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Quality of Care and Performance Improvement

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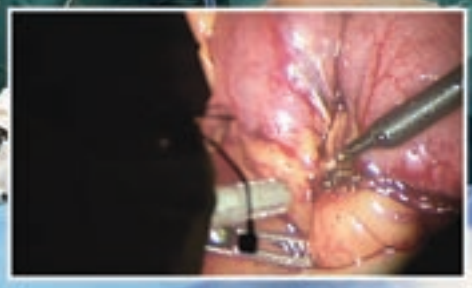

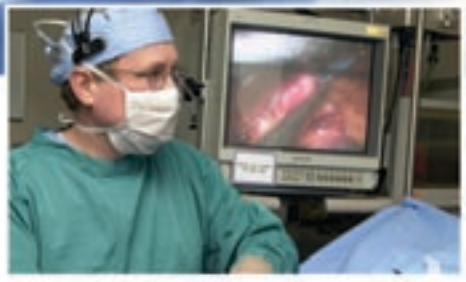

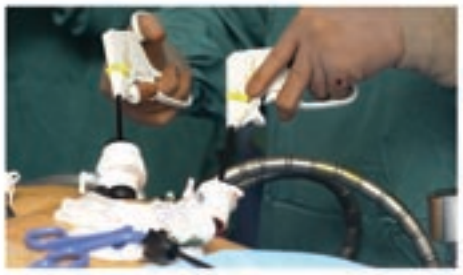

Bariatric surgery: Team approach wins national acclaim

Bariatric surgery is offered at Pitt County Memorial Hospital in conjunction with the Surgical Obesity Program at the Brody School of Medicine at East Carolina University and in partnership with private practice physicians in Greenville. Last year, the National Institutes of Health designated our program as one of six centers that will work cooperatively on research into the surgical treatment of obesity. More recently, the surgeons who practice bariatric surgery at PCMH have been recognized as a Center of Excellence by Blue Cross/Blue Shield of North Carolina.

The Brody School of Medicine Obesity Program, which has been offered here for 24 years, has developed a nationally recognized protocol that incorporates extensive preliminary screening and lifetime follow up by a multi-specialty team including psychiatrists, nutritionists and medical counselors. Bariatric surgery has proved particularly effective in reducing the effects of diabetes in morbidly obese patients. The Brody School of Medicine and University Health Systems are working together to make things happen—in the community, in the region and in the state.

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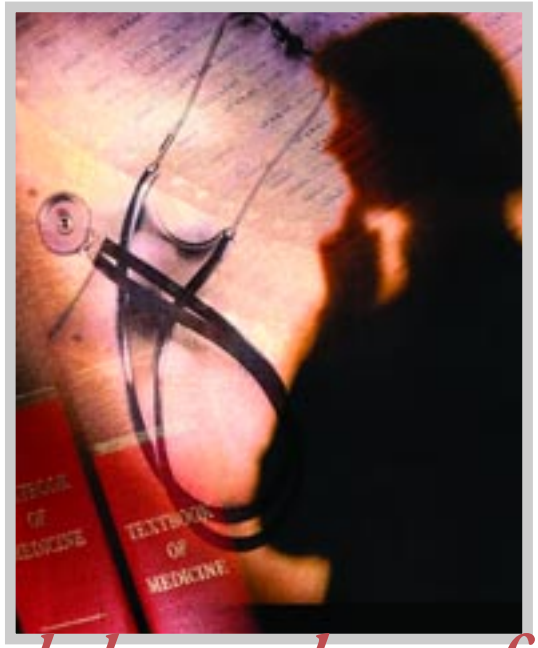
POLICY FORUM
Quality of Care and Performance Improvement

COMMENTARIES

SPECIAL ARTICLE

DEPARTMENTS



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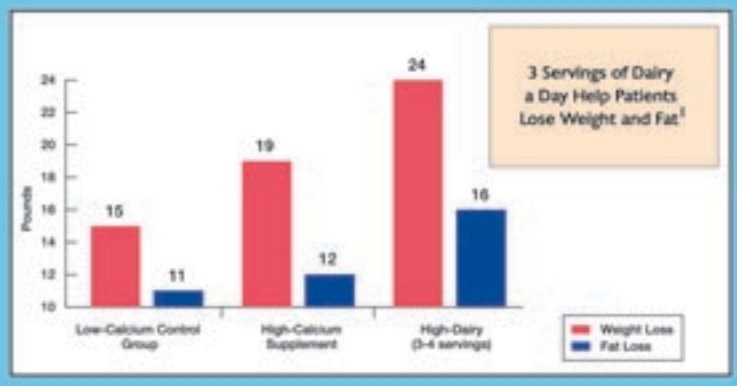

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[1] Zemel MB, et al. Dietary calcium and dairy products accelerate weight and fat loss during energy restriction in obese adults. *Obesity Research.* 2004; 12(4): 582-590. In the study, dairy products that counted as a dairy serving were: excellent sources of calcium and good sources of protein.
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Quality of Care and Performance Improvement:
An Important New Emphasis Whose Time Has Come

Lawrence M. Cutchin, MD, and Clyde L. Brooks, Jr., MD

Background

In December of 2003, the North Carolina Medical Society (NCMS) appointed a Task Force on Quality of Care and Performance Improvement. The NCMS Task Force, consisting of 13 members and six consultants, is charged with "recommend[ing] actions the NCMS [could] take to expedite the employment of available resources to address documented problems with care quality and patient safety in North Carolina." The Task Force has met on a number of occasions since its initial appointment and has reviewed the literature on quality of care and perfomance improvement, looking at the national experience as well as experience in our own state. The Task Force has discussed the range of actions that the North Carolina Medical Society could take to create a safer and more effective healthcare delivery system for our patients. The Task Force is submitting a white paper with specific recommendations on the subject to the North Carolina Medical Society this fall.

At the invitation of the Editor of the *North Carolina Medical Journal*, the Task Force summarized some of the principal themes developed during its early work. Members of the Task Force are contributing papers to the *North Carolina Medical Journal*—papers designed to share these ideas and themes with a broad spectrum of healthcare professionals, healthcare organizations, and policy makers in our state. We hope that these writings will serve as a basis for further discussion of how North Carolina physicians can work in partnership with others to elevate the safety and effectiveness of care available to the citizens of North Carolina.

A Philosophical Perspective on Quality of Care and Its Improvement

From the outset, the Task Force was concerned with a few central ideas that are well described in various literature:

(1) Insofar as there exists a body of knowledge from which medical decisions should be made, there is a presently a lack of consistent application of this knowledge in clinical practice. This is known as the knowledge-practice gap. Clearly any action recommended by the Task Force must incorporate ways to address this issue.

(2) The Task Force was concerned with national (and state and local) publicity related to the volume of errors occurring in routine medical care (particularly since the publication of the national Institute of Medicine report, *To Err is Human*, in 2000).[1] This has raised feelings of alarm and distain among the general public. The publicity has also spawned expectations that healthcare professionals and provider organizations will take specific steps to ensure that these systematic errors are minimized or eliminated. Task Force members recognized the effort to reduce the frequency of errors as an essential component of overall system performance and care quality and that Task Force recommendations must address this issue.

(3) The Task Force has taken the view that quality of care is a broader concept than simply the issue of errors or adverse events (safety). The effectiveness of healthcare delivery—the extent to which desired patient outcomes are achieved—is the other side of the quality coin. The Task Force's recommendations will address the extent to which the delivery of healthcare in general, and the practice of medicine by physicians in particular, achieve desired outcomes. To that end, the Task Force will recommend some initiatives aimed at improving the decisions and actions of practicing physicians.

(4) The Task Force is aware of recently documented care quality deficiencies in the United States, as well as disappointing efforts to address these deficiencies through interventions

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targeted to either individual practitioners or care delivery systems. For example, McGlynn, et al.[2] recently presented data to show that United States adults receive only about half of the recommended care for a group of common acute and chronic conditions and preventive services (a *process* indicator of care quality). Comparisons of key quality of care indicators delivered in 12 United States metropolitan communities show that for 439 indicators across 30 conditions and types of preventive care (representing 52% of the reasons adults use ambulatory care services in this country and 46% of the reasons for which they are hospitalized), on average, adults in these communities were receiving 50 to 60% of the recommended care. These studies, which found considerable variation among communities studied, indicate that there are significant quality differentials among communities with regard to these indicators of service "omission" for which there is solid evidence of appropriateness. Our own North Carolina Teachers' and State Employees' Comprehensive Major Medical Plan has recently disseminated data showing that there are substantial numbers of North Carolina state employees, dependents, and retirees with diagnosed chronic diseases for whom standard, evidence-supported healthcare services are not being provided. Medical Review of North Carolina (MRNC) has shown similar findings with respect to patients discharged from North Carolina hospitals following a myocardial infarction. Clearly there are reasons to examine the patterns of such services for defined clinical entities. It is important to ascertain the extent to which explicit services covered by standard health insurance plans are not provided, even though there is substantial evidence of their appropriateness and effectiveness in the care of specific patients.

(5) The Task Force recognized that there are arguments with the current emphasis on evidence-based approaches to medical practice, particularly as this movement has led to the promulgation of so-called "clinical guidelines" pertaining to the care of patients with particular conditions or diagnoses by various professional, third-party, and governmental agencies. Even so, few can deny the merit of disease management strategies. These strategies have attempted to encapsulate clinical guidelines in an organized and cost-effective strategy for managing the care of large numbers of individuals who have similar clinical diagnoses/conditions and for whom it is possible to standardize both the patterns of healthcare encounters, related services, and pharmaceutical usage. Despite these advances, the fact remains that there is a substantial lack of evidence, by any criteria used, to evaluate the effectiveness of many of the treatments and strategies for disease management in use today. Hence, there is a continuing need for the development of the clinical evaluation science base of contemporary medical practice. The fact that randomized, placebo-controlled research evidence does not yet exist (or perhaps cannot ever be developed) to support every clinical procedure or maneuver does not mean that clinical decision making has to sit idly by and remain non-responsive to the needs of patients. But, where such evidence is available, or where it can be amassed, it should be used to shape the clinical decisions of those on the frontlines of medical practice.

(6) The Task Force took heart from recent reports from studies in the United Kingdom and elsewhere indicating that for those clinical procedures *actually performed* or prescription medications *actually ordered*, the majority seem to be procedures and prescriptions for which there is evidence from randomized, controlled trials or convincing non-experimental evidence with high consensus among clinicians that these procedures or treatments are actually "evidence-based." for example, Mulligan, et al., reported in *The Lancet* that a *post hoc* analysis of 100 consecutive patients in a single medical ward in Oxford, England found 82% of the patient management interventions "...were based on high quality scientific evidence."[3]

Similar retrospective findings have been reported from internal medicine departments in Canada,[4] for dermatology outpatients in Denmark,[5] hematology-oncology clinics in the United States,[6] and thoracic surgical practice in Buffallo, New York.[7] The literature is rapidly growing in this regard, and these are only illustrative of the range of clinical situations where evidence-based approaches have been shown to be implemented. The point is: though the conduct of randomized clinical trials of every procedure or maneuver in medicine and surgery is a practical impossibility, there is substantial data available to show that not only is there a growing body of literature offering evidence of effectiveness of common medical and surgical procedures, but there are also data to show that the procedures being performed are ones for which there is supporting evidence of effectiveness.

The Value of Quality Improvement

The Task Force grappled with the question of establishing the *economic value* of quality improvement (the so-called "business case" for quality). This question comes up most often in discussions among purchasers of group health insurance (e.g., large employers) or among insurers themselves who ask whether investments in quality improvement programs or initiatives yield a financial benefit to those who either purchase or insure healthcare for defined beneficiary populations.

The Task Force believes that despite the difficulties of establishing the "business case" for quality improvement, the fact that there are usually clearly demonstrated health and economic benefits to those served constitutes a sound reason for the North Carolina Medical Society to lead the way in promoting the improvement of quality of care and the performance of healthcare systems in our state. We plan to do so in the interest of benefiting the health and healthcare available to all North Carolinians.

This special issue of the Journal begins with a two substantial Issue Briefs. The first is prepared by prepared by two colleagues affiliated with Medical Review of North Carolina, the federally-designated Quality Improvement Organization (QIO) serving

North and South Carolina. Drs. Meera Kelley and Ross Simpson have offered a comprehensive overview of key health policy issues surrounding the problems of quality improvement and assurance. The second is by Drs. Sharon Hull, Leila Kahwati, Elizabeth Kanof, and Ms. Jennifer Proko. It offers a detailed discussion of how considerations of quality may be integrated with mainstream clinical practice in primary care. Their reviews are followed by papers on: data and information systems essential to quality improvement by Mr. Robert Weiser and Dr. Christopher Mansfield; evidence-based medicine by Drs. Charles Willson and Hadley Callaway; disease management approaches to quality improvement by Drs. John Mangum and Conrad Flick; educational programs addressing quality of care by Drs. Stephen Willis, Thomas Pulliam, and Thomas Bacon; efforts to make quality of care efforts "patient-centered" by Drs. Allen Dobson and Michelle Jones; and a summary paper on how quality of care and performance improvement efforts are mutually reinforcing by Drs. Noel McDevitt, William Walker, and Gordon DeFriese.

We are grateful to the authors of the papers appearing in this special issue of the *North Carolina Medical Journal*, most of whom are members of the Task Force on Quality of Care and Performance Improvement appointed a year ago. The preparation of these papers, and the deliberations which have led to their collection in this issue of the Journal, reflect the intensity of interest among these Task Force members, but also provide a template and a roadmap for further quality improvement initiatives taking place in our state. **NCMJ**

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Quality of Care and Health System Performance:
Where Are We Now? Where Should We Be Going? Who Can Take Charge and Lead Us There?

Meera A. Kelley, MD, and Ross J. Simpson, Jr., MD, PhD, MPH

Where Are We Now?

We have observed tremendous advances in healthcare during the past century. Between 1900 and 2000, life expectancy in the United States increased from 46.3 to 73.9 years for a man and from 48.3 to 79.4 years for a woman. Significant developments include vaccines, antibiotics, modern surgery, anesthesia, and treatments for chronic conditions such as diabetes and hypertension—just to name a few.

In the face of these dramatic improvements, however, there is considerable concern about the safety and quality of our current healthcare system. The concerns with healthcare quality focus on medical errors, underuse and overuse of diagnostic tests and therapies, and waste of resources. Medical errors reflect unintended actions, such as the wrong drug being given to a patient. Underuse of therapies, which can also be termed "errors of omission" reflect lack of use of recommended care, such as use of beta-blocker medication for patients with a heart attack. Overuse of certain aspects of care is suggested by the significant geographic variability across the United States in resource utilization (e.g., the cost of care for the average patient), and in rates of certain procedures such as hysterectomy. Finally, waste reflects the all-too-common repetition of tests and services such as x-rays or CT scans when patients receive care at different sites.

Errors

"Medical errors" include events in which an unintended action was performed, an intended action was not performed, or an intended action was performed incorrectly. Not all errors result in a negative outcome for the patient—indeed, most do not. Similarly, not all bad outcomes result from medical errors; "adverse events" are occurrences that are deleterious to the health of the patient and may or may not result from an error. A patient with no history of drug allergy, for example, who develops a severe rash when prescribed an appropriate therapy experienced an "adverse event," but not a "medical error." The focus on medical error reduction is to minimize the opportunity for adverse events that result from medical errors—these are termed "preventable adverse events."

The 1999 national Institute of Medicine's *To Err is Human*[1] reported that 44,000-98,000 people die in United States hospitals each year as a result of medical errors. While the precise number has come under considerable scrutiny, certainly the true number is "too many," and the number of people hurt non-lethally is likely to be much, much greater than the number who actually died. Adverse drug events are common in hospitalized patients, with 2-35% of patients having such events, and cause over 7,000 deaths per year. Over two million nosocomial (hospital-acquired) infections occur per year in United States hospitals. As previously suggested, not all adverse drug events or infections acquired in the hospital are preventable.

Variability

Healthcare delivery varies considerably across our country. Among Medicare beneficiaries, for example, spending per enrollee in 1996 in Miami, Florida was $8,414, while in Lynchburg, Virginia it was $2,829. The chance of being hospitalized when a person dies in Newark, New Jersey was 49%, while in Boulder, Colorado it was 19.9%. The likelihood of spending greater than seven days out of the last six months of life in an intensive care unit in Munster, Indiana was 25.5%, while in Eugene, Oregon it was 2.9%. Finally, the chance of getting aspirin upon discharge from the hospital after a myocardial infarction in Mason City, Iowa was 96%, while in San Luis Obispo, California it was 52%.[2] Interestingly, states with higher

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Medicare spending actually seem to receive lower-quality care. States with more general practitioners use more effective care and have lower spending, where states with a higher proportion of specialists have higher costs and lower quality as measured by specific process of care criteria.[3]

Underuse of Standard Treatments

Overall in the United States, the proportion of patients receiving the recommended care for prevention, acute treatment, and chronic care is approximately 55%.[4] Beta blockers following acute myocardial infarction, testing for hemoglobin A1C in patients with diabetes, administration of vaccines for pneumococcus and influenza, anticoagulants for stroke prevention in patients with atrial fibrillation, mammography screening, and smoking cessation counseling are often not used in appropriate patients.

