ONLINE CONTENT

The *Quality Chasm* reports, evidence-based practice, and nursing's response to improve healthcare

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In a growing set of landmark reports, the Institute of Medicine (IOM) set in motion a sweeping quality initiative for reform of the healthcare system. Many of the recommendations incorporate evidence-based practice applications. Key points from the primary IOM reports are brought together. In the keystone report, the IOM offers analysis of the current health system and provides a blue print for change. Subsequent reports in the same series advance the blueprint by providing exemplars of quality healthcare, identifying clinical priority targets for corrective action, and recommending changes in education of health professionals. This article explores the role of healthcare professionals, specifically nurses, in improving healthcare in context of these reports and discusses how evidence-based practice closes the chasm. Health professionals will be expected to make changes in practice and education. Crucial on the healthcare team, nurses are major players in the healthcare reformation that has been set into motion.

Definition of Quality Healthcare

Degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.[1]

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In 1990, the interdisciplinary opinion leaders in the Institute of Medicine (IOM) launched an intensive initiative to improve the quality of healthcare.* IOM leaders proclaimed that there is a chasm between what we *know* to be best healthcare and what is actually practiced. In their rapid-fire series of reports, these leaders are calling for one of our nation's most far-reaching health reforms. Known as the *Quality Chasm* series, these reports dissect healthcare problems and recommend solutions that are both fundamental and sweeping.[2] The profession of nursing is central to many of the interdisciplinary and discipline-specific changes.

This discussion outlines major messages of key reports in the *Quality Chasm* series and explores roles for nurses as part of the larger health profession team in improving healthcare quality. Because evidence-based practice (EBP) is central to the IOM recommendations, this discussion also includes descriptions of EBP.

THE QUALITY OF HEALTHCARE

In an effort to improve the quality of healthcare in the nation, leaders in IOM analyzed problems that exist in quality healthcare. After an intensive review of literature, they detailed and analyzed the nature of the problem. This analysis expanded our understanding of the scope of the quality issue: the problem is one of overuse, misuse, and underuse of healthcare services and was described as a wide gulf between ideal care and the reality that many Americans experience.

Safety and Quality in US Healthcare

Following intensive study, IOM leaders detailed major deficits and problems in two reports: *To Err is Human: Building a Safer Health System*[3] and *Crossing the Quality Chasm: A New Health System for the 21st Century*.[2] The report *To Err is Human* offers impressive documentation regarding the serious and pervasive

*The Institute of Medicine is an independent, scientific advisor, which strives to provide advice that is unbiased, based on evidence, and grounded in science to improve the nation's health. From Institute of Medicine. About the IOM. Available: http://www.iom.edu.

nature of the nation's overall quality problem: as many as 98,000 hospitalized Americans die each year as a result of errors in their care. In fact, more people die from medical mistakes each year than from highway accidents, breast cancer, or AIDS. In addition to deaths, medical errors cause permanent disabilities and unnecessary suffering. Although errors may be detected more easily in hospitals, errors occur in every healthcare setting: day-surgery and outpatient clinics, retail pharmacies, nursing homes, and in-home care. For medication errors alone, both in and out of hospitals, it is estimated that errors exceed more than 7000 annually—more than those from workplace injuries.[3]

Authors of *To Err is Human* concluded that the burden of harm conveyed by the collective impact of all of our health quality problems is staggering. By casting light on the tens of thousands of Americans who die each year from medical errors, *To Err is Human* effectively placed the issue of patient safety on the radar screen of providers and policymakers. Hardly a person was left unaware of this alarming report because the media aired and printed numerous accounts from this report.

Defining the Quality Chasm

As disturbing as the report on safety was, it was only a beginning in the unfolding story of quality in American healthcare. In *Crossing the Quality Chasm: A New Health System for the 21st Century*,[2] IOM authors highlighted other widespread defects in our healthcare system. Taken together, these defects detract further from the health, functioning, dignity, comfort, satisfaction, and resources of Americans. Expressed as a *report card* on the issue of "quality of care", the report includes more than 70 research studies to illustrate frequent shortcomings in the healthcare system, including the inability to translate knowledge into practice and apply new technology safely and appropriately. These studies document: (1) overuse, such as use of antibiotics in viral bronchitis; (2) underuse, such as low rates of vaccination to prevent pneumonia in elderly individuals; and (3) misuse, such as preventable adverse drug events in intensive care units. Table 1 entitled *Score Card: Examples of Quality Shortcomings* (available in the online version of this article at the *Nursing Outlook* Web site: http://www.nursingoutlook.org) presents examples of these shortcomings that have been verified through research.

