

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

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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

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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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