Overuse

There is a growing consensus that certain diagnostic tests, drug therapies, and surgeries are overused. These include hysterectomies, cardiac catheterizations, cardiac bypass surgery, pacemakers, and the use of sedatives and antibiotics. For example, antibiotic prescriptions for sore throats, which are commonly caused by viral infections that are not responsive to antibiotics, are prescribed in over 60% of encounters. By expert panel review, over 40% of hysterectomies, coronary bypass surgeries, and coronary angioplasties are either inappropriate or of questionable utility.[5]

Waste

Our healthcare system is inefficient. Duplicate history taking, complex billing requirements, incomplete or missing patient records, and unnecessary reports all contribute to added costs and decreased patient satisfaction. In addition, patients seeking care from multiple institutions often face duplication of tests due to lack of availability of prior ones.

Comparison of Consumer Perceptions in the United States with Those of Other Industrialized Nations

The goals for healthcare in the 21st century suggested by the 2001 national Institute of Medicine report, *Crossing the Quality Chasm*,[6] are for healthcare to be: (1) safe, (2) effective, (3) patient-centered, (4) timely, (5) efficient, and (6) equitable. The Commonwealth Fund conducted international health policy surveys measuring these six factors.[7,8] The 2001 International Health Policy Survey sponsored by the Commonwealth Fund included 1,400 adults and the 2002 International Health Policy Survey included a sample of 750 from the United States, United Kingdom, New Zealand, Australia, and Canada. Subsequent comparisons among the countries surveyed in these healthcare quality priority dimensions revealed the following:

(1) ***Safety:*** The United States ranked last. The United States had the highest reports of medication errors (receiving the wrong medication or dose over the past two years), and patients who were most likely to say a medical mistake was made in their treatment.
(2) ***Effectiveness:*** The United States tied for last. The United States had more patients not getting a recommended test, treatment, or follow-up due to cost, and was last in patients not filling a prescription due to cost.
(3) ***Patient-Centered:*** The United States ranked second to last. The United States ranked last (tied with the United Kingdom) on physicians spending enough time with patients and last on physicians listening carefully to patients' health concerns.
(4) ***Timeliness:*** The United States ranked third. The United States was the best on hospital admission waiting times, but next to last on waiting five days or more for a physician appointment when patients last needed medical attention.
(5) ***Efficiency:*** The United States ranked last. The United States was last on being sent for duplicate tests by different healthcare professionals, and worst on not having medical records or test results reach a doctor's office in time for appointment.
(6) ***Equity:*** The United States ranked last for lower-income patients. The United States was worst on patients having problems paying medical bills and worst on patients being unable to get care where they live.

How Did We Get Here?

Despite the dramatic scientific advances we have seen over the past century, the way we deliver care for patients has not changed significantly. In other words, we have revolutionized the *products* of healthcare—medications, interventions, etc., but we have not changed the fundamental *process* of providing care. The physician-patient encounter still remains as the hub of American healthcare, with essentially all care orchestrated by the physician.

In our current environment, this method of delivery poses two serious challenges. For one, in order to provide the best, guideline-based evaluations and therapies at the time of the patient encounter, the sheer volume of information that the physician must have is staggering. As of July 2004, the National

"Physicians face numerous interruptions, distractions, and required activities that are not critical to the actual care of the patient."

Guidelines Clearinghouse contained 1,329 individual guideline summaries.[9] Patients today take significantly more medications than even five years ago, with new drugs developed all the time.

Second, providing care itself is much more hazardous than in the past. Physicians face numerous interruptions, distractions, and required activities that are not critical to the actual care of the patient. Just a few examples include documentation for billing that is not essential to the care of the patient, administrative demands from the practice and hospital, health plan programs with redundant and distinct safeguards, such as prior authorizations and post-payment audits, and inconsistent formularies across plans so that the physician cannot, as a routine, simply write for the medication he or she feels is most appropriate and has experience with. Therefore, the resources needed at the time of the patient-physician encounter have increased, while the time actually available for focused, uninterrupted interaction has decreased.

How Do We Build a Better Health System?

Given how complex our healthcare system is, there will be no single easy solution. One key component that will be essential is the consistent availability of information on how we are doing. Without this ongoing information, attempts to determine effective solutions will be unsuccessful and highly inefficient. How do we know where we are now and how will we know if a change has resulted in improvement? We need a practical way to measure quality that results in data that are meaningful; that is, data which are based on sound scientific evidence and are clinically important.

How Do We Measure Quality?

In order to measure quality, several things need to be in place. Easily available and accurate health data are a necessary requirement as standards for care norms and appropriate or achievable outcomes for patients are agreed upon.

There are three types of quality of care measures: structure, process, and outcome measures. Structural measures include capacities, technologies, and infrastructure, such as telecommunications, a management information system, and staffing, which may affect outcomes. Structural measures may also include the credentials (e.g., board certification) of healthcare providers. Outcome measures include adverse events that happen to patients like death and readmission to a hospital. These events are the ones physicians often find easiest to relate to and understand. Process measures include the procedures to assure the appropriate use of diagnostic tests and therapeutics.

Quality of care can be measured through assessment of appropriate outcomes and by the processes of care delivered to patients. Facility licensing and accreditation, for example, usually rely on structural measures of quality. Requirements range from rooms size and sanitation to fire detection and staffing (both numbers and credentials). Facilities and support systems must be physically adequate to uphold the provision of quality care.

Outcome measures are the end results of particular healthcare practices and interventions that patients feel and recognize. Poor outcomes are obviously events like death or serious complications that might lead to hospital readmissions. Studies of outcome measures can lead to decisions about where a patient can be treated. If the patient has pneumonia and can be treated at home, that could reduce treatment costs. Or, if there is not a cure, outcomes research can provide information that may help improve a patient's quality of life.

Process measures reflect actual care provided to a patient. Examples of a process measure include timely administration of beta blocking drugs to appropriate patients recovering from a myocardial infarction, and regular testing of blood lipid levels and hemoglobin A1C levels in patients with diabetes.

Neither structure, process, nor outcome measures are inherently better for measuring quality as each type has its own advantages and disadvantages, and quality of care projects often include all three types of measures. For example, outcome measures are often influenced by factors outside the healthcare system and are often not amenable to direct improvement. Process measures are most likely to be under the control of the healthcare system and amenable to change. However, their link to improved health may not always be obvious. For example, a hospital's rate for administering a beta-blocking drug to patients who do not have contraindications to these drugs is an important process measure of good care, but it may be difficult to show that improving this single process of care results in an improved outcome of lower death rates following discharge. Quality of care requires efforts in the assessment of multiple processes of care and outcomes that are linked to these processes.

Good measures of healthcare quality share several key attributes. They must be accurately measured; there must be consensus that the measure is important for health; and there must be room for improvement and established approaches to improve the measure. Health information might be in the form of administrative data, such as claims data or information that can be obtained or abstracted from medical records. There must be agreement in the medical community on the type of care that is appropriate for patients with the medical condition under study. Typically, information from randomized trials and expert panels are utilized to identify populations and treatments appropriate for the specific disease. Most importantly, there must be accepted interventions available to improve the measure. The key factor offering the promise for improving care is developing and implementing change. Such interventions often include performance reports in which an individual hospital's or physician's ratings of key care indicators are compared to appropriate normative data. Increasingly, more specific interventions (e.g., care maps or plans, standardized discharge orders, or educational material) are developed and disseminated as part of the program.

What Is Happening on a National Level?

Several national organizations have committed to stimulate the necessary changes in healthcare quality. These key organizations include the Centers for Medicaid and Medicare Services (CMS), the National Quality Forum (NQF), the Agency for Healthcare Research and Quality (AHRQ), the Joint

Commission on Accreditation of Healthcare Organizations (JCAHO), the American Health Quality Association (AHQA), and Quality Improvement Organizations (QIOs).

Making quality of care information available to the public has become an increasing priority among these groups. CMS began a national effort to make information on quality of care in nursing homes public in 2002, home health agencies in 2003, hospitals in 2004, and is expected to release physician-level practice quality data in the next few years.[10] Expectations of accountability and openness about the care provided are likely to expand. In addition, Blue Cross Blue Shield and the Centers for Medicaid and Medicare Services are examples of organizations trying models of "pay for performance"—that is, rewarding providers of better care with increased payment.

How Do We Begin to Develop a Healthcare System that Is Safe, Effective, Patient-Centered, Timely, Efficient, and Equitable?

In order to create a better and higher quality healthcare system, information must be readily accessible at the time of the patient encounter. Communication across healthcare settings—hospitals, offices, nursing homes—will have to be efficient and effective. Giving the patient all his or her own basic health history in a concrete format (written or electronic) is one initial step to assist with knowledge transfer. Finally practice complexity must be minimized through the use of standardized, simplified communication—for exchange with health plans, for sharing of information across different healthcare settings and systems, and for improved education and empowerment of patients in their own care. Many of these goals will be more readily achieved through the widespread incorporation of electronic health records.

Physician Culture

The other major shift that will be required is a change in the culture in which we practice—our way of thinking about how care is best delivered, and who is responsible for the results. Traditionally, physicians have been trained to work and think independently, to maintain knowledge through the use of their memory—to avoid the use of crutches, "cookbooks," or checklists; and to appreciate the variation among patients and the necessity of a tailored approach. Instructions of the physician were expected to be followed by other healthcare workers and even patients, without questioning. In order to change our culture, we as physicians must begin to think of ourselves as members of a healthcare team—a team that involves nurses, pharmacists, social workers, therapists, many other healthcare workers, and, importantly, the patient. We must recognize the limitations of our memory and encourage the reliance on readily available, up-to-date clinical information, and check lists to ensure that each patient receives every step of recommended care and so that medication interactions and errors can be better avoided. We must also encourage input from the various members of the team, including the patients, if these goals are to be achieved.

This new culture does not undermine the physician's role. The physician still performs those critical aspects of care that only he or she as a member of the team is trained to do—assess patients, direct major aspects of therapy, perform procedures or interventions, and communicate with the patients. Indeed, by limiting the roles to those things that only the physician can do, the physician-patient interaction once again can become the center, can be strengthened, and distractions, which include concerns about medical errors, will be minimized.

No longer can we afford to rely solely on the physician to ensure all aspects of care. We must set up systems of care that include the various members of the team—each empowered to do that which he or she is trained to do according to protocols, which are often predetermined. While physicians cannot be solely responsible for each aspect of care, given our clinical training and experience, we must lead the changes—the new systems.

Some Examples of Successes

For the past two decades, many national organizations, led by the Health Care Financing Administration, now the Centers for Medicare and Medicaid Services (CMS), have been actively involved in healthcare quality improvement. Such efforts began with the use of implicit criteria for case review of individual medical records by peer physicians and have progressed to explicit review of quality using standardized epidemiological and educational methods. Specific diseases with specific indicators were identified and compared across providers. The improved use of warfarin in the prevention of stroke in patients with atrial fibrillation, decreasing the delay time in administration of antibiotics in patients with pneumonia, and the administration of ACE inhibitors in patients with heart failure occurred as the result of these efforts.

These data-based activities were effective in improving key processes of care in specific diseases. However these projects were limited by the extensive costs and delays inherent in the collection, analysis, and feedback of this information to providers. Most importantly, the interventions used to improve care were limited by the efforts involved in data collection, and these efforts could not encompass the full range of modern interventions. Current efforts focus less on data collection and more on public reporting and specific educational interventions. Future efforts will focus on use and support for electronic health records, increased focus on outpatient care rather than care provided in the hospitals, and active steps to support and encourage widespread culture change to support quality care. Quality Improvement Organizations (QIOs), like Medical Review of North Carolina, are expected to provide active support for these programs.

First steps

Donald Berwick, MD, likely the most prominent leader in the healthcare quality improvement movement, suggests that in order to change the system, three preconditions seem helpful;

to face reality, to seek new designs, and to involve everyone. Facing reality means looking honestly at the weaknesses in our current system. New designs will be essential for success. We must involve everyone on the healthcare team—including patients—to create the new vision and to develop solutions.

As individual physicians we can take one step, now, to look at weaknesses in our practice settings. For the primary care physician, this may include examining a small proportion of charts of patients with diabetes mellitus and assessing the frequency with which the recommended steps of care were met. For a hospital physician, contacting the quality improvement department will readily generate performance data for some common, significant medical conditions. Nursing homes and home health agencies also have extensive data on care for the current national priority conditions.

We can also empower our patients with knowledge of their health conditions and treatments. We can acknowledge to them that the system is far from perfect. We can encourage them to take an active role in their own care, to ask questions, and to bring a friend or family member with them when they are hospitalized to help gather and process the information and care provided.

Some in healthcare assume that we as individuals can wait for the system to be changed, that somehow there will occur sweeping, broad, systematic changes across the United States. This assumption is incorrect. Past experience reveals that models of success have been developed by small groups of people working together, trying something new. Margaret Mead put it best; "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has." **NCMJ**

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The Practice of Quality:
Incorporating High-Yield Strategies into the Daily Reality of Medical Practice

Sharon K. Hull, MD, Leila C. Kahwati, MD, MPH, Elizabeth P. Kanof, MD, and Jennifer P. Proko, RN, CHCQM

Introduction

Today's physician is expected to incorporate clinical guidelines, increasing numbers of preventive services, and patient safety concerns into the realities of the day-to-day practice of medicine, regardless of specialty.[1-4] Fifty years ago, the concepts of "utilization review," "best practices," or "patient safety" were virtually unheard of, and the field of preventive medicine was in its infancy (though great strides in sanitation and other public health issues had been made by the early 1900's). As medicine progressed during the latter half of the 20th century, physicians were increasingly asked to be mindful of the costs and effectiveness of healthcare. With the increased oversight of therapeutic interventions, particularly by the Food and Drug Administration (FDA) in the United States, significant emphasis was given to the safety of particular medications and medical devices. As we enter the 21st century, physicians now must to be aware of patient safety and quality issues at both the individual patient and the systems of care levels. Third party payors are increasingly linking quality of care and safety measures to reimbursement and privileging decisions, holding physicians and corporate healthcare systems accountable for their practice in new ways.

"Today's physician is expected to incorporate clinical guidelines, increasing numbers of preventive services, and patient safety concerns into the realities of the day-to-day practice of medicine, regardless of specialty."

It is challenging to incorporate quality improvement into our primary care delivery system. The value of quality care is obvious, but methods for measuring it and for improving it are not so easily determined, nor is it familiar territory to most practicing physicians. A number of difficulties arise in simply measuring quality in healthcare. These include the balancing of stakeholders' perspectives, developing a framework to enforce accountability, development of clinical criteria, choosing the indicators to be reported publicly, addressing the ethical and other conflicts between reimbursement and quality, and development of information systems to support the collection and analysis of quality data.[5] It is also important that measurement of quality take into account outcomes that matter to patients, such as pain relief, improved functional ability, and relief of emotional distress. Despite the challenges, however, the potential exists for this evolving concern about quality to lead to development of a new paradigm of healthcare. The concept of "prospective healthcare," utilizing personalized health plans to determine individual risk for disease, planning for early detection of disease and delivery of preventive or therapeutic interventions early enough to be effective, has been proposed as a model for the future of the United States healthcare system.[6]

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Moving from our present system to "prospective healthcare" is a lofty goal that will require a major overhaul of our current healthcare system. It will also require changes that extend far beyond any one physician, patient, or medical practice. Such change can only occur through systems-level redesign, taking into account patients, physicians, and the myriad of business entities that comprise our healthcare system. For the practicing physician, success in improving quality of care begins with the actual day-to-day encounters between a patient, a physician, and the medical practice. In this paper we discuss the practicalities of quality improvement (with an emphasis on systems-level considerations) in two commonly targeted areas: clinical preventive services and chronic disease management.

"Studies have shown that office organization and staff and provider attitudes are more important than tools such as flow sheets and computerized records."

Is Quality a Primary Care Issue?

McGlynn, et al., surveyed metropolitan United States residents and found that only 56% receive recommended care for chronic conditions and less than 55% receive recommended preventive care.[7] The increasing burden of chronic illness, time constraints, and practice, as well as healthcare system organization, all contribute to problems delivering high-quality care. Physicians want to "do the right thing," agreeing with the importance of most clinical recommendations,[8,9] but they want the flexibility to form their own opinions about relevant and appropriate guidelines for their patients.[10] Despite their general agreement with such recommendations, physicians may find themselves confronting clinical inertia, defined as "failure of healthcare providers to initiate or intensify therapy when indicated."[10,11] The burden of chronic disease and pressures to increase practice volume and productivity combine to create a "perfect storm" in primary care, making delivery of quality healthcare a significant challenge.

Escalating chronic disease burdens challenge a healthcare delivery system that is already strained by difficulties with access to and payment for care. More than half of patients in primary care clinics have a chronic disease.[12] Over 80% of patients who have cardiovascular disease, stroke, hypertension, diabetes, cancer, chronic obstructive pulmonary disease, asthma or anxiety/depression and who have a physician see a family practitioner, general internist, or general pediatrician on a regular basis.[13] This means that primary care physicians are the front-line providers for people who already have or are at risk to develop one or more chronic illnesses.

