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The Effects of Industrial Quality Management of the Japanese and United States Health Care Systems

Mary Jo Sexton-Tosh

THE EFFECTS OF INDUSTRIAL QUALITY MANAGEMENT ON THE JAPANESE AND UNITED STATES HEALTH CARE SYSTEMS

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A Culminating Project Presented to the Faculty of the Graduate School of Lindenwood College in Partial Fulfillment of the Requirements for the Degree of Master of Health Management

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ABSTRACT

This thesis will focus on the effects of industrial quality management on the Japanese and United States Health Care Systems.

Research has attributed the lack of quality management information in terms of the Japanese health care system to the closing of Japan's borders prior to the Meijing Restoration Era. Because of the isolation from the western world, Japan is behind the United States in its implementation of quality measurement standards to the provision and outcome of health care services.

Over the years the development of the health care industry in both the United States and Japan has taken different paths. Some theorists believe this difference can be attributed to cultural influences unique to each country. Other theorists believe this difference is attributed to the ways in which each government regulates its overall national economy and the emphasis placed on gross domestic products.

The purpose of this study is to investigte the possibility that, within the different societies, culture may have played a secondary role in the development of quality management techniques in health care. Instead, it explores the emphasis of the GDP as the primary factor in the degree to which quality management exists in the medical industry.

To limit the scope of the research, this study focuses on industrial quality management of the Japanese and United States health care systems from World War II to the present. While the evolution of medicine specific to each culture is discussed at length, it is done so in context of the development towards present day health care and quality management practices.

Results of this study produced considerable evidence to suggest that while the effects of industrial quality management have had a significant impact on both health care systems, the rate and emphasis of that development has been quite different. Regardless of its past isolation from the rest of the western world, in many ways Japan has surpassed the United States in the employment of quality improvement techniques in managing health care.

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CHAPTER I

INTRODUCTION

To write a dissertation on the history of total quality management/continuous quality improvement (TQM/CQI) and health care would only add to the plethora of information already in existence. Employees of health care know all too well of the changes that have taken place in the industry, and why health care leaders initially began to search outside of their own system for solutions to long-standing problems of cost control and quality. From Japanese and American manufacturing, our health care leaders adopted practices of TQM/CQI and used them as the focal point for improving cost, quality and access to patient care. Although these reforms are well documented in the history of U.S. health care, little research can be found about how the philosophies and practices of TQM/CQI may have translated from manufacturing to Japanese health care. The intent of this dissertation is to focus on the general evolution of health care in Japan from post-World War II to the present, and to identify the effects TQM/CQI industrial theories may have had on the health care industry. These effects will be compared to the progression of quality theories in U.S. manufacturing and health care industries during the same period.

Before we can appreciate the cause-and-effect relationship between quality improvement initiatives and the delivery of health care, we must first have a

general understanding of how these initiatives were developed. Primitive measures of quality have existed in the U.S. since the early 1920's. Those measures were formalized into standards by 1953 and had begun to define the parameters for measuring the quality of care (JCAHO 1990). The evolution of the current health care standards will be discussed later. In the 1970's low levels of compliance by U.S. health care organizations (HCO's) to quality assurance standards kicked off a reform that changed QA practices. Historically, the standards of quality have taken a negative, ill-defined and rather reactive approach to care. The practices of quality management had a more positive, well-defined and proactice approach. Using the tools of statistical quality management taught by the Japanese to American manufacturing, it was only a matter of time before U.S. health care began to redefine the way it conducted business.

The first concepts of "quality performance" took place at the turn of the eighteenth century and were based on moral principles brought to the American colonies by the Germans (Raffel 1993). Since industrialization had not yet been introduced, the manufacturing of goods was left to the individual craftsman. The first ideals of quality performance were based on the craftsman's ability to master his craft, but only insofar as its worth was perceived by the buyer. The level of mastery (or quality) the craftsman had achieved was, in the eye of the consumer, what placed the craftsman in the category of either apprentice, craftsman or master-craftsman (NCQA 1993).

The American Industrial Revolution, which was brought into the United States as a result of German influence, started the measurement of performance that began to infiltrate the U.S. industry. Rudimentary forms of quality management already existed in the health care sector through the gathering of mortality/morbidity rates among a fraternity of physicians known as the American College of Surgeons. Translated to the manufacturing industry, these early measures of performance were based on the production, inspection and delivery of goods (NCQA 1993).

Industrialization's mass production of goods eventually put the craftsman out of business and repositioned the roles of master-craftsman, craftsman and apprentice into that of supervisor, foreman and lineworker. Although performance was still measured by the skill of the worker, it was now left to the discretion of a supervisor to determine the quality of an employee's performance. Usually the main determinant in measuring the level of performance was the workers' ability to meet the almighty delivery deadline (NAHQ 1994).

Additionally, from this industrial framework came the development of other equally important strategies for measuring performance:

- written inspections for materials and procedures;
- measurement instruments and processes for specific types of inspection, (i.e., how many widgets are produced per employee); and,

- the standardization of work processes (i.e., job descriptions) to assure performance (AHA 1989).

At the start of World War II, American manufacturers became burdened with demands for large quantities of military and medical supplies. But, while factory workers and medical students went off to war, American production lines and hospitals were being staffed with the unskilled labor left behind. This change in workforce caused the level of quality in mass production to decline significantly. However, the importance of the delivery deadline only continued to increase as the demands of war continued to increase. It was this decline in quality that led the American government to create a task force called the "War Production Board" (Raffel 74). The Board's task was to develop strategies for quality control and to oversee improvements in the production of military and medical goods the government purchased from manufacturers. The first training courses the Board developed on statistical measurements and strategies for quality control came from research conducted by the Bell System in the 1920's. As one of its training instructors, the Board hired Dr. W.E. Deming to teach military personnel the statistical processes of total quality management/continuous quality improvement (NAHQ 1994).

By the end of World War II the U.S. had already become an international industrial power. The economy was flourishing and most Americans were content

to rest on the laurels of their war victories. So, when Dr. Deming offered his expertise on statistical quality control to American industrialists, they rejected his theories because of the current prosperous economy. Because they failed to recognize the long-term advantages associated with quality control, they viewed Deming's philosophies as totally unnecessary to their future (JCAHO).

Though the U.S. economy was enjoying a momentous surge, the Japanese economy was in total chaos at the close of World War II because of its dependence on what its government purchased from its manufacturers. The small percentage of goods Japan produced for outside buyers was considered to be poor in quality according to the standards of international industrialists and consumers. The reputation for inferior worksmanship was a major obstacle for the Japanese to overcome if they were to compete in the world market. In a desperate attempt to improve the quality and delivery of its products, and as a means of encouraging competition on an international level, the Japanese government sent work teams abroad to study the operations of foreign manufacturers and observe their approach to quality performance. There were also many lecturers invited to Japan to teach manufacturers and government officials methods of statistical quality control. Two of the visiting lecturers were none other than Dr. Deming and Joseph Juran whose philosophies were quickly embraced by the Japanese

government and strongly influenced the creation of the Union of Japanese Scientists and Engineers (Walton 49). The Union was charged with the responsibility of mastering techniques of statistical quality control taught by the American statisticians and for implementing these techniques into the daily processes of Japanese manufacturing (Berwick 38).

