budget shortfalls that are causing them to trim education budgets, including funding for universities and community colleges (Griner and Danoff, 2000).

When change happens in health professions education, it does not happen overnight. Multiyear processes are required to develop, review, and achieve consensus on new requirements or methods before they can be implemented. Given this environment, the committee believes that reform of clinical education will be possible only with the skill and commitment of a broad range of health care leaders. A recent analysis and synthesis of 44 curriculum reform efforts revealed that leadership is the factor most often cited as affecting curriculum change (Bland et al., 2000).

Consequently, the committee believes that to maintain momentum for reform in clinical education, there will need to be biennial summits at which leaders who have demonstrated a real commitment to implementing the committee's overarching vision can gather. These summits should serve as a forum for leaders to take stock—including review of education-related performance measures and, over time, related trends against goals—and to define future plans. There should be a written report issued from the summit that captures such information and communicates it more broadly to the field.

Recommendation 10: Beginning in 2004, a biennial interdisciplinary summit should be held involving health care leaders in education, oversight processes, practice, and other areas. This summit

should focus on both reviewing progress against explicit targets and setting goals for the next phase with regard to the five competencies and other areas necessary to prepare professionals for the 21st-century health system.

Conclusion

The committee has set forth 10 major recommendations for reforming health professions education to enhance quality and meet the evolving needs of patients. Each of these recommendations focuses on ways of integrating a core set of competencies into health professions education. Taken together, they represent a mix of approaches related to oversight processes, the practice environment, research, public reporting, and leadership.

The staging of these recommendations is important. The first step is to articulate common terms so that shared definitions can inform interdisciplinary discussions about core competencies. Once the disciplines have agreed on a core set of competencies, public and private oversight bodies can consider how to incorporate such competencies into their processes—providing a catalyst for many educational institutions and professional associations, as well as support for those who have already moved toward adopting a competency-based approach. The committee believes that the development of common language and definition of core competencies should happen as rapidly as possible and by no later than 2004, given that the integration of core competencies into oversight processes will take considerable time, perhaps a decade or more if the efforts of ACGME and ACPE are any guide.

As the work of integrating core competencies into oversight processes proceeds, the efforts of leading practice organizations to integrate the core competencies into care delivery should be fostered through regional demonstration learning centers and Medicare demonstration projects. Simultaneously with

these efforts, AHRQ and private foundations should provide support for research focused on the efficacy of the competencies and competency education and, most important, develop a set of measures reflecting the core set of competencies, along with national goals for improvement. Given that the committee calls upon AHRQ to issue a first report on health professions educational institutions by 2005, albeit with a limited number of initial measures, efforts related to reporting must begin immediately. Finally, the committee believes that biennial summits of health care leaders who control and shape education—starting in 2004—will be an important mechanism for integrating and furthering the efforts of those developing measures, practice and education innovators, researchers, and leaders from oversight organizations.

The committee is confident that its recommendations are both sound and feasible to implement because they are supported by a literature review, and informed by a broad range of leaders who shape education both directly and indirectly (see appendix C). Building a bridge to cross the quality chasm in health care cannot be done in isolation. The committee hopes that this report will jump start other efforts to reform clinical education, both individually and collectively, so that it focuses on continually reducing the burden of illness, injury, and disability, with the ultimate aim of improving the health status, functioning, and satisfaction of the American people (President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry, 1998b). The public deserves nothing less.