Clinical preventive services also lie within the domain of primary care practice and evidence indicates that preventive services recommended by knowledgeable sources are not being delivered. Since the 1980's, the United States Preventive Services Task Force (USPSTF) and other organizations have issued evidence-based recommendations for clinical preventive services.[14] Such recommendations are useful and often form the basis of clinical practice guidelines and performance measures. However, they are often difficult to implement, and uptake rates for many services are low. Among the 15 recommendations from the USPSTF with the greatest likelihood of reducing the burden of disease and the highest degree of cost-effectiveness, eight are being provided to eligible patients less than half the time.[15]

So why is there a gap between the recommendations that work and those that get done in practice? Many barriers have been proposed including lack of time, lack of staff, lack of knowledge, and lack of appropriate levels of reimbursement.[10,16-20] High-volume practices have been shown to deliver preventive services less frequently.[10] Though the average time spent delivering health promotion or health education in a routine family physician's office visit ranges from 0.7 to 1.98 minutes,[10,21] a recent study showed that delivery of the full set of USPSTF recommendations to eligible patients in a typical primary care practice would require 7.4 hours of physician work time per day.[20] Thus, time constraints often force primary care physicians to prioritize between illness care and delivery of preventive services. There is some evidence that physicians and patients do not always make such priority choices in accord with the best evidence available.[19,20,22]

Interventions to Improve Delivery of Quality Care

Many strategies have been used to translate research into practice and so we have some ideas about what works and what doesn't work. Passive education about guidelines such as lectures and seminars are not very effective at increasing uptake rates,[16,23] while one-on-one discussions,[16,23,24] reminder systems and other computer information systems[16,23] may be more effective. Multifaceted interventions (i.e., those that combine more than one strategy) appear to be more effective than any one single strategy,[25] and systems that automate or use standing orders fare better than on-demand type systems.

In one of the largest interventions to improve preventive services delivery in community family practice settings (Study to Enhance Prevention by Understanding Practice, or STEP-UP), tailored approaches were developed to increase the delivery of preventive services.[26,27] This program incorporated several systems-level interventions, including a one-day assessment of practice operations by a trained nurse facilitator, analysis of staff relationships and the external environment. Staff and physicians were provided feedback about their rates of preventive service delivery and a toolkit was developed from which practices could

choose items most useful to them. Follow-up of this program at 12 and 24 months after the intervention showed that practices participating in the STEP-UP program had a significant and persistent increase in overall preventive service delivery rates, rates of health habit counseling, and screening rates. No significant increase was found in immunization rates.[26,28] It is unclear from the literature how many of the practices that implemented the STEP-UP program were also using electronic medical records.

A study of 44 primary care clinics testing systems-level changes to improve a variety of preventive services cited several barriers to the effectiveness of quality-improvement measures at this level. Some of these barriers included insufficient motivation for change, lack of ability to change on the part of the organizational culture and leadership, lack of evidence for changes that were implemented, processes related to implementation, and lack of sufficient time to make change.[29,30]

In 1994, the United States Department of Health and Human Services began a program called "Put Prevention into Practice" (PPIP) designed to improve delivery rates of preventive services recommended by the USPSTF. The program provides practice workflow and patient education materials for physician practices to use, and is available for purchase through the Agency for Healthcare Research and Quality (AHRQ), with some items available for free download at the PPIP website, http://www.ahrq.gov/clinic/ppipix.htm.[31] These materials appear to be helpful, but implementation without practice-specific assessment and tailored, multifactorial intervention strategies seems to be difficult.[17,18,32-39] Consistent barriers to implementation include clinician issues (time, lack of training, lack of self-efficacy), office systems issues (lack of knowledge, motivation, or support among office staff; inadequate systems to keep and monitor preventive service records), patient issues (lack of knowledge or motivation, anxiety about procedures and results, inconvenience, cost concerns), and systems issues (inadequate reimbursement and excessive time and productivity pressures).[19,20]

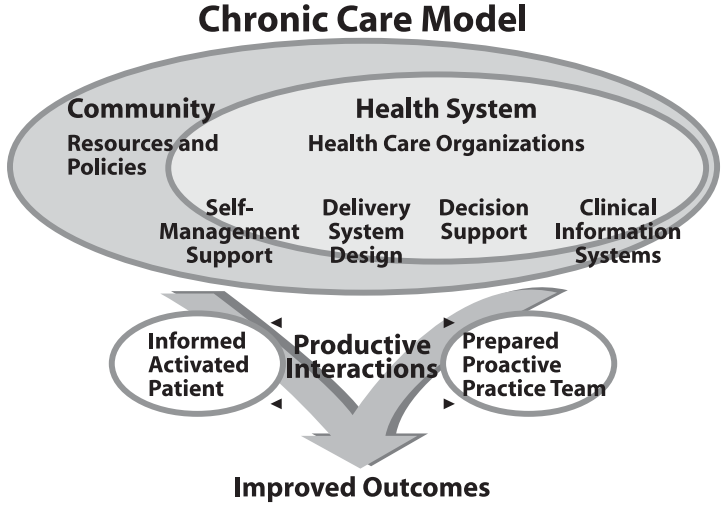
Management of chronic disease with appropriate screening, treatment, education, and prevention interventions is also a significant challenge. The Chronic Care Model[40-46] has been developed to address the multi-level considerations that should be incorporated into adequate management of long-term illness. The model considers six dimensions of chronic care (community resources and policies, healthcare organization, self-management support, delivery system design, decision support, and clinical information systems)[40-46] in three settings (the community, the healthcare system, and the provider organization) (see Figure 1).[44] This model is complex, and its implementation requires a practicing physician to become a *systems-level thinker*. Where it has been most successfully utilized, this model has been instrumental in improving disease management, particularly in diabetes, congestive heart failure, and asthma.[46-48]

Electronic medical records (EMR) and computer reminder systems are increasingly common in primary care and other health-related settings and have a significant role to play in improving quality. The Veterans Health Administration recently announced plans to allow its computerized medical record system to be available to other public and private sector healthcare organizations at nominal cost beginning in late 2005.[49] This is consistent with a recently announced initiative by the Department of Health and Human Services to create a health information infrastructure that will incorporate nationally standardized electronic medical records.[50,51] These trends indicate that physicians in the future can likely expect increasing pressure to implement such systems. The cost to implement EMR, privacy issues, standardization of file formats, and implementation of "a minimum but affordable set of variables needed to assess quality and outcomes of care"[52] all can be significant barriers to their use. While only about 5% of United States primary care providers currently (in 2003) use EMR,[53] their use has been shown to improve guideline adherence.[54] It has been noted, however, that computer guideline systems can be difficult to implement.[55] Results of some studies show that use of EMR increases the number of tests ordered, but without significant improvement in clinically relevant patient outcomes.[56,57]

Other uses of information technology include direct physician order entry in hospital and clinic settings[58] and prevention of adverse drug effects by computer warning systems.[59,60] These developing technologies bring with them a distinct set of implementation, privacy, and cost concerns that may delay their widespread acceptance.

There are many external pressures to improve quality in healthcare,[61] and physicians must become familiar with the language and culture of quality improvement (QI). Managed care organizations and healthcare payors have been monitoring quality of care for years, mainly through the use of insurance claims information. Increasingly common are chart audits, which allow the capture of relevant clinical information not always available from claims.

Figure 1.
The Chronic Care Model[40]



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Physician performance report cards have yet to appear, but efforts to improve the methods used to sample and calculate accurate physician-level performance measures are in progress. Recently, the American Board of Medical Specialties (ABMS) developed "Maintenance of Certification" (MOC) requirements for board-certified physicians.[62,63] The MOC program is being adopted by most recognized medical specialty boards and requires four basic components, the last of which mandates that physicians be able to document their ability to "assess the quality of care they provide compared to peers and national benchmarks and then apply the best evidence or consensus recommendations to improve that care using follow-up assessments."[62,63] The specialties of pediatrics, internal medicine and family practice all are offering modules for self-study and assessment relevant to common disease processes.[62-64]

Where to Begin

To improve the quality of care, a practice needs (1) evidence-based clinical recommendations, (2) evidence-based system recommendations, and (3) an improvement strategy.[40] The first spells out the clinical content, the second spells out what system changes can influence the delivery of the clinical content, and the third lays out how to bring items (1) and (2) into routine use. Without all three elements, most attempts to improve quality will not be successful or sustainable.

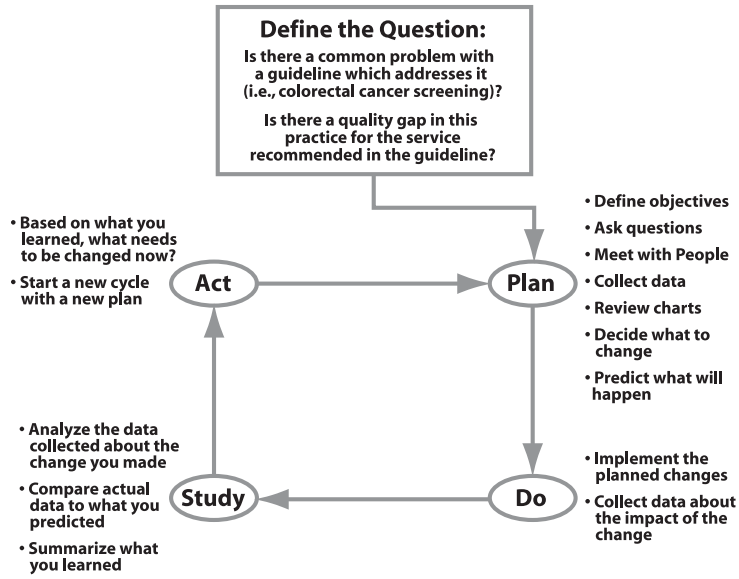
Perhaps the most important suggestion for those who are just starting to introduce quality improvement into their practice is to start with a single medical condition. The selected condition should be prevalent within the practice population and more importantly, it should be one in which current evaluation suggests that patients are not routinely receiving care consistent with clinical practice guidelines and best evidence. To determine whether a quality gap for a particular service exists, a practice can perform a manual chart audit by reviewing ten to 20 charts of patients eligible to receive that service based on age, gender, or risk factors. For offices without EMR, a request to the practice's largest insurance payors can provide a list of patients in the practice with a particular condition such as diabetes or asthma and can provide a raw list from which a manual chart audit can proceed. Chart audits are even easier for offices with EMR. Lastly, the physicians and practice staff should be highly motivated to study the particular condition and act to improve it.

One useful improvement strategy for affecting change is the "Plan-Do-Study-Act" (PDSA) paradigm (Figure 2) used widely by the Institute for Health Care Improvement (IHI)[65,66] and developed by W. Edwards Deming.[66] This systems-oriented approach to problem solving requires that an organization (e.g., a clinical practice) develop an objective and a plan to meet that objective, carry out the plan, study the results within a relatively brief time period, and act on the results of the initial study.[65, 66]

We will not attempt to describe this framework in detail here, but those who are interested are encouraged to consult the original references[65,66] or the IHI website.[67] A sample strategy for utilizing the PDSA strategy in a clinical practice setting is provided in the sidebar accompanying this paper.

The process of quality improvement requires the cooperation of everyone who works in the practice, and it requires thinking at the systems and process levels. The importance of systems approaches cannot be overemphasized. Studies have shown that office organization and staff and provider attitudes are more important than tools such as flow sheets and computerized records.[68] It has also been noted that supportive attitudes and high levels of self-efficacy were not sufficient to improve prevention service delivery; over half of medical practices studied were poorly organized to deliver recommended services.[69]

Figure 2.
PDSA Cycle Overview *(Adapted from Deming[66] and Langley[65])*



In summary, the process of quality improvement in private practice can be daunting if one sets out to provide the entire range of best practice recommendations at one time. For the private practitioner who is not part of a larger healthcare system, success is more likely if one improvement process is undertaken at a time. Subsequent efforts will benefit from the experience of earlier improvements, and enthusiasm is more likely if early efforts are successful. The practitioner who begins with one or two small projects is likely to quickly decide that EMR and computer technology would make the task easier.

As more specialties comply with the ABMS guidelines for Maintenance of Certification, and as governmental regulations and reimbursement strategies focus more heavily on quality issues, this process will become more common, and practitioners who start now, even if they start small, will be well-prepared for the future of quality improvement in the real world. **NCMJ**

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Sample PDSA Cycle Strategy for Colorectal Cancer Screening

The following sample strategy illustrates the use of the PDSA model.

I am general internist in a small town solo practice that does not presently use EMR. I know that colon cancer is among the more common of cancers in older men and women and early detection through screening leads to decreased morbidity and mortality.[70] Annual fecal occult blood testing, periodic sigmoidoscopy or colonoscopy, and periodic double contrast barium enema are all acceptable and effective screening strategies.

QUESTION:
Does my practice have a quality gap for this service?
A manual review of 20 charts from patients 50-70 years in age without terminal illness or obvious medical contraindications to screening reveal the following statistics:

- 65% of charts document that colon cancer screening was offered to the patient
- Of those offered screening:
  - 40% received a recommended test
  - 15% received an inadequate or incomplete screening
  - 25% did not follow through with the screening after intially agreeing to it
  - 20% refused screening
- 100% of those with abnormal screening results had appropriate follow-up arranged in a timely fashion

As my practicing partners and I review these results, we realize that our practice has no systematic way to ensure we offer colon cancer screening to every eligible patient. Furthermore, our practice has no systematic way of facilitating patient decision-making about screening, particularly with regard to choosing from among the various recommended strategies. We seem to do well with ensuring the results are reviewed and appropriate follow-up is arranged.

PLAN:
I meet with my staff to review these findings, and to ask for their input about how to improve our practice performance in this area. We agree that our first objective will be to increase the percentage of eligible patients who are offered a screening test, and we set our target at 90%. We will take the following steps:

(1) A preventive services flow sheet, such as the one obtained for free at the PPIP website, will be placed in every patient chart at their next scheduled visit by the front-office clerk who pulls patient charts prior to appointments.

(2) The nursing assistant (NA) who triages the patient at the appointment will ask the patient about his/her last colon cancer screening and also review the chart to determine the current status. The physician will develop a simple one-page flowchart based on USPSTF recommendations for the NA to use in determining whether a patient is due for this service.

(3) Patients who are overdue for screening will have a "sticky note" placed on the chart by the NA to remind the physician to offer screening.

(4) Physicians will strongly recommend screening to patients and answer any questions they may have. Patients who decline screening will have this noted in their progress note. Patients who accept screening will be referred back to the NA for further arrangements. Either way, the physician will note on the flow sheet the date on which screening was offered.

DO:
The office staff implement these policies and agree to review our progress in six weeks. To facilitate implementation, small adjustments to the policies can be made along the way and do not have to wait until the STUDY phase.

STUDY:
After these policies have been in place for six weeks, we select another set of 20 charts of patients age 50-70 who were seen within the prior six weeks and find the following:

- 80% of charts document that colon cancer screening was offered to the patient
- Of those offered screening:
  - 60% received a recommended test
  - 5% received an inadequate or incomplete screening
  - 20% did not follow through with the screening after initially agreeing to it
  - 15% refused screening

The staff note that several patients had to have their procedures rescheduled because they did not follow any preparation instructions, and others did not return the entire set of hemoccult cards to the office. Staff also report that patients have many questions about the differences in the various screening options available. While our office has certainly improved the percentage of patients offered a screening test, it is still short of the practice goal of 90%.

This completes one PDSA cycle, and a new one begins.

In the new PDSA cycle we begin with the following changes or additions to the PLAN based on our last STUDY results and agree to STUDY again in six weeks:

(1) We will place posters in the waiting and exam rooms encouraging patients to ask their physician or nurse about colon cancer screening.

(2) During triage, when the NA determines if the patient is due for screening, the NA will ask the patient if he/she is interested in screening, and, if "yes," will begin to prepare the necessary paperwork for the physician to order the test.

***Sample PDSA**—continued on page 280*

Sample PDSA—*continued from page 279*

(3) NAs will give patient education materials about colon cancer screening (including a decision aid to help patients choose from the effective alternatives) to the patient waiting in the exam room. Patients can read the material while waiting for the physician.

(4) Standard written patient preparation instructions for each of the four screening strategies are given to patients who have tests scheduled. We arrange necessary referrals and give them to the patient before he/she leaves the office.

This sample strategy may seem archaic to those who have access to computers or EMR, but it is presented to illustrate that care quality improvements can be made even without access to computers. While EMR and computerized databases would improve efficiency in this process, it is possible to improve without them. In our practice, we have agreed to "start somewhere."

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Data and Information Requirements for Healthcare Performance Monitoring and Improvement

Robert R. Weiser, and Christopher Mansfield, PhD

Quality improvement requires the ability to measure performance. In healthcare, because of the many variables that can affect outcomes, performance measurement has been difficult. Establishing standardized measures based on valid and reliable clinical data on a state or national scale has proven to be especially challenging. A good deal of effort and resources by several different national groups and many individual physician practice organizations has demonstrated that performance measurement in healthcare is possible, and that, when combined with quality improvement methods, it does produce results.[1,2]

Quality improvement efforts must address two principal objectives. Safety is the first objective of quality, (i.e., "First, do no harm."). And safety, is defined as freedom from accidental injury.[3] Prevention of accidental injury in medical care depends on practicing within rational, evidence-based systems designed to anticipate, avoid, minimize, and learn from error. Such systems rely on algorithms, checklists, and recording and sharing information about the patient's care among the host of health providers likely to be involved. The second objective of quality is that the best care possible is provided within reasonable cost parameters. We can think of "best" care as that which is "safe, effective, patient-centered, timely, efficient, and equitable."[4] If not the best, then at least that which is adequate within conventional standards of care (i.e., "reasonable care"). It is not just that "Healthcare harms too frequently... but that it also...routinely fails to deliver its potential benefits."[4] Things that ought to be done may be left undone.