In addition, it is clear that the level of preventive healthcare practiced today does not meet the standards that are recommended by research, clinical guidelines, and health organizations. As one example, the US Preventive Services Task Force noted that colorectal cancer screening tests save lives; however, only about 15% of adults aged 50 years and older receive the recommended screening.[4,5] Lack of this screening is an example of underuse of knowledge in care. Overuse of preventive services is also a concern in examining quality of healthcare; for example, experts now recommend *against* screening for idiopathic scoliosis in adolescents.[6]

The *Quality Chasm* report underscores the lack of quality healthcare, cost concerns, poor use of information technology, absence of progress in restructuring the health care system, and the underutilization of resources. Through these analyses of healthcare safety and quality, a deep rooted problem was highlighted: health science and technology have advanced at a very rapid pace, but the healthcare delivery system has not maintained delivery of high-quality healthcare services.[2] Research results are not translated into practice, and practice lags behind knowledge.

Hurdles in translating research into clinical practice are the large volume of complex health research literature and the form of that knowledge as it is available to the clinician. Until recently, research results were neither translated into clinical practice recommendations nor applied consistently in the delivery of health care. In addition, poor healthcare system design contributes to the chasm. Design inadequacies include a lack of multidisciplinary teams to provide comprehensive and coordinated care, a complex system that is a maze to patients, and one that fails to provide the services from which patients would likely benefit.[2]

One news release of *Crossing the Quality Chasm* summarized, "America's health system is a tangled, highly fragmented web that often wastes resources by providing unnecessary services and duplicating efforts, leaving unaccountable gaps in care and failing to build on the strengths of all health professionals."[7] IOM issued this statement, setting the theme for the quality initiative: "Between the health care we have and the care we could have lies not just a gap but a chasm."[2]

BLUEPRINT FOR A NEW HEALTH SYSTEM

After these analyses of problems in healthcare quality, the IOM Committee on the Quality of Health Care in America developed strategies to improve the quality of healthcare over the next 10 years. Between 1999 and 2001, IOM reported on radical transformation of the healthcare system and policy environment that was needed to close the chasm between "what we know to be good quality care and what actually exists in practice."[2] Given the size and pervasiveness of the problem of quality in America's healthcare system, the IOM issued an urgent call for fundamental change to close the quality gap. This call and accompanying overarching principles were detailed in the *Quality Chasm*.

An IOM panel of experts concluded that reform around the margins would be inadequate to address the problems of the healthcare system. Rather, sweeping systemic changes would need to occur. The panel developed a blueprint for change calling for immediate

Table 2. New rules to redesign and improve care

1. **Care based on continuous healing relationships.** Patients should receive care whenever they need it and in many forms, not just face-to-face visits. This rule implies that the healthcare system should be responsive at all times (24 hours a day, every day) and that access to care should be provided over the Internet, by telephone, and by other means in addition to face-to-face visits.
2. **Customization based on patient needs and values.** The system of care should be designed to meet the most common types of needs, but have the capability to respond to individual patient choices and preferences.
3. **The patient as the source of control.** Patients should be given the necessary information and the opportunity to exercise the degree of control they choose over healthcare decisions that affect them. The health system should be able to accommodate differences in patient preferences and encourage shared decision-making.
4. **Shared knowledge and the free flow of information.** Patients should have unfettered access to their own medical information and to clinical knowledge. Clinicians and patients should communicate effectively and share information.
5. **Evidence-based decision-making.** Patients should receive care based on the best available scientific knowledge. Care should not vary illogically from clinician to clinician or from place to place.
6. **Safety as a system property.** Patients should be safe from injury caused by the care system. Reducing risk and ensuring safety require greater attention to systems that help prevent and mitigate errors.
7. **The need for transparency.** The healthcare system should make information available to patients and their families that allows them to make informed decisions when selecting a health plan, hospital, or clinical practice, or when choosing among alternative treatments. This should include information describing the system's performance on safety, EBP, and patient satisfaction.
8. **Anticipation of needs.** The health system should anticipate patient needs, rather than simply reacting to events.
9. **Continuous decrease in waste.** The health system should not waste resources or patient time.
10. **Cooperation among clinicians.** Clinicians and institutions should actively collaborate and communicate to ensure an appropriate exchange of information and coordination of care.

Data from Institute of Medicine (US) (2001)

action to improve all aspects of care for everyone over the next decade. The plan offers strategies to implement change and defines: performance expectations for the 21st century healthcare system; six aims to improve quality; recommendations to better align payment incentives with quality improvement; steps to promote evidence-based practice; and steps to strengthen clinical information systems.[2] In these recommendations, health professions were charged to rise to accountability for improvements, singly and collectively.

