·FRONTIERS

OF HEALTH SERVICES MANAGEMENT

FRONTIERS

OF HEALTH SERVICES MANAGEMENT

Volume 7, Number 4 Summer 1991

Frontiers of Health Services Management
is published by Health Administration Press,
a division of the Foundation of the
American College of Healthcare Executives.

Frontiers of Health Services Management

Thomas C. Dolan, Publisher
American College of
Healthcare Executives
Chicago, IL

Douglas A. Conrad, Editor
Graduate Program in
Health Services Administration
University of Washington, Seattle

Kelly Sippell
Associate Managing Editor

Rebecca McDermott
Managing Editor

Sherry Sawyer
Data Entry

Correspondence on editorial matters should be addressed to the managing editor in care of the editorial office at Health Administration Press, 1021 East Huron Street, Ann Arbor, Michigan 48104-9990, (313) 764-1380. Address subscription orders, notice of change of address, and questions about missing or defective issues to Foundation of the American College of Healthcare Executives, Order Processing Center, 1951 Cornell Ave., Melrose Park, Illinois 60160, (312) 943-0544, ext. 3001. Send both old and new addresses, including zip codes, and allow six weeks for processing. Requests for back issues or single issues should also be addressed to the Order Processing Center. Checks should be made payable to *Frontiers of Health Services Management.*

Frontiers of Health Services Management (ISSN 0748-8157) is published quarterly by Health Administration Press, a division of the Foundation of the American College of Healthcare Executives, 1951 Cornell Avenue, Melrose Park, Illinois 60160. C 1991. Subscription rate: $55.00 per year (four issues) in the United. States, $65.00 in other countries; $15.00/single issue; multiple-year subscriptions are not available. Second class postage paid at Melrose Park, Illinois, and additional mailing offices. POSTMASTER: Send address changes to *Frontiers of Health Services Management,* Order Processing Center, 1951 Cornell Ave., Melrose Park, Illinois 60160.

DOUGLAS A. CONRAD

Editorial

This issue of *Frontiers* presents the state-of-the-art thinking on the topic of total quality management (TQM) in health care. Vinod Sahney and Gail Warden of the Henry Ford Health System (HFHS) synthesize the concepts of TQM and walk us through their practical application of it in HFHS.

As I read the article and the commentaries by Dr. Brent James of Intermountain Health Care, Dr. Donald Berwick with his background at the Harvard Community Health Plan, and Rodney Wolford of Alliant Health System, I was struck by the fundamental nature of the operational and strategic change required in the implementation of TQM by a health care organization. While our authors and commentators happen to represent large, complex health care systems and organizations, I argue that both the theory and practical lessons they share with you are transferable to all health care organizations-whatever their size, scope, and complexity of form. In particular, the three-part process of quality management transformation described by Sahney and Warden–initiation, transformation, and integration of quality management as an organizational way of life-mirrors the very approach to change that is the essence of successful management.

Total quality management, it seems to me, is neither a passing fad nor an "evangelical" branch of management philosophy. Rather, the process of total quality management offers the health care executive a structured approach to managing the processes and outcomes of the organization. By weaving together the disciplines of statistical process control with an ongoing managerial commitment to systematically **p**lan, **d**o, **c**heck, and **a**dapt (the PDCA cycle of Shewhart), TQM crafts a stronger and more resilient organizational fabric.

The challenge of health care organizations in the future is to translate the concepts and process designs delineated in the pages of this issue into a commitment to "organizational learning" at all levels of management and operations. Indeed, total quality management is really just total *management;* and, to succeed in that endeavor, leaders at all levels must understand and gain new knowledge about the processes of their organizations.

DOUGLAS A. CONRAD is Professor in the Department of Health Services and the Graduate Program in Health Services Administration at the University of Washington, and Editor of Frontiers.

VINOD K. SAHNEY AND GAIL L. WARDEN

The Quest for Quality and Productivity in Health Services

Summary

The leaders of health care organizations across the country are facing significant pressures to improve the quality of their services while reducing the rate of cost increases within the industry. Total Quality Management (TQM) has been credited, by many leaders in the manufacturing industry, as an effective tool to manage their organizations. This article presents key concepts of TQM as discussed by quality experts, namely, Deming, Juran, and Crosby. It discusses 12 key concepts that have formed the foundation of TQM implementation at Henry Ford Health System. The process of implementation is presented in detail, and the role of TQM in clinical applications is discussed. Success factors and visible actions by senior management designed to reinforce the implementation of TQM in any organization are presented.

VINOD K. SAHNEY is Corporate Vice President, Henry Ford Health System, Detroit, Michigan. GAIL L. WARDEN is President and Chief Executive Officer, Henry Ford Health System.

In the summer of *1980* NBC aired a documentary written and narrated by Lloyd Dobyns. Because network documentaries rarely draw a large audience most networks schedule these programs at times that will do least damage to their financial bottom line; this occasion was no different. The program did not draw a great market share, but it did start a revolution in American industry. Titled *"If Japan Can ... Why Can't We?"* it featured W. Edwards Deming, Ph.D., a consultant in statistical studies. Dr. Deming, an American, had been honored by Emperor Hirohito with Japan's Second Order Medal of the Sacred Treasure and the citation, "The Japanese people attribute the rebirth of Japanese industry and its world-wide success to Ed Deming." In addition, Dr. Deming was honored by the Union of Japanese Scientists and Engineers with the establishment of the "Deming Prize" given annually to an organization that has excelled in the use of statistical methods for advancement of design and dependability of product. This program profiling Dr. Deming and the effect of his theory on Japanese industry marked the start of a major change in American business. The change was a new focus on quality.

The decade *1970* to *1980* was a period during which major U.S. manufacturing industries lost considerable market share. Japanese companies captured *60* percent of the U.S. market in television sets and *19* percent of the market in automobiles (Garwood and Sandridge *1986).* The story was the same in watches, where Japanese competition caused the Swiss worldwide market share to drop from over *70* percent to below 25 percent. The Japanese had captured the market with high-quality, low-cost products. These setbacks in various industries led a number of U.S. companies to reexamine their management methods.

The period *1980* to *1990* is characterized by the U.S. manufacturing industry's focus on quality. Once American industry recovered from the initial shock of loss of market share–including the stages of denial and casting blame on the federal government–it began the rebuilding process by focusing attention on the quality of its products and customer service. This movement was led by such industrial giants as Ford Motor Company, Motorola, Xerox, Campbell Soup, IBM, 3M, and Hewlett Packard (Walton *1986).*

In *1981,* Dr. Deming became a consultant to Ford Motor Company and has since guided it in the quest for quality. In November *1989,* President George Bush awarded the Malcolm Baldrige National Quality Award to Milliken and Company and the Xerox Corporation. In presenting the award President Bush said, "Both companies were being squeezed out by foreign competition. Both companies said that there is only one definition of quality: the customer. Success came when they developed their human resources. The improvement in quality of products and the improvement in quality of services are national priorities. When it comes to meeting the competition,

America is back in business. These two companies are in the lead" (Xerox Corporation 1990).

What is this quality revolution? What are the key concepts of continuous quality? Can these concepts be applied in health care? How can this total quality management process be initiated within health care institutions? This article will address these questions.

INDUSTRIAL QUALITY GURUS

Three Americans are generally recognized as leaders of the industrial quality movement. They are W. Edwards Deming, Ph.D., Philip B. Crosby, and Joseph M. Juran, Ph.D. The key concepts espoused by each of these individuals are summarized below.

Quality Philosophy of Dr. W. Edwards Deming

Dr. Deming is a consultant in statistical studies. He received a Ph.D. in physics from Yale University. While working at the U.S. Department of Agriculture, he became fascinated with the idea of dealing with process control as well as quality control. In 1940, he worked with the U.S. Census Bureau to introduce statistical sampling techniques into the census, then was recruited by the Supreme Command for the Allied Powers to help prepare for the 1951 Japanese Census. In 1950 he accepted an invitation from the Union of Japanese Scientists and Engineers to lecture on quality control to Japanese workers, scientists, and plant managers.

Deming's philosophy of management is summarized briefly here (Walton 1986; Deming 1986).

Deming advocates a strong commitment on the part of management toward a long-term perspective including clearly defined mission and vision statements. These statements should provide all employees with guidance in their day-to-day actions. Quality must become a central focus on the corporation. The emphasis must shift from inspection to prevention. Preventing defects before they occur and improving the process so that the defects do not occur, are the goals for which a company should strive. Deming believes that a company will be served best by developing a long-term relationship with a few suppliers rather than switching from one supplier to another, based on low bids. A long-term relationship allows suppliers to become partners, reduce cost, and put resources into improving their facilities and technology. Training and retraining of employees is critical to the success of the corporation. Deming believes that it is management's job to coach employees. Education and training are investments in people. They help to avoid employee burnout, reenergize employees, and give a clear message to employees that management considers employees to be a valuable resource. Finally, Deming

also believes that management must pay attention to variability within processes. He advocates systematic understanding of variation and reduction of variations as a strategy to improve processes.

Deming believes that the road to enhanced productivity is through continuous quality improvement called the Deming Chain Reaction (Walton *1986).* Improving quality through improving processes leads to a reduction of waste, rework, delays, and scrap. This reduction causes productivity as well as quality to improve.

Deming's insights are equally applicable to health services delivery systems as to manufacturing. In health care organizations, a simple process like medication administration must rely on professionals from multiple departments. Physicians order medication, which must be transcribed correctly by the unit clerk and taken to the pharmacy on time. A pharmacist must fill the order correctly and transport medications back to the unit. A nurse must then administer the correct medication to the patient. This process can break down at several points. Only through a clear understanding of the process, training in correct methods, and complete cooperation in all areas can the patient receive the right medications at the right time. An environment in which each department blames the other is not conducive to achieving quality improvement. Communication among departments as well as an understanding of the interrelationships of work flow among them is critical to the improvement of quality.

A common problem in hospitals is excessive waiting time in the admitting department. The admitting department blames the nursing department for not informing them when rooms become available. The nursing department blames the physicians for not discharging their patients on time. Physicians blame the admitting department for not getting new patients on units in time so that workups can be completed. This scenario is repeated all over the country. Very little progress has been made in most hospitals because workers do not have a fundamental understanding of the processes. Deming's philosophy provides an excellent framework for resolving the chronic problems facing health care institutions.

Quality Philosophy of Philip B. Crosby

Philip Crosby has been one of America's leading quality experts for the past 25 years. He served as the corporate vice president of ITT, responsible for worldwide quality operations for *14* years. In *1979,* he formed his own corporate consulting company in Winter Haven, Florida. His client list includes such corporations as 3M, IBM, Xerox Corporation, and over 500 other major companies. He has presented his philosophy of quality in two books: *Quality Is Free (1979)* and *Quality Without Tears: The Art of Hassle-Free Management (1984).*

Crosby defines quality as "conformance to requirements." Requirements must be stated clearly by designers, and the job of manufacturing is to produce products that conform to the requirements. Crosby strongly advocates a system of quality improvement that focuses on prevention rather than appraisal. Prevention involves careful understanding of the process and identification of problem areas, followed by improvement of the process.

Crosby strongly advocates the ultimate goal of quality as "Zero Defects" and that a company should constantly strive to achieve this goal. He believes that the best measurement of quality is "cost of quality" and that this cost can be divided into two components: the price of nonconformance, and the price of conformance. The price of nonconformance includes the cost of internal failures (i.e., the cost of reinspection, retesting, scrap, rework, repairs, and lost production) and external failures (i.e., legal services, liability, damage claims, replacement, and lost customers). Crosby estimates that an organization's cost of nonconformance can be as high as 25 to 30 percent of the operating costs. The price of conformance, on the other hand, includes the cost of education, training, and prevention as well as costs of inspection and testing. An organization must minimize the sum of both costs.

Based on his experience with numerous companies, Crosby (1984) has developed a systematic 14-step process to provide quality within an organization. The cornerstone of his quality improvement process is the commitment of top management.

The focus on process improvement, error-cause removal, employee training, management leadership, and worker awareness of quality problems, are all important tenets. Crosby also makes a point of the hidden costs of poor quality. In health care, most hospitals focus on the issues of malpractice insurance costs on laws and greedy lawyers. From Crosby's perspective, organizations should view these costs as costs of poor quality. An average U.S. hospital of 300 beds spends over $10 million in malpractice coverage (cost of nonconformance) and spends less than $2 million on training, education, and process improvement (cost of conformance). In spite of loud protestations, much of the cost of malpractice insurance can be attributed to mistakes in the work environment that could have been avoided through training and process improvement.

Quality Philosophy of Dr. Joseph M. Juran

Dr. Joseph Juran has been one of the leading proponents of Total Quality Management in this country. He has published extensively and has consulted through the Juran Quality Institute. Juran (1986) has developed the "Quality Trilogy," as a universal way of thinking about quality that fits all functions, levels, and product lines. Manag-

ing for quality, according to Juran, consists of quality planning, quality control, and quality improvement.

Quality planning is the beginning point at which an organization focuses on the process of planning for quality (Juran 1989). This is the point where the needs of the internal and external customers are captured. These needs are then converted to product specifications. Quality planning involves the design of a process that meets the specific goals. The end result of quality planning according to Juran is a process capable of meeting quality goals under operating conditions. The second step is quality control. In Juran's Quality Trilogy, this step begins with the definition of the quality characteristics that need to be measured. These are the key aspects of the process critical to the overall product quality. For each item to be monitored, the units of measure and the frequency of monitoring must be defined. Control limits are established based on the process capabilities. The job of quality control then is to monitor the process and take corrective action to keep the process under control.

The third step in the Quality Trilogy is quality improvement. Quality improvement should be performed by a series of well-defined projects. By systematically selecting projects and working on them with a team that is knowledgeable in the process, one improves quality. Dr. Juran feels that many companies stop after the first two steps in the Quality Trilogy. It is quality improvement step that is key to reaching new heights in quality.

I (Sahney, Dutkewych, and Schramm 1989) have compared the differences and similarities in the writings of these three quality gurus and found that although there are differences among the philosophies, many of the concepts presented by these leaders are common to all three. One important difference between the philosophy of Deming and those of Juran and Crosby is that Deming does not believe in the necessity to measure cost of quality as defined earlier. He believes that there are too many costs that are immeasurable and unknown-for example, the loss of customers.