To achieve these two objectives, there must be commitment, accountability, leadership, systems for review and decision making, performance standards, means to measure performance, and data systems and procedures that allow providers to identify and learn from error. This commentary focuses on the measures, data systems, and procedures (i.e., establishing the information base required for quality improvement) both at a state- or system-wide level and within individual institutions and practice organizations.

What is the Best Way to Measure Performance?

Performance measurement in healthcare refers to the ability to quantify outcomes, processes, satisfaction, or events in a manner that is objective, valid, and reliable. This means that it must be based on data that are collected accurately and consistently over time and location. The measures should be evidence- or consensus-based and provide a measurement of the care actually being provided against explicit standards. And perhaps most importantly, the measures must be meaningful. This means that the healthcare system has the ability to intervene directly to improve that which is being measured.

"The need for better health records and recognition that technology exists to provide them is apparent not just to a few leaders of organized medicine, but to the general public and politicians as well."

While it is not currently possible to measure every nuance of each patient's care, we can measure those parts of care for which there is evidence or wide agreement.[5,6] And this certainly tells us more about the care provided than the limited information in the measures themselves. The fact that only

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64% of Medicare patients admitted to hospitals in North Carolina receive antibiotics within four hours of arrival tells us a great deal beyond the measure. It points to underlying systemic issues. If we can't establish processes that assure that this one well-defined, understood and accepted part of treatment is accomplished, what else is being missed?

The data to drive the measures can be derived from a variety of sources including, payment or claims data, paper or electronic medical records, surveys, and reports such as incident reports. Each of these sources has its pluses and minuses. Claims data are the easiest to obtain, but the accuracy of certain variables, such as diagnoses and comorbidities, is sometimes uncertain. Information abstracted from medical records is the most clinically rich, but is a challenge to abstract reliably when multiple institutions or abstractors are involved. It is also labor-intensive and therefore the most costly means of obtaining data. Widespread adoption of electronic medical records will facilitate access to this information.

While the ultimate aim of quality improvement is to improve *outcomes*, outcome measures are the most difficult to develop. This is because most outcome measures must be risk-adjusted to account for the variations in the patients' condition or severity of illness. Fortunately *process* measures generally do not require risk adjustment and can be far more useful in quality improvement. Process measures address those aspects of treatment for which there is evidence linking them to improved outcomes for a specific diagnosis. Improvement in process measures for the specified population of patients should result in better outcomes. An example of a process measure currently in use is the percentage of eligible acute myocardial infarction (AMI) patients discharged from the hospital on a beta blocker.

Satisfaction measures attempt to quantify the consumers' degree of satisfaction with their encounter with the healthcare system. This is an aspect of quality that has been addressed through commercial surveys that are widely used by hospitals.

Event measures are most commonly associated with patient safety, such as the capture of medication or treatment errors.

Who Is Measuring Performance?

The importance of *performance* measurement is reflected by the number and type of organizations and agencies that have dedicated a significant amount of time and resources to their development. The Joint Commission on Accreditation of Health Care Organizations (JCAHO), the American Medical Association (AMA), the National Committee on Quality Assurance (NCQA), and the National Quality Forum (NQF) have all been deeply involved in the development of quality measures. The JCAHO now requires hospitals to abstract, validate, and submit a set of quality measures covering four clinical topics on a quarterly basis. The AMA in conjunction with several specialty medical societies has published nine sets of physician performance measures. The NCQA developed measures for managed care organizations. The NQF is a non-profit organization that operates a consensus-based process to endorse quality measures. It functions as a standards-setting organization for the healthcare industry. The federal government is obligated to utilize NQF-endorsed measures or must justify why they are utilizing something different.

At the federal level the Agency for Healthcare Research and Quality (AHRQ) and the Centers for Medicare and Medicaid Services (CMS) have worked for several years to develop quality measures. AHRQ has established the National Quality Measures Clearinghouse (www.qualitymeasures.ahrq.gov) that contains more than 400 sets of quality measures. CMS has developed, and now makes public, performance measures for nursing homes and home health agencies. CMS has also indicated it will make hospital performance measures public by the end of this year. All of these measures, plus a set of claims-based quality measures for the outpatient setting, are currently utilized by Medicare Quality Improvement Organizations (QIOs) in their work. Medical Review of North Carolina (MRNC), a private non-profit physician organization, is the QIO for this state.

Using Performance Measures to Improve Care and Ensure Patient Safety

Performance measurement and data collection is difficult, but if it is used constructively it is worth the effort. To utilize it constructively means incorporating it into quality improvement activities rather than using it in a punitive manner. And there are several constructive uses. *Benchmarking* with these measures allows us to determine what an achievable performance level is right now. Benchmarks should represent a demonstrably attainable level of excellence.[7]

For example, if we know that 10% of hospitals in North Carolina can get the proper antibiotic started within four hours of admission for 95% of their pneumonia patients, then we have determined that this is an achievable level. Utilizing systems analysis, we can examine how this was accomplished and construct models of best practice that can be shared with and implemented by other hospitals. Comparisons of performance levels can be done among similar types of institutions and practices.

Utilizing performance data, MRNC has worked with hospitals, nursing homes, and physicians in North Carolina and has seen improvement in several areas. Nursing homes have substantially improved the management of pain in their residents. Physicians have dramatically improved rates of testing for lipids and hemoglobin A1C in patients with diabetes. And hospitals have substantially improved on the number of eligible AMI patients discharged on beta blockers.

Individual physician practices have begun to utilize performance measures and comparative data to improve the care provided their patients. Patient registries, electronic medical records, and manual systems are being used to collect data and assess practice performance. The results are sometimes surprising to physicians who frequently believe that they are performing at a much higher rate. In some instances the ability to identify all of their patients with diabetes and measure practice performance has led to systemic change in the practice.

For individual practice organizations, safety remains the first concern, and systems must be in place to prevent errors of commission. But to provide the best care possible, the systems must

also prevent errors of omission. We must make sure that we do the things we ought to do (e.g., not just the proper sequence of steps in a procedure, but acquiring, recording, considering, and sharing information required to prevent, diagnose, prescribe, and treat). For primary care practitioners, patient information systems must be designed to facilitate prevention and management of the most common infectious and chronic diseases. Clinical priority in structuring the patient information system should be preventing the leading diseases associated with mortality (heart, cancer, and stroke) and making sure the leading "actual" causes of death are addressed, (i.e., smoking, diet, and physical activity).[8,9] Does the record system remind, facilitate, perhaps even force, the clinician to consider patient behaviors and discuss them with the patient if appropriate or necessary?

A patient information system should provide a list of the patient's principal problems for the physician at each encounter. A physician, being reminded that Mrs. Jones is a diabetic, should be cued by the system to consider whether her visit should include: an eye exam, hemagolbin A1C test, urine test, foot exam, lipid profile, nutritional assessment, diabetes education, and assessment of blood pressure, weight/body mass index (BMI), and physical activity. For female patients, regardless of the problem list, it should cue to remind about smoking, and, by age standards, for mammograms, cancer screenings, and flu vaccine. The data system should be designed for sharing information with the patient and other providers. If Mrs. Jones is educated and engaged in her care, she should know her "numbers" and encouraged to set goals for those within her control. Sharing data with her may itself reduce the chance of error. Educated and engaged patients may spot potential errors themselves. Sometimes, breakdowns in the clinical-patient relationship are responsible for errors.[10] Breakdowns in communication with other providers are a very common source of error and most error incidents are not single acts, but a chain of events or a cascade.[11,12] An electronic health record, can become a shared communication tool among her providers. The pharmacist can easily know what other medications she is taking and essential information can accompany referrals to other providers.

Error is a condition of being human. The more humans involved, the more error is possible. Indeed, without proper systems the potential for increase in error is exponentially related to the number of people involved a patient's care. Good systems not only allow us to minimize error but to learn from error. Lewis Thomas said "We get along in life this way. We are built to make mistakes, coded for error. We learn, as we say, by 'trial and error.'...Why not 'trial and rightness' or 'trial and triumph'"[13]

Conclusion

"If we want safer, higher-quality care, we will need to have redesigned systems of care, including the use of information technology to support clinical and administrative processes."[4] The need for better health records and recognition that technology exists to provide them is apparent not just to a few leaders of organized medicine, but to the general public and politicians as well. President Bush recently announced an initiative with the goal of an electronic health record (EHR) for most Americans within a decade, proposed doubling federal spending for EHR to $100 million, and challenged the healthcare industry to invest in health information systems.[14] Ultimately that is what performance measurement is about: changing systems to provide better care. Without collecting the data and measuring the system's performance, we don't know what we need to change or the urgency with which we need to change it. **NCMJ**

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Evidence-Based Medicine:
Ready for Prime Time?

Charles F. Willson, MD, and G. Hadley Callaway, MD
The authors elected to take separate viewpoints

New and Better

Charles F. Willson, MD

"Evidence-based medicine is most recently defined as the integration of the best research evidence with clinical experience and patient values."[1] As a busy clinician for the past 25 years, I've become accustomed to the science of uncertainty and to making timely decisions based on incomplete evidence. But I've yearned for a way to know that my diagnostic and therapeutic approaches reflected state-of-the-art pediatric care at that moment in time. Most textbooks when published are already two years behind current knowledge. Continuing Medical Education (CME) courses certainly helped to update my knowledge base, but often left gaps in how to implement the best approach being described. Hospital or phone consultations with pediatric subspecialists were helpful, but the specialist I needed at that moment may not be available for hours or days. The movement toward a systemized analysis of the research evidence and development of practical care guidelines for common or more rare clinical problems (i.e., evidence-based medicine) has the potential to meet this significant need of busy primary care clinicians.

Under the old medical care paradigm, when an infant presented acutely to my office with a serious, but uncommon, diagnosis such as septic arthritis, I'd arrange admission to the hospital. Hectically trying to remember the teachings on septic arthritis of our pediatric infectious disease experts during my residency years, 1974 through 1980, I'd quickly consult a general textbook of pediatrics published about ten years earlier. I'd hurriedly write orders that included diagnostic studies prior to antibiotics, intravenous antibiotics, orthopedic consultation, and pediatric infectious disease consultation. If I were really uncertain about what to do, such as whether to have the orthopedist tap the joint or have a radiologist tap it under ultrasound guidance, I'd call the consultant for a recommendation. This process might take 20-40 minutes. All the while patients continue to arrive for care at the rate of four to six per hour. As I entered the next exam room, I'd fret about the serious decisions I'd just launched and wondered if I had met "best-practice" standards.

But things are changing. Spurred by the national Institute of Medicine report, *To Err is Human*,[2] reporting that 98,000 deaths occur yearly in our hospitals due to preventable medical errors, our profession has been called to action. We must improve our systems of care. These mortality statistics don't even address how many hospitalized patients might have received substandard care. In the companion report, *Crossing the Quality Chasm*,[3] the Institute of Medicine Recommendation Number 8 calls for the Secretary of the United States Department of Health and Human Services to be given "the responsibility and necessary resources to establish and maintain a comprehensive program aimed at making scientific evidence more useful and accessible to clinicians and patients." Fortunately, the evolution of computer technology and the Internet will make such a massive effort feasible. Our medical school students and residents have also changed. They are computer literate and savvy. We medical school faculty are encouraging them to search the Internet for evidence-based articles relevant to their patients, and many now turn to the computer for help instead of the aging textbooks on the clinic shelf.

> *"The practice of medicine is an art, based on science. Medicine is a science of uncertainty and an art of probability"*
> —Sir William Osler

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Not only will the computer software allow us to access the latest information about a particular clinical problem, I hope the Institute of Medicine will link these sites to a data warehouse that will allow the patient's admission data and eventual outcome to be recorded. That way, we would have an on-going study of the clinical effectiveness on all the patients we treat with a particular diagnosis. Although time-consuming, this feedback on outcomes could be the price we physicians pay for having evidence-based medicine at our fingertips. Of course, in all these activities, patient confidentiality must be maintained. Physician-specific information would be protected under peer-review laws.

Now, when I admit a patient to the hospital, I ask the resident on the pediatric ward to do a quick diagnosis-specific search to see what recent articles may answer our clinically relevant questions. Medication dosages are easily accessed on a personal digital assistant (PDA) linked to the ePocrates®[4] web site. Evidence-based medicine is becoming a reality. I'm left with a few extra, precious minutes to practice the art of medicine, sitting with the parent, holding her hand, and answering her tearful questions.

But, there are bumps in the road. Dr. Onady who authored the chapter on evidence-based medicine in our textbook, *Pediatric Hospital Medicine*,[1] has testified in a malpractice trial where the defendant physician used an evidence-based approach to treat a patient who subsequently suffered a poor outcome. The plaintiff alleged that the physician's care deviated from the community standard and won. Progress is rarely painless.

The future for our physicians in training is truly exciting. Instead of trying to remember what Dr. Willson taught her about managing a 15-month old with fever and a swollen joint, the new physician will turn to her laptop computer. In seconds a pediatric web site will appear that outlines a recently updated algorithm for diagnostic work-up and management of septic arthritis in a child. Perhaps the data will even be age, sex, and ethnically specific. A comprehensive differential diagnosis list may provide much of the value of a specialty consultation. Within seconds, the pediatrician will have ordered a hospital admission, ultrasound-guided arthrocentesis, blood culture, complete blood count (CBC), and pathogen-specific antibiotics. OOPS! The computer screen flashes that the child is allergic to penicillin, and a substitute antibiotic is suggested. The physician then has time to answer the mother's questions and allay fears. The mother knows that her baby's doctor has used the latest medical information in developing the care plan. As the mother carries her child to the hospital, she'll stop first at the radiology suite for the joint tap and the orthopedist consulting will have the fluid analysis when he arrives on the ward to see her. The pediatrician goes into the next exam room with a mind uncluttered by doubts and questions about the crucial decisions she has just made.

Osler would be relieved and proud.

Approach with Caution

G. Hadley Callaway, MD

The new "evidence-based medicine" has a somewhat arrogant name, as though the rest of healthcare is "opinion-based." I would be careful not to throw out the baby with the bathwater.

I hesitate to throw out the "opinions" I was taught in medical school and orthopedic training. My teachers taught from all the evidence that was available, supplemented by their clinical experience. During training we used Medline and critically reviewed the literature. We had lots of evidence, but not randomized controlled studies for every treatment.

In my specialty of orthopedics, the "evidence-based medicine" is surprisingly limited. Very few surgical treatments have been evaluated in randomized controlled studies with comparison to sham surgery or to each other. As an example, consider the difficulty in randomizing a humpback child to scoliosis surgery or not.

If I only used "evidence-based medicine," my scope of practice would be tiny. My standard treatment for back or joint pain might be: "There is evidence that acetaminophen will reduce your pain score, but nothing else to offer." I have ePocrates®, but that is no help in this situation.

I am also wary of sudden changes in the medical "evidence." Witness the Atkins® diet craze. Should my mom have been taking Premarin®? Within orthopedics there are a hundred "scientifically" supported fads that come and go. Many published and unpublished studies are controlled by industry. This is why most doctors do not change their practice based on the newest journal reports.

Finally, most of my life is guided by firmly held opinions based on limited evidence. What to study, whom to marry, which religion, how to raise the children—all are determined by opinion. Why should medicine be so different?

So How Should We Deal with "Evidence-Based Medicine?"

First, tell the public that evidence-based medicine is not new. Physicians have always relied on scientific evaluation of treatment alternatives, but the quality of studies is constantly improving. We have been using computerized literature searches of Medline since the 1980s. We were taught in medical school to critically analyze the literature. Statistics were part of the pre-med and first year curriculum. Most of us update our practice according to monthly journal reports.

Second, let's change the name to "medicine with a constantly updated computer reference." The whole movement owes its existence to the Internet. Either the reference will pop up when I enter orders at the hospital, or I will need to carry it in my pocket. You cannot practice according to the voluminous and changing evidence-based guidelines without an Internet device.

Third, recognize that evidence-based medicine is just the

X-generation reviewing and rewriting the information base. Remember how crude and mistaken the medical evidence was before the baby boom rewrote it last generation? The term "evidence-based medicine" is inflammatory and misleading; it should be abandoned. I would suggest "medicine based on randomized trials," which acknowledges that the rest of medicine has a good foundation in evidence also.

Fourth, tell everyone that updating our information will take a long time. During the transition we must work with a blend of old and new information. Don't let Medicare or insurance companies deny or limit coverage for valuable treatments because they are not yet supported by randomized controlled studies which constitute the best "evidence." Misuse of guidelines by third-party payers may harm more patients than the guidelines help.

Fifth, get familiar with the guidelines. Before they are accepted as dogma, they deserve scrutiny by practicing physicians. Guidelines that conflict with common sense should be reviewed. Areas that need study should be identified. As journal articles are published, their effect on guidelines should be considered. Over time, the guidelines will increasingly restrict our treatment options, so they had better be good. Whoever controls the guidelines will control medical practice.

Finally, use the guidelines as a crutch. I have a hard time keeping up with journal reading. The Cochrane guidelines are like Cliff's (or Spark) Notes, although chapters covering most of my practice are still missing! **NCMJ**

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Evidence-Based Medicine: A Clinical Case Scenerio

Charles F. Willson, MD

The first patient of the morning

The young mother is clearly worried as she relates that her nine-month-old daughter, Kaylee, started running a fever last night. She gave an appropriate dose of Tylenol and checked on her throughout the night. The fever waned initially, but is now back with a vengeance: 104.4F. When she changed the diaper this morning, the child cried in pain as she moved the left leg. The left knee was swollen and warm. The Tylenol dose this morning did little to relieve the pain and fever.