Performance Expectations for the 21st Century Healthcare System

According to this report, the proposed agenda for crossing the chasm from the healthcare system of today to the possibilities of a healthcare system for tomorrow is for all healthcare constituencies, policy makers, and recipients of care to commit to a national statement of purpose for the healthcare system. These groups were urged to share six aims to improve the quality of care while redesigning the healthcare delivery system so that patients will experience safer, more reliable, more responsive, more integrated, and more available care. These six aims are that health care is safe, effective, patient-centered, timely, efficient, and equitable.[2] A total system redesign is both a huge undertaking and highly complicated. It requires the cooperative efforts of policy makers, insurance companies, those involved with reimbursement, health educators, academic health institutions, service organizations, healthcare providers, and consumers. To guide the process, the IOM recommended ten (10) "New Rules to Redesign and Improve Care" against which changes should be measured (Table 2). The rules are intended to make the health system more responsive to patients' needs and preferences, and to encourage patients' participation in decision-making.[2]

The IOM recommendations focused on creating an environment that supports evidence-based practice, facilitates the use of information technology, provides appropriate payment incentives, and prepares the workforce to provide healthcare in the today's changing world.[2]

Examples of Healthcare Quality Approaches

In its next report, *Leadership by Example: Coordinating Government Roles in Improving Health Care Quality*,[8] the IOM expanded the quality initiative by providing extant examples of quality improvement. These examples highlight demonstrations of quality in government-based healthcare. The government has control of about 45% of all healthcare through the various

governmental agencies targeted in the *Leadership* report. These agencies are Medicare (elderly), Medicaid (low income), State Children's Health Insurance Program (children), Veterans Health Administration (veterans), TRICARE (military), and Indian Health Service (Native Americans).

To support quality enhancement, these government systems have been directed to leverage their unique positions as regulator, purchaser, provider, and research sponsor. Systems are to: (1) use regulatory processes to establish clinical data reporting requirements, (2) add purchasing strategies that reward quality, (3) implement public healthcare delivery systems as laboratories for development of care delivery models, and (4) increase applied health services research to accelerate development of knowledge and tools. This report challenged the government to improve its system of healthcare and to use EBP.[8]

Where Do We Begin?

Effective management and utilization of research results, knowledge, technology, and resources are essential in the redesign to improve quality and call for a set of priority conditions upon which to focus the initial efforts. Following the proposal for sweeping healthcare reform contained in the IOM reports, healthcare professionals recognized that the next step was to establish priority health topics toward which to channel resources. In the document *Priority Areas for National Action: Transforming Health Care Quality*,[9] experts identified 20 priority areas for quality improvement. Criteria for selecting priority areas were: (1) impact in terms of burden on patient, family, healthcare system, and society; (2) improvability by using evidence to close gaps between best practice and usual care; and (3) inclusiveness, reflecting applicability to patients across the life span and settings, and eliminating disparities.[9] Examples of the 20 priority areas that resulted from this deliberative process include areas such as care coordination, self-management, asthma, and diabetes. (The full set of *Priority Areas for National Action* are presented in the online version of this article in Table 3 available at the *Nursing Outlook* Web site: http://www.nursingoutlook.org.)

This report again emphasizes the need for EBP principles to be applied to reduce unwarranted variations in care where knowledge for improvement was already available. The core aspect of improvability is that there exists evidence-based knowledge and standards for effective care not yet implemented. "Improvability originates in the premise that an effective, and potentially cost-effective, treatment has been identified, but that this treatment is not delivered in safe or appropriate ways to all those who need it."[9]

Adequate evidence-based standards for effective care are available for 19 of the 20 priorities. The remaining priority, obesity, was identified as a priority area with "emerging" evidence for improvability because there was limited evidence to define best practice. However, obesity was still selected as a priority area based on its impact and inclusiveness, and to accelerate research to generate evidence for treatment guidelines.

Action plans for each priority condition included: (1) designing and maintaining evidence-based processes; (2) promoting primary, secondary, and tertiary prevention; (3) building the necessary information technology infrastructure to support delivery coordination of care, systems design, and ongoing management, payment, and accountability; and (4) aligning incentives inherent in payment and accountability processes with the goals of quality improvement. With these newly-specified quality targets, the IOM urged various groups to focus on improving care, with nursing and medicine profiled as leaders in the effort.[9]

Preparing Health Professions for the New Healthcare Quality

As anticipated by the group writing the *Quality Chasm* reports, the shift in emphasis to higher accountability for science-based care and the new processes of EBP created an attendant need for a healthcare workforce with adequate preparation. After an interdisciplinary summit, the IOM published *Health Professions Education: A Bridge to Quality*.[10] The report indicated that current educational programs do not adequately prepare nurses, physicians, pharmacists or other health professionals to provide the highest quality and safest healthcare possible and there is not sufficient assessment of their ongoing proficiency. Education for all health professions is in need of "a major overhaul" to prepare health professionals with new skills to assume new roles.[10]