The introduction of Deming's and Juran's quality philosophies into the Japanese economy was quite instrumental in fueling a performance revolution among its industrialists. To achieve total quality management meant to develop "a management process of continuous improvement - a process of continuously striving to exceed customer expectations" (Melum 93). Juran taught the definition of quality as the "freedom from deficiencies" and "the desirability of product features" based on the perceptions of the consumer (Juran 89).

American industrialists know firsthand of the successes the Japanese achieved through their institution of quality management techniques. As Japan reestablished its reputation in the international market and became a manufacturing leader, America's reputation for quality began to deteriorate. By the early 1970's American manufacturers were looking to their eastern competitors for solutions to their own quality dilemma and as a result they too became believers in the process of quality management. U.S. industrialists soon refocused their attention from the need to meet the proverbial delivery deadline to ways of upgrading the quality of goods produced and internationally distributed (JCAHO).

Up until the late 1980's the only tales about the processes and benefits associated with quality management tools in improving employee and organizational performance remained in American and Japanese industrial literature. The time had now come for the health care industry to take serious action against uncontrollable costs and inaccessibility, so American health care began to look through the documentation. Another issue that helped push performance to the forefront of the American health care industry was the patterns of variability noted in the clinical practices of its providers. The practices of independent solo-practitioners, the institution of "for profit" medicine, and the increasing trend toward medical liability played important roles in contributing to the skyrocketing costs of medical care. Most important, however, was the government's need to continue to monitor and evaluate the quality of goods and services it purchased, particularly for the care of the poor and elderly, through its Medicare/Medicaid contracts with the health care industry. This statistical process of monitoring the care provided to Medicare/Medicaid recipients was most instrumental in medicine, and dismantling the brotherhood that existed among physicians. Up until now, doctors had retained the responsibility for internally handling their own performance issues (Berwick 38). This new accountability of the physician to government regulators, payers, and the legal system finally eliminated the "internal rights of surveillance" the brotherhood had long enjoyed. It posed the question of how health care performance might benefit from lessons

learned by the American manufacturing industry about quality management and variability measurement techniques (AHA 38).

In 1987 over one-hundred clinicians, health care executives and industrial quality control professionals met in Boston as the National Demonstration Project on Quality Improvement in Health Care (NDP). Their mission was to experiment with the applicability and use of quality management and improvement methods in health care organizations. Twenty-one experts in quality management from major U.S. manufacturers, universities, and consulting firms were paired with leadership teams representing twenty-one U.S. health care organizations. By using the Deming and Juran tools of quality management to solve the problems of performance each of their respective organizations currently faced, these leaders set out to define a process of quality improvement for health care (Juran 97).

Sponsored by the John A. Hartford Foundation, a leading supporter of American health services research, the NDP began answering questions of probability for the support of quality management, and how that information would apply in the health care market, especially in managing its insurmountable problems of poor performance and high cost. The reader should keep in mind that the formation of the NDP took place almost forty years *after* Deming and Juran had introduced their theories of statistical quality performance to the Japanese.

However, it was the success Japan had managed to achieve that gave the NDP its constant drive to complete its demonstration project. They eventually concluded that a high success rate did in fact exist between the use of CQI tools and improvement in the outcome of patient care, from both a quality and a cost perspective (NAHQ 46). Among the lessons learned by the health care industry, through the work of the NDP, was the need for total commitment from administrators, employees and practitioners to fully support the practices of quality improvement. If hospitals were to be successful in the delivery of care and services, they must have total commitment from all staff to the QI process, and be able to assign a price tag to the cost of poor performance versus the cost of improvement. The report published by the NDP not only illustrated the positive effects quality performance initiatives can have in health care organizations, but also the rewards of minimizing the variation of practice patterns among providers and of lowering the overall cost of doing business (Berwick 121).

Curiously, even though Americans were both fascinated with and frustrated by Japanese expertise in manufacturing and management, they were not interested in the experiences and performance of the Japanese health care system. Because of the pressures put on them to bring their costs in line with the cost of living, employer groups forced American health care organizations to look inward

for new management strategies. As a result, homegrown organizations such as Kaiser Permanente on the west coast and the Health Insurance Plan in New York City became major pioneeers in developing quality management organizations. These organizations were the first to establish health care systems which were both the providers of care and the insurance company for those providing that care. With this new model came the resurrection of an old form of physician reimbursement. The process of linking an advance payment system to the provision of care first surfaced in America on a very limited basis in the late 1890's (Mayer & Mayer 104).

Organized medicine (i.e., American Medical Association etc.,) objected to the "prepaid group practice" (PPGP) model because a system of salaried physicians meant giving up the autonomy the medical community had long enjoyed. The notion of forfeiting one's independent status and fee-for-service reimbursement was not one well accepted among the medical community. It was not until the Nixon administration that the health maintenance organization was created from the PPGP model, and was officially recognized and supported by the government as an efficient and effective way to control cost. Health services research had proven that the PPGP could save significant federal dollars by reducing hospitalization days (Roemer & Schonick 87).

In neglecting to seek out similar experiences of the Japanese health care system, Americans may have missed many significant opportunities in learning other new methods of quality management. But, through researching the evolution of quality improvement in U.S. and Japanese manufacturing, and how these developments may or may not have influenced their respective health care systems, this paper will attempt to identify what, if any, missed opportunities there may have been. Certainly there are many similarities in the initiation of quality management philosophies among the manufacturing sectors of both countries. And, although there are many parallels in the structure of Japanese and American health care systems, until research has been conducted on the similarities of quality management in both health care systems, neither will be aware of what techniques they can borrow to further improve patient care in their respective cultures.

Chapter II

LITERATURE REVIEW

Health Care In Japan

There are many documented similarities between the Japanese and U.S. health care systems, particularly in respect to their employment-based, multi-payer plans. Patients in each country have their own choice of providers and obtain care through various private channels. Like the U.S., Japan has a private medical sector that is extremely powerful and also resistant to the efforts of insurance programs to try to regulate physician behavior (Graig 93).

Approximately one-third of Japanese physicians are private, solo-practitioners who are reimbursed on a fee-for service basis. Hospital-based physicians are salaried employees of the health care organization, excluding any physician-owners of the same organization. It is not surprising then for the Japanese solo practitioner to earn significantly more than the salaried practitioner. In 1987 the salary of the hospital-based physician was only 2.4 times the average wage. On the other hand, the annual income of a private practitioner was 6.8 times the average wage (Marmor 82).