As a pediatrician, I know the diagnosis of septic arthritis is fairly certain. But, it has been several years since I initiated care for a child with septic arthritis, and, over a practice lifetime (25 years), I'd probably made the initial diagnosis only a dozen or so times. Thinking back to my resident days, I try to recall the teachings of my honored mentors. ("What would Floyd Denny have done?") Clearly, I'll admit the child to the hospital, get someone to tap the joint for cell count and culture, and begin intravenous antibiotics. But questions begin crowding my thoughts. ***Should I ask the orthopedist to tap the joint or should I have a radiologist tap it under ultrasound guidance?*** In this era of immunization against Hemophilus influenza group B, ***what antibiotics should I start, and at what doses?*** I remember seeing an article from the Centers for Disease Control and Prevention in the *Journal of the American Medical Association* last month that talked about Kingella kingae as an emerging cause of septic arthritis in children. I'd never heard of Kingella kingae and meant to look it up. ***Is it a new pathogen or one of the old ones now renamed?*** I don't even know if it is a gram positive or gram negative bug. ***What antibiotic would cover it? What are the chances that the baby will have a damaged hip, or make a full recovery?*** As the questions come, so do the patients. I need to call the hospital and have the patient admitted. Fortunately, we have pediatric residents who can take over and call radiology, orthopedics, and pediatrics infectious disease. (My colleagues in more rural practices don't have these resources.) I'd like to sound knowledgeable as I instruct the resident, but I don't know the current literature, and the next patient is waiting.

I take the mother's hand, explaining that her daughter has an infection of the knee that can be quite dangerous. Hospitalization, study of the joint fluid, and intravenous antibiotics for many days will be necessary. Tears begin rolling down her face. "We have wonderful specialists who will help us with Kaylee's care," I tried to reassure her, but I was certain that the worry on my face spoke louder. Her questions start to come. ***How long will Kaylee need to stay in the hospital? Will her knee be ok? Is it dangerous to stick a needle in a baby's knee? Do the antibiotics have side effects? How did she get this infection?*** I reassure her that I'll be over to the hospital at lunch time to answer all these good questions, but we needed to get Kaylee over to the hospital now to start treatment. As I enter the next exam room, I hope that I'll be finished with my morning patients in time to get over to the hospital to check on Kaylee.

I feel an irony that the vast fund of medical knowledge is inaccessible when a busy clinician needs it the most. When a baby presents with a septic arthritis or any other major infection, the clock is ticking. The opportunity for an optimal outcome is hanging in the balance. Evidence-based medicine with its guidelines, decision trees, and clinical care paths will bring the state-of-the-art, up-to-date information to the finger tips of the front-line practitioner, even in the remotest of setting.

Not only must we embrace evidence-based medicine, we must go the extra mile and ask that all physicians who use these tools report the outcomes of their patients. Precious information that would strengthen our knowledge base is being lost every day. Am I concerned about losing some autonomy as a practitioner? It's a small price to pay to benefit Kaylee.

Disease Management Approaches to Quality Improvement

John R. Mangum, MD, and Conrad L. Flick, MD

Physicians and other healthcare professionals correctly view good medical decision-making as the cornerstone of quality care for our patients. However, no matter how well-constructed a plan of treatment for an individual patient may be, optimal management of that disease may still not be achieved unless other, less obvious factors fall appropriately into place. Unfortunately, the pitfalls are numerous and commonplace. The cost of medication may lead a patient to not fill a prescription. The patient may take the medication less often than prescribed due to real or perceived side effects. The patient may not understand that a chronic asymptomatic disease requires ongoing therapy and periodic medical re-evaluation. These and numerous other cultural, financial, and social factors may strongly impact the management of a patient's disease and that patient's overall health status.

"Disease management is a many-faceted process...usually designed for high-cost and/or high-volume diseases, such as diabetes, hypertension, asthma, HIV, and congestive heart failure."

The number of Americans living with chronic disease is increasing dramatically. It is estimated that the number will reach 120 million in 2010, constituting 40% of the United States population.[1] Within the Medicare program, as much as two-thirds of the expenditures are estimated to go for the care of participants with five or more longstanding medical conditions.[2] Among younger populations, estimates of lost workplace productivity due to chronic disease are remarkably high.[1]

The federal government, groups of employers, and providers of healthcare are all searching for innovative solutions that can improve health outcomes, reduce hospitalization rates, provide cost savings, and reduce workplace absenteeism. More and more frequently they are looking to "disease management" as a key strategy in achieving these goals.

Disease management is a many-faceted process of organizing care with the intention of improving health outcomes for certain disease states and, when possible, lowering overall healthcare costs. Most of the cost reductions are achieved through methods to prevent errors, limit long-term complications of diseases that are not being maximally managed and prevent duplication or overuse of services. It is usually designed for high-cost and/or high-volume diseases, such as diabetes, hypertension, asthma, HIV, and congestive heart failure.

Disease management can be as simple as a patient education handout explaining the disease or as complex as a multidisciplinary team working together to establish a comprehensive plan of care for an individual with multiple chronic conditions.

Medical conditions that seem to be the best candidates for disease management approaches have some or all of the following characteristics:

- High volume or high cost (or both)
- Evidence that wide variations in care approaches exist among practitioners
- Evidence that particular defined care approaches lead to improvements in clinical outcomes

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Disease Management in Practice

Joe Taylor is a moderately overweight 58-year-old male who has been hypertensive for seven years. His hypertension is controlled with two medications. He presents to his family physician, Dr. Williams, complaining of increased urinary frequency and low energy. He is diagnosed with new-onset type II diabetes mellitus. Dr. Williams discusses with Mr. Taylor many aspects of diabetes—how it is treated, the importance of exercise and weight loss, the vital role diet plays, the potential complications that may arise. She provides written patient education materials. She asks Mr. Taylor to begin home glucose monitoring. Dr. Williams follows appropriate clinical practice guidelines in choosing an oral hypoglycemic agent and re-evaluates his hypertensive regimen in light of the newly diagnosed diabetes.

Through the disease management program already in place, Mr. Taylor is referred to a dietitian and to a local patient education program for diabetics that brings them in for a series of group sessions. A nurse with the disease management program contacts Mr. Taylor by phone two weeks after his diagnosis to ask how he is doing, answer questions he may have about diabetes, see if he is doing the home glucose monitoring, encourage adherence to diet and exercise recommendations, and to reinforce the reasons that long-term control of the diabetes is so important to his health.

A few days before his follow-up appointment with Dr. Williams, Mr. Taylor is contacted by phone reminding him of the day and time of the appointment. At that first follow-up appointment, Dr. Williams has triggered her diabetes software program in the electronic medical record for Mr. Taylor. The program provides for easy tracking over time of blood pressure, weight, hemoglobin A1Cs, annual dilated eye exams, and last flu and pneumococcal immunizations. It provides reminders to Dr. Williams for periodic checking of urine micro-albumin, foot/skin integrity and sensation, and other important aspects of diabetic care. Over the next several months, the pharmaceutical benefit manager monitors medication refill records to see if the patient appears to be taking his medication as prescribed.

Through the combined efforts of the patient and all those involved in his care, Mr. Taylor is given the best possible chance to control his diabetes and reduce the likelihood that he will develop vascular, renal, neurologic or other complications.

- Care by multiple physicians of different medical specialties
- Purchaser interest in reducing treatment variation/cost[3]

Disease management is in its early stages and, thus far, there is little firm evidence regarding outcomes.[1] Over 150 companies in the United States currently offer some form of disease management services or products.[1] Many of these are independent companies, but some have been developed by managed care organizations, e-Health technology companies and pharmacy benefit managers.

Future purchasers of disease management services will require detailed information on the effectiveness of these programs. This is especially important as the medical community strives for a more evidence-based approach to its medical decision-making. The disease management industry has the challenge of providing measurable and accurate data showing improved health outcomes and reduced healthcare costs.

Well-structured disease management programs should incorporate the following characteristics and goals.

- Improve outcomes by promoting the provision of timely and appropriate services.
- Utilize clinical information systems to help identify and track defined patient populations.
- Develop clinical practice guidelines by physicians and other healthcare personnel knowledgeable in treating chronic disease, utilizing evidence-based medicine, where available.
- Promote cooperation between primary care and specialty care physicians, including free flow of clinical information.
- Emphasize educating and empowering patients to successfully manage their own health, use self-monitoring techniques, and intelligently use care resources.
- Allow the choice of pharmaceuticals to be based on clinical judgment and validated outcomes studies rather than forcing strict adherence to program formularies.
- Allow informed and voluntary patient participation in the program.
- Incorporate ancillary medical services to support the physician's treatment plan.
- Allow physicians to deviate from disease management practice guidelines when appropriate, without incurring sanctions or jeopardizing coverage for services.
- Collect, evaluate, and disseminate information on outcomes to physicians and other providers of care.
- Support the primary care physician's authority for decisions to use or not use specialized care and ancillary services for patients.

Physicians have many opportunities within their own offices to establish disease management approaches to the care of their patients with chronic illnesses. Any disease management initiative should make the physician an integral part of the planning and implementation of that system. Without physician involvement and cooperation, the program is far less likely to be effective. A system without physician involvement may, in fact, be counterproductive, since it is the physician who is

ultimately responsible for the care plan and health of that patient.

The growing use of electronic medical records should facilitate more and more physicians in utilizing disease management strategies in their offices. Many primary care organizations and, more recently, the Centers for Medicare and Medicaid Services are encouraging the increased use of electronic medical records.[2] They rightly recognize the potential for decreasing errors, making periodic health maintenance (e.g., mammograms, immunizations) easier to track, and improving health outcomes. Current limitations for physician offices include its cost and the difficulties of getting such systems to allow for easy flow of information between all providers of care (primary care physicians, specialty care physicians, hospitals, pharmacies, and others).

Disease management is an evolving concept. Whether it will be successful is highly dependent on a collaborative effort among all members of the healthcare team (patients, physicians, allied health professionals, health insurers, and employers) to bring improved health outcomes. The need for such approaches will only grow with time, as our population ages and as the unfortunate trend of adult and childhood obesity leads to more Americans living with chronic disease states. The potential burden on society and on the healthcare system is great, and the need for innovative and meaningful new approaches is equally great. With a disease management system that is well-constructed, relatively easy to implement, and efficient in its consumption of time and resources, we have a tremendous opportunity to positively impact our patients' health. **NCMJ**

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Educating a New Generation of Healthcare Professionals with a Lifelong Commitment to Quality of Care

Stephen E. Willis, MD, Thomas J. Pulliam, MD, and Thomas J. Bacon, DrPH

This is a time of evolution and some turmoil within continuing medical education. Physician continuing professional development is coming under increasing scrutiny by a number of regulatory authorities both within the profession and external to it. A number of areas are receiving especially focused attention. These include the need for continuing professional development to be based on demonstrated needs of the physician and to result in demonstrable positive outcomes. The increased empowerment of the consumer and heightened expectations about quality care and evidence-based practices are also an influencing factor.

"...new entrants into the healthcare professions are being trained in paradigms that differ somewhat from the training received by those currently in practice."

Increased physician accountability is expected to ensure positive outcomes. The influence of commercial entities on continuing professional development is closely monitored and scrutinized. Physicians and educators are challenged to successfully incorporate technology and electronic resources into healthcare and continuing education. Educators throughout the continuum of medical education are challenged to include training designed to augment the skills of learners in interacting effectively with patients.

Furthermore, new entrants into healthcare professions are being trained in paradigms that differ somewhat from the training received by those currently in practice. These new methods emphasize the use of interdisciplinary teams in healthcare, evidence-based practice and best practices, quality improvement initiatives, and the use of medical informatics as a tool for healthcare performance improvement. These are recent developments that will substantially impact the care rendered by new providers entering practice. They may bring a set of skills that may not be entirely congruous with traditions of practice developed by more seasoned and experienced clinicians. One of the challenges for educators involved in continuing professional development will be the need to incorporate training in these newer methods into their offerings. Continuous learning and development are important, first and foremost, to improve the healthcare rendered to, and the health of, those patients we serve.

We must embrace a system of practice-based continuing professional development that encourages physicians to: extract data from their practice, understand how these data relate to evidence-based best practices, design a system for conscious evolution of medical practice that is relevant to the community of patients served, incorporate technology and interdisciplinary healthcare teams into the provision of patient care, and finally, to assess the outcome of appropriate interventions and changes in patient care. Physicians must be both supported in and rewarded for such practice-based, patient-centered, and community-focused educational and practice initiatives. In the near future, it seems likely that physicians will be responsible for accounting for more than just "seat time" at continuing medical education (CME) events as they demonstrate their commitment to the ongoing maintenance of certification and continued competence.

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We are fortunate in North Carolina to have a number of organizations committed to the education of our healthcare professionals. These include, but are certainly not limited to, the North Carolina Medical Society, various specialty and sub-specialty associations and societies, regulatory authorities, third-party payors, the academic health centers, and the North Carolina Area Health Education Centers (AHEC) Program. There are a large number of important initiatives, frequently involving collaborative efforts among these various organizations, currently underway. Many of these initiatives could impact medical practice in very fundamental ways. All of these initiatives require that physicians be skilled in the precepts of lifelong learning and committed to making changes in practice. Lifelong learning and continuing professional development must start with the physician being focused on enhancing the health of those we serve, and never end.

When Does Lifelong Learning Begin?

All clinical professionals evolve in their depth of understanding and knowledge in their areas of expertise. Ideally, the evolution of a professional's learning would begin while a student and continue throughout his or her professional life. Medical educators at the four medical schools in North Carolina continue to modify and refocus programs in the areas of interdisciplinary practice, computer-based learning, and evidence-based standards of care.

As examples:

- The Wake Forest University School of Medicine (WFUSM) provides a problem-based medical education. The medical curriculum is called the "Prescription for Excellence: A Physician's Pathway to Lifelong Learning." The curriculum initiates the learning process of the medical student by integrating the basic and clinical knowledge of medicine with current technology while building upon a foundation of ethical professional behaviors. The curriculum is organized to meet the five specific goals: (1) proficiency in self-directed learning and lifelong learning skills; (2) appropriate core biomedical science knowledge, clinical problem solving, and reasoning skills; (3) interviewing and communication skills; (4) information management skills; and (5) professional attitudes and behaviors. Across the five phases of their four-year curriculum WFUSM students study the basics of clinical sciences in an integrated fashion utilizing a variety of educational methods including small groups and problem-based learning. Community-based clinical experiences begin in the first year and focus on general population health. Issues of professionalism and humanism in medicine are addressed longitudinally throughout the four years. Information technology is integrated with a laptop computer issued early on and a Personal Digital Assistant (PDA) provided during their clinical rotations.

  Students are held accountable for embracing lifelong learning. The emphasis is upon the student gathering information and learning to think rather than simply memorizing factual information. The testing process also enhances the learning process with a focus on critical thinking skills rather than simply recalling factual knowledge. Thus far, the product of the Prescription for Excellence curriculum has been a well-rounded, generalist clinician who is prepared to embrace the evolving changes in medical practice with a focus on learning and self-assessment.

- The East Carolina University Division of Health Sciences, collaborating with Eastern AHEC, has a nationally renowned program for training new entrants into healthcare professions in the nuances of effective interdisciplinary practice. Students are challenged to develop and demonstrate the ability to work together as members of teams aimed at providing comprehensive, cost-effective, efficient, and compassionate care for patients with chronic medical conditions. They utilize the unique skills and knowledge of providers from a large variety of disciplines while simultaneously minimizing repetition, enhancing communication, and capitalizing on the synergy inherent in truly interdisciplinary care. Learners who participate in these programs have skills heretofore not taught in the educational programs in medicine.

- Medical and other health profession students at most, or all, of our universities in North Carolina are now required to utilize computers and electronic resources as an integral mechanism for learning. Real-time and "point-of-care" resources are being utilized by an increasing number of health professionals. It will not be long before physicians emerging from residency will be dependent upon electronic resources in the day-to-day provision of patient care. Many of these practitioners will also use electronic media as a primary learning tool. In our opinion, electronic media will never entirely supplant, nor should they, traditional face-to-face professional development. These events provide critical networking and socialization functions in addition to serving as many practitioners' preferred mechanism of learning. At the same time, these events need to be much more data-driven and tied to changes in practice by the participating physicians.

"Physicians must be both supported in and rewarded for such practice-based, patient-centered, and community-focused educational and practice initiatives."

A project funded by The Duke Endowment is currently getting underway in Charlotte and Southern Regional AHECs, in collaboration with the North Carolina Child Health Improvement Initiative at the University of North Carolina at Chapel Hill, to improve asthma care among all pediatric and family medicine practices in those two regions. Ultimately, some 330 practices will be involved in the project. Participating practices will receive data on their practices, take part in learning collaboratives, and implement evidence-based practices to achieve better outcomes of care.

- The United States Medical Licensing Examination (USMLE) has recently incorporated a clinical skills test utilizing standardized patients. As of June 2005, all potential licensees within the United States will be required to take, as a part of the USMLE Step 2, an examination that challenges them to demonstrate an ability to interact effectively with a patient in the context of an authentic, realistic clinical encounter.