The IOM suggested that this overhaul would require changing the way that health professionals are educated, in both academic and practice settings. Programs for basic preparation of health professionals need to undergo curriculum revision to focus on evidence-based quality improvement processes. Also, professional development programs must become widely available to update skills of professionals who are already practicing. Leaders in all health disciplines were urged to come together in an effort for clinical education reform that addresses five core competencies essential in bridging the quality chasm Table 4.[10] From this core set, the IOM suggested that each discipline would need to develop competencies specific to its functions.

To stimulate faculty development, curricular reform, and leadership activities, the IOM suggested using oversight processes and changes in financing as leverage points. For example, oversight processes such as accreditation, certification, and licensure could be le-

Table 4. Core competencies for health professions

1. 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.
2. Work in interdisciplinary teams—Cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable.
3. Employ EBP—Integrate best research with clinical expertise and patient values for optimum care, and participate in learning and research activities to the extent feasible.
4. 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.
5. Utilize informatics—Communicate, manage knowledge, mitigate error, and support decision-making using information technology.

Data from Institute of Medicine (2003)

veraged to encourage reforms in the areas of the five core competencies. The IOM charged oversight organizations with incorporating the core set of competencies into their oversight activities. It urged accreditation bodies to revise standards and provide evidence that their students, both in academia and continuing education, are capable of delivering patient care using the core set of competencies. It asked certification bodies to demand that students demonstrate periodically that they are able to deliver patient care as defined by the five competencies. The IOM encouraged foundations to take the lead in establishing learning centers to focus on teaching and assessing the five core competencies.[10] Finally, through license renewals, healthcare professionals would be required to do the same.

RESPONSE FROM THE HEALTH PROFESSIONS

This national agenda and action plan are now in motion, designed to achieve quality healthcare in the United States. If nursing fails to play a full and active role in implementing the quality agenda that has been spearheaded by IOM, nursing will surely be part of the problem! In truth, all disciplines must embrace fully the blueprint set out in *Crossing the Quality Chasm*.[2] Each must tailor change to its unique profession, while at the same time strive to maintain the interdisciplinary nature of improvement. All must act quickly on the identified priorities. Both nursing expertise and science are required to guide the implementation of many improvable priorities.

Multiple facets of the nation's healthcare sector are responding to the agenda for quality healthcare with unprecedented swiftness. Few other movements in healthcare have gained such widespread and rapid momentum. Nurses have risen to the occasion to join and lead evidence-based quality improvement efforts in healthcare through healthcare initiatives, development of explanatory models and science of EBP, educational program revision, and oversight and regulatory programs. Of particular note is the advancement of EBP concepts in the profession.

Emphasis on Evidence in the Quality Chasm: Nursing's Response

Each of the trend-setting IOM reports[2,9,10] identifies EBP as *crucial* in closing the quality chasm. The intended effect of EBP is to standardize healthcare practices to science and best evidence and to reduce illogical variation in care, which leads to unpredictable health outcomes. Indeed, development of EBP is fueled by public and professional demand for accountability in safety and quality improvement in healthcare. In this context, it is useful to understand EBP in further detail. Leaders in the field have defined EBP as: *Integration of best research evidence with clinical expertise and patient values*.[11] Therefore, EBP melds research evidence with clinical expertise and encourages individualization of care through incorporation of patient preferences.

As the IOM reports emphasize, our healthcare does not reflect current knowledge. Key obstacles to moving research rapidly into routine patient care are the growing *volume* of literature and the *form* of the knowledge. EBP processes overcome both of these hurdles. Health professionals, including nurses, have recently developed strategies to put evidence into practice. This effort is further supported by theories, such as Rogers' theory of Diffusion of Innovation[12] and complex adaptive systems theory.[13]