References

- ABIM Foundation. 2002. Medical professionalism in the new millennium: A physician charter. *Annals of Internal Medicine* 136 (3):243-46.
- Accreditation Council for Graduate Medical Education. 1999. "General Competencies." Online. Available at <http://www.acgme.org/outcome/comp/compFull.asp> [accessed June,

HEALTH PROFESSIONS EDUCATION

- 2002].
- Accreditation Council for Graduate Medical Education. 2002. "ACGME Outcome Project." Online. Available at <http://www.acgme.org/outcome/about/faq.asp> [accessed Aug. 27, 2002].
- Agency for Healthcare Research and Quality. 2002. "NHQR Preliminary Measure Set." Online. Available at <http://www.ahrq.gov/qual/nhqr02/nhqrprelim.htm> [accessed Fall, 2002].
- American Association of Medical Colleges. 1999. *Evidence Based Medicine Instruction*. Vol 2, No.3 edition Washington, DC: AAMC.
- . 2001. "Medical School Objectives Project." Online. Available at <http://www.aamc.org/meded/msop/start.htm> [accessed Sept., 2002].
- American Board of Medical Specialties. 2000. *2000 ABMS Annual Report and Reference Handbook*.
- American Council on Pharmaceutical Education. 2000. "Accreditation Manual-Ninth Addition." Online. Available at www.acpe-accredit.org [accessed June, 2002].
- . 2002. "ACPE Web site." Online. Available at www.acpe.edu [accessed May 1, 2002].
- American Nurses Association/NursingWorld.Org. 2001. "On-line Health and Safety Survey: Key Findings." Online. Available at <http://nursingworld.org/surveys/keyfind.pdf> [accessed 2002].
- Bailit Health Purchasing. 2002. *Provider Incentive Models for Improving Quality of Care*. Washington, DC: National Health Care Purchasing Institute.
- Baker, G.R., S. Gelmon, L. Headrick, M. Knapp, L. Norman, D. Quinn, and D. Neuhauser. 1998. Collaborating for improvement in health professions education. *Quality Management in Health Care* 6 (2):1-11.
- Bashook, P.G., S.H. Miller, J. Parboosingh, and S.D. Horowitz. 2000. "Credentialing Physician Specialists: A World Perspective." Online. Available at <http://www.abms.org/Downloads/Conferences/Credentialing%20Physician%20Specialists.pdf> [accessed Sept. 15, 2002].
- Batalden, P., D. Leach, S. Swing, H. Dreyfus, and S. Dreyfus. 2002. General competencies and accreditation in graduate medical education. *Health Affairs* 21 (5):103-11.
- Bellack, J.P., and E.H. O'Neil. 2000. Recreating nursing practice for a new century: Recommendations and implications of the new health professions commissions final report. *Nursing & Health Care Perspectives* 21 (1):14-21.
- Bland, C.J., S. Starnaman, L. Wersal, L. Moorhead-Rosenberg, S. Zonia, and R. Henry. 2000. Curricular change in medical schools: How to succeed. *Academic Medicine* 75 (6):575-94.
- Board of Pharmaceutical Specialties. 2002. "Recertification." Online. Available at <http://www.bpsweb.org/BPS/recert-gen.html#top> [accessed Sept., 2002].
- Brady, M., J.D. Leuner, J.P. Bellack, R.S. Loquist, P. F. Cipriano, and E.H. O'Neil. 2001. A proposed framework for differentiating the 21 new competencies by level of nursing education. *Nursing & Health Care Perspectives* 22 (1):30-35.
- Buerhaus, P.I., and L. Norman. 2001. Its time to require theory and methods of quality improvement in basic and graduate nursing education. *Nursing Outlook* 49 (2):67-69.
- Byrd, G. 2002. Can the profession of pharmacy serve as a model for health informationist professionals? *Journal of Medical Library Association* 90 (1):68-75.
- Calabretta, N. 2002. Consumer-driven, patient-centered health care in the age of electronic information. *Journal of Medical Library Association* 90 (1):32-37.
- Cantillon, P., and R. Jones. 1999. Does continuing medical education in general practice make a difference? *British Medical Journal* 318 (7193):1276-79.
- Carraccio, C., S.D. Wolfsthal, R. Englander, K. Ferentz, and C. Martin. 2002. Shifting paradigms: From flexner to competencies. *Academic Medicine* 77 (5):361-67.
- Center for the Advancement of Pharmaceutical Education [CAPE] Advisory Panel on Educational Outcomes. 1998. "Educational Outcomes." Online. Available at http://www.aacp.org/Docs/MainNavigation/Resources/3933_edoutcom.doc?DocTypeID=4&TrackID=&VID=1&CID=410&DID=366 [accessed Dec. 10, 2002].
- Chassin, M.R., R.W. Galvin, and the National