KEY CONCEPTS OF TOTAL QUALITY MANAGEMENT

While the quality philosophies discussed here were developed initially for the manufacturing industry, many of them have been applied in the service industry (Spechler 1989). The key concepts that have guided the implementation of the Quality Management Process at Henry Ford Health System (HFHS) are presented in Table 1. In developing these key concepts HFHS was guided by not only the Total Quality Management (TQM) implementation in manufacturing industry, but also the experience of a few hospitals that had initiated TQM in their organizations. Paul Batalden, M.D., at Hospital Corporation of America (HCA) and Donald Berwick, M.D., at

Table 1. Henry Ford Health System Quality Management Process: Key Concepts

1. Top Management Leadership
2. Creating Corporate Framework for Quality
3. Transformation of Corporate Culture
4. Customer Focus
5. Process Focus
6. Collaborative Approach to Process Improvement
7. Employee Education and Training
8. Learning by Practice and Teaching
9. Benchmarking
10. Quality Measurement and Statistical Reports at Every Level
11. Recognition and Reward
12. Management Integration

Harvard Community Health Plan were visited. The beginning efforts at Rush Presbyterian St. Luke's in Chicago, and Alliant Health System in Louisville, Kentucky, were studied. Batalden and Berwick had the greatest influence-HFHS owes them a great deal of gratitude for helping formulate its philosophy.

Top Management Leadership

Leadership and commitment by top management are key factors in improving quality within any organization. The need for management to drive the quality improvement process and to actively participate is a must if the process is to be successful. Little progress will be made if employees believe that quality improvement is another "program of the year" to which management is giving lip service. Management must emphasize that quality improvement is an ongoing effort and not a program or a pilot effort. Top management must look for opportunities to demonstrate full support for quality and continue to emphasize quality. The chief executive officer (CEO) must make sure that individuals within the management team are not giving mixed signals to employees by preaching against poor quality while emphasizing production quotas despite poor quality

Creating Corporate Framework for Quality

Every organization needs to develop a corporate framework for quality. The mission and vision statement must clearly incorporate the organization's commitment to quality. In addition, the organization needs to develop a definition of quality that is meaningful and well understood by all employees. Guidelines should be developed that give guidance to all employees, including managers, on the organization's values and rules. This corporate framework must be widely shared and discussed at every level of the organization. The Henry

Ford Health System's Framework for Quality, developed by senior management and the Board of Trustees, is detailed in Appendix 1. The process of developing the quality framework is important and requires much discussion among senior management to clarify the vision and the quality guidelines. Input must be obtained proactively from multiple sources including the board of trustees, physicians, and employees. The job of developing the quality framework cannot be turned over to staff-it requires CEO leadership and top management involvement.

Transformation of Corporate Culture

Senior management must lead the process of cultural transformation, which may take anywhere from five to ten years. The new culture must be consistent with the quality framework developed. Employees must not be afraid to discuss quality problems within the organization. The new culture must consider identification of quality problems as an opportunity for improvement and not a means of laying blame. Long-range thinking and planning must replace the focus on short-term results. Participative and flexible styles of management must be encouraged, and must replace the limited, authoritarian leadership style that is often prevalent. Communication throughout all levels of the organization must be increased and opportunities for meaningful involvement for all employees must be provided. At first, changes will be barely noticeable. In the early stages, employees will be skeptical of the changes and will devise tests for management. This is where the leadership of the CEO and top management is crucial.

Lewis Lehr, the former CEO of 3M said about the corporations' quality initiative, "The quality improvement effort was sometimes misinterpreted as a motivation program, a productivity program, a cost-reduction program, a resource reduction effort or just another fad. Some lack of commitment within divisions and subsidiaries also hindered early progress. It took time for top management to fully comprehend the magnitude of quality improvement and to understand their obligation to lead the process" (Lehr 1988).

Finally, for a change in culture to be successful, employees must understand the need for the change and accept their individual responsibility for implementing it (Kanter 1983). Leading a successful transformation requires both logical direction and emotional commitment (Marszalek-Gaucher and Coffey 1990).

Customer Focus

An essential step in total quality management is to identify the external customers of the organization. For a hospital, customers include

patients, family members, visitors, payers, physicians, volunteers, and the community. Feedback mechanisms need to be developed for each category of customers. This feedback should include all aspects of care including clinical care, the environment, hotel services, admitting and discharge, ancillary services, and financial systems. Customer feedback should include not only evaluation of current services offered, but expectations and ideas for improvement.

In addition, internal customers must be identified for each of the key processes within the organization. The requirements of each internal customer must be determined. Based on the requirements of both the internal and external customers, process specifications must be developed. This critical step requires careful balancing between the needs and expectations of the customers, and the current technical knowledge and capability of the process.

Finally, mechanisms must be developed to ensure that customer complaints are handled in an effective, professional manner to the satisfaction of the customer. Management must make it easier for customers to provide feedback and be heard. In a recent study conducted by the White House Office of Consumer Affairs it was found that: (a) an average business never hears from 86 percent of its unhappy customers. For every complaint received, the average company, in fact, has 26 customers with problems, 6 of which are serious problems; (b) of the customers who register a complaint, between 54 and 70 percent will do business again with the organization if their complaint is resolved. This figure goes up to a staggering 95 percent if customers feel that their complaint was resolved quickly; and (c) the average customer who has a problem tells 9 or 10 people about it (Albrecht and Zemke 1985).

In developing a quality culture it is critical that customer service take priority. The management of customer complaints must be *viewed as a process that is designed* and its performance must be measured. Michael Albert (1989) has proposed a 15-step process to develop a customer service-oriented organization.

Process Focus

The organization should focus quality improvement on key processes, rather than on the people involved in those processes. Individuals in their daily work and quality improvement team efforts should study specific processes and discover ways to improve them. These efforts must focus on making each process statistically stable and reducing variability. Once a process is stable, teams must work on improving the process. For example, one area in which there are frequent complaints in hospitals is the admitting department. Patients complain about long waiting times before they can be taken

to their assigned rooms. The first reaction of management is to chide the supervisor of admitting for not doing a good job. But admitting is a complex process that crosses various departmental lines. There are several possible causes for delay. Only a careful study of the admitting-discharge process can improve the process.

A scientific approach to process improvement should be used. Changing the process based on whims and hunches amounts to tampering and destablizes the process. Paul Batalden, M.D., and his colleagues of the HCA Quality Resource Group (James 1989) have recommended a nine-step process improvement methodology labeled as FOCUS-PDCA.

- **F**ind a process to improve
- **O**rganize a team that knows the process
- **C**larify current knowledge of the process
- **U**nderstand sources of process variation
- **S**elect the process improvement
- **P**lan a change or test
- **D**ocarry out the change
- **C**heck and observe the effects of the change
- **A**ct, adopt or modify the plan

The PDCA cycle was first developed by Walter A. Shewhart and is known as the Shewhart cycle. Many people also refer to it as the Deming-Shewhart cycle. Organizational improvement is achieved by improving processes, making them error proof, removing slack, and reducing variation (Scholtes 1988).

Another key concept in process improvement is to understand the difference between common cause variation and special cause variation in processes (James 1989).

- Common Cause Variation-present in every occurrence of the process. These result from many causes. Some refer to this as random variation.
- Special Cause Variation-usually outside of the expected limits of variation as depicted on a special graph called "a control chart." They usually occur because of special events (e.g., machine malfunctions or breakdowns) and are often "assignable" to an intervening event-not the basic process.

A key first step in any process improvement is to bring a process under statistical control with the elimination of special causes. Process improvement at this stage requires a detailed study, followed by the use of the FOCUS-PDCA cycle to improve the process and eliminate common causes of variation.

Collaborative Approach to Process Improvement

A central theme of TQM is the involvement of employees in process improvement. Collaborative approach can take several forms. Employees can facilitate process improvement by understanding the needs of the internal customers who rely on their output. For example, housekeeping must understand the nursing department's requirements. A second means of employee involvement is through the assignment and formation of quality improvement teams. Team members are chosen based on their knowledge of the process and their ability to make contributions to its improvement (Scholtes 1988). The person who owns the process leads the team. Each team has a facilitator whose job is to monitor the improvement process that the team follows and counsel the team as it progresses. Team assignments and sponsorship of process improvement projects are reviewed by senior management. Teams consist of six to ten members and usually meet one to two hours per week. Team members assign themselves homework tasks to do between meetings such as interviewing other employees, customers, or management. Both functional and cross-functional teams are formed

Employee Education and Training

Employee education and training at all levels of the organization are central to a motivated work force. Employees must not only be trained in their job function but also in the quality improvement process. It is important that all employees develop a common understanding and language. Quality education should include instructions for simple techniques such as problem solving, process improvement, cause-effect diagrams, pareto charts, control charts, flow charts, and team processes like brainstorming and nominal group techniques.

All new employees must undergo comprehensive orientation and preferably detailed quality education *before* they begin employment

Learning by Practice and Teaching

Management needs to create a learning culture and disseminate TQM principles throughout the organization. The best people to educate the work force are the immediate supervisors. Management must reinforce its concepts of TQM through practice as well as teaching. Xerox Corporation calls this process "the training cascade" (Riddle 1990). At each level, first an individual learns a concept, and then uses it as a member of a team. Subsequently, these individuals teach concepts to their subordinates. They also monitor subordinates to ensure correct use of the process.

Benchmarking

Benchmarking is a process designed to assess the competition in comparison to the organization's own performance. It is a search for those best practices that will lead to superior performance of a company (Camp 1990). Xerox Corporation initiated competitive benchmarking in 1979 and has defined it as "a continuous process of measuring our products, services, and practices against our toughest competition or those companies who are the leaders" (Camp 1990). The key to successful benchmarking is that it requires the organization to know its own products and processes and also forces it to compare itself against the best. This information defines the gap that the organization must close, and it encourages the organization to learn from the best. Benchmarking is a good way to set realistic objectives. Many times when internal people believe that something cannot be accomplished, a visit to a leading organization often sparks the motivation to accomplish higher objectives.

Quality Measurement and Statistical Reports at Every Level

Key quality characteristics measure the goodness of the output of a process and must be defined for each process of significance to the customer. As an example, the quality characteristics for the admitting process may include waiting time at the admitting department, availability of preadmission test results, and availability of medical records. Variations in the performance of processes related to the key characteristics must be measured to help identify appropriate actions for the improvement of quality. Employees at every level of the organization should be trained to perform simple statistical measurements, data analysis, and data display. Employees must become accustomed to displaying quality data and monitoring the progress over time. Time-based displays and graphical displays must be used to communicate with the employees. Quality data also must flow upward in the organization. Senior management should use this data to initiate quality improvement teams and to commit resources for accomplishing the objectives. The objective of quality reports at every level of the organization is to focus management's efforts on improvement as well as to gather information. The objective is not to lay blame. Therefore, it is essential that quality reports be developed within the proper corporate culture.

Recognition and Reward

A central theme in TQM is recognition of employees as they make progress on quality improvement. The organization needs to develop various methods for recognizing employees. Employee teams should

be given opportunities to present their projects to peer groups as well as senior management. The chief executive officer should listen to employee presentations and encourage them to reach new heights. A quality day should be established where teams from different divisions present their projects. Such a day allows management to recognize significant achievements and thank all employees who have participated in the quality improvement process.

Management Integration

The TQM process is successful when continuous quality improvement becomes part of day-to-day management activities. Just as financial reports are now an integral part of good management, quality planning, quality control, benchmarking, and quality improvement teams and collaborative work become part of management activities. Success will be achieved when senior management spends more time addressing the improvement of quality in the organization than solving its financial problems; when quality items appear for discussion on all management, medical staff, and board meeting agendas, and when all employees, including managers, apply the concepts of TQM in their daily work.

Developing a new focus on quality at every level of the organization is central to the transformation of the organization. The key concepts discussed above reinforce each other and are essential blocks for building a quality culture within the organization.

QUALITY MANAGEMENT IMPLEMENTATION IN HEALTH CARE

The health care industry has been under tremendous pressure to reform during the past ten years. Fueled by the large rate of increase of health care expenditures, this pressure comes from payers and consumers asking for improved quality of services and value for dollars spent. The four key approaches of regulation, competition, selective contracting, and patient cost sharing used to contain health care expenditures have not been successful. Health care institutions are under pressure to operate with fewer resources, Medicare reimbursement has not kept pace with cost increases experienced by the institutions, and operating margins have declined rapidly over the past five years. Meanwhile, the cost and total expenditures for health care keep increasing. Private sector companies admit that, for the most part, their efforts to contain health care costs have not been successful. Some companies are ready to throw in the towel and have begun advocating a national health insurance plan. Consumers of health care, on the other hand, are demanding better service from health

care institutions. Given such an environment, many hospitals have launched the TQM initiative as they struggle to provide health services with fewer and fewer resources.

There are three approaches used for health care facilities to maintain quality. The first is working to meet requirements and pass inspections set up by external groups. Hospitals appoint several committees, each with jurisdiction to study a specific area (e.g., mortality and morbidity, medical staff practice review committee, tissue committee, etc). The hospital quality assurance (QA) staff conducts reviews based on defined criteria as well as conducting reviews of specific incidents. These reports are shared with committees. The orientation is to look for bad guys or as Berwick (1989) calls them, "bad apples." Committees are generally reluctant to find bad apples and if they do find one, they search for excuses. Meanwhile, the accused party finds many reasons for the poor performance and blames it on others. But what about all the people that just meet the minimum standard? They are relieved that they were not cited and life goes on. This mode of inspection rarely motivates anyone to study systematically how to improve the quality of the entire group. Most of the QA staff's time is spent doing studies to meet externally set requirements with the objective of meeting external inspection requirements, which tend to be minimum in nature. Quality assurance does not focus on "common-cause variation" or how to improve the whole process. Instead it focuses on the tail of the distributions – the people who do not meet the minimum standards. Hospitals struggle three months before the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) inspection to clean up their act and everything slides back to the old ways once the inspection is over. The Total Quality Management approach on the other hand, focuses on the improvement of the whole process, it addresses both common cause variation as well as special cause variations (James 1989).

"Many hospitals have launched the TQM initiative as they struggle to provide health services with fewer and fewer resources. "

The second approach currently used to maintain quality is certification. This is a reflection of the professionalism theory – it implies that if an individual is professionally trained, then he or she must know what is good quality (McLaughlin and Kaluzny 1990). This model assumes that care is provided without variation by a single individual with no interaction with other individuals. This, however, is not the way it works in reality. If one picks the best auto parts from 200 different vendors and tries to assemble them, the result will not be the best car because what is lacking is a system. The same is true in health care delivery. Hundreds of professionals,

each with their own discipline and training cannot provide good care without a system. This system not only needs to be designed but tuned periodically to function effectively.

