

Baylor Health Care System quality initiatives: a view from the HealthTexas Provider Network

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Definition of quality: degree of excellence; superiority in kind.

—Webster's Seventh New Collegiate Dictionary

I know it when I see it.

—Former Supreme Court Justice Potter Stewart,
commenting not on quality, but on pornography

A young woman rushes into a doctor's office, clutching her chest and groaning with pain. The pain began that morning, awakening her from sleep, and has increased over the past several hours. She spent the preceding day laboring in the yard but does not remember a strain or injury. The lady appears anxious and short of breath and has fine beads of sweat on her forehead. Her husband pleads for someone to do something.

This scenario is common in many physicians' offices. Her pain may be due to a heart blockage, a blood clot, or a muscle strain. Her problem will be dealt with expediently and with a high degree of success. Yet, the physician who solves the young lady's problem may miss a more serious condition. She could be harboring an early cervical cancer. She might have an early breast cancer. Or, she may step on a rusty nail next month and contract tetanus. Each of these problems must be considered and addressed early for optimal care. Unfortunately, our current systems often overlook preventive strategies in the face of acute illnesses.

Can we redesign our encounters with patients to ensure that appropriate preventive measures are consistently performed? It's a daunting task and one that can potentially distract the physician from focusing on the chief complaint of the patient—the reason the patient comes into the office in the first place. Additionally there are the pressures of managed care, coding documentation, and time constraints.

Preventive measures are important. The mortality rate of tetanus can be as high as 100%, for example, though it is preventable by the tetanus toxoid vaccine (1). Other vaccines are also as important for adults as they are for children. In fact, annual deaths from infections preventable by adult immunizations exceed those resulting from automobile accidents or AIDS (2).

Immunizations not only save lives, they save money. The pneumococcal vaccine is said to be one of the most cost-effective treatments in clinical medicine (3). The cost of the vaccine is trivial compared with the cost of hospital stays and office visits to treat a common pneumonia.

Early detection of disease is another case in which outcomes are improved and dollars are saved. We know that metastatic breast cancer is one of the most expensive diseases to treat in modern medicine and that the treatment is not always effective. Regular screening by mammography has been demonstrated to decrease mortality by 25% to 30% in women over the age of 50 (4). Yet, too many women delay or ignore recommended guidelines for mammograms, missing an opportunity for breast cancer to be diagnosed in an early, curable stage.

These issues are all addressed by the so-called quality movement. Dr. W. Edwards Deming is credited with pioneering this field during the 1940s. He studied industrial processes and concluded that productivity can be improved by decreasing the variability of those processes. Applying this principle to clinical medicine, we need to ask why some doctors' offices run smoothly, escorting patients quickly from the reception area to an encounter with the physician, then scheduling tests or referrals promptly and flawlessly. Or, how some surgeons perform an operation skillfully and without mistakes in half the time of others. Or, why cesarean section rates vary from community to community. Dr. Deming taught that when a worker or group of workers performed a task differently from another, there often was the potential for gains in efficiency (5). Dr. Deming originally taught at the University of Colorado, but his work was largely ignored in the USA.

Japan, on the other hand, with its great needs after World War II, found much of value in Dr. Deming's teachings. The war left Japan depleted of natural resources. Oil, fuel, steel, and raw materials were in short supply. The only abundant resource at the time was people. In order to succeed in the world markets, Japan knew it had to produce goods and export them. Yet, at the time, other countries were producing higher-quality goods than the Japanese. In order to compete, Japan had to improve the quality and efficiency of its factories. Dr. Deming was consulted and delivered his message to receptive ears.

Japanese management consciously and deliberately made quality their most important goal. Variability was studied and eliminated wherever possible. Defect prevention was widely stressed to the workers. It was predicted that as quality improved, costs would decline and productivity would improve. Reduced

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rework, waste, and errors made more efficient use of human and physical resources. Improved productivity would allow more markets to be captured, more jobs to be created, and more businesses to succeed.

Changing the quality of Japan's products was not a quick fix. A cultural change in industry was required, and those who did not change were not successful. Japanese workers were taught that producing affordable, reliable, defect-free products was important in keeping their jobs and in rebuilding Japan's economy. Improving quality and reducing errors became not only a requirement of the job but also a personal responsibility. "Made in Japan" came to mean not cheap goods, but quality products.