As evidenced by the American Board of Medical Specialties (ABMS) maintenance of certification initiative, certifying boards are likely to expect practicing healthcare providers to demonstrate proficiency in some of these evolving skills to maintain their certification. It will take a sustained commitment among the many entities committed to improving patient health to effectively integrate new initiatives in continuing professional development. These organizations must work effectively and efficiently with physicians and other healthcare professionals to maximize the rational utilization of these new initiatives.

Equally important is the need for academic health centers, the North Carolina AHEC Program, Medical Review of North Carolina, third-party payers, and individual healthcare providers to accumulate and analyze data that will inform decision-making regarding the appropriate and effective utilization of emerging initiatives in healthcare and continuing professional development. While these critically important challenges are great, they are not insoluble. By capitalizing on the synergy of effective collaboration, we can meet these challenges and insure that the evolution in healthcare and continuing professional development results in improved health for those we serve. **NCMJ**

RESOURCES

1 Association of American Medical Colleges www.aamc.org
2 Accreditation Council for Continuing Medical Education www.accme.org
3 American Board of Medical Specialties www.abms.org
4 Accreditation Council for Graduate Medical Education www.acgme.org
5 Institute of Medicine, National Academies, Washington, DC. www.iom.edu

Making Healthcare 'Patient-Centered':
The Centerpiece of Quality Improvement

L. Allen Dobson, Jr., MD, FAAFP, and Michelle F. Jones, MD

In a time when the bottom line drives healthcare delivery, including access to care, diagnostic interventions, and therapeutic plans, we are left with a system that is in need of fundamental change. The system is inefficient, redundant, confusing for patients and providers. It is increasingly fragmented and is not meeting the needs of its recipients. Instead of treating patients, caregivers treat the threat of malpractice law suits as well as concerns of evoking the wrath of payers over the costs of tests ordered and medications prescribed. Despite the best efforts of those involved in caring for patients, our systems have failed both the patients and the caregiver.

The current attention to the need for quality improvement identified in the 2001 national Institute of Medicine report[1] and the subject of this Journal has sparked significant discussion in the medical, government, and business communities. Future models of healthcare must focus on patients' needs and preferences, quality of services, and a reduction in variability of care. Care coordination and integration, the transfer of information, and communication with the patient must be addressed in any emerging system that adequately meets patients' expectations.

"...all patients in the healthcare system deserve a medical home."

Patient-Centered Care

Patient-centered care has been identified as a key attribute of a new system. It has the needs and preferences of each patient as its central focus. The cornerstone of this care is a patient-physician relationship that is satisfying to the patient and humanizing to both the patient and physician.[2] The interaction should be sensitive to the patient's physical and emotional needs and wants and should be culturally competent. These needs are likely to change over time and with different disease states; therefore, an established relationship will augment decisions and help ensure patient satisfaction. This should ideally be a long-term relationship and should be a partnership for the good of the patient. To-date, there is limited research to identify the most important aspects of patient-centered care or how to best deliver such care. The Cochrane Collaborative[3] performed a systematic review of the literature to determine whether patient-centered communication improves patient health outcomes and patient satisfaction. Although there was evidence of positive impact on patient satisfaction, the evidence was insufficient to draw conclusions about the impact on the patient's health status. Yet, intuitively, care that is patient-centered is what we all want for our own families and represents an obvious system goal in the move toward quality improvement. Clearly more research is required.

Unfortunately the quality of care and evidenced-based decision making provided alone may do little to make up for the shortcomings in the quality of service patients receive, and therefore their perception regarding the quality of our healthcare system. A study by the Picker/Commonwealth Program for Patient-Centered Care[4] suggests that patients often define quality care in terms of "service." Among the measures of quality patients identified in the study were: (1) respect for patient's preferences and values, (2) timely access to care, (3) information and education, and (4) continuity. Similarly, a recent study found that medical errors reported by patients are more likely to directly involve the breakdowns in the physician-patient relationship and the access to clinicians than the technical errors that are the focus of the most current patient safety initiatives.[5]

A Medical Home for All Patients

There is clearly a need for the healthcare system to refocus on better coordination and integration of patient care. This coordination and integration of care should focus on better

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service and begin with a personal physician and a personal medical home. The recommendation of a medical home was initially adopted by the American Academy of Pediatrics for children, but all patients in the healthcare system deserve a medical home. A medical home would serve as a point though which all individuals regardless of age, sex, race, or socioeconomic status enter into the healthcare system. It would ensure access to comprehensive and integrated care through physicians, nurses, therapists, and educators. Information and educational materials for patients could be easily accessed by patients. Barriers to access can be minimized with flexible office hours, open-access scheduling, and asynchronous communication such as voice mail and e-mail. Consultation and referral services would be coordinated through this model and would be smooth with a timely and reliable exchange of information to and from the consultant. The electronic medical record has great potential for improving this vital communication exchange. Many patients depend on those who provide care to coordinate seamless transitions from one setting to another and from a healthcare to a self-care setting.[6]

Patient Inclusion Improves Care

In the current system, timely access to information belongs only to the caregivers. Patients may only obtain information after permission is obtained, the appropriate paperwork is completed, and the two-week waiting period during which the charts are copied by contracting agencies has passed. Donald Berwick has introduced a concept of nurturing "transparency" in the healthcare system. By this he means that all information should be available to anyone involved in the system and in the care of the patient, including, and most importantly, the patient. Healthcare should certainly be confidential, but the healthcare industry is not entitled to secrecy.[7]

A quote from Diane Plamping, a public health researcher from the United Kingdom. says, "Nothing about me, without me."[8] Transparency in the system will allow patients to make informed choices and allow access to facts that may be relevant to the patient's decision making. Naturally, there is a concern about increased liability risk, and tort reform would be a desirable change, but improvement in the system cannot wait for such change. Healthcare systems with transparency will be more patient-centered and safer because patients may recognize information that is outdated or incorrect, which may affect their care.

Information on disease states may be obtained through many peer-reviewed and non-peer reviewed sources with varying degrees of accuracy. No longer is the physician the major source of medical information for patients. In a 1998 survey of Internet users, 42% said they accessed medical information weekly or daily on the Internet.[9] It is becoming well known through growing scientific literature that informed patients participating actively in their care have better outcomes, lower costs, and higher functional status than those held to more passive roles. Guadagnoli and Ward have found in a recent review of the literature that most patients want to be involved in the treatment decisions and to know about available alternatives.[10] Patients should not be forced to share decision making, but should be able to exercise the degree of control they wish. Arora and McHorney found that the majority of patients with chronic diseases, such as hypertension, diabetes, congestive heart failure and depression, preferred to delegate their medical decisions to their physicians.[11] Currently, two-thirds of United States healthcare expenditures are related to such chronic illnesses. Providing systems that support a continuous ongoing relationship between patient and physician, collaborative multi-provider models that support patient needs, and reliable information exchange with patients and clinical decision support systems for physicians are critical in adjusting the healthcare system from an acute care model to one capable of handling the burden of chronic illness.

"Healthcare systems with transparency will be more patient-centered and safer because patients may recognize information that is outdated or incorrect, which may affect their care."

The Internet Extends Care Beyond the Office

Traditionally, the doctor-patient interaction is only reimbursed with a face-to-face meeting. Often times this interaction is needed for evaluation of a patient's condition, but for many this meeting is neither needed by the provider nor wanted by the patient. Twenty-first century technology through the Internet and e-mail communication allows for care in the comfort of a patient's own home. The Internet may offer providers a way to interact more frequently with patients, to monitor progress, and provide education and reminders.

The Internet will likely be able to support a substantial portion of healthcare services, which will require new payment policies to compensate providers as the face-to-face patient visits cease to be the single method of patient care. In the past, payers have resisted paying for these services, citing this was part of the coordination of care and difficulties in adequately documenting time and effort spent on such services. However, primary care practice involves much more time spent in answering calls and messages and in coordinating care. A new healthcare system must keep the patient and the patient-physician relationship as its central focus and must also compensate providers adequately for such services. As pointed out in a recent commentary by Paul Ginsburg, "mechanisms of payment for primary care services can be a substantial impediment to achieving the vision of the primary care

of the future. Fee-for service payment is not evolving in the same way that the practice of medicine is."[12]

Conclusion

Major reform in the system clearly is needed, including new payment methods to support needed changes. However providers should not wait until the system is reformed, tort reform is enacted, or new payment methods are aligned to begin the work at-hand. We must begin the discussions necessary between specialties to re-establish a degree of coordination in care. We must make sure all patients have a medical home. We must innovate and share successes in better service delivery for patients. Insurers must be willing to be flexible in looking at funding innovation. We all must engage our patients in this discussion—becoming patient-centered begins there. **NCMJ**

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Quality of Care and Performance Improvement:
Two Ideas that Go Hand-in-Hand

Noel B. McDevitt, MD, William A. Walker, MD, FACS, FASCRS, and Gordon H. DeFriese, PhD

Americans have become accustomed to hearing the statement that "the United States has the highest quality healthcare in the world!" There is little doubt that the best and most advanced medical care exists in this country. But, the term "quality of care" encompasses both *qualitative* and *quantitative* aspects of care. As Shuster, et al.,[1] have pointed out, "poor quality" can refer to too much, too little, or the wrong care. Assuring access to appropriate and needed basic healthcare services is an integral part of what we mean by quality care. We also recognize that some receive far more care and services than is really necessary, effective, or safe. Moreover, receiving the appropriate procedure or therapeutic intervention does not mean that such services were provided correctly, or in a timely manner. Hence, quality of care, as an implied standard or goal of the healthcare industry or of healthcare professionals, is a multifaceted and complex concept. Achieving this goal or standard of care requires concerted action on the part of all who provide, organize, regulate, pay for, and receive healthcare services.

The Paradox of Quality Improvement

Physicians are confronted by a number of seemingly paradoxical dimensions of the increasing emphasis on quality of care. On one hand, there is the claim that we have the best medical care on the planet, but, on the other, there is the crescendo of claims that American healthcare suffers from serious problems of overuse, omissions, and lack of access and errors that have led to serious compromises in patient safety. Physicians and other healthcare providers are admonished to provide *all* appropriate clinical and preventive services appropriate to the age and gender of their patients, while at the same time healthcare insurers, purchasers, and policy makers seem to impose ever more stringent criteria for both performance and payment as part of so-called "utilization-management" programs. Quality of care, as defined by scientific evidence of benefit and considerations of accessibility and equity among all population subgroups, can seem to be an elusive goal.

Systems of Care: The Focal Point for Performance Improvement

So, what does (or should) an increased emphasis on quality of healthcare mean for the individual healthcare professional? There is no question that any attempt to improve the overall quality of care within any defined population will depend on the day-to-day attention to standards of care, clinical guidelines, and available scientific evidence on the part of individual practitioners. However, nearly all physicians and other healthcare professionals practice in some relationship to organized "systems" of care—most of which have specified (and often legal) responsibility for the provision of medical services to defined populations. Hence, quality of care improvement efforts are conventionally defined and developed within these systems of care and in consideration of patterns of health conditions and healthcare needs within the target populations being served. Insurance and managed care companies often consider even unaffiliated physicians to be participants in qualified "panels" of providers approved to participate in the care of patients who share a common employer or insurance carrier. It is within these formal and informal "systems of care" that organized efforts toward the improvement of care quality have received most attention in recent years, and it is within such systems of care that the potential for the greatest overall public benefit may lie.

Within defined populations served by care systems, patterns and categories of health conditions that represent the predominant burden of illness in a given population may be identified, and therefore the greatest proportion of overall healthcare costs.

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Although simultaneously addressing quality of care across the full spectrum of health and illness conditions encountered in a conventional practice situation may be daunting, it is important to agree to "start somewhere." That "somewhere" should be with a focus on health conditions or diseases demanding the most time and resources.

As an illustration of this incremental approach, assume that every fifth patient seen in a primary care practice is a person of middle-age or older with hypertension. In such a practice, systematic steps to assure that all clinical screening and monitoring of this condition—as well as a consideration of recommended pharmaceutical interventions to control blood pressure and counseling for smoking cessation, diet, and physical activity, take place *as a matter of routine* with every hypertensive patient encounter—is a starting point. Data and information from the practice summarizing the extent to which the blood pressures of *all* diagnosed hypertensive patients are being monitored regularly and under control is an essential element of any approach to internal practice (or system) evaluation of care quality. Similar approaches are appropriate for other categories of patients representing significant proportions of overall practice volume (e.g., numbers and proportion of diabetic patients needing hemoglobin A1C testing, having regular ocular and foot examinations, etc.).

This approach, which is increasingly a matter of routine in physician practices of all sizes and complexity, is an integral part of healthcare system *performance improvement*. Having clinical epidemiological information from one's practice can be a source of lifelong intellectual interest in one's major career activities, and serve as a means of self-evaluation.

"Quality of care, as defined by scientific evidence of benefit and considerations of accessibility and equity among all population subgroups, can seem to be an elusive goal in the imperfect world of mainstream healthcare practice."

Utilization Management Should Encompass Quality of Care

Physicians and other healthcare professionals for a number of years have complained bitterly with justification about the increasing burden of bureaucratic procedures associated with patient care. As utilization management systems have been promulgated by third parties (insurance carriers, health plans, employers, and managed care organizations) to reduce costs and rationalize clinical care, the reporting requirements of nearly every aspect of care have increased. Yet, it is time that these utilization management approaches be integrated with efforts to improve the overall quality of care.[2] Instead of a complete focus on cost-containment and the prevention of the overuse of care, utilization management efforts should be enlarged to include a consideration of "...the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."[3]

Moreover, Wickizer and Lessler[2] have argued that utilization management efforts should give emphasis to areas of care where there is strong evidence of both appropriateness and clinical need in addition to identifying those categories of care where services and procedures are underused and under-prescribed. The emphasis should be on monitoring defined categories of patients, not total populations of the insured, to ensure that those in these defined categories (e.g., all diabetics) receive all appropriate preventive services and acute medical care.

The special Task Force of the North Carolina Medical Society on Quality of Care and Performance Improvement has recommended that the Society identify evidence-based protocols for managing patients diagnosed with diabetes, asthma, and heart failure. Clinical screening and preventive interventions are appropriate and recommended for obesity, smoking cessation, immunizations, alcohol and substance abuse counseling or other intervention, mammography, colorectal cancer screening, and elevated blood pressure. To ensure these services are provided once protocols are identified, the North Carolina Medical Society should provide physicians with tools that are applicable to office-based practice. The North Carolina Medical Society hopes this will help the general public to understand these conditions and the need for clinical screening and other preventive services.

What about Medical Errors and Patient Safety?

All segments of the healthcare industry are placing greater emphasis on reducing medical errors and assuring patient safety. Since the publication of the 1999 landmark report of the national Institute of Medicine, *To Err is Human: Building a Safer Health System*,[4] there has been widespread concern among the general public, the news media, and policy makers over both the enormity of these problems and over the apparent reluctance of professional and healthcare industry groups to address these issues.[5]

As an important part of the overall movement to improve quality and performance in American healthcare, efforts to stem the tide of medical errors and assure the safety of patient care are often too little and too late. As Millenson[5] argues, healthcare

professionals have always maintained that, by virtue of their commitment and training, they are motivated to "do the right thing." Yet, professionalism alone often is not enough to address some of the systemic problems in healthcare that require concerted and forceful action. When the common routines of practice allow the possibility of inadvertent error (such as in surgically amputating the wrong limb, or hanging the wrong bottle of fluid on an IV pole, or dispensing the wrong medication), and when these errors occur repeatedly, everyone should be incensed. Such errors are both preventable (through proper labeling and computerized ordering) and also unacceptable. Patient safety should be an integral part of any quality of care or safety improvement initiative.

"...it is important to agree to start somewhere."

As with quality concerns over the provision of clinical preventive services, errors of omission and commission can result in significant harm to patients. If patients recovering from myocardial ischemic events are allowed to leave a hospital without receiving beta-blockers, despite compelling evidence of beneficial effect and mortality reduction, a serious problem of quality with important implications for patient safety exists. Efforts to improve the quality of care and system performance must include steps that assure that all healthcare professionals are aware of life-saving interventions and are provided reminders that ensure that they will not be overlooked.

What about the Incentives for Quality Improvement?

The United States healthcare system does not recognize the quality of care provided at any level and reward those providers who diligently assure the highest standards of care for their patients. Moreover, there is very little easily accessible data by which patients or the purchasers of healthcare insurance can evaluate the quality of care routinely provided by either individual professionals or by healthcare organizations. As methods for the systematic measurement of care quality (and evidence-based strategies for it's provision) are developed, it will be important that healthcare insurers and policy makers find ways to compensate those who consistently provide the highest quality care for their patients. The so-called "pay-for-performance" movement is controversial largely because of past experience with record-based approaches to physician reimbursement by insurance agencies and by governmental regulatory bodies. But, without such systems, there will remain only the incentive of professionalism as a primary motivator of change toward these higher standards of quality and system performance. Much more can and should be done to reward healthcare professionals who uphold the highest quality of care for their patients. **NCMJ**

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Remembering Cecil*

Donald L. Madison, MD

An accounting of what Cecil Sheps managed to accomplish during his working life might be possible, but it would be less interesting—for the accountant at least—than attempting to understand how and why he did what he did. And so, alongside an admittedly superficial chronicling of his career, I have made that attempt, relying both on the historical record and my own observations.

I begin with the question: Who was Cecil Sheps, MD, MPH, professionally? It is a question that naturally incorporates two others—Where did he come from? And, as importantly, When did he arrive on the scene?