The third approach currently used is to publish outcome statistics (e.g., mortality rates for procedure "Y"). The Health Care Financing Administration (HCFA) began publishing these data a few years ago. Almost nothing has been accomplished. A few hospitals each year are cited, indicating that they were below some acceptable level. Immediately, the hospital issues a press release that the HCFA study did not take into account its patient's acuity or severity. Hospital trustees are told that the Washington bureaucracy has again goofed and wasted taxpayer dollars. Some hospitals may also look for opportunities to manipulate data to avoid being cited. However, very little improvement actually takes place. Meanwhile, 97 percent of the hospitals that avoided the "bad apple" list breathe a sigh of relief and continue as if nothing needs to change. Although this may be a harsh portrayal of the current quality focus in health care institutions, it is close to the truth.

"Total Quality Management differs from QA in the degree of involvement of the employees. "

Total Quality Management differs from QA in the degree of involvement of the employees. Quality assurance is carried out by the development of a separate department whose job is to be the inspector. Quality assurance functions are driven by external regulations. The department being monitored usually resents the whole process, considers it to be a time-consuming, wasteful, and unnecessary, but mandated evil. In such an environment, the department being reviewed considers its job done if it meets the minimum standard (Berwick 1990).

In contrast, the TQM approach focuses on constant improvement rather than on minimum standards. The ongoing effort is carried out by the department itself. It establishes the level of performance being experienced and searches for ways to improve it. When improvement is achieved, the new level of performance is established against which to measure further improvement. The cycle never ends. This approach identifies key processes and key quality characteristics, involves departmental employees, conducts education for its employees in quality improvement tools and techniques, and focuses on removing special causes as well as works on common causes to improve their level of performance and to make processes error free. In 1989, JCAHO incorporated in its "Agenda for Change" the key principles of TQM (Ente 1989).

Few consultants were marketing TQM implementation to health care organizations as little as three years ago. Today, over 50 consultants suddenly have become experts in the application of TQM in health care organizations. Most of these firms are repackaging their organizational consulting services and adding labels, like TQM, to market their services. In many cases, there is a lack of understanding of the key concepts of the approach, health care, and the magnitude of the change required. This is reflected in questions and statements posed to us at Henry Ford such as, "We have to cut our budget this year by $5 million, do you know of a consultant who can help us implement TQM to get these benefits by the end of the year?" "How many teams do you have working in your institution?" "You have been into TQM for a year, how much have you saved?" and, "Our senior management is very busy in budgets and financial management of the institution, so we are beginning with the housekeeping and dietary departments in the implementation of the TQM process." For many institutions TQM is the current thing to do and, unfortunately, in the majority of the institutions, TQM will fail. This article will address some of the key reasons for failure and present two laws that model the quality progress within institutions as a function of senior management commitment and employee involvement. A discussion of the implementation of TQM at Henry Ford Health System follows.

IMPLEMENTATION OF TQM AT HENRY FORD HEALTH SYSTEM

Henry Ford Health System is a vertically integrated regional health system. It has an annual operating expense budget of over $1 billion and a work force of over 15,000 employees. It consists of a teaching hospital, three community hospitals, two multispecialty group practices with over 1,000 physicians, 35 ambulatory care centers, two nursing homes, an HMO with over 400,000 members, and multiple other health-related businesses.

Initiating the TQM Process

Henry Ford Health System initiated the TQM process in October 1988. A task force was formed by the CEO under the leadership of the Corporate Vice President of Planning and Marketing, to study and recommend how to launch TQM within Henry Ford Health System. The first three months were spent reading and discussing the concepts of Deming, Juran, and Crosby. The task force visited several corporations including 3M, Ford, and Chrysler and talked to consultants, including Crosby Associates. Advice was sought from a number of other corporations. Visits were made to Rush Presbyterian St.

Luke's Hospital in Chicago, Harvard Community Health Plan in Boston to meet Donald Berwick, M.D., and HCA to meet with Paul Batalden, M.D.

The task force prepared a document, outlining the key concepts of TQM and keys for successful implementation. The findings of the task force were presented to the CEO and at a later date to senior management at the Management Policy Committee. The CEO was committed to implementing TQM, but it would be fair to say that there were many skeptics. Some of the senior management questioned the necessity of such an initiative; others questioned whether we could afford a new initiative and its cost; some felt that they were already practicing it; some suggested that we wait until the budget planning cycle, which would occupy management for the next three months, was over. Some were unable to find the time to read material that was circulated, but those that did became more and more convinced. A decision was made to proceed further. Some of the reasons for TQM implementation were to

- Develop a quality culture throughout HFHS with a focus on continuous quality improvement
- Improve services to our patients
- Increase value for our customers
- Improve productivity and control increases in the cost of health care
- Improve work environment in order to maintain and attract qualified work force
- Improve organizational understanding of practice pattern variations
- Use benchmarking to compare performance and learn from the best practices.

Selection of a Consultant

A request for proposal (RFP) was developed with the help of the management engineering group and sent to 15 consulting organizations. The RFP requested detailed philosophies of implementation and the fee structure for different packages. The task force developed criteria for evaluating vendor proposals (see Table 2). Twelve organizations responded with detailed proposals. Paul Batalden, M.D., and his Quality Resource Group at HCA was selected as the external consultant to guide the TQM implementation process in its early stages. Batalden's background as a physician, the depth of his understanding, past experience in a group practice, experience of implementation in hospitals, and the proposed fee structure were important factors in his selection as the HFHS consultant. It was felt

Table 2. Henry Ford Health System Quality Management Process

Criteria for Evaluating Vendor Proposals

1. Depth/breadth of experience with quality improvement engagements, and specific improvement experience in health care: including inpatient and outpatient; service and clinical components
2. Willingness and ability to modify approach for health care, particularly training materials
3. Improvement process structure and plan, consistent with HFHS requirements
4. Type and degree of support provided in addition to basic implementation plan:
   - Willingness to assist HFHS in education program development
   - Willingness to provide service on-site.
5. Professional level of consultant resources proposed:
   - Style, experience, sophistication, and credibility of proposed project team
   - Intensity of resource to be provided (i.e. consultant time and skill mix)
6. Pricing
7. Established, proven history
8. Exclusions and restrictions

that he was genuinely interested in changing the health care industry through TQM.

Henry Ford Health System's Total Quality Management initiative was named "Henry Ford Quality Management Process." This was done to clearly convey the idea that it was a process and not a program. The objective was stated:

> *To* develop and implement a total quality management process that can be followed throughout the organization to improve the quality of health care services provided to our customers. The goal of the process is to retain market leadership in health care delivery through quality.

Initial Implementation Steps

A two-day orientation was held for the top 70 executives of Henry Ford Health System with Donald Berwick and Batalden as external facilitators. The evaluations were mixed. Many felt that TQM was the greatest thing since sliced bread and others thought it was a waste of their time-they already knew this stuff. Some commented that this would be the next program of the year and hoped that it would die a quick death. At the end of the two-day orientation, every participant was given a copy of *The Deming Management Method* (Walton 1986) with a personal message from the CEO. This book

presents Deming management method in an easy-to-read style. It has numerous case studies from industry. The author is a journalist who followed Deming for over two years, attended his lectures, and interviewed him on multiple occasions. It was felt to be a good introduction for people beginning to grapple with TQM issues and principles.

A small group of internal staff called the Corporate Quality Resource Group (2 FTEs) was created and spent the summer of 1989 with the consultants developing an implementation plan and customizing the HCA material for HFHS training. Each of the operating entities and staff groups was asked to select two individuals who would guide the process within the group. This group was called the Quality Technology Council (QTC) and consisted of approximately

"Many felt that TQM was the greatest thing since sliced bread and others thought it was a waste of time–they already knew this stuff."

30 members. The QTC began meeting twice a month and began improving its own understanding and learning the concepts of TQM. One of Deming's 14 points was discussed in detail at each meeting. External speakers were invited to share with the group their experiences with TQM.

In fall 1989, all QTC members were trained by external consultants for six days on key concepts of TQM. These courses were called Q 101 and Q 102. Based on the comments of QTC members, course material was revised. In October 1989, a three-day course, that combined Q101 and Q102 and compressed the material from six days to three days, was offered to the members of the Management Policy Committee (MPC). Management Policy Committee members for the most part report directly to the CEO and constitute the policymaking and resource allocation body of the system. In retrospect, this was a big mistake. Prior to training, MPC members felt that since they were extremely busy and quick studies, they should be able to absorb the concepts quickly. However in actual experience, the members of the group realized that they did not have enough time to finish the exercises and fully grasp the concepts. Since that time nine of the 13 MPC members have gone back and retaken the full six-day course. Their unanimous advice is that we should not have shortened senior management training. During the past year MPC has discussed each of Deming's 14 points in detail, with each discussion being led by a different member. The MPC also has had several half-day and three one-day retreats to develop the Henry Ford Health System Quality Framework. This framework includes the system mission, vision, quality definition, and quality guidelines (Appendix 1).

A significant factor in the rollout of the Quality Management Process at Henry Ford Health System was to establish Quality Steering Committees at the system level as well as at each operating group level. The job of the quality steering committee is to guide the implementation of the quality management process within its operating group. The steering committees consist of senior managers who make resource allocation decisions within the group.

A second important step is to anchor the quality management concepts at higher levels before moving it one step lower in the organization. Chief executive officer learning and practice was followed by top management learning and practice followed by middle management learning and practice.

Each of the operating entities and the staff groups was then charged with developing a Quality Framework within its own entity or division. The sequence of the Quality Management Process rollout is described below.

A. *Quality Management Awareness and Learning.* This is the first step during which each operating group formed its own quality steering committee and identified its coach (a member of QTC). In weekly sessions, Deming's 14 points were discussed in detail. The Quality Steering Committee, including the CEO and the coach, participated in the six days of formal training. This step took approximately the first six months.
B. *Quality Management Framework Development.* Each en tity worked on developing its quality framework. This included mission, vision, quality definition, and quality guidelines. This process was a slow and tedious process and is still in progress in many divisions. It took longer to accomplish because it took senior management and the Board of Trustees nine months to finalize the System Quality Framework.
C. *Quality Management Practice.* The concepts taught in Q101A and Q101B started being used. The meeting skills and participation skills had an immediate impact. Soon meetings had agendas and time frames, and participants began using such processes as brainstorming, nominal group techniques, and multiple voting to assist in decision making. Practice teams were formed to enable newly trained managers to further strengthen their understanding of the concepts. Each MPC member participated on a team. The CEO is a member of a team that flow-charted the Policy Making Process. Other senior management members worked on such processes as the capital budgeting and mergers and acquisitions.

D. Customer Awareness Development. Each entity or division was asked to review the current mechanisms for customer feedback and to identify its customers. A systemwide customer feedback questionnaire was implemented for all inpatients. Similarly, an ambulatory care feedback mechanism is being used on a sampling basis for all medical centers. A number of focus groups have been conducted in addition to community surveys. A systemwide team is working on developing a System Quality Report.

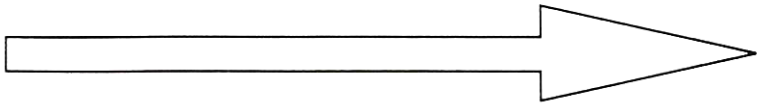
E. Organization Quality Awareness Building. Organization wide awareness building has been initiated through the use of multiple presentations ranging from two hours to one full day. Board presentations have been made. The Henry Ford Health System Board of Trustees has appointed a Quality Committee that has met four times. A charge of this committee is to guide the Henry Ford Quality Management Process. All of the other entities have conducted board, as well as, management retreats on quality. At these meetings trustees have been asked to define the role they should play in quality improvement.

The focus of the activities during the first year of TQM, viewed as the initiation phase, was geared to learning and building quality management awareness throughout the system (see Figure 1). During the first year of implementation ending on 1 October 1990, over 350 senior managers and physicians were trained in formal six-day training sessions. Over 60 physician members of the Henry Ford and Metro Medical Groups have undergone this extensive training. Quality Steering Committees have been formed in every operating group, and coaches have been assigned. Managers within each operating group have developed their preliminary rollout plan for 1991. These plans were presented to the System Quality Steering Committee in its preliminary format. Currently, each operating group is finalizing its Quality rollout plan. This plan addresses how the entity plans to roll out the Quality Management process, needs for formal training, facilitator training, key projects it plans to initiate, and plans for further employee involvement to solidify the commitment and to move the Quality Management Process implementation. These plans were reviewed in December 1990 by the System Quality Steering Committee and will form key parts of the system plan.

Ongoing Training

Approximately one year after initiating the process, the internal Quality Resource Group took over the training function from the

Figure 1. Henry Ford Health System Quality Management Transformation



Initiation	Transformation	Integration
Learning	Chartered teams	Quality management way of life
Practice	Recognition	
Framework	Customer measurement	
Customer awareness	Cross-organizational	
Organizational awareness	Outcome measure link	
	Human Resource policies	
	Process design	
PHASE I	PHASE II	PHASE III

external consultants. A team was formed consisting of senior managers and quality coaches who took responsibility for different sections of the teaching material. Each section leader taught the material at least once. The presentation was videotaped. Each section leader then selected management volunteers from within the HFHS to teach the material. It was the section leader's responsibility to go over the material with and prepare the individual who was next in line to teach the section. Teaching notes and the videotapes have been extremely helpful in preparing new teachers. In addition, external consultants observed and critiqued the initial teaching by the HFHS staff. To date, over 50 managers and physicians have participated as instructors and facilitators in the training program.

A decision was made early to keep the training systemwide and invite participants for each training session from across the system. In a class of 36 participants, no more than nine participants were from any one operating entity or staff group. This decision was made to further the notion of systemness among the participants. Participant evaluations of the training sessions have almost una-nimously singled out this strategy as a good one. Participants have enjoyed interacting with other system members. Each training class is six days in length and taught in two three-day sessions approximately six weeks apart. Participants include a complete cross section of physicians, nurses, and managers.

Department of Quality Improvement Education and Resources

In order to further accelerate progress within the system, the CEO in October 1990, announced the formation of a new Department of Quality Improvement Education and Resources. The mission of this new department is to promote, guide, and support the organization

wide quality transformation of the Henry Ford Health System. In addition, the department is charged with developing new theory and applications of modem quality improvement technology for use in health care. A chair with an endowment of $1 million was established for the chairman of the department. This department consists of a professional and administrative staff of 10 FTEs, and is a major commitment of the system toward the development and application of TQM.

Management Evaluation

To further solidify the implementation of TQM within the organization, the CEO indicated that one of the four dimensions on which each individual reporting to him would be evaluated in 1990, was progress made as a role model based on TQM principles as well as the progress made in the implementation of TQM by the areas reporting to the individual.