Japan may have lost the war, but the Japanese succeeded in dominating the world's marketplace. The battlegrounds had shifted from the high seas to the factories of automobiles, cameras, and electronic watches. Victories were measured in balance sheets and profit margins. The economy of Japan, devastated after World War II, began to take off.

Toyota, for example, had been considered a maker of cheap, unreliable automobiles. By the 1980s, Toyota had become a powerhouse across all major market segments, from subcompact to luxury models. For the past 6 straight years, Toyota has dominated a list of the most durable cars sold in the USA, taken from surveys of owners of 4- to 5-year-old vehicles (6).

Toyota quality management is admired, studied, and emulated. Its secrets lie in what it calls the basic principle: "Don't make errors, don't send errors." In contrast to US assembly lines in which defects are culled out and later repaired, Toyota is known to halt the entire production process and study the root cause of a defect. Instead of searching for blame, Toyota management searches for answers. Lessons learned can prevent future defects, improving efficiency, productivity, and profits (7).

US business was slow to catch on. The dependence of the USA upon other countries began to be recognized during the 1973 OPEC oil embargo. By that time, Japanese products were eroding the US market share for automobiles, cameras, and electronic watches. Alerted executives and managers in the USA began to study Deming's work in Japan, and America's "quality movement" began (8).

Quality initiatives in health care in the USA date back to 1910, when Alexander Flexner published a report on the state of medical education. His report, *Medical Education in the United States and Canada*, detailed deficiencies in the training and education of physicians. Flexner criticized the wide variability in the quality of medical schools. Subsequently, a large number of schools closed.

Another major initiative occurred several years later when Dr. Ernest Codman studied the work of surgeons at the Massachusetts General Hospital in Boston. Like Flexner, Dr. Codman attacked variability and championed publication of outcomes by individual physicians. His views were quite unpopular at the time, and his career suffered. Nonetheless, his efforts prompted the creation of the Hospital Standardization Program, which provided criteria and standards for accreditation that were later adopted by the Joint Commission on Accreditation of Healthcare Organizations (9).

Widespread application of quality initiatives in health care, however, has lagged behind that in other American industries,

similar to the lag of US industries as a whole in comparison to those of Japan. The federal government got into the act in the 1970s, primarily to contain costs in the Medicare program. Professional standards review organizations were established, later replaced by peer review organizations (10). These programs have had only moderate success due to their punitive nature. Dr. Donald M. Berwick refers to this as the "theory of bad apples" (11). Processes that search for blame inevitably lead to a defensive posture, excuses, and cover-ups.

Health maintenance organizations (HMOs) were created to redirect incentives and share the financial risk of patient care with doctors and hospitals. Limitation of access and choice, plus concerns of inherent perverse incentives, have led to a waning of the popularity of HMOs.

Baylor Health Care System (BHCS) has long been interested in quality initiatives and is currently involved in several quality improvement projects (12). The mission of Baylor includes language referring to quality: "To operate as an integrated health care system which exists to serve people as an extension of the Christian ministry of healing by offering a continuum of quality services with a commitment to patient care, medical education, research, and community service."


In 1995, to engage clinical quality in a more focused manner, BHCS created a position for a physician to interface between BHCS administration and a broad range of physician groups to focus on integrating clinical services across the continuum of care. John Anderson, MD, has served in this capacity as BHCS senior vice president for clinical integration for 6 years. To bring to BHCS the capacity to create synergy between its investment in research and clinical quality, a new position of BHCS senior vice president for health care research and improvement was created. Following a national search, David Ballard, MD, PhD, a professor of medicine and epidemiology from Emory University, was recruited to this role in July 1999.

The early returns on these investments are evident. As one of many examples, the HealthTexas Provider Network (HTPN), a wholly owned subsidiary of BHCS, now is conducting a randomized trial of strategies to improve care for BHCS patients with diabetes mellitus. HTPN is receiving \$850,000 from the American Diabetes Association to test the marginal cost-effectiveness of a diabetes resource nurse model for improving diabetes care. In addition to these innovative diabetes care management efforts, other clinical quality improvement initiatives across BHCS include programs that target smoking cessation, cholesterol reduction, immunization compliance, care for patients with acute myocardial infarction and congestive heart failure, and pneumonia processes of care.