Regardless of the amount of money a provider earns, what makes the system of reimbursement less complicated is that the Japanese government

determines what benefits and services are covered and sets the reimbursement rates paid to all providers. These covered services are similar to those provided under U.S.managed care plans because of the inclusion of hospital services, physician services, dental services and prepaid drug programs. Unlike U.S health care benefits., Japanese benefits do not include a provision for long-term care (e.g., nursing homes, hospice programs, etc.). Covered benefits in the U.S. are determined by both the government and the private sector with American physicians being reimbursed by a multitude of methods. This broad based approach has proven to be problem-prone and costly.

The Japanese health care system has been in existence since the sixth century AD; by comparison, most of its foreign counterparts are still in their infancy. It was not until the eighteenth century that the influences of western medicine came to Japan. Up until that time the Japanese government had been very slow and calculating in its acceptance of change. Major influences in the development of their health care system came from the Chinese, Dutch, and the Germans. The Chinese brought the first medical treatments to Japan around the fifth century in the form of acupuncture. It was more than a thousand years before Portuguese missionaries would bring western medical influences to Japan in the form of antiseptics (Hashimoto 121). Up until the fifth century the most common treatments were administered through the use of herbal medicines (Powell 281).

From 1600-1867, the Japanese government closed the country's borders to all foreigners with the exception of Dutch and Chinese traders (Iglehart 30). In 1867 a civil war finally ended the feudal system that had existed since the sixth century AD. Subsequently, the Meiji Restoration created an alliance with landowners, mercantile capitalists and the samurai. The Meiji Era (1868 - 1912) revolutionized the Japanese population through industrialization. It was during this time the Japanese looked to western countries for ideas on modernization. The industrialization was very timely in that the Japanese were now free to study the mistakes made by industrialized western nations and learn many important lessons from them (Steslicke 98). A major influence in Japan came from their contacts with the British Navy, the Merchant Marines, the Prussian Army and American business. At this time the Japanese government took a strong interest in German industrialization and the management-control of social programs. As in Germany, the onset of industrialization brought about the organization of labor groups, and consequently the demand for social welfare programs (Hashimoto 90).

The Meiji Restoration laid the foundations for the present-day Japanese health care system. In 1874, only seven years *after* the revolution, the Japanese government developed the first regulations for employment-based social welfare programs. The "Relief Regulations" of 1874 evolved into the social security system of today. One of the most well-versed historians on the evolution of the

Japanese health care sector, Masami Hashimoto, reminds us that prior to the Meiji Era, outcome data about this sector was almost nonexistent (Hashimoto 84).

From 1874 onward, Japan was eager to share this health care data with western countries and used that information exchange as the blueprint for building their economy and social welfare programs. In 1922 the Japanese re-enacted the Relief Regulations into the Health Insurance Law. Including previous legislation, the Law provided health insurance coverage to major occupational groups such as miners and factory workers. Employers with five workers or less and the self employed were excluded (Steslicke 54).

William Steslicke is a noted researcher on the study of international health politics and law. From his work we know the Health Insurance Laws created two basic groups of insurers:

1) Companies with 700 or more employees who formed health insurance societies and provided medical facilities and care to their employees and their dependents.
2) The government which manages insurance programs for employees of smaller firms not covered by insurance societies. (64)

Companies with 700 or more employees are allowed, by law, to establish independent health plans for their employees. These independent plans

can also join forces with two or more similar organizations to provide benefits to 3,000 or more employees. The "insurance" society is considered only one alternative to the government plan. In the U.S., the government insurance plan *is* the alternate to the private insurance groups. In Japan the insurance society is strictly regulated and monitored by the government. Steslicke considers these societies to be an essential financial go-between for Japanese employers providing benefits to employees and their dependents. In 1986 Jay Wolfson and Peter Levin wrote an article in the May issue of Business Health called "Health Insurance, Japanese Style." The article also expressed the importance of the health insurance society in Japan:

> One of the motto's of Japanese companies. . . 'the company is people'- recognizes the value of each employee as a company asset. A healthy, well-informed employee is seen as the most important investment a company can have. The societies (called kempo's) are the principal social and economic vehicles for helping to make this happen. (39)

In 1991 there were 1,822 kempo's being run by various Japanese health insurance societies.

Unlike U.S. law, Japanese law prohibits the operation of for-profit, investor-owned hospitals. In fact more than eighty percent of Japanese hospitals are privately owned facilities, with one-third having single owners. Japanese

clinics, too, are privately owned by physicians and, also provide inpatient care. In 1986 over forty percent of the physician population retained ownership rights to hospitals and/or clinics, the clinics serving as a critical extension to the provider's practice. However, since Japanese law prohibits for-profit organizations, profits earned by privately held facilities must be used for reimbursement purposes such as in the expansion of the facility and/or the services (Steslicke 82).

The Japanese hospitals and clinics are fierce competitors, and there is a great deal of duplication in services, equipment and materials to attract patients with the use of the latest technology. In addition, providers not on staff at a given hospital or clinic cannot follow their patients once they have been referred to a different facility for care (Graig 1933). This brings up the question of how providers can maintain continuity of patient care, if they are bound to any one given facility that may not have the most advanced technology. The Japanese place great emphasis on their ability to provide coverage to all individuals, but in the process they may have failed to monitor the continuity of the care provided by their practitioners.

Whether on staff at a hospital or clinic, Japanese providers belong to one of two groups: private practice or hospital-based. Health care programs executed by these providers are very straightforward. The Japanese population is covered

by either an employer, a trade association or the local government. Japanese employers with less than seven hundred (700) employees provide coverage to them and their dependents through locally managed government health plans administered by the Social Insurance Agency network. Under this system, the employer-employee share the cost of care with the government acting as a mediary. Premiums for these plans are fixed by law, whereas insurance societies (those with greater than 700 employees) have much more latitude in setting rates. Societies can also provide additional benefits and reimbursements that government-managed plans cannot (National Health Federation of Health Insurance Societies 1992).

The Japanese National Health Insurance Program provides coverage for those not covered by any type of employee plan (i.e., the self-employed, retirees and the unemployed, etc.,) Under this national insurance program one-fifth of the population without any income are covered (NFHIS 1992). The coverage provided under this program is managed either by the local government or trade associations that also provides coverage to specific professional organizations (NFHIS 1992).

In 1972 Japan enacted its first law allowing senior citizens aged 70 and over, (65 if bedridden), free medical care through the National Insurance Program. Between 1973 and 1981 the cost of care for seniors rose 12 percent. In 1982 Japan enacted the Health and Medical Services law to create a senior citizen-specific insurance program. This law shifted the cost of care for the elderly to employment-based plans. Japanese employees are covered by the employer until retirement; then they are required by law to switch to the national plan (Appendix 1).

Financing Japanese Health Care

Through employer-employee payroll tax contributions, the Japanese fund 4.1 percent of the national income for health insurance. While rates vary according to individual plans, premiums for government insurance programs are income-based rates fixed by the law. Premiums for society managed plans are not fixed by law and represent 3 to 9.5 percent of health care income. Contrarily, persons covered under the NHI plan pay premiums based on size of household and level of annual income. The government caps the amount of premium each household is required to pay each year. In 1988 the average per-household premium was $3,120 (Murdo 98) (Appendix 2).