Nurse–scientists developed the ACE Star Model of Knowledge Transformation to emphasize the crucial

steps necessary to reduce volume, convert one form of knowledge into the next, and incorporate a broad range of sources of knowledge throughout the EBP process.[14] The Star Model provides a framework in which to consider the transformation of knowledge from its point of discovery to its impact on patient outcomes. The model is depicted as a five-point star to indicate the various stages of knowledge transformation. Point 1 represents discovery of knowledge using traditional research methodologies including quantitative and qualitative methods. Point 2 represents evidence summary of all the available knowledge compiled into a single harmonious statement. EBP experts point to the value of this new and rigorous research design, often called *systematic review*, to extract and summarize best research evidence for use in informing practice.[2,9] These systematic evidence summaries reduce large bodies of research into a credible and reliable single statement of the state of our knowledge. An evidence summary removes the obstacle of voluminous and rapidly expanding bodies of research literature through the use of special research designs. Evidence summaries in the form of systematic reviews can be considered the *heart* of EBP.[15] These reviews employ a scientific process that involves: formulating a question, locating and evaluating the world's research on the topic, appraising it according to specified criteria, and synthesizing the results into one harmonious statement. A systematic review increases the power and validity of the cause-and-effect relationship between interventions and outcomes, thus making it the ideal base for formulation of clinical guidelines,[12] as represented in Point 3 of the Star Model.

Point 3 provides a translation of the research evidence into practice recommendations, called clinical practice guidelines, by combining research evidence with clinical expertise and theoretical guides. Point 4 reflects integration of evidence-based guidelines into organizational systems and culture and into common clinical action. Point 5 is evaluation of impact of EBP as reflected in patient health outcomes, satisfaction, efficacy, efficiency, costs, and health status impact. Quality improvement of healthcare processes and outcomes is the goal of this knowledge transformation.[14]

Evidence-based guidelines (Point 3) are potent approaches to putting results of studies into action and are central to closing the chasm between what we *know* to be best healthcare and what is actually practiced. To this end, detailed processes have been designed by nurses. Of particular note is the work done though the Registered Nurses Association of Ontario (RNAO, available online at http://www.rnao.org/bestpractices/index.asp). Part of this group's mission is to cultivate knowledge-based nursing practices. Through the Best Practices Program,[16] they offer detailed materials to support implementation of evidence-based clinical practice guidelines. The RNAO toolkit is helpful in assisting healthcare settings to design systematic and well-planned implementation (Point 4) for evidence-based changes in practice.[16]

In another nursing effort, a group of EBP nurse experts convened in an invitational conference. The task was to outline goals and strategies to produce the research needed to further understand the science of EBP. Principal outcomes of this conference were a context-driven definition of the term *translation research* and exploration of research methods to test approaches that promote and sustain translation of research into practice. With the University of Iowa at the lead, the group defined translation research as the "scientific investigation of methods and variables that affect adoption of evidence-based health care practices by individual practitioners and health care systems to improve clinical and operational decision making."[17]

Preparing the Workforce for EBP: Nursing's Response

Rapid change is imminent for all health professionals; this change is already influencing education, licensure, practice, continued licensure, accreditation of educational programs and healthcare facilities, certification, and financing.[2,10] Nursing education, major organizations, accreditation, licensure, certification, administration, and practicing nurses are involved in this change process and in designing the new system. Nurse leaders and policy makers will help to move nursing through the chaos and rapid change that surely accompanies such sweeping reform.

In response to the IOM's recommendation for each health profession to develop competencies in alignment with its primary functions, nurses have established national consensus on competencies for EBP in nursing.[18] Through a rigorous iterative process over a three-year period, competency statements have been generated, validated, and endorsed by a national panel of experts to guide education programs at the undergraduate, masters, and doctoral levels in nursing. Between 20 and 32 specific competencies are enumerated for each level of educational program and a national commentary network has been established to provide a basis for continued refinement. The competencies are organized using the ACE Star Model.[14] Following the IOM recommendations for inclusion of content on quality improvement content in educational programs, these competencies specify evidence-based quality improvement at even the basic level of educational preparation. In addition, the competencies address the new and fundamental skills of knowledge management, accountability for scientific basis of nursing practice, organizational and policy change, and development of scientific underpinnings for EBP.[18]

In addition to these efforts for the preparatory educational stage, nurses have also addressed professional development needs of the existing workforce

through significant continuing education efforts. A series of Summer Institutes on Evidence-Based Practice has been sponsored by the Academic Center for Evidence-Based Practice of The University of Texas Health Science Center since 2002.[19] These conferences have been competitively funded by the Agency for Healthcare Research and Quality. The programming for these 2.5-day institutes is strongly guided by the IOM recommendations and provides intensive study and skill development in an interdisciplinary context to prepare participants to make changes in their home agencies. The number of other regional, invitational, and one-day conferences has greatly increased in the past several years.

Embrace the EBP Movement in Nursing—or Get Left Behind

It is vital to the public's health and for the profession of nursing that nurses embrace the EBP paradigm and move in step with other disciplines in this effort. Critics question if there is sufficient evidence to demonstrate that evidence-based nursing is a single construct or a process that can be distinguished from terms, such as quality assurance or research-based practice.[20] Indeed, clarity about processes and terminology are important in advancing EBP. We are moving into a new healthcare system that includes EBP as a primary component as defined in the IOM reports. Productive approaches include nurses engaging in the definitional and semantic work outlined in the *Quality Chasm*[2] and ensuring that the phenomena of interest to nurses and the science of nursing are well represented in this growing paradigm.