HTPN began to influence this field shortly after its creation in 1994. Patient satisfaction surveys were designed and mailed to patients seen in the clinics (*Figure 1*). Early results found variability among physicians' practices that narrowed when feedback was given to the physicians. An early principle was realized: you can influence what you measure.

Preventive care was subsequently measured by the HTPN Quality Committee. Again, wide variability in compliance rates was identified. For example, some physician offices were good about scheduling mammograms and giving tetanus shots, and others were not. There also seemed to be little correlation be-

Patient Satisfaction Survey



Please answer the following questions based on your last visit. Just mark your answers in the boxes provided below. Please mark only one answer per question.

	Poor	Fair	Good	Very Good	Excellent
1. Ease of making appointments for medical care by phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Length of time you waited between making an appointment for your last visit and the day of visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Friendliness and courtesy shown by the receptionist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Convenience of the location of the office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Hours when the office is open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Cleanliness and attractiveness of the doctor's office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The billing process overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Now, please evaluate the nurse or medical assistant who helped during your last visit...</i>					
8. The politeness and helpfulness of the nurse/medical assistant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Overall satisfaction with the nurse/medical assistant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Now, please evaluate the doctor you saw during your last visit...</i>					
10. Thoroughness of treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Provides you with clarity and completeness of explanations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Attention given to what you have to say	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Respect shown to you by the doctor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Amount of time you have with doctors and staff during the visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. In general, rate your overall health now	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Based on all your experiences, how would you rate your overall satisfaction with the doctor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Would you recommend your doctor to others?					<input type="checkbox"/> Yes <input type="checkbox"/> No
18. The questions on this survey relate to your most recent visit to the doctor. Was that appointment:					
<input type="checkbox"/> Routine Physical Exam					
<input type="checkbox"/> Non-urgent (For example: follow-up visit or periodic renewal of medication)					
<input type="checkbox"/> Urgent (For example: asthma or burn)					
<input type="checkbox"/> Not sure					
19. How many days were between the day the appointment was made and the day you saw your doctor?					
<input type="checkbox"/> Same day <input type="checkbox"/> 3 - 7 days <input type="checkbox"/> 15 - 30 days					
<input type="checkbox"/> 1 - 2 days <input type="checkbox"/> 8 - 14 days <input type="checkbox"/> More than 30 days					
20. How many minutes did it take you to drive/reach your doctor's office?					
<input type="checkbox"/> 5 minutes or less <input type="checkbox"/> 6 - 15 minutes <input type="checkbox"/> 16 - 30 minutes <input type="checkbox"/> More than 30 minutes					
21. How many minutes did you spend waiting past the appointment time to see your doctor?					
<input type="checkbox"/> Did not wait <input type="checkbox"/> 6 - 15 minutes <input type="checkbox"/> More than 30 minutes					
<input type="checkbox"/> 5 minutes or less <input type="checkbox"/> 16 - 30 minutes					

If you would like to be contacted regarding your comments include your name and telephone number below:
 Name: _____ Telephone number: (_____) _____

*Please write any additional comments on the back of this sheet.
 Thank you for completing this survey.*

Figure 1. Patient satisfaction survey developed for the HealthTexas Provider Network.

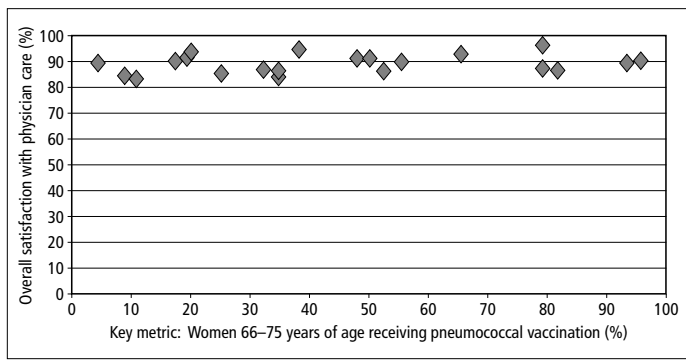


Figure 2. Relationship of patient satisfaction with physicians and administration of the pneumococcal vaccine in women aged 66 to 75 years.

tween the perceived quality of a physician and that physician's success in accomplishing preventive measures. *Figure 2* shows that even patients with the lowest immunization rates for the pneumococcal vaccine were quite satisfied with their physicians.