Strategic Plan

Henry Ford Health System has just completed a year-long process to develop a 10-year strategic plan for the system. This plan was developed by the Futures Committee of the Board of Trustees. One of the six system requirements identified was to: "Develop a cohesive, vertically integrated health care system which demonstrates a commitment to excellence and the process of continuous quality improvement."

During November 1990, the next step in TQM began with the introduction of the first steps of Hoshin planning within the organization. The senior managers reporting to the CEO were each asked to develop their 1991 objectives and plans in support of the six key requirements of the system developed by the Futures Committee of the Board of Trustees. For 1991, plans are in place to further integrate strategic planning and the TQM process within the organization.

Lessons

The involvement and the commitment of the CEO is crucial in implementing a TQM process within any organization. Early in the process, senior managers must spend sufficient time learning and practicing key concepts and methods. There is a tremendous temptation to take short cuts or avoid training sessions to save time, but experience shows that it slows the process at later stages. It is important that senior management develop a conceptual framework for quality and discuss it with employees. This framework must be developed through a participatory process by management and not delegated to staff or consultants.

As the TQM process takes root in the organization, process improvement teams will be formed. In the early stages, it is important to manage this process and to form only a few teams. Each team should have a trained facilitator who acts as a coach for the team. It is critical to develop trained facilitators before teams get formed.

The TQM process offers a great opportunity for management to communicate organization mission and vision for the future. It offers an opportunity to listen to the concerns of the employees. It provides management with a powerful tool to motivate employees and change the culture of the organization. In the early stages, TQM may be perceived as an add-on activity by managers. It is important that leaders continue to emphasize that TQM concepts need to be practiced in everything that managers do, and that quality improvement is a fundamental business strategy of the organization. In addition, TQM is the basis for productivity improvement as well as cost reduction within the organization.

It is important not to equate symbolism with real progress. It is easy to put out slogans, pins, and fliers. It is much more difficult to change management behavior. It is also important not to equate progress with the number of teams formed, or with holding meetings using newly acquired meeting skills or the number of surveys done. Real progress will be made when TQM concepts are incorporated in daily ways of doing work, and when management focuses its attention on the process of everything it does.

TQM AND CLINICAL APPLICATIONS

A question often asked is "can TQM be applied to clinical care or is it applicable to administrative functions only?" Brent James (1989) has addressed this question. He says, "The roots of continuous quality improvement are the same quality principles that medical practice has taught since its inception. The major difference is that the continuous quality improvement theory uses those principles in a formal, explicit fashion. It rigorously applies scientific methods to organized medicine's commitment to learn from every patient, so that the next patient will receive better treatment."

Recently, many case studies have appeared in which the formal TQM process has been used by clinicians to improve the process of clinical care to the patients. We cite a few examples. The first example is from Latter Day Saints Hospital in Salt Lake City. The process studied was "post-operative deep wound infection" (James 1989). A team from the hospital studied prophylactic antibiotic usage for all inpatient elective surgeries performed and related the outcome to the process of care. Based on the study, the process was modified and the outcome improved significantly. The deep postoperative infection rate was cut by 50 percent. Laffel and Blumenthal (1989) have

also given several examples of the application of TQM in clinical settings. They state, "The elimination of unnecessary variation in clinical practice may similarly improve the quality of care... should physicians choose to follow similar procedures for determining the sources of infection and for selecting and modifying antibiotic coverage, it is likely that the hospital would be able to implement their care plans more efficiently and accurately."

Caldwell, McEachern, and Davis (1990) describe the implementation of continuous quality improvement in clinical areas at West Paces Ferry Hospital in Atlanta. Following the TQM process, the team reported a 44.5 percent decrease in antibiotic costs due to elimination of waste. Another team at West Paces Ferry Hospital examined the birthing process with a focus on reducing c-section rate (McEachern, Schiff, and Hallium 1991). The team consisted of physicians, nurses, and administrators. The c-section team developed a flow chart and collected data on c-section rates over two years. A run chart was developed. The team then brainstormed causes of c-section and developed a cause-effect diagram. Systematic process improvements were introduced and results monitored. The authors report decline in c-section rates from 21.0 to 17.8 percent.

The application of TQM to clinical processes offers an excellent communication tool for physicians, nurses, and other professional caregivers to communicate with each other. Documenting the care process and systematically introducing change to improve the process will allow the teams to see the impact of the changes. In addition, the documented care processes become an excellent tool for new employee orientation as well as for communicating with other departments. As clinical processes are documented, opportunities will be identified for improvement of hotel and administrative services being provided to patients and physicians in relation to the clinical care. This coordination of care will allow for reduction of length of stay, unnecessary tests, and patient stays (Coffey et al. 1990). Finally, one of the central themes of TQM is understanding variation in a process and reducing of variation. The concepts of TQM can be applied to understanding clinical practice variations among physicians. This is a key activity at Henry Ford Health System. A number of physician teams are using TQM concepts to study clinical processes. Total Quality Management provides common language for all health care providers to effectively communicate with each other.

EVIDENCE OF IMPACT

Total Quality Management principles have only recently been applied in health care. Most hospitals are in the first or second year of the implementation process. Although a number of case studies have

been reported (Society for Health Systems and Health Care Information and Management Systems Society 1990) at national meetings showing the positive impact of the approach, it is premature to use them to declare that TQM has been successful in health care.

What about other industries? Here there are many successful implementation cases (Spechler 1989). Xerox Corporation by its own admission was in trouble in 1982. The Japanese had made significant inroads into the copy machine business. A benchmarking study conducted by Xerox showed that its unit manufacturing cost equalled the Japanese selling price and defects per machine were sevenfold compared to Japanese products. In 1983, Xerox launched its total quality management process. In 1984, Xerox did not have a single copier rated as "best" in any of the seven categories of copiers. By 1986, Xerox had leadership in two of the classes and by 1988 Xerox was rated the best in six out of seven classes in consumer ratings. During the same period, Xerox experienced a 38 percent improvement in customer satisfaction. In 1989, Xerox was awarded the Malcolm Baldrige National Quality Award (Riddle 1990).

Similar testimonials have been given by numerous companies including Ford Motor Company, General Motors, Motorola, and Hewlett Packard. One thing is clear with TQM-not only does quality improve, but productivity improves and the work environment and employee morale also improve significantly.

A common question asked by many who are considering implementing TQM is "How long before we see results?" Two laws have been developed by Sahney for modeling the impact of TQM on an organization's performance on quality improvement. In discussions with Batalden and on multiple visits to other organizations, several factors were identified that moved the organization forward successfully in the implementation of the quality improvement process. These factors include: senior management commitment and involvement, employee participation, degree of cultural change, and the use of TQM methods and tools in process improvement. It was observed that early progress is slow and the benefits come as more and more of the organization practices these concepts. The laws briefly presented here are meant to qualitatively approximate reality, rather than to provide a quantitatively exact relationship.

Sahney's First Law of Quality Progress

The quality progress accomplished by any organization is directly proportional to the degree of cultural change congruent with the philosophies of TQM within the organization and the degree of use of tools and techniques of process improvement.

Quality Progress = C x P

Where

C = degree of cultural change within the organization to TQM philosophy $0 \leq C \leq 1$

P = degree of use of tools and techniques of process improvement $0 \leq Ps \leq 1$

Experience indicates that methods and process improvement do not last unless the cultural change process is anchored in the organization. Similarly, if the organization spends its resources in motivational talks to the employees but does not follow it up with a methodology and education for process improvement, very little is gained. This is why programs such as guest relations programs do not have a lasting impact. Resources are best used when work proceeds simultaneously on both the cultural change and the application of tools and techniques.

Sahney's Second Law of Quality Progress

The quality progress accomplished in any organization is directly proportional to the (a) square of (degree of senior management commitment in using the principles of TQM) and (b) the degree of all employees actually using the principles of TQM.

Quality Progress = $M^2 \times E$

where

M = fraction of senior management committed to the principles of TQM concepts, $0 \leq M \leq 1$

E = fraction of all employees committed to the principles of TQM concepts, $0 \leq E \leq 1$

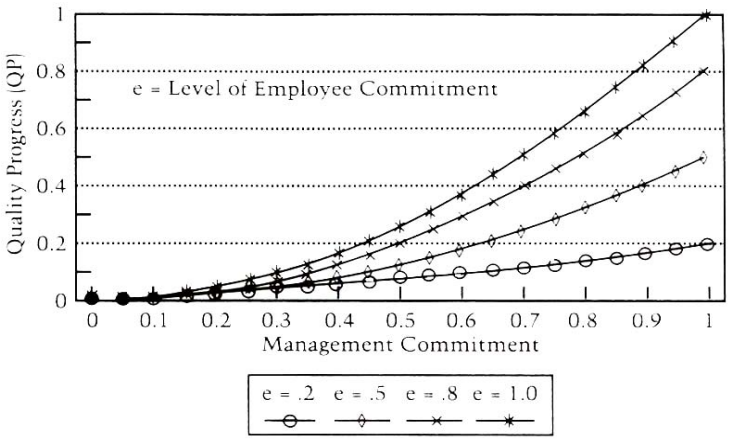
If only 50 percent of senior managers are committed and using TQM concepts and the same was true for all employees then (see Figure 2) M = 0.5 and E = 0.5.

Quality Progress = $0.5^2 \times 0.5 = 0.1250$

This shows that the organization would have only made 12.5 percent progress towards quality goals achievable. The major benefit of TQM starts accruing when all employees and management start using the principles in their daily lives. Benefit accrues much slower in the beginning because efforts of the few practicing TQM is countered by others who stick to old ways. As more and more senior managers commit to TQM, the progress accelerates. When both senior management and employee participation reaches 80 percent, the organization reaches 51.2 percent of the benefit or still only half of the benefits possible (see Figure 2).

There is a great deal of evidence on the positive impact of TQM on the progress of an organization toward quality improvement. Companies such as 3M, IBM, Xerox, Motorola, and Hewlett Packard have been practicing these concepts for almost ten years. The key concepts are consistent with the concepts of management

Figure 2. Quality Progress vs. Management Commitment



of change and organizational focus. Success in the final analysis depends on the ability of management to be able to execute the TQM process in a *consistent* fashion, with determination, single-minded focus, and energy.

VISIBLE ACTIONS BY SENIOR MANAGEMENT IN SUCCESSFUL IMPLEMENTATION OF TQM

If TQM is to be successful, management must take active leadership in each and every area of the process as it is being implemented. Batalden et al. (1989) has outlined his prescription for a successful launch of TQM process:

- Management must learn the meaning of quality, including an understanding of the importance of the customer, and that there are multiple customers in the production process.
- Top management must sponsor and encourage the continuous improvement of quality, including the wise use of teams that can work effectively together to improve the system and other processes, including group processes and organization and system change skills.
- Management must learn the meaning of statistical thinking: how to speak with data and manage with facts; how to take the guess work out of decision making; how to reduce variation and unnecessary complexity through the use of seven standard tools of data analysis and display (e.g., cause and effect diagrams, pareto charts, histograms, scatter diagrams, flow charts, run or trend charts, and control charts);

and how to link the results of the use of these tools with the appropriate management action.

There are many visible actions senior management can take to reinforce the implementation of the TQM process within the organization. These actions are categorized under the 12 key concepts of TQM, which have guided the TQM implementation at HFHS:

1. Top Management Leadership

- Creating a quality steering committee consisting of top management
- Participating in the development of organization quality improvement plans
- Creating a Board of Trustees committee on quality
- Creating a senior management position with responsibility for quality issues (similar to finance, strategic planning, human resources)
- Making quality improvement a routine agenda item on senior management team meetings and board meetings
- Improving the quality of work they do
- Speaking frequently about quality at employee meetings and in external settings
- Networking with other senior managers within the industry and in other industries on the issue of quality improvement
- Developing a personal quality improvement education plan
- Using benchmarking as a process to evaluate competitor performance in quality
- Stressing the relationship of quality to productivity, including the cost of poor quality.
-

2. Creating Corporate Framework for Quality

- Developing mission, value, quality definition, and quality guidelines for the organization through discussions at senior management meetings
- Distributing and discussing the mission, value, quality definition, and quality guidelines throughout the organization
- Orienting new employees to the corporate framework for quality
- Identifying and reviewing the corporate policies to make them consistent with the corporate framework for quality
- Developing quality improvement plans at all levels of the organization and sharing them with all employees
- Integrating quality plans into the strategic plan of the organization and using quality principles in developing strategic plans.

3. *Transformation of Corporate Culture*

- Developing a plan for launching the quality improvement process throughout the organization
- Fostering process, customer "literacy," statistical and scientific thinking
- Speaking to employees about the importance of quality
- Orienting new employees to the corporate framework for quality
- Discussing with employees the key concepts included in the corporate framework for quality
- Encouraging employee leadership and involvement in quality activities within the corporation as well as in local and national professional societies and trade groups
- Reviewing employee performance on a regular basis, including performance on the quality improvement plans
- Working on the improvement of processes within which they work.

4. *Customer Focus*

- Developing means for eliciting customer input in the design of new products and/or services
- Involving customers in evaluating current products and/or services
- Comparing the organization's products/services to those of key competitors
- Developing systems to manage customer complaints and to resolve problems
- Encouraging every department to define its internal and external customers and key quality characteristics.

5. *Process Focus*

- Initiating quality reviews of the processes within each area
- Communicating the results of the reviews to employees, together with a plan to improve
- Soliciting information about areas of quality problems from employees
- Forming project teams in selected areas to work on quality improvement projects
- Identifying process owners and process improvement teams.

6. *Collaborative Approach to Process Improvement*

- Interviewing and understanding customer requirements downstream

- Appointing quality improvement teams
- Participating in quality improvement teams
- Sharing and communicating results of quality improvement project teams within the organization
- Scheduling time to receive team reports and presentations
- Providing necessary resources as well as staff time requested by quality improvement teams
- Conducting presidential reviews of team's progress.

7. *Employee Education and Training*

- Developing an implementation plan to educate all employees within the organization about quality improvement concepts and tools for quality improvement
- Using education as a means of team building at all levels of the organization
- Actively participating in employee education rather than delegating education to an educational department
- Inviting speakers from outside the organization to speak on quality concepts, tools, and experiences to employees.

8. *Learning by Practice and Teaching*

- Conducting quality education classes
- Teaching quality principles to subordinates
- Acting as coach or facilitator to quality improvement teams
- Improving processes in which they are involved.

9. *Benchmarking*

- Identifying leaders for specific processes both inside and outside of the industry
- Visiting leading organizations to study process and to learn firsthand what can be accomplished.