Health care premiums for seniors are financed by a set number of methods. The federal government contributes 20 percent, the local government

provides 10 percent and employee insurance groups finance the balance. In addition, government managed plans for small companies receive a 16 percent contribution for expenditures from the government. In all, the HNI plan receives 50 percent of its funding from the government (Murdo 102).

Health Care Cost

Japan has tried to control the cost of care through the use of a procedure-based fee schedule. Through government regulation, targets for health care spending increases are set according to the growth of the GDP. This fee schedule sets reimbursement rates for both outpatient and inpatient procedures and reimburses providers according to the "point-fee-system" (Graig 140). The point-fee system is similar to the U.S. Medicare resource based-relative value system (RBRVS) and reimburses hospitals on a standard per-diem basis. All payers pay the same fee for the same service regardless of the health care setting (i.e., hospital, clinic, etc.,) or the provider. Billing beyond the fee schedule is against the law in Japan, therefore providers are held to accepting the government rate as payment-in-full. Unlike the U.S., cost shifting among payers in Japan does not exist because benefits and reimbursements are established by law through the Central Social Insurance Medical Society and the Ministry of Health and Welfare that includes representation from providers, payers and consumers (Ikegami 91).

Japan's health care costs have risen from 4.4 percent of GDP in 1970 to 5.5 percent in 1975 and have remained below 7 percent from 1975 to 1994. In 1985 an amendment to the 1984 law which created a separate plan for seniors was implemented, and focused on hospital capacity. In Japan the chronically and terminally ill are admitted to hospitals instead of a hospice or long-term care facility as in the United States. Consequently, the average length of stay is 52.1 days, or five times that of the U.S. (Schieber, Poullier and Greenwald 19). Japan also has the highest number of hospital beds per thousand people among all industrialized nations. Under a strategy called "The Golden Plan," the Japanese have redistributed the increase in cost of care for the elderly by shifting dollars spent on long-term hospital care from the hospitals to home health care (Ikegami 25).

Uwe Reinhart in "Health Care Woes of America" concluded that one of the biggest differences between the U.S. and Japanese health care systems is not their multi-payer structure; instead, he relates the difference to culture. The Japanese society has a deep rooted tradition of social obligation and requires the working class to bear a large portion of the cost for the poor and the elderly. Japanese society is much more homogenous, has a higher literacy rate and fewer differences in income levels. The U.S., on the other hand, is perhaps the most

heterogeneous society in the world. Contrary to Japan, the United States has a high illiteracy rate and major differences in income levels among its population. Methods for reducing health care benefits, particularly to the aging, are actively sought by the U.S. government which picks up the greatest portion of this care.

It would appear that America does not display such deep social obligations to its poor and elderly, as seen in its low rates of hospitalization days and the high utilization of long-term care facilities and hospice programs. In fact, the U.S. spends more on long-term health care than the remaining twenty-four industrialized countries belonging to the Organization for Economic Cooperation and Development (Reinhart 19). The U.S. system, unlike its OECD partners, is decentralized in its control of health care funding. European systems are centralized.

During World War II American employers assumed the role of health insurance provider in order to appear more attractive to the scarce supply of workers left behind (Starr 82). The government, in turn, created tax incentives to employers who provided health care coverage to their employees. Premiums are tax deductible for the employer and such benefits are not considered as taxable income for the employee.

U.S. Health Care Cost

In 1970 U.S. health care costs were $74.4 billion dollars and represented 7.3 percent of the GNP. By 1988 the cost of health care reached $539.9 billion or 11.1 percent of GNP (Jencks 99). At the end of 1994 the cost of health care exceeded $800 million dollars and represented 14% of the GNP. An article in Health Care Financing Review made a projection of future health care expenditures and estimated that by the year 2030 costs will represent 26 percent of the GNP (Sonnenfeld 54).

Financing U.S. Health Care

U.S. employers pick up 33 percent of all health care costs while the government provides for an additional 40 percent. Out-of-pocket costs account for less than 27 percent of all health care expenditures. However, there are 40 million uninsured and perhaps an equal number of underinsured individuals in America (Jonas 104). The large number of uneducated and impoverished individuals within the population places a great burden on the U.S. health care system. In addition employers are pressuring the federal government to reform its laws and increase its percentage of contribution to the payment of health care cost.

Compared to the other constituents of the OECD, the U.S. spends more on health care than any of the others. In addition, it is also separated from the

majority of other industrialized nations by the lack of a universal health insurance system. In Blendon's 1990 study, he noted that only 10 percent of Americans surveyed stated they were satisfied with the health care system, ninety-percent were not (Sonnenfeld 49). However, in order to attempt to clarify the dilemma faced by the U.S. system, background information on its development and problems are in order.

History of U.S. Health Care

In the United States, the education and practice of medicine evolved from the democratic, egalitarian and individualistic culture of colonial times. Although medical education and practices were largely influenced by the Europeans, major developments mostly took place from within this spirit of free enterprise. The European influence helped to build the initial foundations of medicine in America, unlike the European influence of Japan which merely helped to reshape a system that had been in existence since 6th century AD (Graig 87).

In colonial times, the sick were usually treated by women in the home who used medicinal herbs and followed medical guides that had been written for lay people. Even those individuals with little or no training in their treatment of the sick were considered "physicians." Those individuals who were trained in medical practices under a rudimentary apprentice program were also considered "physicians." Very few practitioners came to the colonies from Europe at this time and there were no medical schools in the new world to provide training. In

1753 there was one hospital in the colonies, the Pennsylvania Hospital, and in 1756 the first school of medicine was established at the College of Philadelphia (later, the University of Pennsylvania). In 1768 the second school, King's College (later, Columbia University) was established. Raffel informs us that by the time of the Revolutionary War, "it was estimated that . . . there were about 3,500 practitioners in the Colonies and not more than 400 had received formal training" (Raffel 7). Approximately 50 percent of those physicians holding formal degrees had immigrated from Europe, particularly Britain. Apprenticeships were the main approach to training physicians until 1753. The opening of the Pennsylvania Hospital brought about a whole new method of training. In 1800 there were still only four medical schools in America and they were extremely limited in what training they could provide. What is most significant during this time is the movement by the university-trained physicians to organize medicine according to the European model and the eventual creation of educational standards. Through the founding of university medical schools, the establishment of early medical societies and journals came into existence. These efforts facilitated the communication among practitioners, improved the quality of practice and established the medical profession to a level comparable to that of the European communities (Raffel 8).