- Roundtable on Health Care Quality. 1998. The urgent need to improve health care quality. *Journal of the American Medical Association* 280 (11):1000-1005.
- Christakis, N.A. 1995. The similarity and frequency of proposals to reform U.S. medical education: Constant concerns. *Journal of American Medical Association* 274 (9):706-11.
- Collier, S. March 2002. Workforce Shortages. Personal communication to Ann Greiner.
- Commission on Collegiate Nursing Education. 2002. "CCNE Accreditation." Online. Available at <http://www.aacn.nche.edu/Accreditation/> [accessed 2002].
- Council on Graduate Medical Education. 1999. *Physician Education for a Changing Health Care Environment*. Rockville, MD: Health Resources and Services Administration.
- Counsell, S., R. Kennedy, P. Szwabo, N. Wadsworth, and C. Wohlgemuth. 1999. Curriculum recommendations for resident training in geriatrics interdisciplinary team care. *Journal of the American Geriatrics Society* 47 (9):1145-48.
- Davis, D., M.A. OBrien, N. Freemantle, F.M. Wolf, P. Mazmanian, and A. Taylor-Vaisey. 1999. Impact of formal continuing medical education: Do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *Journal of American Medical Association* 282 (9):867-74.
- Davis, D., M.A. Thomson O'Brien, and N. Freemantle. 2000. Review: Interactive, but not didactic, continuing medical education is effective in changing physician performance. *Database of Abstracts of Reviews of Effectiveness* Volume 132 (2):75.
- Detmer, D.E. 1997. Knowledge: A mountain or a stream? *Science* 275 (5308):1859.
- Epstein, R.M., and E.M. Hundert. 2002. Defining and assessing professional competence. *Journal of the American Medical Association* 287 (2):226-35.
- Federation of State Medical Boards. 2002. "Post-Licensure Assessment System." Online. Available at <http://www.fsmb.org/PLASmain.htm> [accessed Aug., 2002].
- Ferrill, M.J., L.L. Norton, and S.J. Blalock. 1999. Determining the statistical knowledge of pharmacy practitioners: A survey and review of the literature. *American Journal of Pharmaceutical Education* 63 (3)
- Finocchio, L. J., C. M. Dower, N. T. Blick, C. M. Gragnola, and the Taskforce on Health Care Workforce Regulation. 1998. *Strengthening Consumer Protection: Priorities for Health Care Workforce Regulation*. San Francisco, CA: Pew Health Professions Commission.
- Frosch, D.L., and R.M. Kaplan. 1999. Shared decision making in clinical medicine: Past research and future directions. *American Journal of Preventive Medicine* 17 (4):285-94.
- Gerteis, M., S. Edgman-Levitan, J. Daley, and T. Delbanco, editors. 1993. *Through the Patient Eyes*. Vol. San Francisco, CA: Josey-Bass.
- Gifford, A.L., D.D. Laurent, V.M. Gonzales, et al. 1998. Pilot randomized trial of education to improve self-management skills of men with symptomatic HIV/AIDS. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* 18 (2):136-44.
- Gorman, P.J.M., A.H.M. Meier, C. Rawn, and T.M. M. Krummel. 2000. The future of medical education is no longer blood and guts, it is bits and bytes. *American Journal of Surgery* 180 (5):353-56.
- Grantmakers in Health. 2001. *Training the Health Workforce of Tomorrow*. Washington, DC: Grantmakers In Health .
- Green, M.L. 2000. Evidence-based medicine training in internal medicine residency programs a national survey. *Journal of General Internal Medicine* 15 (2):129-33.
- Griner, P.F.M., and D.M. Danoff. 2000. Sustaining change in medical education. *Journal of American Medical Association* 283 (18):2429-31.
- Guyatt, G. 1992. Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group. *Journal of American Medical Association* 268 (17):2420-2425.
- Guyatt, G.H., R.B. Haynes, R.Z. Jaeschke, D.J. Cook, L. Green, C.D. Naylor, M. Wilson, and W.S. Richardson. 2000. Users guide to the medical literature: XXV. Evidence-based