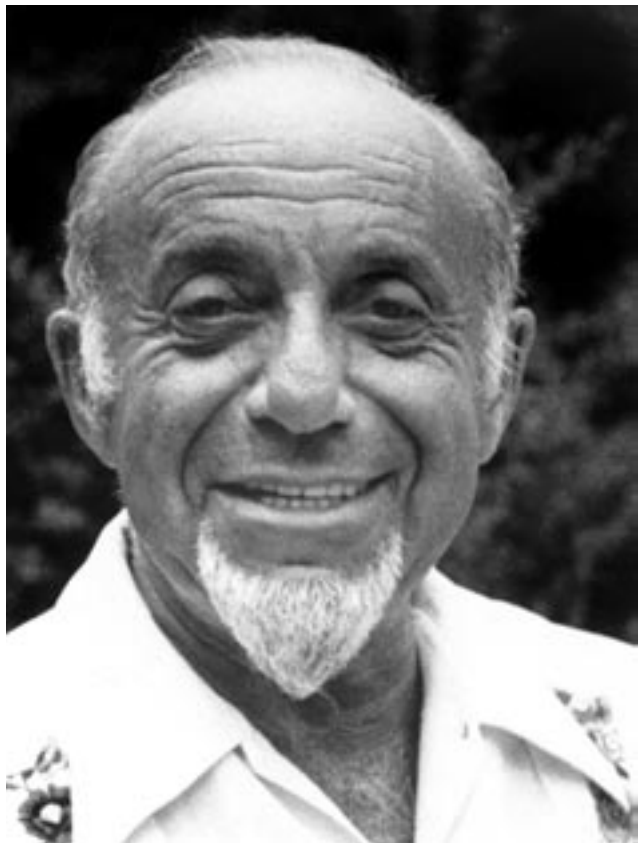
Cecil was one of a small group of "medical careniks" who became active at the end of World War II. They called themselves medical careniks partly in jest; yet one would suppose that the Russian genesis of the word also matched their favorable view of socialist health systems, as well as their view of themselves as young revolutionaries in public health.

The suffix, *nik*, is both Russian and Yiddish. It means something "associated with or characterized by," as in the Russian *Sputnik* (meaning associated with or, literally, traveling with the earth), and two familiar nikwords of American slanguage—beatnik and peacenik, or the Yiddish word *nudnik:* a bothersome boor or pest, which is how some of the old-line public health officers in the late 1940s must have viewed the medical careniks who were urging change on the public health establishment.[1]

What set the medical careniks apart, besides their youth (young for the most part, although the leaders were veterans of earlier campaigns), was their wish to turn both the American Public Health Association and the United States Public Health Service in a direction that would enlarge public health's concern to include medical care.

They called it "medical care," not "healthcare"—which, so far as I can tell, is a recent singleword invention of "publicrelations" consultants to the hospital industry, a term generated out of concern that "medical care" might point too narrowly to the medical profession and thereby exclude the new hospital CEOs and their various underling Os, along with their corporate bosses. Certainly, the medical careniks did not envision, much less embrace, the corporate genesis of so much of today's health services sector. In their day the term "medical care" stood for medical programs for populations—starting with the practice of medicine to be sure, but moving from there in a public health rather than a private practice direction—and certainly never toward a corporate destination.

Almost all in the group of whom I speak were physicians. Virtually all were male. Most were veterans of World War II. Most were Jews. In intellect they ranged from superior to brilliant. And they shared the same commitment to public health and social justice. They were also of about the same age; those I



*Based on remarks by the author at the Memorial Service for Cecil G. Sheps, MD, MPH (1913-2004), Chapel Hill, NC, May 21, 2004.

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knew best (the group mentioned below) were all born between 1912 and 1917.

I should name some names here. Nearly all of these people are gone now. The oldest—Sy Axelrod, and the youngest—Dick Weinerman, plus Milt Roemer and Les Falk had become close friends while working together in the Farm Labor Health Program (the original migrant health program) just after World War II. Others included Milton Terris, Leonard Rosenfeld, Paul Cornely, and my two mentors, George Silver and Cecil Sheps. Those were probably the core, although there were several others. They all seemed to know each other, either through the Public Health Service or the American Public Health Association (APHA), from earlier association as medical students, or through their common mentor—because all would have considered themselves disciples of the medical historian, internationalist, and public gadfly (where medical care was concerned), Dr. Henry Sigerist of Johns Hopkins.

In the years before email and cheap long-distance telephone service they also wrote to each other. That correspondence probably exists in several places, but a good deal of it can be found in the Richard Weinerman papers at Yale. (Weinerman was a faculty member at Yale at the time of his premature death, so his papers were catalogued before those of the others, most of whom, by the way, also gave their papers to the Contemporary Medical Care and Health Policy Collection at the Yale University Library.[2])

Their letters to each other between 1945 and about 1949 voice concerns that were common among veterans: finding a job, entering graduate school, fathering children. These young men, however, also wrote about politics, especially their hopes for the next Wagner-Murray-Dingell Bill, and, often, of the prospect of seeing each other, and of visits to or lectures by or letters from Henry Sigerist.

In the Weinerman correspondence from those years, there are only one or two exchanges between Dick Weinerman and Cecil, but in letters from the others to Dick, Cecil is mentioned several times in ways that make it clear that he is a member of the group, even though in one respect he was an outsider.

Cecil was a Canadian. But not just *any* Canadian; because he had been a "carpetbagger" to Saskatchewan. That was what they called themselves—those who came from outside that mainly rural Canadian Province to help plant the first North American instance of social insurance for hospital care. Mindel Sheps, Cecil's wife and medical school classmate at the University of Manitoba, was also a carpetbagger; and so, later, was Len Rosenfeld. The carpetbaggers would have been automatically welcomed into the group of medical careniks because the Saskatchewan development was so profoundly important to them. Besides, the most famous carpetbagger of all had been Henry Sigerist, who came to Regina at Cecil and Mindel's invitation to direct the preliminary survey for the Provincial health plan.[3] And more than anyone else, it was Sigerist who united the younger medical careniks and articulated their cause.

All the members of this group would distinguish themselves later. By another 20 years, in the mid- to late-1960s, they had become the mentors for a new generation of medical careniks. Sy Axelrod, Milt Roemer, and Milton Terris became teachers—primarily (although they were researchers, too). Len Rosenfeld and Les Falk became administrators, but were teachers and researchers, as well. Paul Cornely, Dick Weinerman, George Silver, and Cecil Sheps did it all.[4]

I met George Silver in September 1964. I was a fourth-year medical student from California and had come east to do a two-month elective with him in Social Medicine at Montefiore Hospital in the Bronx. The American Public Health Association just happened to be meeting in New York City that fall, and so I heard, and even met, some of the medical careniks—those who spoke at the meeting or chaired sessions. But although I'm quite sure he was on the program someplace, I didn't lay eyes on Cecil. I knew his name, though.

A little over a year later—after Silver had become Phil Lee's[5] Deputy in charge of stirring things up in Washington, DC, after he helped me find a job in the Public Health Service, and after my new bosses had accepted my suggestion that I be assigned to Cecil Sheps at Beth Israel Medical Center in New York—after all that had been arranged, I made an appointment to meet him, finally. (I started to write, "to finally meet him," but splitting an infinitive when writing about Cecil is something you can't do—not if he once corrected your prose.)

The night before our scheduled meeting, my wife and I were driving from Staten Island, where we lived, to see a movie in Manhattan. Somewhere in Brooklyn I turned the radio on and, quite by chance, heard two people engaged in a polite but vigorous debate about Medicare, which Congress had enacted nearly a year earlier and which was just about to be implemented, as a matter of fact, by my division of the Public Health Service. In essence, their argument was over whether Medicare had been a bad idea all along and was therefore doomed to fail—as organized medicine was still predicting in the spring of 1966—or whether it was necessary and would succeed. Both debaters were in command of the points they wanted to make, but I had no idea who they were. We were coming off the Brooklyn Bridge when the host identified his guests. One was president of one of the borough medical societies; the other was the General Director of Beth Israel Medical Center, Dr. Cecil Sheps.

The next morning I showed up at Beth Israel and was ushered into the inner sanctum of the office of the General Director. I had already heard him speak, and now, there he was, puffing his cigar in a holder, attired in a bow tie, shorter than I'd imagined. He didn't have the goatee yet, and I remember thinking that he looked like Jacob Javits, who was then the senior Senator from New York. Dr. Sheps accepted my congratulations on his previous night's radio performance and then quickly got to the business at hand. He had only been at Beth Israel a few months, yet he was full of ideas about what projects I might work on—virtually every project, it sounded like, and there were a lot of them.

The Public Health Service's idea (and mine) was that I was there to learn how to be a medical care administrator so that I might be of some use to my unit, which was called, by the way, the Division of Medical Care Administration. Cecil would be

my teacher. I was enthusiastic, not having realized yet that my aptitudes, whatever they may have been, did not include administration. But I was still ignorant of that and eager to learn.

Cecil was presiding over at least ten—possibly twice that many—community medical care programs or related projects from Beth Israel: the Gouverneur Ambulatory Care Program, the "I Spy" Children and Youth Project, the Methadone Maintenance Demonstration at Manhattan General, the community medicine curriculum at Mt. Sinai Medical School, the Judson Memorial Church project, nursing home affiliations, the national neighborhood health centers evaluation project for the War on Poverty, the *Guide to Medical Care Administration* project for the APHA. Those are the ones I can remember him mentioning that I might work on.

In 1966 he was 53 years old and at the peak of his professional career. In the office he was a dynamo. Three secretaries stationed just outside the door worked on his dictation. He wrote letters constantly (he followed up on everything). After editing each dictated draft quickly, he gave it back for typing, then read the final version carefully before signing it; and always, in those pre-Xerox days, he initialed every carbon copy. He once told me the reason he did that. I've forgotten what it was, but since he did it, I did it, too, for as long as there were carbon copies. Then the phone calls, one after another, placed by one of those secretaries. And the small blue slips that he habitually attached—perhaps at home the night before, or on an airplane the previous day—to documents that he had already perused and wanted one or several of his colleagues to know about. The notes on the blue slips were sometimes dictated, too, but were more often scribed in his illegible scrawl. At the bottom of each blue slip was a check mark either on the "please return" line or the "need not be returned" line. To an impressionable and wholly inexperienced young person like me, watching him work was an indelible adventure. If I were casting a film about Cecil in New York, I would look for a young Edward G. Robinson.

He had many interests and talents. First, of course, he was interested in—and knowledgeable of—all developments in medical care. That's a lot right there. Beyond that he was keenly interested in politics and history, theatre and art—and travel. Also in all jokes that started with the line, "Two old Jews were talking." He collected those.

But he was no Renaissance man; there were things he didn't know, and things he couldn't do so well. He could barely drive a car. And despite his love of travel, his sense of direction lacked a great deal. As a writer and editor he was a stickler more than a stylist. And he didn't understand sports at all; this would turn out to be a disadvantage later, when he became Vice Chancellor of a major state university and was obliged to sit in the Chancellor's box at football games, and converse at halftime with other, more observant fans who also happened to be trustees and important alumni.

Cecil's first listed publication, in *Canadian Advance*, was on a medical care topic: it was titled "The Municipal Doctor System." The article appeared in 1939, three years after his graduation from medical school, perhaps when he was working in general practice in Manitoba, which he did for a time. I say "perhaps" because he omitted those early experiences from his *curriculum vitae*, including only this entry: "Health Administration, Health Professions Education, Health Policy, Preventive Medicine and Public Health, 48 years." Presumably that would cover everything. World War II also began in 1939, and Cecil entered the Canadian Army—although his military service doesn't appear on his vita either. However, from the end of the war forward, one can follow his major professional interests pretty well from reading the titles of his 154 publications.

The first thing I notice is an impressive series of articles on the subject of venereal disease control, beginning in Saskatchewan. The venereal disease papers are interrupted by a second publication on a medical care topic, "Health Regions—(the) Essential First Step in (the) Saskatchewan Health Program," and one on general public health, "Mortality in Socio-Economic Districts of New Haven" (written while he was getting his master's degree in public health at Yale). The venereal desease papers then continue, but now from the School of Public Health at the University of North Carolina at Chapel Hill (UNC-CH).

To explain this odd trajectory—Winnipeg to Regina to New Haven to Chapel Hill—I should amplify something I mentioned earlier. Near the end of the war, the people of the Province of Saskatchewan elected a socialist government headed by Premier Tommy Douglas, leader of a political party called the Cooperative Commonwealth Federation (CCF). The CCF was the first socialist government in North America—if one discounts municipal governments. In Great Britain, at nearly the same time, the socialists (Clement Atlee's Labor Party) defeated Winston Churchill's Conservatives, and a few years later Britain put in place the National Health Service. How heady a time those immediate post-war years must have been for young socialists like Cecil and Mindel!

In Saskatchewan Cecil held the title of Acting Chairman of the Health Services Planning Commission and the political title of Assistant Deputy Minister. He was 31 years old then. By some accounts—but not his—he aggravated the medical profession of the province, and the government acceded to the doctors' wish that he be relieved.

Enter the Rockefeller Foundation. In the immediate post-war years, Alan Gregg, who ran the medical sciences program at Rockefeller, made a few small grants in medical care. He had been doing this for a number of years, but strictly on the side, so to speak, because the Rockefeller Foundation had no formal program in medical care; it was merely one of Dr. Gregg's hobbies. At the end of the war he proposed that the Foundation launch such a program, which it did, bringing in John Grant, who had been a long-time field officer—in China primarily, but also in India and elsewhere—to head it up.

During the 1940s, first Gregg and then Grant invested in a few young men (I'm reasonably certain they were all men) by giving them stipends and sending them off for a year to a school of public health—either Hopkins, Harvard, Yale, or Michigan—to study medical care and get a degree. Several of

those I named earlier received such Rockefeller stipends; and that is how Cecil was able to attend Yale during the 1946-47 school year. His medical care teacher was Franz Goldmann, who authored one of the first American texts on the topic.[6]

At the end of his year at Yale, Cecil needed a job and found a temporary one—in North Carolina. The School of Public Health at Chapel Hill needed someone to teach biostatistics in summer school. On his way south he stopped in New York to see Dr. Grant, who made an entry in his diary (all Rockefeller Foundation officers kept diaries): "Sheps is certainly bright, and one judges (he) will make an excellent and enthusiastic teacher."

Later on, Cecil and Dr. Grant would come to know each other well. Cecil used to say that of all the people he knew professionally—and he seemed to know everyone—the two he most admired, whom he considered his mentors, were Henry Sigerist and John Grant.

Assistant Professor of Public Health, 1947

At the end of that summer session, someone—it was probably John Wright, who was then the chair of the Department of Public Health Administration and the co-author on several of those early articles on venereal disease control—asked Cecil to stay on at the School of Public Health.

After a couple of years, Cecil's interest in venereal disease gave way to an altogether different theme—planning. Rockefeller awarded a major grant to UNC-CH to plan to become a statewide medical center. John Grant considered the UNC-CH grant one of the most significant investments of his burgeoning medical care program. A teaching hospital was due to open in Chapel Hill in 1952, and with it what Abraham Flexner had called a "half medical school" (in his 1910 report, *Medical Education in the United States and Canada*) would expand at last to a full four years. Further, the University promised its constituents that the new hospital's mission would be "to serve the people of North Carolina." These events were the stimuli for the Rockefeller grant. Cecil was put in charge—John Grant more or less insisted on this—and given the title, Director of Program Planning in the Division of Health Affairs.

But soon his publications began to shift again, to the subject of the hospital. In fact, Cecil ended his six-year sojourn in Chapel Hill in 1953 to become General Director of the Beth Israel Hospital in Boston.

I notice that during the early and middle 1950s, some of his titles began to sound less like scholarship and research and more like mild exhortations or at least wise musings, which suggests that they were probably speeches edited for publication—for example, "Community Hospital: The Future Health Center" and "We Must Use Hospitals More Effectively."

During both of Cecil's two main administrative jobs—as head of two major urban medical centers—he published articles, not just occasionally but regularly. In fact, when I worked with him in New York, he reported in print, promptly, on whatever it was that he was doing or thinking. From his example I assumed that writing for publication must be part of a medical care administrator's job. It never occurred to me until years later, after I had met many important administrators, some of whom could hardly draft a press release, that Cecil's example was not the standard; that the *sine qua non* quality for an institutional administrator was not an eagerness to lead by communicating ideas—to one's staff, professional peers, and the public—so much as good conduct in the board room.

At the Beth Israel in Boston Cecil also began medical care research. (We now call it health services research.) He received a grant from the Public Health Service, found two outstanding colleagues, Jerry Solon and Sidney Lee, and they began their pioneering investigations—intellectually and methodologically important studies of hospital-based ambulatory care. For the first time, an important teaching hospital, used by thousands of people as their major source of medical care, was actually tracking its community of patients, finding out who they were, understanding the reasons why they used the outpatient department as their primary source of care, and learning what finally happened to them. This was research focused on the modern teaching hospital, where by the mid-1950s, biomedical research and house staff training ruled. Furthermore, it was non-biomedical patient care research designed to uncover information that any administrator would want to know, should want to know, and Cecil did want to know.

Most of his publications during the Boston years reflect or report on these studies of outpatient care. But he was also interested in the larger environment of the teaching hospital, for example, on how it related to the medical school. With a group of colleagues that included Dean Clark, the General Director of the Massachusetts General Hospital (who would later join Cecil at the University of Pittsburgh), he undertook a national survey of teaching hospitals, concentrating on the nature of their affiliations with medical schools. He wrote about the hospital's responsibility for home care and community health education. And along with his old professor Franz Goldmann and a couple of fellow medical careniks, Sy Axelrod and Milton Terris, he co-edited a book for teaching medical and public health students, titled *Readings in Medical Care*.