Regardless of these efforts, the attempt to establish medical licensure among practitioners did not take hold in either colonial or postcolonial America. Early attempts at licensure brought about the establishment of state licensure boards, the granting of authority to medical societies, and the recognition of the university medical degree as an alternative to obtaining licensure from either state licensure boards or medical societies. In 1821 Georgia was the first state to restrict the issuance of medical licensure only to those individuals who were graduates of recognized medical schools. Even though there was great opposition to the process of licensure from the apprentice-trained physicians, the trend for formal medical education was established. The measure of a physicians' competence was determined by whether the physician had graduated from a medical school with an M.D. degree. This was the standard used in the absence of a mechanism for licensure (AHA 17).

The notion of a university-based medical education came from Scotland. Indeed, the University of Edinburgh was the dominant force in the structuring of the university established at Pennsylvania and Columbia. Because of the absence of strong hospital affiliations, university education became the standard for medical training. By the beginning of the nineteenth century, hospitals with university affiliations had become more common and established schools such as Harvard and John Hopkins began to increase the length of the training program. This expansion began the reform of medical education. Most of the physicians

who were instrumental in this reform had acquired training in the early 19th century from France, Britain and most important, Germany (Graig 29).

During the first half of the 19th century, many U.S. general practitioners went abroad to obtain advanced training and education. By 1860 the number of medical specialists in America began to dominate those of the general practitioner. At the same time, the American Medical Association, which had been founded in 1847, was gaining momentum in establishing medical education standards within the U.S. medical community. Medical schools had the authority to license practitioners but the majority of these schools provided inadequate medical education and training. Medical societies began to pressure the American Medical Association (AMA) to persuade states to re-establish examination and licensure boards who, in turn, could pressure schools for reform in educational standards of quality. In 1904 the AMA established a Council on Medical Education (CME) which began to rate the various schools. The creation of the CME eventually led to the detailed study of medical schools and hospitals that, in turn, brought the scientific method to the practice of medicine (Mizuno 26).

Summary

The most meaningful historic data we have about the Japanese and U.S. health care systems was not documented until the turn of the twentieth century due to the influence of he Meiji Restoration which had opened Japan's borders to westerners. At the same time, the Flexner Report had begun the recognition of

American medicine as a science. As a result, the demographic and economical data each country has shared has been the best source of documentation in the study and comparison of their health care systems. On the other hand, those individuals who have studied health care administration and the law have also contributed a great deal to the comparison of these two systems. What their documentation has taught us is that the similarities in the U.S. and Japanese health care systems have both been heavily influenced by the Germans through the process of industrialization. Because of basic social and cultural differences, each system has placed a different emphasis on the aspects of care provided to its populations of employed, self-employed, unemployed, retired and elderly. Research conducted on both demographic information and historic fact illustrates that each system faces a dilemma of escalating cost caused by a growing elderly population. Each has chosen a very different path in the regulation of the overall cost of providing health care coverage to not only the elderly but to the employed and unemployed populations as well. If this difference in culture and health care philosophy can be related to the fact that U.S. health care consumes 15 percent of its GDP while Japan maintains a 7 percent and below portion of GNP, then a closer look at the quality initiatives responsible for Japan's ongoing stability in controlling health care costs could provide many valuable lessons (Sonnenfeld 84).

Chapter III

Selective Review and Evaluation of Research

Quality Management and Japanese Health Care

The literature bears out that the Japanese learned the basics of quality management from the U.S. and, in turn, perfected it to such a high level that the U.S. has now become a pupil. In 1950 a statistical consultant from Washington, W. Edwards Deming, was invited to Japan to teach engineers and executives variability management. In 1954 Joseph Juran, a management consultant, expanded the lessons of quality to Japanese middle managers. The Japanese went even further by teaching foremen and production workers the lessons of quality management. By 1965 the Japanese concept of total quality control (TQC) was established (Powell 90).

In the early 1970's the Japanese began to focus on ways to employ quality techniques to better understand and prioritize customer needs. As a result the development of Hoshen Planning came about which provided management with seven tools that could be applied to both manufacturing and service organizations (Appendix 3). Overall, these efforts in quality management have made little impact on Japanese health care facilities. This is because Japan had focused its efforts of TQC on the products it exports. The revenue generated from its exports is essential for Japan to purchase the precious resources the country lacks. Most

hospitals use some form of quality management techniques but only those facilities owned by major employers use advanced concept of TQC (Melum 375). In the late 1980's Japanese health care experts began to look at the use of total quality management in the U.S. health care facilities. Two of the largest hospitals in Japan are owned by automobile giants Toyota and Mitsubishi. Because the U.S. is one of the largest importers of foreign cars, its relationship with Japan has facilitated the exchange of information regarding the role of employers in health care and the quality controls used by each to regulate cost.

One of the major concepts the U.S. has adopted in this exchange of data is that of the seven tools used to measure and control variability, a concept originally taught by Deming. These tools were used by quality teams to identify and solve problems in management processes. Once a problem was identified, the quality teams applied tools such as cause-and-effect diagrams and flowcharts. Root causes were further identified using histograms, Pareto charts and scatter diagrams (Appendix 4). When a solution was applied, the effects were monitored through the use of control charts. The application of the scientific method worked well in both U.S. and Japanese manufacturing and in U.S. health care (NAHQ 1994).

When total quality management (TQM) spread to service and administration, the seven tools of quality management were modified. The

Japanese Society for Quality Control established a committee to develop tools more suitable for use by service and administrative departments. The committee called these tools the seven "management and planning tools" (MP) (Kongstvedt 84). The first two, affinity and interrelationship diagrams (Appendix 5) were designed for basic planning. The affinity diagram was a creative (right-brain) exercise that uses cards to rearrange disparate ideas and form categories and headers. The interrelationship diagram was an exercise in logic (left-brained) for the identification of causal relationships between ideas. Key ideas were then prioritized (JCAHO).

The tree and matrix diagrams and the prioritization matrix were then used for establishing intermediate planning (Appendix 6). The tree diagram is used to identify systems within the organization and the criteria necessary to maintain system goals or priorities that were developed by the affinity and interrelationship diagrams. The matrix diagram identifies who is responsible for what criteria and the prioritization matrix identifies goals or priorities to be looked at first. The process decision program chart and the activity network diagram were specific to the practices of contingency planning and the identification of sequences found in management processes and group processes that could be done simultaneously (Appendix 7). This is similar to the critical-path process (JCAHO).

The first question asked by the few Japanese hospitals using advanced quality techniques was what to measure. In response, the quality function deployment method was developed that answered the question from both the internal and external customers point of view and prioritized customer preferences (Appendix 8). These preferences were then translated into health care terms that could be measured and controlled (Appendix 9). The items to be measured were documented on the matrix with customer needs on the left and measures and controls on the top. A typical quality function deployment priority measure is patient waiting time because of its effect on the patient, the third party payer and the physician. Another measure is the monitoring of physician prescribed medication errors because of their overall effect on outcome and length of stay.