As the Quality Committee considered strategies to improve compliance with preventive measures, the dilemma posed at the beginning of this paper became apparent. How can a physician remain focused on a patient's symptoms and concerns and also keep track of the numerous preventive health care measures important to the overall health of that individual?

The solution resides in a system that assists the physician and patient in keeping track of necessary services. A form designed

Name _____ DOB _____ Chart _____

ADULT CLINICAL PREVENTIVE SERVICES (18+)

General		Weight	--				
		Height	--				
		Blood Pressure	Q5Y				
		Cholesterol	Q5Y				
		Tobacco	--				
		Alcohol	--				
		Illicit Drugs	--				
		Counseling	--				
Counseling Codes: A=Aspirin, D=Diets, E=Exercise, H=HRT, I=Injury Prevention, S=STD's, T=Tobacco Cessation							
All		DRE	QY > 40				
		Serial FOB x 3	QY > 50				
		Flex. Sig.	Q5Y > 50				
Female		Self Breast	QM				
		HCP Breast	QY				
		Mammogram	QY 50-75				
		Pap Smear	Q1-3Y ^{1,2}				
		Chlamydia	Opt 15-25				
Male		Self Testicular	QM				
		HCP Testicular	Opt.				
		PSA	Opt.				
Immunizations		Influenza	QY > 65 ³				
		Pneumonia	x1 > 65 ^{3,4}				
		dT	Q10Y				
		MMR	Opt.				
		Varicella	Opt.				
		Hepatitis A	Opt.				
		Hepatitis B	Opt.				
		PPD	Opt.				

DRE = Digital Rectal Exam, FOB = Fecal Occult Blood, HCP = Health Care Professional, Opt. = Optional
¹ If cervix present; ² Initial QY x 3; ³ Any age if DM/heart disease/lung disease; ⁴ Optional booster Q6-10Y
 ✓ -- Ordered/Recommended, D=Discussed, E=Elsewhere, R=Refused, N=Normal, A=Abnormal

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Figure 3. A form developed to track preventive services in the HealthTexas Provider Network.

to document immunizations, Pap smears, colon screenings, mammography, and other preventive measures assists the physician and staff. Developed by the Quality Committee, this simple tool has been correlated with improved compliance rates (13) (*Figure 3*). It also allows the physician's staff to become a part of the process. Delegation of this task to the nurses and front office staff allows each patient encounter to become an opportunity for prevention. Despite the nature or purpose of the visit, preventive services can be surveyed and ordered or administered when appropriate.

Patient participation is also elicited in this effort. Posters in the examination rooms and waiting rooms encourage patients to speak up and ask for preventive services that they may need (*Figure 4*).

Other quality initiatives involve studying and standardizing, where appropriate, the management of illnesses. Is one way of treating pneumonia or stroke preferable to another? This gets back to Dr. Deming's thesis. When variability in a process exists, it should be studied. Opportunities for optimizing care may be discovered.

Researchers have been studying disease management under a field labeled evidence-based medicine. There is scientific support for many processes of care in medicine, though, at present, only a minority of processes have been subjected to this type of analysis. Further study will advance and refine the practice of medicine.



Figure 4. A sample prevention poster that is displayed in physician offices of the HealthTexas Provider Network.

Investigation and dissemination of information from evidence-based medicine is being planned by the HTPN Quality Committee. Contribution to this field is anticipated by comparing the practices of different physicians, searching for efficiencies and improved outcomes. Certainly, groups of physicians can

advance this effort more rapidly than solo investigators. Stephen Covey summarized this as follows: "We can combine our talents and abilities and create something greater together" (14).

Former Supreme Court Justice Potter Stewart may have difficulty with a definition of pornography, just as we struggle to clearly define quality in health care. This difficulty must not deter us from the goal of finding better ways to care for the patients we serve.