HEALTH PROFESSIONS EDUCATION

- medicine: Principles for applying the users guides to patient care. *Journal of American Medical Association* 284 (10):1290-1296.
- Hafferty, F. 1998. Beyond curriculum reform: confronting medicine's hidden curriculum. *Academic Medicine* 73 (4):403-7.
- Halpern, J. 1996. The measurement of quality of care in the veterans health administration. *Medical Care* 34 (3):55-68.
- Halpern, R., M.Y. Lee, P.R. Boulter, and R.R. Phillips. 2001. A synthesis of nine major reports on physicians competencies for the emerging practice environment. *Academic Medicine* 76 (6):606-15.
- Harden, R.M. 2002. Developments in outcome-based education. *Medical Teacher* 24 (2):117-20.
- Harmening, D.M. 1999. "Pioneering Allied Health Clinical Education Reform. A National Consensus Conference." Online. Available at <ftp://ftp.hrsa.gov/bhpr/publications/cerpdf.pdf> [accessed Aug., 2002].
- Health Resources and Services Administration. 1999. *Building the Future of Allied Health: Report of the Implementation Task Force of the National Commission on Allied Health*. Rockville, MD: Health Resources and Services Administration.
- Hovenga, E.J. 2000. Global health informatics education. *Studies in Health Technology & Informatics* 57:3-14.
- Hundert, E.M., F. Hafferty, and D. Christakis. 1996. Characteristics of the informal curriculum and trainees ethical choices. *Academic Medicine* 71 (6):624-42.
- Hyde, R.S., and J.M. Vermillion. 1996. Driving quality through Hoshin planning. *Joint Commission Journal on Quality Improvement* 22 (1):27-35.
- Ingersoll, G. 2000. Evidence-based nursing: What it is and what it isn't. *Nursing Outlook* 48:151-52.
- Institute of Medicine. 2000. *To Err Is Human: Building a Safer Health System*. Linda T. Kohn, Janet M. Corrigan, and Molla S. Donaldson, eds. Washington, DC: National Academy Press.
- . 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press.
- Institute of Medicine. 2002. *Leadership By Example*. Washington, DC: National Academies Press.
- Jablonover, R.S., D.J. Blackman, E.B. Bass, G. Morrison, and A.H. Goroll. 2000. Evaluation of a national curriculum reform effort for the medicine core clerkship. *Journal of General Internal Medicine* 15 (7): 484-91.
- Jordan, S. 2000. Educational input and patient outcomes: Exploring the gap. *Journal of Advanced Nursing* 31 (2):461-71.
- Lavin, M.A., I. Ruebling, R. Banks, L. Block, M. Counte, G. Furman, P. Miller, C. Reese, V. Viehmann, and J. Holt. 2001. Interdisciplinary health professional education: A historical review. *Advances in Health Sciences Education* 6 (1):25-47.
- Leach, D.C. 2002. Building and assessing competence: the potential for evidence-based graduate medical education. *Qual Manag Health Care* 11(1):39-44.
- Leach, D.C. 2002. Competence is a habit. *Journal of the American Medical Association* 287 (2):243-44.
- Lenburg, C., R. Redman, and P. Hinton. 1999. "Competency Assessment: Methods for Development and Implementation in Nursing Education." Online. [accessed Mar. 19, 2002].
- Mansell, D., R.M. Poses, L. Kazis, and C.A. Duefield. 2000. Clinical factors that influence patients desire for participation in decisions about illness. *Archives of Medicine* 160:2991-96.
- Marwick, C. 2000. Will evidence-based practice help span gulf between medicine and law? *Journal of American Medical Association* 283 (21):2775-76.
- Maudsley, G. 2001. What issues are raised by evaluating problem-based undergraduate medical curricula? Making healthy connections across the literature. [Review] [93 refs]. *Journal of Evaluation in Clinical Practice* 7 (3):311-24.
- Mazur, D.J. and D.H. Hickam. 1997. Patients preferences for risk disclosure and role in decision making for invasive medical procedures. *Journal of General Internal Medicine* 12:114-17.