Others, focusing on the hierarchy system for rating types of evidence, suggest that EBP does not suit the science and art of nursing. They mistakenly claim that research relating to values and experiences is recognized in EBP or may not be suitable, for a systematic review; consequently, it may become labeled as *weak*.[21] Still others believe that "theory" is being neglected in the EBP approach.[22] The truth is that systems for rating strength of evidence *do* include a wide span of sources of knowledge, spanning from systematic reviews to true experiment to expert consensus opinion (eg, the system developed by the National Health System).[23] Further, qualitative research *is* a component of EBP research, just as patient values and individualization of care are. Nurses can assure that qualitative research results contribute to crossing the quality chasm by participating in systematic review projects, meta-analysis, and translation research activities. Likewise, theory and values can be used in informing clinical decisions when they are considered in its correct form of knowledge and not confused with knowledge produced through RCTs.[24]

Nurses have assumed leadership roles in redesigning healthcare for quality improvement. A number of nurses have been, and are still, deeply involved in producing the recommendations generated through the ongoing *Quality Chasm* reports. These nurses are leading the way for expansive involvement of all professional nurses in redesigning the healthcare system to ensure that it is safe and effective. Those nurses who are part of the various IOM groups producing these recommendations can serve as resources for others and should be called on to be a conduit of information both into and out of the IOM. Each IOM report contains the names of those nurses involved in producing the recommendations.

Nurses' awareness of and interest in EBP have risen sharply. This is seen through the numerous emerging conference themes on EBP and EBP preconference sessions added to standing conferences. Nursing literature also reflects this expansion of interest in EBP through its sheer growth in volume. Early on, there were few EBP articles in the Cumulative Index to Nursing and Allied Health Literature (CINAHL), most of which were written by British authors airing their reaction to EBM/EBP mandated by their National Health System. A bibliometric survey of nursing journals indexed in CINAHL brings into focus the explosion of interest in EBP.[25] The first nursing journal article on EBP appeared in 1996[26]; this was the sole article on EBP that was published during that year. In 1997, there were three more articles published on EBP. Taken in three-year increments, the volume of EBP literature in nursing rose as follows: 1997 to 1999 = 32 articles; 2000 to 2002 = 370 articles; 2003 to July 2005 = 441 articles. In a little more than six years, the number of nursing articles on EBP has increased by almost 1400%![25]

CONCLUSION

The imperative for nurses to stay abreast of the IOM *Quality Initiative* is compelling. The *Quality Chasm* reports highlighted in this discussion are the foundational documents upon which IOM generates subsequent recommendations. This rapidly growing number of reports holds great significance for the profession of nursing in that they are setting the very tone and direction for healthcare reform for *all* disciplines. Beyond the reports included here, other IOM reports lay directions for other healthcare aspects, such as computerized health information systems, academic health centers, and nursing administration. Other noteworthy IOM quality initiative reports and their full text URL links are identified in Table 5 (available in the online version of this article). To stay abreast of this initiative, nurses can access up to date information about the IOM *Quality Initiative* on the Internet.[27]

In the quest to close the quality chasm, nurses, other health professions, healthcare organizations, accreditation bodies, and licensing bodies must come together to overhaul the healthcare and education systems. Nurses are engaging in this important work as leaders, scien-

tists, and educators. We know what we have now—what we could have is ours to define and develop!