10. *Quality Measurement and Statistical Reports at Every Level*

- Developing a corporatewide quality report similar to a corporatewide financial report
- Developing quality reports for each division and/or department
- Using quality reports to develop quality improvement plans
- Launching educational programs that teach concepts of measurement and statistical concepts to employees
- Developing customer satisfaction reports for both internal and external customers and distribution of them within the organization.

11. *Recognition and Reward*

- Developing and implementing a comprehensive employee recognition plan, which should cover recognition at various levels within the organization depending on the significance of the contribution
- Actively communicating with employees on such matters as key quality goals, formation of quality improvement teams, results achieved, and comparisons with key com petitors
- Making themselves available to listen to employee concerns on quality
- Implementing an employee suggestion system that provides both recognition and rewards for employee ideas
- Recognizing employees and teams who make significant quality improvement in front of their peers and their families
- Competing for national awards for quality (e.g., Malcolm Baldrige Award).

12. *Management Integration*

- Placing quality issues on each senior management meeting agenda
- Implementing monthly quality reports for the corporation and every one of its operating divisions and department
- Forming quality improvement plans at all levels of management
- Communicating with all levels of the organization about the quality framework, quality plans, and quality improvement projects
- Holding formal and informal reviews of quality plans and the status of accomplishments
- Assisting divisions having difficulties in meeting their quality plans
- Participating in resolving quality problems that cross department lines
- Participating in quality activities at local and national in dustry meetings
- Integrating quality plans in the corporation's strategic plans
- Developing and implementing strategies to increase employees' authority to act
- Developing and implementing employee suggestion systems
- Developing role model statements for managers and evaluating and rewarding managers based on their accomplishments in comparison the role model criteria.

DISCUSSION

During the past 20 years, U.S. health care costs have escalated and total health care expenditures exceeded $600 billion a year, or over 11 percent the gross national product. Employers, federal government, state government, and the public are greatly concerned about this cost escalation. Public confidence in health care industry leaders has dropped significantly from a high of 73 percent in 1966 to 33 percent in 1988 (Blendon 1988). There are other signs of problems in the industry. Over 37 million Americans are not covered by health care insurance. Our infant mortality rates are higher than the top 20 industrialized countries. Meanwhile, with all the expenditures, physicians and health care executives are unhappy. Physicians feel the pressure of regulations and constant inspection by outsiders. Health care executives struggle with the lack of resources.

What is the solution to this mess? Some employers are now advocating national health care insurance. Other health care leaders are recommending rationing. Neither solution is acceptable to the American people, except as a last resort.

Total Quality Management is a possible answer. It is a new paradigm in health care management. It is a new way of looking at the delivery of health care. This change, like all other changes, will not be easy. Health care managers and supervisors are entrenched in their jobs. Change can be threatening. Therefore, TQM needs to be introduced with great care. Anchoring the TQM process at the top management level and rolling it out from top to bottom slowly and deliberately is the answer. Changing the culture of the organization cannot be accomplished quickly-managers must learn to view their jobs differently. Instead of telling employees what to do and when to do it, and inspecting employee performance, managers should be more like coaches. Their job is to guide and lead by example-to detect the need for training and retraining and where barriers need to be systematically brought down. Persistence and patience is essential for successful implementation. In addition, health care providers must work with payers and insurance companies jointly to study the current health care payment and delivery process. Opportunities to improve the process must be identified followed by pilot implementation. The FOCUS-PDCA method can be applied and systematic changes made in the process. Only by examining this process in light of customer-supplier relationships can we make progress that is beneficial to all. TQM holds great promise for health are organizations. Total Quality Management implementation will fail if

- Management separates TQM activities from daily work
- It is viewed as a project by employees with a start and finish date
- It is delegated by senior management to a staff function

- It is viewed as activities done in quality committee meet ings.

Many of us are now learning that the traditional approaches to quality assurance and cost containment are not the answer; instead we must seek an organizational and cultural transformation committed to improving the quality of everything we do, and through that, enhancing productivity. One learns very quickly that just another program that is designed to be a quick fix is not the answer. Instead, one learns that embarking on total quality management has great potential but that it will only be achieved through the direct involvement of senior managers and their commitment to it.

We found that establishing a Total Quality Management Initiative must begin with CEO curiosity and trustee involvement, followed by the development of a quality framework and a process that involves every major entity in the system.

Special attention must be paid to the introduction of Total Quality Management to senior managers. We found that it needed to begin with in-depth discussions about Deming's 14 points followed by several days in the classroom. At the end of that period, our managers were asked to practice and to begin to facilitate and teach the concepts to others. It is at that point that they begin to internalize the knowledge that they have been exposed to and begin to apply what they have learned, in their day-to-day management practice.

Beyond the senior managers' introduction to the process there must also be the development of individuals at the next level of the organization who have the curiosity, interest, and commitment to become coaches and teachers. In our organization we found that such an approach has allowed us to roll out the program much more quickly, and to create an upward pressure on senior management to maintain its commitment and demonstrate it to the organization.

The development of Total Quality Management Teams has also had a special impact on the organization. Despite the natural tendency to form a team for every problem that surfaces, we found that it is more important to have fewer teams but to have as many people as possible given the opportunity to participate in the process. An example of one team that has demonstrated this is a team that has been trying to define an ideal process for an ambulatory care patient encounter.

It is also desirable to create employee awareness about Total Quality Management through a planned process. This can be accomplished through presentations, employee orientation, corporate newsletters, and external speakers. As the employees learn more about and have an opportunity to participate in the process, a natural curiosity begins to evolve that facilitates the development of the initiative. The greatest benefit we have observed is a boost in morale and pride in the organization.

It is important, however, to recognize that there will be resistance at every level partially because it is a change, partially because of the time that such an initiative takes away from the employee's ordinary duties, and the cost that is associated with it with initially no visible financial return. Finally, it is important to reinforce the fact that cultural transformation requires not only the support of management and its participation, but also requires management to take the time and patience to let it evolve. Anyone becoming interested in Total Quality Management needs to recognize that it is a long journey and that the transformation is not going to happen overnight.

We feel that health care delivery is at a crossroads in this country. In 1933 Franklin Roosevelt said in his inaugural address, "This generation of Americans have a rendezvous with destiny." We believe that the current health care leaders have a rendezvous with destiny. Health care expenditures cannot keep rising at the current rate without external forces demanding a fundamental change in the system-national health insurance. Health care leaders have the opportunity to use TQM to cut waste and improve quality of the services provided and in the process keep the health care system in the private sector. Can it be done? We think so. It depends on how successful we are in implementing TQM concepts in the health care industry.

Acknowledgment

The authors wish to acknowledge the helpful comments of many colleagues who read the first draft of this article and gave us many helpful suggestions. Special thanks go to Paul Batalden, M.D., Lauretta Fortune, Linda Taylor, Anita Fennessey Watson, and Richard Wittrup.

Note

An expanded version of this article with additional details and explanation is available from Vinod K. Sahney, Ph.D., 600 Fisher Building, Detroit, MI 48202.

References

Albert, M. "Developing a Service-Oriented Health Care Culture." *Hospital & Health Services Administration 34,* no. 2 (Summer 1989): 167-83.

Albrecht, C., and R. Zemke. *Service in America.* Homewood, IL: Dow Jones-Irwin, 1985.

Batalden, P., D. Smith, J. Bovender, and D. Hardison. "Quality Improvement: The Role and Application of Research Methods." *Journal of Health Administration Education* 7, no. 3 (1989): 577-83.

Berwick, D. M. "Commentary: Peer Review and Quality Management-Are They Compatible?" *Quality Review Bulletin: Journal of Quality Assurance 16,* no. *7* (July *1990): 246-51.*

Blendon, R. J. "The Public's View of the Future of Health Care." *Journal of the American Medical Association 259 (24* June *1988): 3587-93.*

Caldwell, C., J. E. McEachem, and V. Davis. "Measurement Tools Eliminate Guesswork." *Healthcare Forum journal* (July-August *1990): 23-27.*

Camp, R. C. *Benchmarking.* Milwaukee, WI: Quality Press, *1990.*

Coffey, R. J., K. B. Brewer, M. Becker-Staples, and H. L. Hodgson. "Reduction of Unnecessary Patient Days Through a Total Quality Approach to Improve Discharge Planning." *Proceedings of the Quest for Quality and Productivity Conference.* Norcross, GA: Institute of Industrial Engineers, *1990.*

Crosby, P. B. *Quality Is Free: The Art of Making Quality Certain.* New York: NAL Penguin, Inc., *1979.*

---. *Quality Without Tears: The Art of Hassle-Free Management.* New York: New American Library, *1984.*

Deming, W. E. *Out of Crisis.* Cambridge, MA: MIT Press, *1986.*

Dobyns, L. "Ed Deming Wants Big Changes, and He Wants Them Fast." *Smithsonian (21* August *1990): 74-82.*

Ente, B. H. *Brief Overview of the joint Commission's Agenda for Change.* Chicago: The Commission, *1989.*

Garwood, W. R., and D. M. Sandridge. "A Top Management Quality Revoluton." In *A Quality Revolution in Manufacturing,* edited by V. R. Dingus and W. A. Golomski. Norcross, GA: Industrial Engineering and Management Press, *1986.*

James, B. C. *Quality Management for Health Care Delivery.* Chicago: Hospital Research and Educational Trust, American Hospital Association, *1989.*

Juran, J. M. *Juran on Planning for Quality.* New York: The Free Press, *1989.* . "The Quality Trilogy." *Quality Progress 19,* no. *8* (August *1986): 19-24.*

Kanter, R. M. *The Change Masters.* New York: Simon and Schuster, *1983.*

Laffel, G., and D. Blumenthal. "The Case for Using Industrial Quality Management Science in Health Care Organizations." *Journal of the American Medical Association 262 (24* November *1989): 2869-73.*

Lehr, L. "One Step at a Time: Implementing a Quality Process." In *Quality Revolution in Manufacturing,* edited by V. R. Dingus and W. A. Golomski. Norcross, GA: Industrial Engineering and Management Press, *1988.*

McEachem, J., L. Schiff, and A. Hallium. "A Quality Improvement Approach with a Cross Function Team to Lower C-Section Rates." *Proceedings of the Quest for Quality and Productivity Conference.* Norcross, GA: Institute of Industrial Engineers, 1991.

McLaughlin, C. P., and A. D. Kaluzny. "Total Quality Management in Health: Making it Work." *Health Care Management Review 15,* no. 3 (1990): *7-14.*

Marszalek-Gaucher, E., and R. J. Coffey. *Transforming Health Care Organizations: How to Achieve and Sustain Organizational Excellence.* San Francisco, CA: Jossey-Bass, 1990.

Riddle, E. "Xerox Leadership Through Quality." Presentation made to Henry Ford Health System executive management staff, 1990.
Sahney, V. K., J. I. Dutkewych, and W. R. Schramm. "Quality Improvement Process: The Foundation for Excellence in Health Care." *Journal of the Society for Health Systems* 1, no. 1 (1989): 17-30.
Scholtes, P. R. *The Team* Handbook. Madison, WI: Joiner Associates, 1988.
Society for Health Systems and Health Care Information and Management Systems Society. *Proceedings of the Quest for Quality Conference.* Norcross, GA: Industrial Engineering and Management Press, 1990.
Spechler, J. W. *When America Does it Right: Case Studies in Service Quality.* Norcross, GA: Industrial Engineering and Management Press, 1989.
Xerox Corporation. *The Xerox* Quest *for Quality and The National Quality Award.* Publication 700p91456. Rochester, NY: The Corporation, 1990.
Walton, M. The Deming *Management Method.* New York: Dodd, Mead & Company, 1986.

Appendix 1. Henry Ford Health System Framework for Quality

Mission

Henry Ford Health System is dedicated to developing and providing the highest quality , compaasionate health care to serve the needs of the southeastern Michigan community. The System's services will be the most comprehensive, efficient, and clinically effective in the region, supported by nationally recognized Henry ford education and research programs.

Vision

Henry Ford Health System will:

- Evolve into the highest quality, most comprehensive and integrated health system in the region
- Develop a Center for Health Sciences to be enaged in leading edge tertiary care, research and education
- Provide virtually all of the health care needs of the population served, from primary care to highly specialized tertiary care.
- Offer a range of health insurance and managed care programs which meet the diverse needs of the population and payors.
- Think of itself as an entity to which the users of its services belong. Administrative systems will emphasize ease and convenience of use by the members.
- Be a responsible member of the community and assume leadership in developing sound health care policies at the local, state and national level.

Quality Definition

Quality is continuous improvement in patient care and service, education and research, and all other activities in which we are involved, in order to make the System a leading statndard of excellence within the health care industry.

Corporate Values and Quality Guidelines

Henry Ford Health System embraces these basic values and quality guidelines and recognizes their role in its continued success.

1. *Customer Focus*
   - Quality patient care and service is a key principle for HFHS.
   - HFHS is committed to continuously improving the quality of services to its internal and external customers, and to giving priority attention to their concerns.
   - Communication with customers is ket to beter understanding their needs and expectations, continuously improving processes, and building their trust.

2. *Management and Clinical Leadership*
   - Leadership demonstrates commitment and behaves in a manner consistent with quality management concepts, including: team work; continuous improvement; process focus; and statistical thinking.
   - Leadership accepts principal responsibility for creating an environment that encourages the involvement of all System employees and medical staff in continuous quality improvement.

3. Employee Focus

- HFHS employees are an important asset and resource, and will be treated fairly, with dignity, and respect.
- Employees will be given an opportunity to develop their potential through education and trainng, including the use of tools and techniques of quality improvement.
- Communication with all employees about the System's mission, strategy, plans and objectives is key to building their understanding and trust
- Employees are an important source of knowledge about current processes and ideas for improvement.
- Employees at every level will be active members of quality improvement teams.

4. Measurement

- All work units within the System are committed to using customer and process knowledge as an input to identify key quality indicators.
- All work units will develop quality reports using key quality indicators to monitor progress and to identify areas for improvement.
- The System is committed to the process of competitive benchmarking as a means of improving its services.

5. Community Focus

- HFHS will contine to improve the health status of the population it serves.
- HFHS will volunteer its expertise, time and facilities to meet civic and professional needs; participate in advocacy for health care; and be a resposible corporate citizen and neighbor.

6. Systemness

- To deliver quality products and services to our customers, all components of the System must collaborate and work in concert and harmony. The achievement of systemness is essential for consistent quality and service in meeting both internal and external customer expectations.

7. *Recognition and Reward*

- HFHS leadership will create an environment that encourages people to practice, participate and teach the principles of quality improvement. Groups and individuals will be recognized for quality improvement practices.