The Japanese Physician/Pharmacist

Many of the quality problems in Japanese health care can be attributed to the national fee-schedule reimbursement system. Since all providers are paid the same rate for the same service, there are no incentives for the provider to assure quality to all patients. There are also no distinctions between the level of a physicians training or salary. In addition, hospital-employed physicians earn significantly less than solo-practitioners and are usually better trained. Powell and Anesaki noted that the supply of physicians is increasing in Japan yet the number of solo practitioners interested in serving rural practices still remains insufficient (Powell & Anesaki, 90).

Another negative effect of the national fee schedule in relation to quality in the Japanese system is the practice called "gaming the system" (Schieber, Poullier & Greenwald 19). This involves increasing the volume of patients seen by a given provider and keeping the doctor-patient visit as short as possible to create the need for repeated office visits. Additionally, during these visits Japanese physicians will further manipulate the system by ordering multitudes of tests and prescription drugs. Since Japanese providers can also dispense the drugs they prescribe, the dual role of physician/pharmacist creates a conflict of interest by American standards. Pharmaceuticals represented 18.4 percent of total health care expenditures in Japan, compared to 8.3 percent in the United States (Schieber, Poullier & Greenwald 22). Japan also leads the world in per-capita prescription drug consumption (25).

A major percentage of the doctor's income is generated from the function of dispensing drugs. Although drug prices are set by the Ministry of Health and Welfare, doctors can negotiate with drug companies for discounted rates. Doctors are reimbursed the full legal price from the insurers and keep the difference between the official cost and the discounted cost. This margin is substantial; in 1991 it was 25 percent of the physicians' income. The medical practice of overprescribing drugs is so common in Japan that it has become known as "kusuri zuke" meaning "the pickling with drugs" (Powell & Anesaki 174).

The Japanese government is currently considering legislation to prevent drug manufacturers from negotiating discounted prices with physicians (Eisenstodt 12).

Japanese Hospitals

As a means of controlling cost and monitoring quality in Japan, a chronically ill or terminal patient is admitted to the hospital instead of into a hospice program or long-term care facility as in the United States. As a consequence, the average length of stay in Japan is 52.1 days, or five times longer than that of the U.S. (Schieber, Poullier and Greenwald 99). Long-term care facilities are not an alternative on the immediate horizon for Japan. The Japanese culture includes a strong sense of obligation towards caring for one's family (Hashimoto 84). There is a negative stigma attached to institutionalization and to the failure to honor family obligations (84).

As the reader will recall, the majority of hospitals and clinics are privately owned and managed by physicians. Consequently, physicians are very reluctant to refer patients to competitors or to offer outside practitioners admitting privileges to their hospitals. Such practices feed the overutilization of tests, drugs, procedures and equipment.

Physicians also own most of Japan's hospital equipment which is just another financial incentive to order more tests and treatments. Since there

are no regulations controlling how much or what kind of equipment a physician can own, Japan is saturated with the latest medical equipment and technology. For example, in 1982 Japan had 19 computerized topography (CT) scanners per million people while the U.S. had 11 and the West Germans had two. The number of CT scans per million in Japan had risen to 95 in 1987 (Murdo 154).

Hoshen Planning

Supported by the seven tools of quality, Hoshen planning is the method the Japanese chose to determine what to measure and control, and to identify organizational breakthroughs in their quest to regulate the provision and cost of care (Appendix 10). Breakthrough is the process of identifying major organizational problems and setting realistic goals for improvement. This is the cornerstone of TQM in that it involves all members of an organization and sets individual targets for meeting goals (JCAHO).

Along with Hoshen planning, the direction of Japanese manufacturing and health care lies in what is referred to as strategic information systems created to facilitate the exchange of information necessary to the TQM process. After careful research of the information systems used in U.S. health care facilities, the Japanese passed them off as amateurish and outdated (NAHQ 298).

Using their vast knowledge and resources in electronics, the Japanese created a communication network that allows for a "real time" exchange of information such as in the dispensing of drugs, the rates of inpatient hospitalization and the utilization of specific tests and treatments. At present, health care is not the major user of the strategic information system. Instead, Japanese organizations such as 7-Eleven have taken the lead and offer everything from groceries to banking (Graig 95).

Quality Management and U.S. Health Care

The current approach to quality management in the U.S. is a product of a long evolution. For centuries, the only method of applying quality management techniques was through inspection. Crafts experts and consumers inspected the quality of the craft and the quality of work done by the apprentice. As production became standardized, management scientist Frederick Taylor and industrialist Henry Ford concluded that direct supervision by craftspeople was no longer practical and a separate inspection process was developed. Quality inspectors were trained to study overall outcomes of work using statistical methods for determining how many samples to inspect and what criteria were essential for passing the test. Though this form of quality control added to the cost of the product, manufacturers nevertheless considered it necessary to prevent the distribution of defective products (Walton 56).

In the mid 1920's, Walter Shewhart of Bell Telephone Laboratories wrote a book that forever changed the philosophy of quality control. "The Economics Control of the Quality of Manufactured Product" scrutinized the old methods of inspection. Shewhart suggested manufacturers would find it more beneficial to find and fix problems related to work process rather than finding and fixing problems in products. He argued that proper control of the production processes was a much more efficient and effective way of improving and assuring quality (Walton 184).

The quality control methods of Shewhart's theory quickly spread throughout Great Britain and the U.S. during World War II, but in the postwar era it was Japan that utilized and developed these techniques most effectively. With the assistance of experts such as Deming and Juran, Japan applied quality control methods not only to manufacturing, but also to product design, marketing, distribution, sales, service and other company functions (Graig 97).

A.V. Feigenbaum gave this extension of company-wide control new definition in his book "Total Quality Management". He proposed quality control as an all encompassing system for integrating quality throughout an organization so that all functions could work together on achieving customer satisfaction. It was the Japanese, however, who initially expanded this concept to include the entire organization in quality management. This company-wide total quality

control involved all levels and functions of a corporation. In its most advanced form, total quality management in the 1990's involves both horizontal (across functions) and vertical (across hierarchical levels) integration of the company's strategic focus on quality (Feigenbaum 77).

Because of intense competition in the 1980's, many U.S. industrial companies began to use programs of quality management in every business process. For the majority of these companies, changing the methods of quality control was a matter of survival. Consequently, companies like the Xerox Corporation, Westinghouse and Motorola set quality improvement records of astounding proportions by beginning with simple quality programs that were eventually extended to all functions. Not only were these companies among the first winners of the Malcolm Baldridge National Quality Award, but they have also provided an excellent example for other industries, including health care organizations, to follow (Berwick 54).

The success stories of American companies that have benefited from industrial quality management methods have been told and retold, but only recently have such tales come from health care organizations. The first was in a report written by the National Demonstration Project on Quality Improvement in Health Care. The project was hosted by the Harvard Community Health Plan and was designed to answer the question: "Can the tools of modern quality improvement,

with which other industries have achieved breakthroughs in performance, help in health care as well?" (Berwick 90).