References

1. Institute of Medicine. Medicare: a strategy for quality assurance. In: Lohr KN, ed. Washington (DC): National Academy Press; 1990.
2. Institute of Medicine (US). Crossing the quality chasm: a new health system for the 21st century. Washington (DC): National Academies Press; 2001.
3. Institute of Medicine (US). To err is human: building a safer health system. Washington (DC): National Academy Press; 2000.
4. US Preventive Services Task Force. Screening for colorectal cancer: recommendations and rationale, July 2002 [online document]. Agency for Healthcare Research and Quality, Rockville, MD. Available at: http://www.ahrq.gov/clinic/3rduspstf/colorectal/colorr.htm.
5. Leatherman S, McCarthy D. Quality of health care in the United States: a chartbook. New York: The Commonwealth Fund; 2002.
6. US Preventive Services Task Force. Screening for idiopathic scoliosis in adolescents: a brief evidence update for the US Preventive Services Task Force, June 2004 [online document]. Agency for Healthcare Research and Quality, Rockville, MD. Available at: http://www.ahrq.gov/clinic/3rduspstf/scoliosis/scolioup.htm
7. Institute of Medicine of the National Academies. News release. Crossing the quality chasm: a new health system for the 21st century [online document]. Available at: http://www.iom.edu/report.asp?id=5432.
8. Institute of Medicine. Leadership by example: governmental roles. Washington (DC): The National Academies Press; 2002.
9. Institute of Medicine. Priority areas for national action: transforming health care quality. Washington (DC): The National Academies Press; 2003.
10. Institute of Medicine. Greiner A, Knebel E, eds. Health professions education: a bridge to quality. Washington (DC): The National Academies Press; 2003.
11. Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. Evidence-based medicine: how to practice and teach EBM, 2nd ed. Edinburgh: Churchill Livingstone; 2000.
12. Rogers EM. Diffusion of innovation. New York: Free Press; 1995.
13. Plsek P. Redesigning health care with insights from the science of complex adaptive systems. Appendix B, Crossing the quality chasm: a new health system for the 21st century. Institute of Medicine. Washington (DC): National Academies Press; 2001.
14. Stevens KR. ACE Star Model of EBP: the cycle of knowledge transformation. Academic Center for Evidence-based Practice; 2004. Available at: http://www.acestar.uthscsa.edu.
15. Stevens K. Systemic reviews: the heart of evidence-based practice. Adv Pract Acute Crit Care 2001;12:529-38.
16. Registered Nurses Association of Ontario. Best practice guidelines. Available at: http://rnao.org/bestpractices/index.asp. Accessed: July 28, 2005.
17. Titler MG. Overview of the US invitational conference "Advancing Quality Care Through Translation Research." Worldviews on Evidence-Based Nursing 2004;1(Suppl 1): S1-S5.
18. Stevens KR. Essential competencies for evidence-based practice in nursing. San Antonio (TX): Academic Center for Evidence-Based Practice, The University of Texas Health Science Center at San Antonio; 2005.
19. Academic Center for Evidence-Based Practice. Available at: http://www.acestar.uthscsa.edu. Accessed July 28, 2005.
20. French P. What is the evidence on evidence-based nursing? An epistemological concern. J Adv Nurs 2002;37: 250-7.
21. Forbes A, Griffiths P. Methodological strategies for the identification and synthesis of 'evidence' to support decision-making in relation to complex healthcare systems and practices. Nurs Inquiry 2002;9:141-55.
22. Fawcett J, Watson J, Neuman B, Walker PH, Fitzpatrick JJ. On nursing theories and evidence. J Nurs Sch 2001;33:115-19.
23. NHS Rating System—NHS Research and Development Centre of Evidence-Based Medicine. Levels of Evidence [online document]. Available at: http://cebm.jr2.ox.ac.uk. Accessed January 12, 2001.
24. Stevens KR. The truth about EBP and RCTs. J Nurs Admin 2002;32:232-33.
25. Stevens KR. Bibliometric survey of CINAHL nursing journals to identify trends in publications on evidence-based practice. Unpublished document, 2005.
26. Jones K, Wilson A, Russell I, Roberts A, O'Keeffe C, McAvoy B, et al. Evidence-based practice in primary care: Network for Evidence-Based Practice in Northern and Yorkshire. Br J Commun Health Nurs 1996;1:276-80.
27. Institute of Medicine. Crossing the Quality Chasm: The IOM Health Care Quality Initiative [online document]. Available at: http://www.iom.edu/focuson.asp?id=8089.