THE COMMENTARIES: A SUMMARY

In his commentary Brent James poses the question as to whether TQM is an "evangelical movement" or the rigorous application of the scientific method in operational settings. judging it to be the latter, he elucidates a process of TQM at Intermountain with three parts: quality planning, quality monitors, and quality improvement teams including front-line workers and quality facilitators. Dr. James details three organizational levels for implementing TQM: (1) support services, (2) the medical infrastructure where industrial quality control techniques are particularly applicable; and (3) clinical products, or the medical services provided directly to patients. For the latter, Dr. James highlights the increased opportunity for proactive leadership by health care executives, as physicians and organizations are now increasingly at *joint* legal and financial risk for the care provided to patients. He concludes by emphasizing the need for an organization culture that supports TQM and notes that physician ownership of the process is enhanced by an approach of "measure, don't mandate" and by letting the delivery team design its own process.

Dr. Donald Berwick applauds the article by Sahney and Warden as a "description of theoretically informed practice" and "a resource of enduring value." He highlights the significance of TQM as a process of *learning,* rather than choosing-one carried out by the top leaders themselves. Berwick refers to the process of TQM, as described by Sahney and Warden, as "cascade training," in which learning, practicing, and teaching are passed down from one level of management to the next. Dr. Berwick observes that "like many new starts, the HFHS process is leaving external strategy a little behind at first." He concludes by stressing five challenges to organizational implementation of TQM: overcoming the barriers of "time, teams, and territory" in involving physicians in this change; integrating management of TQM into daily operations; achieving the full potential of "systemness" within the organization; overcoming the lack of awareness in the "secular environment" of TQM as an industrywide option; and transforming the "obstacle of secrecy," which views TQM as a source of private competitive advantage, into a conception that those who share their knowledge of TQM "will not lose market, they will win leadership."

Rodney Wolford cautions that, while Sahney and Warden's review of the TQM philosophies of Deming, Crosby, and Juran is conceptually correct, health care executives should read independently in this area to develop their own understanding. Wolford reports that the Alliant Health System commitment to TQM was initiated in 1986; and, reflecting on that experience he remarks that organizational cultures differ, and there exists "no cookie-cutter implementation process." Wolford comments on four factors that he believes are critical to success in implementing TQM: a quality planning process that unifies the individual manager's and the organization's vision statement; the concept of empowerment, especially in developing self-directed teams and rewarding employees; clear, multidisciplinary process planning and information systems that are focused on production and "expert systems to measure and minimize variation of vital processes."

-D.A.C.

Brent C. James

TQM and Clinical Medicine

Total quality management (TQM) is sometimes described as the rigorous application of the scientific method in operational settings. But its proponents often promote it with an evangelical zeal that hardly seems compatible with the scientific method. They set forth lists of philosophical rules (e.g., Deming's 14 points) and label "good" and "bad" behaviors. On that basis, some nonpractitioners have been heard to describe it as the "management fad of the year." They see it as indoctrination, not science; an ideological conversion, not the application of rational measurement techniques to generate new knowledge. They note that health care delivery is fundamentally different from manufacturing industries and question whether industrial techniques apply in a health care setting. They observe that health care quality is the traditional province of the medical profession and openly wonder how TQM will integrate with existing quality systems.

TQM: Scientific Measurement or the "Management Fad of the Year?"

Sahney and Warden's article correctly introduces Dr. Joseph Juran's Quality Trilogy as "a universal way of thinking about quality that fits all functions, levels, and product lines." Figure 1 displays the Juran Quality Triology as a Venn diagram, with a single modification: Dr. Kate Jennison (of Harvard Community Health Plan) suggests that, within health care, the "Quality Control" function may be better described as a "Quality Monitor," or ongoing quality measurement system.

BRENT C. JAMES, M.D., is Executive Director, IHC Institute for Health Care Delivery Research, Salt Lake City, Utah.

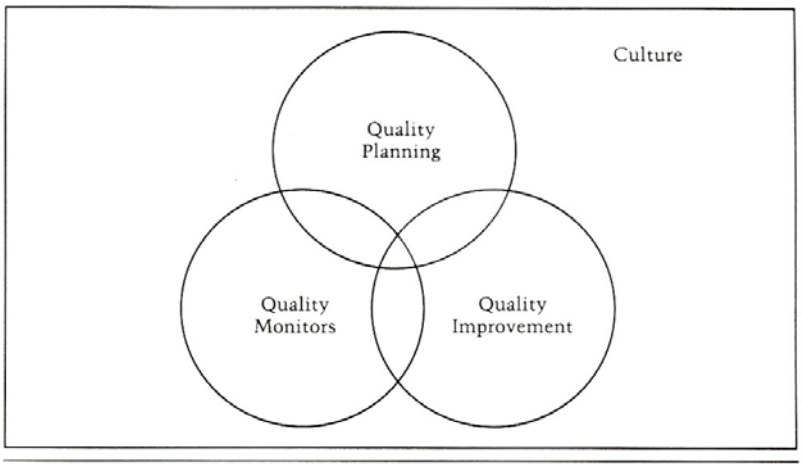
Quality Planning

Quality Planning first identifies, then routinely tracks an organization's major external customer groups and its major "products." For a hospital, customer groups include (among others) patients, payers, regulators, physicians, and the medical profession (which sets expectations for medical outcomes). Products include clinical care delivery (e.g., normal childbirth, treatment of hypoxemia, management of benign prostatic hypertrophy, or breast cancer screening) and service factors (e.g., admit/discharge, food services, or billing). The aim is to accurately identify high-priority customer needs (through scientific measurement) then to match those needs to product features. Quality Planning may also identify critical process factors that are essential to consistently produce outputs that meet customer needs. Together, important customer needs and critical process factors are called Key Quality Characteristics (KQCs).

Quality Monitors

Quality Monitors track those KQCs that were identified in the Quality Planning step. They are an ongoing part of the hospital's operation. They routinely measure the KQCs for every instance

Figure 1. The Juran Quality Trilogy



of a major product, or they measure a valid random sample of all instances of a major product. Once a Quality Monitor is in place, it feeds data back to manage the process itself. The same data are also used for the Quality Planning process. The aim is to achieve a quality breakthrough, as defined in terms of customer needs, for every major product every year. The set of activities that surrounds the use of quality data to routinely plan and coordinate quality breakthroughs is called hoshin planning, as was briefly mentioned by Sahney and Warden.

Quality Improvement

Quality Improvement teams study processes and outcomes using the scientific method to achieve Quality Planning's quality improvement goals. They typically involve individuals who are intimately familiar with the underlying process (front-line workers with "fundamental knowledge") as well as technical advisors ("quality facilitators"). They often collect additional process and outcome data at a level of detail far beyond that embodied in a routine Quality Monitor. But unlike a Quality Monitor, they have well-defined end-points-when the quality breakthrough is understood or achieved, they are dissolved.

Quality Planning, Quality Monitors, and Quality Improvement work in a cycle. Quality Planning uses data generated by the Quality Monitor, with independent data regarding customer needs, to identify critical areas for improvement. Quality Improvement teams study those areas to achieve quality breakthroughs. The findings of a Quality Improvement project are used to modify the process and its Quality Monitor.

But the Quality Planning/Quality Monitor/Quality Improvement cycle takes place within an organization, and the organization's routine ways of doing business-its culture-can have a profound effect on how or whether scientific quality improvement activities take place. Culture describes the set of management values-philosophies and behaviors-that determine how the infrastructure of an organization works. They are a matter of vision, consensus, indoctrination, and ideologic conversion. They are the values that determine the way tasks are planned and accomplished within the society that is a health care delivery organization.

Total quality management therefore consists of two parts: a culture, based on shared values and management philosophy, and a set of measurement and analytic tools, firmly rooted in the scientific method. TQM's seeming inconsistency between management philosophy and measurement science is artificial: quality improves

when both elements work within their appropriate spheres.

It is interesting to observe the typical order in which TQM practices are adopted within an organization. Logically, one would first build a quality-based culture; then organize a quality-based planning process; next use the initial results of the quality planning process to establish routine quality monitors; and then launch quality improvement teams to achieve high-priority quality advances.

In fact, most organizations start with a few quality improvement teams in order to gain some experience with TQM. Next, they formally commit to pursue continuous quality improvement and begin a planned process of cultural change. As the cultural change moves ahead, they recognize that their initial quality improvement teams, while addressing important issues, may not be focused on the most important issues. They therefore start to prioritize quality improvement needs and initiate organized quality planning. Finally, they develop quality monitors for critical process and outcome factors. In fact, it is not uncommon to find that early quality improvement teams spend much of their time developing routine quality monitors-they naturally evolve into "quality monitor development teams" and resume their role as quality improvement teams only after the necessary data infrastructure is in place.

TQM and Clinical Medicine

Within Intermountain Health Care (IHC) we use a three-level approach to quality management. This approach has helped us understand the role of TQM within clinical medicine and its integration with existing quality assurance systems. We divide the work activities of our hospitals into three major categories: support services, medical infrastructure, and "clinical products."

Support services describe the "hotel functions" of a hospital. They include such elements as admit/discharge, scheduling, billing, and maintenance. They are usually within the direct control of the hospital administration. They can make a very important contribution to the overall quality of health care delivered within a hospital. For example, some recent analyses at IHC identified quality improvement projects within support services (specifically, billing and scheduling) as our greatest opportunities to increase patient satisfaction and improve financial returns. When judged by those two factors, support service quality improvements appear to far outweigh potential benefits of clinical quality improvements.

Of the three categories, support services can borrow the most from Industrial Quality Control (IQC). IQC describes the techniques and philosophies that have been used to apply TQM within some manufacturing industries. Many of the first successful attempts to apply TQM within health care were derived directly from manufacturing industries and so may be classified as IQC. They were typically applied to support service processes. The industrial model appears to work consistently well within this category of hospital activities.

Medical infrastructure corresponds to a hospital's clinical departments, such as anesthesiology, radiology, clinical lab, blood bank, and respiratory therapy. They coincide closely with the JCAHO's fixed departmental monitors. They represent a unique blend of administrative and professional issues. While medical professionals typically oversee their functions, they also report directly to the hospital administration. The medical professionals involved are usually either employees of the hospital or have special contractual arrangements with the hospital. Industrial Quality Control methods also work well within medical infrastructure departments. For example, IQC-based quality projects have improved patient waiting times in pharmacies and x-ray retake rates in radiology departments.

Clinical products are the clinical medical services that are provided to patients within a hospital. They can differ substantially from support services and medical infrastructure in a number of ways:

1. Support services and medical infrastructure are present within a hospital so that a medical team can deliver clinical products-they are the foundation upon which clinical products rest. They can therefore affect whether or with what ease high-quality clinical services can be delivered. Clinical products represent

the top of the pyramid of care-hospitals exist to provide clinical care to patients.

2. In the past, hospitals were facilities where physicians provided care to patients. The hospital's primary "customers" were physicians, who brought their patients to a particular facility. Hospital administrators needed little understanding, let alone control, of the nature or quality of clinical services. Recent changes in health care financing have changed that relationship. Hospital administration and independent physicians are now both at legal and financial risk for the care that they jointly provide. Hospital administration is therefore playing a much more active role in the type of clinical services provided and the manner in which clinical processes function.
3. Independent physicians are usually customers with regard to support services and medical infrastructure. They use the outputs of those categories and have expectations regarding them, and they are not intimately involved in their operation. Independent physicians are truly "providers" only in the area of clinical products.
4. Physicians have traditionally accepted responsibility for the technical quality of their clinical products. In fact, the medical profession is sometimes defined in that manner, and physicians vigorously defend their right to control their own quality in clinical areas. The profession, through medical staff structure, is organized into teams charged to oversee the quality of specific clinical products.
5. Many hospital managers, in attempting to establish TQM within their organizations, lament their inability to convince independent physicians to actively participate on quality improvement teams. They fail for two reasons:

    - They frequently ask independent physicians to participate on teams operating within support services or medical infrastructure, where the physicians are primarily customers. At the same time, they ask the physicians to participate without compensation for their time. That is equivalent to asking a patient to contribute substantial amounts of time to a quality improvement team without compensation, or demanding that hospital employees participate on quality teams, but on their own time-after hours, on weekends, or in place of their lunch break.
    - Physicians routinely contribute their time to quality projects for clinical products, where they function as providers. But that time is structured along professional lines-through the medical staff and its organization. Even clinical quality improvement projects are likely to fail with physicians if these established structures are ignored.

6. Industrial quality control requires that a team identify critical process and outcome factors, then *specify* them. Specification implies that exact performance levels can be set for each factor. That approach corresponds very closely with the idea of externally developed protocols-what physicians sometimes call "cookbook medicine." Two difficulties arise:

    - Williamson, Goldschmidt, and Jillson (1979) estimated that less than 10 percent of common medical process steps are supported by clinical research. Most medical practices are well-established through traditional practice but have no direct scientific support. It is therefore usually impossible to scientifically specify a "best" process for a clinical practice-the necessary scientific knowledge simply does not exist. "Best practices" are therefore subject to professional opinion-different physicians can legitimately hold various opinions regarding best practices.
    - The issue is ownership. If best practices are a matter of opinion, and most

physicians believe that their own opinions are at least as valid as those of their colleagues-especially with regard to their own patients in their own particular setting-then how can a quality team generate specifications that a hospital's physicians will accept and follow?

Within IHC we have found two methods that lead to widespread physician ownership for and use of common care practices:

1. *Measure, don't mandate.* It is often sufficient to identify critical process factors, then compare physician practices with regard to them. For example, when studying transurethral resection of the prostate (TURP), we found that the length of the surgical procedure was an important predictor for some bad clinical outcomes. Rather than mandating a maximum surgical time, we measured physician performance across a group of comparable patients. The resulting data were blinded, then fed back to the physicians in medical staff meetings. Variation in surgical times rapidly declined, and *a de facto* specification resulted. Others have documented similar effects when physicians are given credible clinical data in a nonthreatening setting (Caper In press).
2. *Let the entire delivery team develop its own specification.* A group of IHC in tensivists flowcharted the care of patients with hypoxemia on ventilators in an intensive care unit. The flowchart was extensive, running to over 100 decision nodes for this complicated process of care. Copies of the flowchart were placed at each hypoxemic patient's bedside. Both nurses and physicians tracked the flowchart as they made clinical decisions. If a clinician chose not to follow the action recommended by the flowchart, then that node was automatically referred back to the team for review. The initial assumption was that, if a clinician failed to follow the flowchart, then the flowchart was defective. The reasoning of the clinician was presented to a group of peers, so that the whole team could discuss best care. Over about a six-month period flowchart compliance increased from about 40 percent to over 90 percent (East et al. 1990).