Donald M. Berwick, M.D., a pediatrician at the Harvard Community Health Plan, served as a principal investigator for the NDP and is a judge for the Malcolm Baldridge Award. His theory on quality management in health care maintains that there have been two major revolutions: one of theory and one of accountability (Berwick 123). In the early 1900's the first revolution of health care and its relationship to society took place in the Flexner Report. Abraham Flexner of the Carnegie Foundation was an educator from Harvard. Along with Dr. N.P. Colwell, secretary of the AMA's Council on Medical Education, Flexner conducted educational surveys of U.S. and Canadian medical schools and hospitals to determine the quality of medical education and training. Flexner's formal report, "Medical Education in the U.S. and Canada", was published by the Carnegie Foundation in 1910 and was influential in revolutionizing U.S. medical education from the rudimentary apprenticeships to an era of applied scientific training and theory (Raffel 72) .

A second revolution in U.S. medicine began in September of 1987 and was not a revolution in theory, but a revolution in the locus of control. One hundred years ago, as a result of Flexner's work, power was shifted away from the medical practitioner to the medical scientist within the medical community. The modern shift for control cuts more fundamentally into the medical profession

from the outside. Berwick refers to this shift as a revolution in accountability (Berwick 5). Today's medical community no longer commands the right to judge quality or control of medical economics. Instead, prepaid care, government regulation and price competition are dismantling the medical professions autonomy.

In the current decade, all twenty-four industrialized countries of the OEDC face similar problems in health care: cost, variation in practice, regulation, and increases in the aging populations. These similarities are well documented in the literature on the Japanese and U.S. health care systems. Within each respective system, Berwick has contributed as much knowledge about the effects of these problems on the U.S. system as Masami Hashimoto has in regard to Japan.

W.E Deming, Joseph Juran, Kaoru Ishikawa, George Box, Donald Berwick, Masami Hashimoto are all leading theoreticians on quality improvement who have contributed to the dramatic progress in industrial and medical stability. The basic approach these quality leaders share is to apply scientific thinking to all levels of an organization in order to continuously improve processes through whatever work is done (Appendix 11). The commonality of their thinking was instrumental in the bringing together of the NDP to ascertain the effectiveness the scientific methods of industrial quality might have on health care organizations in

America (Berwick 10).

Even though the scientific works of the same quality theoreticians were instrumental in industrial Japan, we know from the works of Margaret Powell that there have been no formal quality initiatives similar to the NDP in Japanese health care. It wasn't until the early 1970's that Japan began to focus on ways to employ quality techniques to better understand and prioritize customer needs. As a result, the development of Hoshen planning came about and provided management with seven tools that could be applied to both manufacturing and service organizations. Overall, these efforts made little impact on Japanese health care. This reflects the fact that historically Japan has focused its efforts of TQM on the products it exports rather than the services it provides (Hashimoto 210).

In U.S. health care TQM has done very well, although Americans have just begun to use the seven management and planning tools of Hoshen planning. Information on these systems has been gathered by a research group called GOAL-QPC through the use of a quality function deployment subcommittee. When subcommittee members visited Japan in 1983, they were told that the use of the seven management and planning tools was essential to an effective TQM organization. Japan had developed these tools between 1973-77, and they had proven to be very effective for TQC practitioners in service and administration roles who disliked using control charts and histograms (AHA 1989).

In 1992, GOAL-QPC sent another quality team to Japan to study Hoshen planning in leading Japanese companies (Appendix 12). The representatives concluded that the Japanese had fully integrated cost, quality, delivery and morale. Indeed, the biggest problem is that some Japanese companies are not putting quality first, as a result of pressure for cost reductions. This deviation from quality contributed to the Japanese government asking all manufacturers to cut cost by 50 percent over a five-year period (Wolfson 42).

The U.S. sees quality in terms of cost, profit and delivery as separate entities that relate to total quality instead as integrated entities of total quality. Congressman Dan Ritter commissioned the General Accounting Office (GAO) to research this cost-quality relationship. The GAO studied this correlation through an in-depth analysis of the Baldridge Award winners/runners up and concluded there was a strong relationship. As a result, there are three important lessons the Americans learned from the Japanese:

1) quality, cost and delivery are integrated;
2) the Japanese are finding quality harder to maintain under pressure to control cost; and,
3) no two Japanese organizations approach Hoshen planning in the same way, instead it is customized in the way of strategic planning.

In 1987, at the International Quality Congress, the Japanese shared the TQM factors that contributed to their leadership role:

1. *Pervasiveness of quality priority in management:* The United States is closing the gap in this area. The requests for tens of thousands of copies of the Baldrige Award Criteria are evidence of the growing commitment to quality in the U.S. health care industry.

2. *Quality assurance activities from planning and development to sales and service:* The United States has made some progress here, but the failure of some industries, such as the automotive industry, to adequately pursue reliability is a real handicap.

3. *QC activities for all departments and full employee participation based on executive leadership:* Tremendous progress has been made in employee participation in the United States. Some areas, however, such as financial services are still lagging behind.

4. *Hoshen deployment and its management:* Hoshen planning and its management have been slow starters in the United States. With the current explosion in interest, however, Hoshen planning should be fairly wide-spread by 1995.

5. *QC diagnoses and their applications:* Education in a QC method has been extensive, especially in the automotive and electronics industries, which measure the performance of their own employees and that of their suppliers. However, because of a lack of a fully implemented TQM system, their results in most organizations have fallen far behind their potential.

6. *QC circle activities:* In U.S. applications, quality control circles are more often called quality improvement teams or Kaiser teams. Many quality circles failed in the 1980's because of lack of a full TQM system to support them. Teams are widely advocated, however, and should become more effective as Hoshen planning expands and shapes team activity in the most important areas.

7. *QC education and training:* Total quality management education is expanding at an incredible rate. However, the lack of quality control in TQM is resulting in wasted effort and delays in the national TQM rollout.

8. *Development and application of QC methods:* Because the United States was so far behind and so ignorant of Japanese TQM technology, much of the work in the 1980's concentrated on studying and copying the Japanese. In the 1990's, the major focus will be on areas where we can surpass them. GOAL/QPC's work on integrating innovation and the generative technologies with TQM holds a great promise in that area.

9. *Expanding quality control beyond manufacturing to other types of industry:* In this one area, the United States may have already surpassed Japan. Major areas of success in the transfer of TQM to service industries include health care, education, government, and financial services. In these areas, TQM is now perhaps more advanced in the United States than in Japan.

10. *Nationwide promotion of QC activities:* President Bush's participation in promoting the Baldrige Award, as well as the support in the U.S.

House of Representatives and Senate and other national organizations have greatly helped in promoting TQM nationally (AHA 384).

One of Japan's highly respected TQM leaders, Shigeru Mizuno, discusses the goals of company-wide quality control (CWQC) in Japan in removing company barriers to long-range objectives. The purpose of CWQC is to continually rebuild the company's foundation so it can always attain its goals (Mizuno 137). Considering that less than fifteen years ago TQM and TQC was unfamiliar to most businesses, quality experts have made exceptional progress.