Table 1. Score Card: Examples of quality shortcomings

Healthcare standard	Study results	Source
Common Cold Almost all colds are caused by a virus, for which antibiotics are not an effective treatment and therefore the standard is symptomatic care.	Data were collected from the National Ambulatory Medical Care Survey for 531 children ≤18 years diagnosed with common colds, URI, or bronchitis, excluding those with lung disease. Antibiotics were prescribed at 44% of visits of patients with common colds.	Nyquist A, Gonzales R, Steiner JF, Sande MA. Antibiotic prescribing for children with colds, upper respiratory tract infections, and bronchitis. JAMA 1998;279:875–7.
Peptic ulcer disease National Institutes of Health Consensus Development Conference strongly recommended that people with *H pylori* peptic ulcer disease (PUD) receive antimicrobial therapy for the infection (February 1994).	Data were collected from pharmaceutical claims files of 3571 Medicaid beneficiaries ≥18 years old who received care for PUD and who were not receiving nonsteroidal antiinflammatory drugs. Only 11% of patients received antimicrobials within five days of a PUD encounter.	Thamer M, Ray NF, Henderson SC. Influence of the NIH Consensus of *Helicobacter pylori* on physician prescribing among a Medicaid population. Med Care 1998; 36:646–60.
Asthma care Prevailing standards of asthma care on asthma medications, including steroid inhaler, peak flow meter, and self-management tools.	Survey of 5580 HMO patients ≥14 years old who were prescribed asthma medications was analyzed. 72% of patients with severe asthma had a steroid inhaler, 26% needing daily medications had a peak flow meter at home, and only 42% were advised about self-management tools.	Legoretta AP, Christian-Herman J, O'Connor RD, et al. Compliance with national asthma management guidelines and specialty care: a health maintenance organization experience. Arch Intern Med 1998;158:457–64.
Diabetes mellitus: Hemoglobin $A1_C$ Perform Hemoglobin $A1_C$ (or glycosylated hemoglobin) at least once a year for diabetics. It is a blood test that reflects the metabolic control of diabetes.	Medicare claims from three states were examined for 97,388 Medicare patients≥65 years old diagnosed with diabetes mellitus. 84% did not receive a hemoglobin $A1_C$ test during the prior year.	Weiner JP, Parente ST, Garnick DW, Fowles J, Lawthers AG, Palmer H. Variation in office-based quality: a claims-based profile of care provided to Medicare patients. JAMA 1995; 273:1503–8.
Smoking Counseling In 1996, the Agency for Health Care Policy and Research (AHCPR) recommended that primary care physicians identify patients' smoking status and counsel smokers at every visit (AHCPR, 1996).	Data were gathered from a mail survey of 6830 randomly selected patients ≥20 years old who had visited a clinic during the study period (85% response rate). Only 53% of smokers were asked their smoking status; 47% of smokers were advised to quit.	Kottke TE, Solberg LI, Brekke ML. Delivery rates for preventive services in 44 Midwestern clinics. Mayo Clin Proc 1997; 72, 515–523.

Table 3. Priority areas for national action

1. Care coordination
2. Self-management/health literacy
3. Asthma
4. Evidence-based cancer screening
5. Children with special healthcare needs
6. Diabetes
7. End-of-life organ failures
8. Frailty associated with old age
9. Hypertension
10. Immunizations
11. Ischemic heart disease
12. Major depression
13. Medication management
14. Nosocomial infections
15. Pain control in advanced cancer
16. Pregnancy and childbirth
17. Mental illness
18. Stroke
19. Tobacco dependence
20. Obesity (emerging)

Data from Institute of Medicine (2003)

Table 5. Other noteworthy reports from the Institute of Medicine *Quality Initiative*

Quality through Collaboration: The Future of Rural Health Care (2005)
Based on the recommendations in the *Quality Chasm* report, the Committee proposes a five-pronged strategy to address the quality challenges in rural communities.
By the IOM Committee on the Future of Rural Health Care
Available at: http://www.nap.edu/openbook/0309094399/html/

1st Annual Crossing the Quality Chasm Summit: A Focus on Communities (2004)
This report offers guidance at the community and national levels for overcoming the challenges to the provision of high-quality care articulated in the *Quality Chasm* report and for moving closer to achievement of a patient-centered health care system. It presents commitments made by national champions.
By the IOM Board on Health Care Services.
Available at: http://books.nap.edu/catalog/11085.html

Academic Health Centers: Leading Change in the 21st Century (2004)
Because academic health centers train health professionals, conduct research to advance health, and provide care, especially to the most ill and poorest populations, specific recommendations are made in this report. Recommendations include public policy steps, strategic management systems to enable a more coordinated and cohesive system, Congressional financial changes to support innovation in clinical education, pioneering the use of information systems for clinical purposes and incorporate their use into clinical education and research.
By the IOM Committee on the Roles of Academic Health Centers in the 21st Century
Available at: http://www.nap.edu/catalog/10734.html

Patient Safety: Achieving a New Standard for Care (2004)
This report describes a detailed plan to facilitate the development of data standards for collection, coding, and classification of patient safety information and recommends an applied research agenda on patient safety.
By the IOM Committee on Data Standards for Patient Safety
Available: http://www.nap.edu/books/0309090776/html/

Keeping Patients Safe: Transforming the Work Environment of Nurses (2003)
The only IOM report on a single discipline, this report provides guidelines for improving patient safety by changing nurses' working conditions and demands. It includes key aspects of the work environment for nurses and reviews potential improvements in working conditions that are likely to have an impact on patient safety.
By the IOM Committee on the Work Environment for Nurses and Patient Safety
Available at: http://www.nap.edu/books/0309090679/html/

Data from Washington, DC: National Academies Press
Available online at: http://www.nap.edu