Dr. Ernest Codman introduced the principles of continuous quality improvement to American medicine in the early 1900s. They have been at the heart of medical practice since that time. But most physicians lacked the data systems necessary to routinely implement the philosophy of scientific continuous quality improvement for clinical products.

Many physicians reject the notion that industrial quality control will revolutionize American medical practice. They see clinical medicine as just too different from industrial manufacturing. But when the same methods and ideas are advanced within the establis-hed professional framework for quality impr-ovement, when the hospital supplies the necessary data management and analysis infrastructure, and when physicians are asked to concentrate on clinical products, then physicians adopt TQM easily.

References

Caper, Philip. "Population-Based Measures of the Quality of Medical Care." In *A Textbook on Medical Quality.* Hanover, NH: Codman Research Group and Metropolitan Life, In press.

East, Thomas D., Alan H. Morris, Terry Clemmer, James F. Orme, C. Jane Wallace, Susan Henderson, Dean F. Sittig, and Reed M. Gardner. "Development of Computerized Critical Care Protocols-A Strategy That Really Works!" *Proceedings of the Fourteenth Annual Symposium on Computer Applications in Medical Care (SCAMC),* IEEE Computer Section. Washington, DC, November 1990.

Williamson, John W., Peter G. Goldschmidt, and Irene A. Jillson. *Medical Practice Information Demonstration Project: Final Report.* Office of the Assistant Secretary of Health, Department of Health, Education and Welfare, Contract #282-77-0068GS. Baltimore, MD: Policy Research Inc., 1979.

DONALD M. BERWICK

Blazing the Trail of Quality: The HFHS Quality Management Process

Classic articles are not always easy to recognize at first, but the contribution by Vinod K. Sahney and Gail L. Warden in this issue of *Frontiers is* an exception. In their comprehensive review of the motivation, theory, and sequence of activities during the first two years of TQM at Henry Ford Health System, Sahney and Warden have provided a resource of enduring value to health care leaders, present and future, who want to tackle TQM in their own settings. Best of all, this is an article written not by theorists or sideline consultants, but by two top-flight managers who are actually engaged day-to-day in the transformation of the organization they lead. This is not primarily a description of theory; it is a description of theoretically informed practice.

Why would the CEO of a billion-dollar health care organization bet on a new management system? The answers are found between the lines as Sahney and Warden guide us through their cogent discussions of stress in American health care and the elements of modem approaches to TQM. Sahney and Warden never tell us directly *why* they chose to take the risk of change, but two reasons, at least, must be at work. First, they must believe that "business as usual" in the classic management strategies of health care will not succeed. These top-level managers must be deeply worried about what will happen if they do *not* change. Second, they must believe that TQM, as they understand it, offers a plausible route to greater organizational success than any practical alternative. Without these two premises at the nucleus of their effort, it would be difficult to understand the degree of investment in TQM underway at HFHS. Either they believe both that *change is needed* and that there *is no better way out,* or they are a little crazy.

DONALD M. BERWICK, M.D., is Associate Professor of Pediatrics, Harvard Medical School, Boston, Massachusetts.

Highlights

A few specific elements of the Henry Ford approach to TQM deserve special highlighting.

First, they have developed a "branded model" that they call the "Henry Ford Health System Quality Management Process." The newcomer to TQM can become confused easily by the panoply of experts and the "guru" mentality of the field as it has developed outside health care. One can feel desperate at the start in seeking the "best choice" among the theories of Deming, Juran, Crosby, Imai, Mizuno, Ishikawa, and others. The HFHS group has followed the pathway of many corporate leadership groups before them in approaching the issue not as a problem of *choosing* but as a problem of *learning.*

They began by studying and were unrelenting in their travel, reading, and conversation as they sought out the heart of a management theory that would make sense to them. The 12 "key concepts" of the "HFHS Quality Managem-ent Process" have never been assembled before in just this particular way-it is a model very much their own. But it is a model fully mature in its connections to the several excellent frameworks that the

major theorists have offered: Deming's "14 points;" Juran's approaches to leadership, planning, and process improvement; and the Malcolm Baldrige National Quality Award's concerns with integration and benchmarking, to name a few. Developing a local, "branded" model of TQM could be an empty exercise if pursued for its own sake. But, as carried out by HFHS, it is a sign of deep, persistent learning by senior leaders who used "writing it down our own way" as a step toward the fullest possible mastery of the managerial framework to which they intend to change.

Second, *the planning and learning processes have been carried out by the top organizational leaders-themselves.* Gail Warden, the CEO himself, visited many of the sites from which HFHS began to collect the elements of its own management model. The training strategy, following Xerox's notion of "cascade training" from each level to the next one below it, implements three guidelines: (1) senior managers receive the same training as those below them-no shortcuts; (2) senior managers personally practice the skills they study; and (3) whenever possible, leaders teach the skills that they have learned and practiced.

This cascade of learning, practicing, and teaching from each level in the organization to the next one down is costly and slow at first. But it is a proof of commitment by leaders that later accelerates the change process as few other images can. Sahney and Warden call it "anchoring the quality management concepts," and they have resisted the easier pathways of delegating or hiring in the training resources.

The section of their article entitled, "Visible Actions by Senior Management in Successful Implementation of TQM," is evidence of the authors' conviction that durable organizational change depends more on the behaviors of the leaders than on their directives. It requires more courage to change oneself than to direct that others change; Sahney and Warden know that.

Third, the article reveals *a focus on mastery.* In rapid-fire American organizations, managers can easily come to interpret their jobs as movers of things. Effectiveness is measured in the speed with which "in-box" items become "out-box" items; reflection seems wasteful.

Nothing about HFHS strikes one as inactive. Yet it is important for the reader of Sahney and Warden's article to get a sense of the degree to which these leaders have patiently sought mastery of the concepts on which they intend to act. They write, for example, "The Quality Technology Council began meeting twice a month and began improving its own understanding and learning the concepts of TQM. One of Deming's 14 points was discussed in detail at each meeting.... " In these phrases, Sahney and Warden describe a minimum of 15 meetings of 30 top managers over six months solely for the purpose of "improving... understanding and learning." And this is but one of the formal learning activities put into place.

How rare is such intentional, long-term investment in learning at senior levels in most modem, harried American health care organizations! Henry Ford Health System is unwilling to move into TQM as its future strategy without placing reflection and learning at the highest levels of organizational priority. That requires not just time and money, it requires humility.

Fourth, the HFHS approach is a *technically balanced* one. Health care leaders lament that as they seek help from consultants in total quality management they often find only "partial quality management." TQM in mature forms re-quires balance among several disparate areas of activity-primarily among *technical* skill build-ing (such as learning and teaching process impr-ovement, statistical thinking, and building better data systems), *cultural* changes (such as driving out fear, leadership by example, building cross-functional teams, and reforming compensation and reward systems), and *strategic* activities (such as building improved customer knowledge, identifying key processes and products, gaining benchmarking information, and planning the implementation of TQM, itself, within the organization).

The TQM effort tends to be ineffective if one or another of these three basic components-technique, culture, or strategy-overwhelms the others. Purely technical approaches never "scale up" in an organization with a conflictual culture. Purely cultural maneuvers can make people feel good, but fail to be reflected in specific process improvements that last over time. And even organizations that invest in both technical and cultural change never experience the full leverage

TQM if they do not link those changes to carefully drawn strategic knowledge and planning.

The HFHS model offers a good image of a thoroughly balanced effort, with all three major areas receiving attention. Like many new starts, the HFHS process is leaving external strategy a little behind at first, but in their mention of "hoshin planning" and "management integration," the HFHS team is showing their hand; they intend to move toward *strategic quality* management as soon as the cultural and technical groundwork is fully laid.

This leads to the fifth observation: *the emphasis on building a sound organizational infrastructure.* Henry Ford Health System intends not to be dependent on outside help in the long run for its training, learning, and research in TQM. From the start, this organization is investing in its own coaches and facilitators, and has now gone so far as to set up its own internal quality improvement department to guide this resource development. The organization is capitalizing the TQM effort just as aggressively as it would capitalize a major new building. It is not requesting immediate payback, or even, so far as the reader can tell, calculating any return on that initial investment in infrastructure. It has clearly decided to build internal critical mass, and is well on its way to doing so.

Challenges Ahead

As powerful as the HFHS example already is, the challenges ahead are massive, as Sahney and Warden would probably be the first to admit.
Like all health care organizations entering TQM, HFHS must find a way to involve physicians in the change, even physicians who are not salaried by the corporation. These doctors face three important barriers to integration into the corporate TQM effect, the three "T's"-Time, Teams, and Territory. Fee-for-service doctors who spend time in learning and practicing TQM, especially in quality improvement teams, forego income. Even those for whom this is not a problem (salaried physicians, for example, who are "given" the time) find cross-functional teams unfamiliar and uncomfortable as they are asked to slip out of their hierarchical roles and assumptions. Finally, the basic breaking down of barriers that comes with an organizational focus on the improvement of work processes can violate some deeply held territorial assumptions of physicians about how patient care is, in fact, given.

No one has yet developed a simple, reliable way to involve physicians as a general group in TQM. At HFHS, however, as in many other TQM pioneers, the news is not all bad. In large physician staff groups, a few enthusiasts reliably emerge right away for whom the three "T's" seem simply not to be a barrier. They have known all along that time in improvement is well spent, that teams can be great fun, and that interdependency is far more important than good fences in achieving clinical goals.

Moreover, senior managers who take involving physicians seriously tend to learn over time that the doctors respond far more favorably to specific requests for involvement than the managers predicted at first. TQM and quality improvement methods make sense to doctors; they understand that, in process improvement efforts, the organization is formally using an approach conceptually grounded in the same scientific method as are sound clinical practice and research (define the task, gather diagnostic information, formulate remedies, and test the results).

A second major challenge is in (to use HFHS's term) *management integration* of TQM. This simple expression belies the complexity of the task: it involves no less than making TQM, itself, a daily way of life for the organization. In a fully mature TQM culture, it is no longer necessary, or even possible, to distinguish "quality management activities" from other activities. They are one and the same. In such an organization, the basic components of TQM–process thinking, cross-functional team work, focus on quality, and so forth–become pervasive characteristics of work life, and, furthermore, the efforts of the organization become more and more aligned according to key needs and processes as experienced by those the organization serves. In short, the organization focuses its activities on issues that really matter to customers, and it uses TQM skills to work on those issues.

This alignment process goes under several names: strategic quality management, hoshin planning, and quality policy deployment, for example. Whatever it is called, however, it is this integration that converts TQM from a merely sat-

isfying activity to one of true strategic advantage for the organization. It converts an organization of competent soloists into an orchestra.

A third challenge for HFHS is even greater than that of achieving management integration; it is to realize the full potential of the word "system" in the title "Henry Ford Health System." TQM brings with it a relentless focus on the needs of the people who depend on an organization-the customers-and from the point of view of the customers of health care it matters little that we happen to have inherited a collection of organizational forms called hospitals, nursing homes, clinics, and so forth. What the health care customer wants is health, delivered through products and services with certain associated characteristics (timeliness, dignity, informativeness, etc.), at a reasonable price. The most efficient route to high-quality products and services is through high-quality designs, and the greatest opportunities for health care in the future lie not in improving old forms of delivery, but in inventing new ones. This will require systemic thinking, breaking the boundaries of current organizational forms. Conceptually, this is most possible in just such a place as HFHS, with its scope, diversity, mission, and position in its community. Practically, such redesign will severely strain the trust, confidence, and courage of those who hold stakes in the current design. Through TQM, FIFES can make its parts better; but the more important question is, "Can it make a better whole?"

The HFHS article offers little discussion of a fourth set of obstacles to full-fledged TQM; namely, the secular environment of health care, which remains essentially oblivious to TQM as an industrywide option. This may reflect a welcome degree of confidence among the HFHS leaders; they intend to make TQM happen despite a potentially unfriendly environment. But, the environmental issues will not simply dissolve, as Sahney and Warden certainly know. For the time being the festival of surveillance, the demands for data, the threat of suit, the enthusiasm for various protocols for care, and price shopping will characterize most health care markets, including Detroit's. In the near future, physicians will almost certainly face declining income and increasingly severe scrutiny of their practices and competence Patients may come to experience more and more "rationing" through queues and limitations on technology, further shaking their confidence in a system they already doubt. Fear, accusation, and the costs of external inspection are likely to grow in the years ahead.

Total quality management offers one positive option in this negative terrain, but can it survive through the several years it will need to take root? In future writings by the HFHS group, it will be interesting to hear about their strategies for keeping TQM intact while other fires blaze.

In this article, HFHS has faced one additional challenge to TQM, and beaten it at the start: the obstacle of secrecy. TQM has spread in other industries not because it is a nice way to manage (although it is that), but because it offers competitive advantage. Companies that use TQM drive others out of business. Strangely (to the Western mind), this fact has not prevented highly cooperative activity both within and across industries as they develop and use TQM methods. Sharing managerial and organizational knowledge among companies is a feature of TQM. It is not a feature of American health care.

Why should one hospital help another, especially if only one will survive in the long run? The obvious answer is, "It should not." The correct one is, "For the good of both." If highly cooperative activity is fruitful in industries that make video cameras and cars, then it must be even more compelling when the mission is to serve the health of a nation. No hospital should withhold from others information on an effective new medical breakthrough, even if that were to the inventor's competitive advantage. No less should health care organizations withhold what they are learning today about better ways to manage the processes they run. As it happens, if the lessons from other industries apply, those who share their knowledge of TQM will not lose market, they will win leadership.

This is how HFHS has chosen to behave. Their model bears no copyright; their discoveries are no secret; they discuss their flaws with good humor; and they have not, thank goodness, converted their lessons into yet another quality management "product." In sharing their ideas and their wisdom, they set a benchmark for the behavior of our whole, troubled, worthy industry. The name for that is "leadership." At times like this, it is precisely what we need.

G. Rodney Wolford

A CEO's Perspective of TQM

Quality. Never has a management topic been more discussed, indeed, one that could so profoundly affect the American workplace and our economy. Hospitals and other components of the health care system can certainly benefit from the concepts of "total quality management," and it is hoped that they will demonstrate leadership in its implementation.

In "The Quest for Quality and Productivity in Health Services," the authors review the philosophy of total quality management, discuss its application, and review their experiences at the Henry Ford Health System. This thorough article provides a comprehensive overview of the basic concepts of total quality management and may encourage other hospital organizations to learn and adopt the philosophies of total quality management for their own organization.