- Mazurek, B. 2002. Strategies for overcoming barriers in implementing evidence-based practice. *Periatric Nursing* 28 (2):159-61.
- Mitchell, G. 1999. Evidence-based practice: Critique and alternative view. *Nursing Science Quarterly* Vol. 12, No. 1:30-35.
- Murray, E., L. Gruppen, P. Catton, R. Hays, and J.O. Woolliscroft. 2000. The accountability of clinical education: Its definition and assessment. *Medical Education* 34 (10):871-79.
- National Association of Boards of Pharmacy. 2002. "Examinations -- NAPLEX." Online. Available at <http://www.nabp.net/> [accessed Aug. 10, 2002].
- National Committee for Quality Assurance. 2002. "What Does NCQA Review When It Accredits an HMO?" Online. Available at <http://www.ncqa.org/Programs/Accreditation/MCO/mcostdsoverview.htm> [accessed 2002].
- National Council of State Boards of Nursing. 2001. "NCLEX - RN@ Examination: Test Plan for the National Council Licensure Examination for Registered Nurses." Online. Available at <http://www.ncsbn.org/public/testing/res/NCSBNRNTTestPlanBooklet.pdf> [accessed Aug., 2002].
- National Council of State Boards of Nursing, I. 1997-2000. "Nursing Regulation: Examination Pass Rates & Licensure Statistics." Online. Available at http://www.ncsbn.org/public/regulation/licensure_stats.htm [accessed 2002].
- National League for Nursing Accrediting Commission. 2002. "National League for Nursing Accreditation Commission Website ." Online. Available at www.nlnac.org [accessed May 31, 2002].
- O'Brien, T., N. Freemantle, A.D. Oxman, F. Wolf, D. A. Davis, and J. Herrin. 2001. Continuing education meetings and workshops: Effects on professional practice and health care outcomes. *Cochrane Database System Review* (2): CD003030.
- O'Connor, G.T., S.K. Plume, E.M. Olmstead, J.R. Morton, C.T. Maloney, W.C. Nugent, F. Hernandez, Jr., R. Clough, B.J. Leavitt, L.H. Coffin, C.A. Marrin, D. Wennberg, J.D. Birkmeyer, D.C. Charlesworth, D.J. Malenka, H.B. Quinton, and J.F. Kasper. 1996. A regional intervention to improve the hospital mortality associated with coronary artery bypass graft surgery. The Northern New England Cardiovascular Disease Study Group. *Journal of the American Medical Association* 275 (11):841-46.
- O'Neil, E. H. and the Pew Health Professions Commission. 1998. *Recreating health professional practice for a new century - The fourth report of the PEW health professions Commission*. San Francisco, CA: Pew Health Professions Commission.
- Partnership for Solutions. 2002. "Physician Concerns: Caring for People with Chronic Conditions." Online. Available at http://www.partnershipforsolutions.org/pdf_files/2002/physicianccern.pdf [accessed Oct. 8, 2002].
- Pew Health Professions Commission. 1995. *Critical Challenges: Revitalizing the Health Professions for the Twenty-First Century*. San Francisco, CA: UCSF Center for the Health Professions:
- Phillips, R.L. Jr, D.C. Harper, M. Wakefield, L.A. Green, and G.E. Fryer, Jr. 2002. Can nurse practitioners and physicians beat parochialism into plowshares? *Health Affairs* 21 (5):133-42.
- Platt, D., and C. Laird. 1995. CQI: Using the Hoshin planning system to design an orientation process. *Radiology Management* 17 (2):42-50.
- Pomeroy, W.M., and I. Philp. 1994. Healthcare teams: An interdisciplinary workshop for undergraduates. *Medical Teacher*:6p.
- President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry. 1998. "Quality First: Better Health Care for All Americans." Online. Available at <http://www.hcqualitycommission.gov/final/> [accessed Sept. 9, 2000].
- Satya-Murti, S. 2000. Evidence-based clinical practice: Concepts and approaches. *The Journal of American Medical Association* 282 (17):2306-7.
- Schuster, M.A., E.A. McGlynn, and R.H. Brook. 1998. How good is the quality of health care in the United States? *Milbank Quarterly* 76 (4):517-63, 509.
- Shell, R. 2001. Perceived barriers to teaching for critical thinking by BSN nursing faculty. *Nursing & Health Care Perspectives* 22 (6):286-91.