In 1960, Cecil became a full-time academic for the second

time when he moved to the University of Pittsburgh to chair the Department of Health and Hospital Administration in the School of Public Health. During his five years at Pittsburgh, the topics of his publications broadened further. Much of his writing was still about the hospital, but now he was writing also about medical schools, schools of public health, expenditures for health and medical care, and on the general topic of research in medical care and community health. One notices, too, that some of his publications reported the results of some outside committee and consulting assignments, for example, emergency medical care in Allegheny County, and the adequacy of health resources in Idaho, Montana, Nevada, and Wyoming. In addition, he was engaged in community medical care research, with articles about families and their regular doctors, how the citizens of an industrial town that the authors called "Aluminum City" made use of medical specialists, and the office practices of 500 internists in New York State.

I had always assumed that Cecil's move to New York City in 1965 was explained by the lure of Beth Israel Medical Center, which to my mind was already becoming the Montefiore of Manhattan in terms of its strong social medicine orientation. I assumed that the general directorship of this institution was simply too attractive an offer to turn down. I assumed wrong. Much later, Cecil told me that the reason he had moved to Chapel Hill (the first time) and then to Boston, and to Pittsburgh, had been because of the professional opportunity each of those positions offered. Mindel had gone along, had followed him, so to speak, as the "less-qualified" member of the couple. But while they were in Boston, she had earned her graduate degree in biostatistics, and in Pittsburgh she became a member of the faculty of the Graduate School of Public Health. After a time, however, she found herself in a fundamental disagreement with her superior over some basic matters of academic behavior. The disagreement was important enough so that Cecil told her that they would leave Pittsburgh, and that it was now her turn to take the lead; she should find her best opportunity, and wherever it was he would follow. She picked Columbia University, and he then applied at Beth Israel. He would have found some other job in New York had the position at Beth Israel not been open.

In New York several of Cecil's publications began to reflect some of the federal health legislation that was part of President Johnson's Great Society, and the general theme of "serving the community." His pieces of that period had titles like "The Medical School—Community Expectations" and "The Role of the Teaching Hospital in Community Service" and "Evaluation of Neighborhood Health Centers" and "Relating a Neighborhood Health Center to a General Hospital."

The return to Chapel Hill in 1969 seems to have been a perfect fit for both Cecil and the University. The ideal candidate to head a new federally funded health services research center, he had, after all, been a pioneer in that field—well-recognized for his own work and highly regarded as an advisor to the Washington, DC, funding agencies.

But for Cecil the opportunity must have seemed fortuitous for personal reasons. One day in New York, I think it was in the spring of 1967, he told me that he and Mindel were going to Chapel Hill the following day to close on the purchase of a lot on which they intended to build their retirement home. I asked him when that would be. "Probably a long time from now," he said. The opportunity to move to Chapel Hill earlier—for Cecil to launch a new research center, for Mindel, who was just then emerging as a world-class demographer, to join Bernie Greenberg's department of Biostatistics, for the couple to go where they intended to move eventually—must have been something both were enthusiastic about.

Many of Cecil's Chapel Hill writings—numbers 90 through 154 on his publications list—were becoming even more hortatory. The titles suggest this, but since he sent most of them to me, I can also bear witness. Once he asked me whether I thought one of his offerings, I believe it was a commencement address, was "too opinionated" for publication, not well enough supported by "data." I said that at his age and career standing he was entitled to speak his mind in print. "That's what I was thinking," he said, "but I'm glad to hear you say it." By this time he was being invited frequently to comment, for publication, on topics that concerned him; and by this time those topics were many. Again, he was writing about medical schools, schools of public health, hospitals and academic medical centers, consumer sponsorship of medical services, and regionalization, plus four new topics—the Health Maintenance Organization (HMO), the Area Health Education Center (AHEC), the family nurse practitioner, and something called "primary care." And as he had done in Pittsburgh, he was accepting consulting assignments when they suited his interests, which were now turning increasingly international. There were papers on Puerto Rico and Beer Sheva, Israel, and an edited volume, *Primary Health Care in Industrialized Nations*.

Early in the history of the UNC-CH Health Services Research Center—it might have appeared in the first annual report—Cecil announced a motto for the Center: "turning services into programs." I knew what it meant, but I wasn't sure exactly how or where research fit into that phrase. Cecil *was* sure. "Turning services into programs" had been the theme of his entire career. And it was what the Health Services Research Center was going to do. Sometimes research would come first—as it had at Beth Israel Hospital in Boston. But just as often, the meaning of that phrase would be realized through direct action, by organizing programs, with only an implied promise that research would, might, someday follow. The promise was enough for Cecil. As a result, some of his research associates organized health centers, others worked on plans for a local HMO, some worked at developing an AHEC program, and a few actually did research.

It is clear to me that Cecil wielded considerable influence. He was responsible for a few policies and many programs. In some cases he was directly responsible, in more, indirectly responsible—through a remark he made to someone, through someone he appointed or suggested for an assignment or job, or by his continuous coaxing, and because he always followed up.

I started to draw up a list of programs and institutions that Cecil might have been responsible for, at least where one can

fairly ask the question: Would this have existed if it hadn't been for Cecil? Often, of course, we don't know. But even that element of doubt is a measure of his influence. I began my list locally, but soon realized that I just don't know enough to go very far with it. Beyond the health services research center that now bears his name, I thought first of the Orange-Chatham Comprehensive Health Service Program (now Piedmont Health Services), probably because it was the first thing he suggested I work on when I arrived in Chapel Hill. Then there was the Lincoln Community Health Center in Durham; HealthCo in Warren County; the North Carolina Office of Rural Health (and by extension all of the many local initiatives throughout the state that this office has been responsible for, as well as similar rural health offices in other states that so admired the one in Raleigh that they copied it); UNC-CH's family nurse practitioner program (and by extension, because it was one of the earliest and most influential, other such programs throughout the nation); the distinctive community orientation of the medical school at Ben Gurion University of the Negev in Beer Sheva, Israel; and countless other programs—federal, state, and local, on which he "gave advice."

Vice Chancellor, mid-1970s

During his time in New York, Cecil was often in Washington, DC, for a day. During those years, the federal government was launching a host of new medical care programs. When Cecil would return from one of his day trips to Washington, DC, and someone asked what he had been doing there, he would usually say, "I was giving advice." His advice was frequently sought and often followed.

I could never quite understand exactly why he was so influential, but I acknowledge that he was. Sometimes when I heard him pressing some point in a group, I would think that what he was saying could not possibly make a difference because it was too familiar; I'd heard it many times, even said it myself, and I imagined his other listeners were responding in the same way. But he *was* effective. I remember, for example, hearing him speak at a retreat to the group of idealistic young physicians and administrators who were organizing their own community health centers through the Rural Practice Project.[7] He was talking with them as colleagues, informally, but he seemed again to be repeating the obvious, and I thought his words would be of little value to this group. That wasn't their reaction. They listened closely, and several of them came up to me afterward, or the next day, or in some cases months later, to say how much they'd learned from Cecil, how clear he had made everything, and how much his words meant to them. They were stimulated—intellectually and, I think now, even emotionally—by what he had to say. I'm not sure why, but I think it wasn't as much the content of what he said as the conviction with which he said it; he was telling them what he stood for. They must have realized that all of that experience, passion, and commitment were authentic, and that they were hearing The Word from a genuine medical carenik. **NCMJ**

NOTES & REFERENCES

1 The story of this battle is told by Arthur Viseltear in Emergence of the Medical Care Section of the American Public Health Association, 1926-1948: A Chapter in the History of Medical Care in the United States. Washington, DC: American Public Health Association, 1972.

2 The exceptions are Axelrod and Cornely. The Solomon J. Axelrod papers are at the University of Michigan, the Paul B. Cornely papers at the National Library of Medicine.

3 There are several published accounts of Sigerist's mission to Regina. Probably the best is: Duffin J, Falk LA. Sigerist in Saskatchewan: The Quest for Balance in Social and Technical Medicine, Bulletin of the History of Medicine 1996;70(4)658-693. See also various chapters in: Fee E, Brown T (Editors). Making Medical History: The Life and Times of Henry E. Sigerist. Baltimore: Johns Hopkins University Press, 1997.

4 Axelrod spent most of his career at the University of Michigan; Roemer was at Cornell and then UCLA; and Terris at the New York College of Medicine. Rosenfeld held several administrative positions—in Nicaragua, Saskatchewan, Rochester, Detroit, and New York—before he finished his career at UNC-Chapel Hill. Falk worked for the United Mine Workers in Pittsburgh and then as a professor at Meharry Medical College in Nashville. Cornely was at Freedman's Hospital in Washington, but spent most of his career at Howard University; Weinerman was at the University of California at Berkeley, Kaiser-Permanente in Oakland, and at Yale; Silver was at Johns Hopkins, Montefiore Hospital in the Bronx, and then Washington, DC; he finished his career at Yale.

5 Lee was twice Assistant Secretary for Health and Scientific Affairs: first in the Johnson Administration (under Secretary of Health, Education, and Welfare Wilbur Cohen) and again in the Clinton Administration (under Health and Human Services Secretary Donna Shalala).

6 Franz G. Public Medical Care: Principles and Problems. New York: Columbia University Press, 1945.

7 Madison DL. Starting Out in Rural Practice. Chapel Hill, NC: Department of Social and Administrative Medicine, University of North Carolina at Chapel Hill, 1980.

Running the Numbers

A Periodic Feature to Inform North Carolina Healthcare Professionals About Current Topics in Health Statistics

From the State Center for Health Statistics, North Carolina Department of Health and Human Services
www.schs.state.nc.us/SCHS

Potentially Avoidable Hospitalizations in North Carolina

While many inpatient hospitalizations are for trauma emergencies or elective procedures, some hospitalizations might be avoided if satisfactory primary care were used or if the conditions were diagnosed earlier. Research suggests that certain hospital diagnoses in particular are often associated with problems in access to or use of primary care. Using diagnostic criteria established in previous research,[1,2] we examine potentially avoidable inpatient hospital discharges in North Carolina (sometimes called ambulatory sensitive conditions) based on selected principal or first-listed diagnoses.

We used the principal ICD-9-CM (International Classification of Diseases, 9th Revision, Clinical Modification) diagnosis codes from the 2002 North Carolina hospital discharge data base to identify potentially avoidable hospitalizations. Discharges for newborns and deliveries were excluded from the analysis, as were records for residents of other states. North Carolina residents discharged from out-of-state hospitals are not included in the North Carolina hospital discharge data base.

The following table presents potentially avoidable hospitalizations in 2002 by diagnostic category, showing the total number of discharges, the average length of stay, total hospital charges, and average charges per hospital stay.

Potentially Avoidable Hospitalizations in North Carolina, 2002

Primary Diagnosis	Total Discharges	Avg. Length of Stay (days)	Total Hospital Charges	Average Charges Per Stay
Pneumonia	32,900	6.0	$423,612,729	$12,876
Congestive heart failure	29,193	5.4	$395,333,009	$13,542
Asthma	11,280	3.4	$74,265,930	$6,584
Cellulitis	8,186	5.1	$71,943,189	$8,789
Diabetes with ketoacidosis or coma	4,560	3.8	$39,720,703	$8,711
Pyelonephritis	3,652	3.9	$27,182,354	$7,443
Perforated or bleeding ulcer	3,584	5.1	$51,015,899	$14,234
Ruptured appendix	1,874	5.9	$33,267,109	$17,752
Malignant hypertension	1,458	4.2	$16,442,232	$11,277
Hypokalemia	743	4.3	$6,357,782	$8,557
Gangrene	163	7.2	$2,608,125	$16,001
Immunizable conditions	39	6.6	$423,887	$10,869
Total	**97,632**	**5.2**	**$1,142,172,948**	**$11,699**

These 97,632 discharges represent 11% of the total of 855,268 hospital discharges in North Carolina in 2002 (with the exclusions mentioned above). These hospitalizations accounted for $1.14 billion in hospital charges. Charges indicate the amount billed by the hospital to the patient or the patient's insurance company, not what was actually paid to the hospital. Pneumonia and congestive heart failure were the most common primary diagnoses, accounting for 64% of all potentially avoidable hospitalizations. The rate of potentially avoidable hospitalization was 1172.6 per 100,000 North Carolina resident population, which is only a slight decline from the 1997 rate of 1182.5.

RUNNING THE NUMBERS—continued on page 310

RUNNING THE NUMBERS—continued from page 309

Persons on Medicare accounted for 57% of all potentially avoidable hospitalizations (data not shown in table). Rural counties and counties with the lowest per capita income levels have potentially avoidable hospitalization rates (per 100,000 population) substantially higher than the state average.

There could be some debate about exactly which diagnoses are used to indicate "potentially avoidable" hospitalizations, and certainly not all hospitalizations for conditions such as pneumonia and congestive heart failure can be prevented, especially among older persons. Nevertheless, the results here indicate that many hospitalizations in North Carolina could be prevented if the seriousness of the diseases were reduced through better primary care services.

An earlier report of the State Center for Health Statistics on this topic by Kathleen Jones-Vessey can be accessed at http://www.schs.state.nc.us/SCHS/pdf/schs118.pdf.

1 Weissman J, Gatsonis C, Epstein A. Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. JAMA 1992; 268: 2388-2394.
2 Pappas G, Hadden W, Kozak Z, Fisher G. Potentially avoidable hospitalizations: inequalities in rates between US socioeconomic groups. American Journal of Public Health 1997; 87:811-816.

Contributed by Paul A. Buescher, PhD
State Center for Health Statistics, North Carolina Division of Public Health

Letters to the Editor

New Directions in End-of-Life and Palliative Care in North Carolina

To The Editor:

I just finished reading Dr. Keith Meador's article on Spirituality and I for one want to sound out an enthusiastic Hurrah! Finally, an article from a physician that seems to understand the complexities of contextual and content issues in spirituality and medicine.

Calling a chaplain early in the process of end-of-life care is absolutely essential. He is absolutely correct that not all institutions have chaplains, but some medical professionals out there are working very hard to get institutions to see the value of paid professional chaplains. And he is also correct when he says that standards for spiritual care have not been developed. However, some chaplains are writing about the need for standards, the Association of Professional Chaplains (www.professionalchaplains.org) and the Association of Clinical Pastoral Education (www.acpe.edu) have study documents on their web sites that would offer a first set of universal standards for spirituality. Unfortunately, they are conceived of by professional chaplains for professional chaplains, and as of yet we have not seen any secular accreditation organization take the risk to affirm or deny the importance of such standards.

I applaud Dr. Meador's insight. I hope that articles such as his and others written by informed and committed physicians and chaplains will be used as stepping stones for opportunities to sit down together and discuss context and content of spirituality and medicine.

Larry J. Austin, D.Min
ACPE Supervisor, BCC
Director of Pastoral Services
Pitt County Memorial Hospital
Greenville, NC

The North Carolina Institute of Medicine

Since January 2002, Publisher of The *North Carolina Medical Journal*

In 1983 the North Carolina General Assembly chartered the North Carolina Institute of Medicine as an independent, nonprofit organization to serve as a non-political source of analysis and advice on issues of relevance to the health of North Carolina's population. The Institute is a convenor of persons and organizations with health-relevant expertise, a provider of carefully conducted studies of complex and often controversial health and healthcare issues, and a source of advice regarding available options for problem solution. The principal mode of addressing such issues is through the convening of task forces consisting of some of the state's leading professionals, policy makers and interest group representatives to undertake detailed analyses of the various dimensions of such issues and to identify a range of possible options for addressing them.

Members of the North Carolina Institute of Medicine are appointed for five-year terms by the Governor, and each task force convened by the Institute typically includes at least one-third of its membership from among the appointed members. Topics to be addressed through task force efforts are chosen following requests from the Governor, the General Assembly or agencies of state government. In some cases, topics are selected on the basis of requests from a number of stakeholder organizations across the state where this type of analytical process is considered to have potential value.

The North Carolina Institute of Medicine assumed the role of publisher of the *North Carolina Medical Journal* in January 2002 through an agreement with the North Carolina Medical Society, which founded the Journal in 1845. The Institute views the *North Carolina Medical Journal* as an extension of its mission. The Journal provides a forum for stakeholders, healthcare professionals, and policy makers and shapers to study and discuss the most salient health policy issues facing our state. Like many states, North Carolina is grappling with issues such as an increasing number of uninsured, the unmet health needs of the growing Latino population, a critical shortage of nursing personnel, the health risks of tobacco and obesity, rising prescription drugs costs, mental health system reform, the increasing societal burden of chronic illness care, the threat of bioterrorism and the necessity of assuring adequate public health preparedness—all in the midst of an economic downturn. Each of these issues presents unique challenges to healthcare providers and state policy makers. Yet, a fully implemented task force to consider each of these sets of issues is not feasible. The Journal makes it possible to present an organized and balanced overview of some of these issues, six times per year, and allows interested persons the opportunity to engage in the ongoing discussion of these issues throughout the year. The Institute hopes that our readers of the *Journal* will, in this way, become involved in the continuing debate about the most promising avenues for assuring the highest standards of health and healthcare for all North Carolinians.

health policy

North Carolina Institute of Medicine

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