The authors, however, attempt the near impossible in an effort to briefly outline the philosophies of Deming, Crosby, and Juran. This effort serves the useful purpose of stimulating the reader's interest and understanding of the philosophy of total quality management. While conceptually correct, interested parties must be encouraged to read much further. A thorough review of the literature and writings of quality experts cannot be substituted.

The authors suggest that adopting total quality management processes could have a positive impact in addressing the issues of the current state of affairs with regard to rapidly rising health care costs and decreasing accessibility. I am in total agreement.

G. RODNEY WOLFORD is President and CEO, Alliant Health System, Louisville, Kentucky.

The evolution of our health care system has resulted in the creation of scores of autonomous businesses, subsidiaries, and departments that do not necessarily focus on the best interest of the consumer. The system seems to develop more self-serving bureaucratic processes daily in order to protect the status quo. We have reached a point of endangerment for the system itself.

Certainly the concepts and tools of total quality management initiates the ability to fundamentally change and improve the processes and quality in one's own organization. More important, by using a broader perspective of these same concepts and tools one can begin to grasp the root causes of certain major problems in the American health care system and adopt more global perspectives and actions to initiate or embrace the reform of the system. I am reminded of a recent Acura automobile advertisement that stated that the company required its engineers to have strong minds, vivid imagination, and a short memory of past success. The same requirements should be applied to our health care leaders because fundamental change is required if we are to maintain a pluralistic, private health care system in the United States.

During the past three years as CEO of the Alliant Health System, I have had the personal and professional pleasure of being a part of an organization that has made a commitment to total quality management. The TQM commit-ment at Alliant was initiated in 1986. Nearly a year of research by a dedicated team preceded the implementation throughout the organization in 1987. Initiating TQM when there were no good examples to follow in other hospitals led us through many learning experiences, trials, errors,

and successes. While we are proud of the recognition received and the many visitors with which we have shared our progress (and gained from their experience in return), we openly confess that we have made many mistakes and are constantly evaluating and working toward continuously improving our processes of total quality management. The results have been professionally satisfying and beneficial for the organization, and they are likely to improve as our commitment is sustained with time and resources.

The Henry Ford implementation process as described is fascinating, thorough, and similar in many ways to our experiences at Alliant. It is always important, however, to understand that all organizational cultures are different and there is no cookie-cutter implementation process. Thus the implementation and approach at Henry Ford differs from that of Alliant and probably all the others who have initiated TQM efforts-as well it should.

The authors emphasize on numerous occasions the importance of management commitment. This cannot be overstated. The principles and processes of total quality management are not grass root-driven. Total quality management simply will not work unless management commitment is solid. Management must have a thorough knowledge of TQM principles, philosophically accept them, and be walking and talking examples for the organization. The approach used at Henry Ford involving managers as teachers in cross-functional groups is excellent. It is an approach Alliant regrets not using early in our implementation. Through this approach employees understand that management is committed, and more important, teaching the subject requires management to develop a base of knowledge that assists in enhancing its own commitment.

Unfortunately, a mistake that is often made early in TQM implementation is attempting to change the culture and behavior of the executives when the infrastructure that directs their time, goals, and rewards remains the same. Management education will not be enough unless the organization evaluates and rewards the desired behaviors. This is no easy task.

The discussion of the implementation plan at Henry Ford did not emphasize adequately several things that are critical to long-term success. Alliant's experience has shown that the quality planning process is perhaps one of the most critical steps. Openly communicating a vision and stating organizational goals and objectives with quality as a central theme is critical for the organization. At Alliant, we require all of our managers to write a vision statement of their own to fit under the umbrella of the Alliant vision statement. This allows the managers to internalize and commit to their own expression a vision that they own and will use to lead their areas of responsibility toward significant improvement in the future. In addition, each manager annually is required to develop a quality plan that deals with TQM implementation and the use of improvement tools. Differing significantly from the application of management by objective, we find the quality planning process to be one of the most time-consuming but valuable foundations for our long-range and annual activities in the TQM process. The lack of quality planning in Sahney's formulas used in his first and second laws of quality process is a significant deficiency. Culture change, use of TQM tools and techniques, and management and employee involvement are all critical to the success of total quality management. However, the Juran trilogy points out that quality planning is equally important. Many health care organizations have made the mistake of focusing only on quick results in quality improvement without careful planning of the infrastructure. This is a mistake that Alliant made in its early years of TQM, and it will be replicated here if planning is overlooked.

A second area discussed but not emphasized is another major concern. This is the concept of empowerment, giving employees the right and responsibility to make decisions to better serve our customers. The adoption and implementation of this philosophy is incredibly difficult. Managers have not been trained or rewarded adequately to give up power and, further, they are threatened by the idea that if empowerment actually works, their very jobs may be in jeopardy. Given the multiple layers of management we have created, there may be some justification for that concern. On the other hand, it is our own management practices that have conditioned our employees to be fearful of accepting empowerment. We probably start training for avoidance of empowerment in kindergarten and

continue it for life by creating fear and penalties for failure. Employees must be trained in the techniques of empowerment, but they also must be expected to use them aggressively and be rewarded for using their own informed judgment to meet the needs of customers. Unless management changes its own behavior, the desired results in empowering employees will not occur.

At Alliant we actively seek and recognize employees who have used empowerment to benefit a customer. Further, we have systematically addressed elements of our bureaucracy that requires multilayers of approvals for simple actions that in reality need no approvals by management. The most gratifying experience has been the emergence of self-directed work teams who have taken on many of the responsibilities of management and are producing results that some of our top managers would envy if they could replicate. More important, the result has been a dramatically improved employee who is motivated by ongoing accomplishment and job satisfaction.

The important and critical concept of process improvement is touched on several times throughout the article. The experience with process improvement at Henry Ford is not clear, but our experience at Alliant has taught us several things.

First, most processes within health care organizations are not clearly defined. Because of this, quality improvement teams organized to improve processes have often floundered and discovered that the root cause of their difficulties is the absence of an accepted or defined process. It is difficult to improve a process when none exists. As a result, much of our early efforts focused on planning and identifying specific processes. In many cases, immediate improvement is realized because the act of defining and measuring a process generally leads to reduction in the variation. Once the processes are in place, the more traditional methods of process improvement can then be applied.

Clinical Applications

Another lesson learned at Alliant is the importance of treatment processes used by our physicians. While most discussions of total quality management in clinical areas emphasize quality improvement, initial focus and attention should be placed in the areas of process planning. This includes the development of protocols, practice parameters, critical paths, or whatever you wish to call them. However, it is difficult to impossible to improve a process if you are really dealing with 30 or 40 different processes represented by different practicing physicians. As suggested earlier, TQM tools are much more effective if early efforts focus on process definition.

During the last 18 months, Alliant has been systematically developing and applying our definition of clinical processes, which we call "critical paths." A multidisciplinary staff of physicians and employees have evaluated and defined critical paths for over 150 DRGs. Many, though not all, physicians have embraced this concept. As success has been demonstrated and outside interest has grown, more physicians have agreed to embrace the critical path concept. In almost every analysis, our control charts demonstrate reductions in variation of treatment patterns, lengths of stay, and resources consumed. In coping with ever-increasing pressure by payers to stabilize or reduce our costs while continuing to improve quality, we find the application of critical paths to be invaluable.

In addition, critical paths have assisted us in developing different and improved relationships with our physicians. Nurses are given the responsibility of monitoring the critical path process for each patient. This action assists them in developing a new partnership role with the physician. Also, the critical paths have brought about an increased awareness on the part of our physicians in regard to processes, total resources consumed, and outcomes. This inevitably will lead to improved alignment of the goals of both physician and hospital.

Information Systems

The availability of information systems to produce data for total quality management was not extensively discussed. The tools to be used for continuous improvement, however, require a level of data that few hospitals can supply with existing systems. The information systems in use in hospitals have mostly been developed to focus

on financial functions and reporting. TQM will propel a reexamination of systems and their output. Major information system overhauls will occur with a new focus on production systems and expert systems to measure and minimize variation of vital processes. Financial data will then become a by-product and not the purpose of the information systems.

The authors suggest that some of the published quality indicators, such as the Medicare mortality rates, have had little meaningful value. I agree that mortality rates have limited value, but the concept of comparison and consumer awareness has been initiated with this effort by the Health Care Financing Administration. This I find to be quite valuable. Health care has had a free ride in terms of consumer information. We have systematically fought all efforts of outsiders to compare us, relying on technical jargon and patient rights as a shield. Our ability to withhold meaningful information to the consumer is drawing to an end-as it should. Even though mortality rates are not the best comparison, the result has been marked improvement in the clinical services of some hospitals simply because no one likes to stand outside the boundaries of acceptability. Comparison can be a stimulus for change. The big danger we must avoid-if we are to be compared–is focusing our management only on those areas that are reported. A well-integrated total quality management process would avoid this trap.

Conclusion

In conclusion; I reemphasize the authors' suggestion of the long-term nature of total quality management and the need for patience and perseverance. The early stages of implementation are not easy. Differences between expectations and reality will emerge daily. Management begins to talk aggressively about quality and focus the organization on quality; however, education, use of quality improvement tools, empowerment, and other aspects lag behind. Thus, there can be skepticism that management really means what it is saying. Changing a culture that has rewarded behaviors that are not compatible with a total quality management philosophy is difficult to lead and manage. Thus an eye toward the long-term effect must prevail. Senior management has only a certain capacity to accelerate this process and must live with that reality. Quick fixes will end up going the way of all fads. Sustained efforts and fundamental changes directed at total quality management will succeed with management endurance.

Reply

Our article, "The Quest for Quality and Productivity in Health Services," had two objectives. The first was to provide health care professionals not familiar with TQM with a summary of the key concepts involved. To that end, we summarized the work of recognized experts in the field and also presented the 12 key concepts that form the building blocks of our own quality initiative. In addition we provided a selected list of references for those interested in further reading. The second objective was to illustrate the implementation of TQM in a health care setting by describing our experience at Henry Ford Health System (HFHS).

G. Rodney Wolford found our approach similar in many respects to that of the Alliant Health System with which he is associated. This was not by chance. We have carefully monitored the progress of TQM in other health care organizations by participating in the National Demonstration Project and Health Care Forum quality networks, as well as through visits to other organizations. The goal of this activity has been to seek out and select ideas that best fit our own situation. An example of this is the use of our own managers to conduct training, an idea adopted from the Xerox Corporation. Further, our core training for TQM is conducted centrally within HFHS, with employees from as many as ten different operating entities being represented in each class. The objective here is to both teach TQM and promote "systemness" within the organization.

Wolford found our process lacking in emphasis on quality planning. In the first 18 months of TQM implementation, we did not focus on quality planning for two key reasons. First, we did not have enough top managers who had been trained sufficiently to do effective quality planning. Second, HFHS was involved in a major effort to develop a ten-year strategic plan, and we were reluctant to dilute that effort. In addition, the ten-year plan formed the foundation and a vision to which quality improvement plans were linked. As mentioned in our article, we felt that once a core group of management and professional staff had been trained, the quality planning process could follow. In keeping with this approach, each of our operating entities has developed a three-year quality plan during the past six months. Projected progress is addressed in eight dimensions-for example, customer focus, process focus, and employee mindedness. These plans were presented to the Quality Committee of the Board of Trustees in summary form in March 1991.

Dr. Brent James of Intermountain Health System points out that TQM is too often promoted with "evangelical zeal that hardly seems compatible with the scientific method." We completely agree. HFHS intentionally developed its own model to avoid becoming blind followers of one of the gurus and, instead, focused on learning from all. The results are reflected in the 12 concepts presented in our article that are the keystones to the "Henry Ford Quality Management Process."

James suggests an approach to the clinical application of TQM, with which we completely agree. At HFHS, three routes have been taken. In one, physicians participate in quality improvement teams that address administrative processes that impact physicians. Examples include projects in the areas of medical records, ad-

mitting, and laboratory. The second avenue is clinical process quality improvement teams, with physicians as team members. These teams are studying clinical protocols-for example, management of asthma, low back pain, and pap smears. The third avenue is based on the recently established Center for Clinical Effectiveness that, with active physician participation, has spearheaded a number of projects to study variation in clinical practices. In less than a year, several successes that been achieved through use of the scientific process, data analysis, and consensus development as outlined by James.

Finally we acknowledge with great humility and appreciation the kind remarks of Dr. Donald Berwick. He has put the TQM initiative and efforts of HFHS in a conceptual framework that adds great value to readers of our article. He correctly points out that the current health care environment is, in important ways, hostile to the concepts of TQM. Consistent with Berwick's ideas, we at HFHS believe that the best way to improve the value received for health care expenditures is through developing effective customer-supplier relationships. Accordingly, we have launched a number of initiatives during the past year with local, state, and federal governments, as well as with regulatory bodies and local industries.

We acknowledge freely that there are many questions to which we do not have clear answers. For example, we do not fully understand how to modify our performance evaluation system or how health care institutions can become preferred suppliers for major employers. We also continue to struggle with the development of the format and content of a systemwide quality report.

In spite of these uncertainties, we remain committed to the process of continuous quality improvement and to the quality framework presented in our article.

-V.K.S., G.L.W.

To Our Readers

Coming in the Spring Issue

"Allocating Resources Ethically: New Roles for Administrators and Clinicians" by Robert Veatch, Director, Kennedy Institute of Ethics, Georgetown University, Washington, DC

Commentaries by

Paul Hoffman, Executive Vice President and CEO, Alta Bates Corporation, Emeryville, CA

David H. Hitt, President, Methodist Hospitals of Dallas, TX

Daniel Callahan, Director, The Hastings Center, Briarcliff Manor, NY

A New Book from Health Administration Press

Health care decision makers can learn more about achieving quality in their field in *Striving for Quality in Health Care: An Inquiry into Policy and Practice by R:* Heather Palmer, Avedis Donabedian, and Gail J. Povar. The book also includes an introduction by Kathleen N. Lohr, "Quality of Health Care: Critical Definitions, Concepts, Principles, and Practicalities."

The book consists of three parts, originally prepared as papers commissioned by a committee of the Institute of Medicine (IOM) charged by Congress to design a strategy for quality review and assurance in the Medicare Program. The works featured in this book include a definition of quality of care, the conceptual framework for measuring quality of care, and a focus on the challenges associated with implementing a functioning quality assurance program. In addition, this book explores the ethical considerations of quality of care in an era of sophisticated health care technologies.

Health Administration Press is a division of the Foundation of the American College of Healthcare Executives. If you are interested in submitting a book manuscript, please contact Daphne *M.* Grew, Director, Health Administration Press, 1021 East Huron, Ann Arbor, *MI 48104-9990, (313) 764-1380.*