1. Simon HB. Anaerobic infections. In Dale DC, Federman DD, eds. *Scientific American Medicine*. Healtheon/WebMD, 2000;7:V:6 [CD-ROM].
2. American College of Physicians. *Guide for Adult Immunization*, 3rd ed. Philadelphia: American College of Physicians, 1994.
3. Nichol KL, Baken L, Wuorenma J, Nelson A. The health and economic benefits associated with pneumococcal vaccination of elderly persons with chronic lung disease. *Arch Intern Med* 1999;159:2437-2442.
4. Kerlikowske K, Grady D, Rubin SM, Sandrock C, Ernster VL. Efficacy of screening mammography. A meta-analysis. *JAMA* 1995;273:149-154.
5. Deming WE. *Quality, Productivity and Competitive Position*. Cambridge, Mass: Massachusetts Institute of Technology Center for Advanced Engineering Study, 1982.
6. *Wall Street Journal*, March 15, 2001:1.
7. Couch CE. Quality assurance and improvement: lessons from the industrial leader and possible applications to medical care. Presentation to Texas Health Resources, July 1999.
8. Al-Assaf AF, Schmele JA. *The Textbook of Total Quality in Healthcare*. Boca Raton, Fla: St. Lucie Press, 1997.
9. Kovner AR. *Health Care Delivery in the United States*, 4th ed. New York: Springer Publishing Co, 1990.
10. Hayes RP, Lundberg MT, Ballard DJ. Peer review organizations: scientific challenges in HCFA's health care quality improvement initiative. *Med Care Rev* 1994;51:39-60.
11. Berwick DM. Continuous improvement as an ideal in health care. *N Engl J Med* 1989;320:53-56.
12. Khetan RS, Khetan RA. Improving health care quality in Texas and the Baylor Health Care System. *BUMC Proceedings* 2001;14:34-35.
13. Felton C. Presentation to the HealthTexas Quality Committee, March 20, 2001.
14. Covey SR. *The Seven Habits of Highly Effective People*. New York: Simon & Schuster, 1990:49.

Invited commentary

In the fall of 1999, the HealthTexas Provider Network Board of Directors enthusiastically declared quality improvement to be a key initiative for our organization. The quality improvement committee, now chaired by Dr. David Winter, was an immediate outgrowth of that commitment. Over 20 committed physicians now attend that committee meeting each month. Dr. David Ballard has served as a valued advisor and motivator to the committee.

All of the physicians in our organization have long embraced quality and quality improvement as a laudable goal. Nonetheless, we realized quickly that we had never understood or mastered the processes that are so well described in the article by Dr. Winter in this issue of *Proceedings*. We realized that quality improvement involved not just individual physician commitment

but learning to move the entire health care team and the entire organization into steps that improve outcomes. It's just not enough for the physician to want to improve; if the team doesn't improve, meaningful positive change is unlikely.

Let me cite the example of breast cancer screening. Most physicians know exactly how this works. We attend a seminar or read an article and are reminded of the need to perform better in obtaining mammographic screening for our patients. We intend to mention mammography to each woman we treat, yet as the article notes, treating today's presenting illness often distracts from the intended preventive service. The intention to get her a mammogram is then never completed.

Our early experience has taught us that only when the physician's entire staff is committed to better mammographic

screening does the result significantly change. From the telephone secretary to the receptionist to the nurse and finally the physician, there are multiple opportunities to schedule that needed preventive service. In the end, the entire team has participated in quality improvement, the service was appropriately performed, and a life-threatening early cancer was discovered and cured, often without the physician having to be the only one to think of it.

We have begun to train our physician committee members to be mentors, whose role is to coach their peers, show their peers the data about their performance, and help them devise methods of implementing quality improvement in their own practices. Barriers are common, and physicians value their autonomy highly. No physicians want another person to tell them how to practice; no physicians want to think that they're being made to practice "cookbook medicine." Yet the data continue to challenge us with the fact that we are not providing the ideal services at the level that is intended and in accordance with good evidence-based medicine. The recent Institute of Medicine re-

ports are raising public awareness of the importance of meeting certain standards. We know that we must be proactive in leading that effort, not fighting it.

Out of those initial commitments, our quality improvement committee physician mentors are helping the entire HealthTexas organization make changes that are improving outcomes, first in delivery of preventive services and now in diabetes care. Physicians and their nurses, along with other professionals in the office setting, are seeing the results of those changed processes. Although it's gratifying to all the physicians and nurses involved to see improvement, patients will, of course, be the ultimate beneficiaries.

Dr. Winter's excellent article illustrates the history, the heroes, and the current status of the entire quality improvement movement in health care. It is a relatively young movement but one that will powerfully impact physicians throughout the USA and certainly in the Baylor Health Care System and HealthTexas Provider Network.

—CARL E. COUCH, MD
Chairman, HealthTexas Provider Network