HEALTH PROFESSIONS EDUCATION

- Superio-Cabuslay, E., M.M. Ward, and K.R. Lorig. 1996. Patient education interventions in osteoarthritis and rheumatoid arthritis: A meta-analytic comparison with nonsteroidal anti-inflammatory drug treatment. *Arthritis Care Research* 9 (4):292-301.
- Swankin, D. 30 May 2002a. Continuing Competence. Personal communication to Elisa Knebel.
- Swankin, D.S. 2002b. *Results of a Survey of Selected State Health Licensing Boards and Health Voluntary Certification Agencies Concerning their Continuing Competence Programs and Requirements*. Washington, DC: Citizen Advocacy Center.
- Tanenbaum, S.J. 1994. Knowing and acting in medical practice: the epistemological politics of outcomes research. *J Health Polit Policy Law* 19 (1):27-44.
- U.S. News and World Report. "Latest Hospital Rankings." Online. Available at www.usnews.com/usnews/nycu/health/hosptl/tophosp.htm [accessed Summer, 2002].
- United States Medical Licensing Exam. 2002. "United States Medical Licensing Examination - Steps 1, 2, 3." Online. Available at <http://www.usmle.org/step1/intro.htm> [accessed Aug. 10, 2002].
- van der Vleuten, C.M., D.M. Dolmans, and A.A. Scherpbier. 2000. The need for evidence in education. *Medical Teacher* 22 (3):246-50.
- Von Korff, M., J.E. Moore, K.R. Lorig, et al. 1998. A randomized trial of a lay person-led self-management group intervention for back pain patients in primary care. *Spine* 23 (23):2608-51.
- Wagner, E.H., R.E. Glasgow, C. Davis, A.E. Bonomi, L. Provost, D. McCulloch, P. Carver, and C. Sixta. 2001. Quality improvement in chronic illness care: A collaborative approach. *Joint Commission Journal on Quality Improvement* 27 (2):63-80.
- Wass, V., C. Van der Vleuten, J. Shatzer, and R. Jones. 2001. Assessment of clinical competence. *Lancet* 357 (9260):945-49.
- Weed, L.L. and L. Weed. 1999. Opening the black box of clinical judgment. Part II: consumer protection and the patients role. *British Medical Journal*. November 13
- Wennberg, J.H. 1998. *The Dartmouth Atlas of Health Care 1998*. Hanover, NH: Center for the Evaluation Clinical Sciences, Dartmouth University.
- Woolf, S.H. 2000. Taking critical appraisal to extremes: The need for balance in the evaluation of evidence. *Journal of Family Practice* 49 (12):1081-85.
- Wu, S., and A. Green. 2000. *Projection of Chronic Illness Prevalence and Cost Inflation*. California: RAND Health.
- Yoder-Wise, P.S. 2002. State and association/certifying boards: CE requirements. *Journal of Continuing Education in Nursing* 33 (1):3-11.