CHAPTER IV

RESULTS

World War II served to catalyze the training of specialists because two-thirds of the physicians leaving the armed forces took advantage of veteran's educational benefits and returned to residence training in specialty areas. By 1966, seventy percent of physicians had begun to call themselves "specialists" (Starr 90).

Post World War II witnessed a shift from the physician solo-practice to a group practice model that has continued to reshape medical practice to the present. One-third of all physicians are now practicing in some 60,000 groups. More than sixty percent of those physicians practicing in groups are in multi-speciality settings (90).

Up until the twentieth century, physicians in the private sector were paid strictly on a fee for service basis. By the mid-twentieth century physicians themselves had introduced the prepaid group practice that offered them a choice of two systems of patient care. The federal government enacted the Medicare and Medicaid laws in 1965 and advanced the practice of corporate medicine in both the investor-owned and not-for-profit health care organizations. These laws also increased the number of university medical centers and investor-owned hospital chains such as Humana and Kaiser Permanente. Both types of facilities furthered the practices of corporate medicine by increasing the number of management staff

and providers employed by medical schools and hospitals (90).

The new health care financing laws for services to the poor and elderly laid the foundations for the increase in corporate control of service delivery by third-party payers through government mandated regulation of fee for service and indemnity payments of health care services. Health care inflation was out of control for years. In response, the government authorized third party payers and imposed additional corporate controls on hospitals, physicians and patients such as diagnosis-related groups (DRG's), prospective pricing and a resource-based relative value scale (RBRVS) (Levit 13).

The creation of the HMO Act of 1973 further signified the support of the federal government for the corporate practice of medicine. It enabled the number of managed care plans to grow and expand patient enrollments through health care programs financed by federal grants, contracts and loans. The passage of the HMO Act also brought strong support for HMO's from the executive, legislative and judicious branches of government, states proactive in HMO development and employer groups. Peter R. Kongstvedt feels this concept was successful in that it eliminated some seventeen national health insurance bills introduced to Congress in the early 1970's. Yet the lack of a national plan is what continues to separate

the U.S. from other industrialized nations. In the meantime, the U.S. still holds the highest percentage of health care costs of its Gross Domestic Products, and has the highest rate of increase (Sonnenfeld 13).

The development of managed care was viewed as a continuing threat to hospitals because it could significantly reduce the number of admissions compared to the effects of other insurance plans. In the early 1970's, managed care plans enrolled 5 million people in some type of prepaid group practice plan. Today over 100 million people are enrolled in various types of managed care plans. Under managed care thousand of providers have transitioned to the practice of corporate medicine, however, most have been reluctant to do so (MacLeod 288).

The evolution of prepaid group and industrial practice plans in the private sector has been one of the most extraordinary developments in the history of medical care organization in the world. These prepaid plans went on to create a template for financing and organizing health care in America and brought about the institution of corporate management to the practice of medicine.

The Cost of U.S. Health Care and Federal Spending

The federal budget is composed of seven areas with more than one-half of all spending devoted to entitlement and mandatory programs (Congressional

Budget Office, 39). Medicare and Medicaid continue to fuel federal spending at a rate of ten percent each year hindering the government's ability to address other domestic issues. Federal attempts to reduce the deficit and focus on the other issues has usually resulted in funding cuts of health care entitlement programs. Public debt is growing at a rate exceeding fifty percent of the GAP and this fact alone will preclude the U.S. government from taking on long range commitments to health care entitlements (29).

At its current spending rate, the government's Medicare Trust Fund is expected to be depleted by the year 2001 (Health Services Administration, 1993). If the federal government is to continue its commitments to the elderly, more efficient and less costly delivery systems must be developed. Individual states have also been forced to cut spending and help the government fund Medicaid programs whose expenses are expected to double in the next five years. State funding currently provides the single largest source of financing for Medicaid. This funding has grown at a rate of 12 percent per year (Participant Hospitals, 6). This is a much different process than health care financing in Japan which obtains the largest portion of its financing from employers. The increase of Medicare funding in the U.S. has also forced the individual states to strongly support improved access to care and cost containment. This increase has forced states to forego meeting other community needs such as education, crime

prevention and transportation improvements while Japanese health care cost allows these needs to not only be met but also improved upon.

The rising cost of care has also caused a reduction in profit and expansion for U.S. businesses. Employers are now working with managed care organizations in containing health care costs through the quality management of access to care. At the same time, the number of uninsured is forcing health care organizations to shift the financial burden to the insured population.

As a result of pressure by employer groups and insurers to contain health care spending, the government has become involved in managed care as a partner in strategizing for cost containment and access to care. In the early 1980's states were given a number of options for pursuing methods of delivery and financing of Medicaid services. Consequently, the Medicaid managed care organizational structure varies by program and by state. Today, states have now enrolled 15 percent of the entire Medicaid population in some 261 Medicaid managed care plans in 34 states (Kaiser Foundation, 94).

Cost and Quality

The burden placed on employer groups and hospitals to manage the cost of care is what eventually led to the development of the present-day medical corporation and the concept of managed care. Health care quality assessment had traditionally focused on structure, process and outcome and that assessment has

formed the basis of present-day quality management to include the dimension of cost. This change is evident in the realignment of the quality standards by the JCAHO and the initiation of managed care organization standards by the NCQA. Up until the late 1970's the accreditation standards of the Joint Commission approached quality assurance from a reactive point of view. Measures of quality were the result of the organizations ability to answer the question of what went wrong and who was responsible. An example of this thought process is seen in the medical communities' ongoing studies of mortality and morbidity. In the late 70's the JCAHO launched what was called it's Agenda for Change. Using the quality philosophies of the manufacturing industry, the JCAHO began to restructure its standards to integrate quality processes and facilitate communications across departments rather than within departments. The Agenda refocused the reactive quality assurance standard into quality management techniques borrowed from manufacturers and aimed at proactive outcome improvements (JCAHO). Mortality and morbidity rates are now only one of the many quality studies.

In the mid 80's the National Commission of Quality Assurance was formed to establish standards similar to those of the JCAHO but more specific to the managed care organization (MCO) rather than the traditional health care organization. The standards of the NCQA require the integration of a quality management program throughout the MCO with the purpose of monitoring,

evaluating and improving the structure, process, outcome and utilization, or cost, according to the frequency of diagnosis, service and age group (NCQA 1994).

What Does It All Mean

To say the U.S. health care system is diverse is an understatement. While the majority of countries belonging to the OECD have turned to national health care programs as a solution to controlling cost, the U.S. has chosen a different approach. Under the traditional U.S. system, controlling the cost of care was not a concern of health care providers who were being paid on a fee for service basis and who were only interested in processes and quality activities relative to outcomes. Today the cost of health care is forcing employers to put pressure on HCO's and the government to establish spending controls. As a result, managed care has regained popularity because of its belief in preventive medicine, quality management and utilization control. Through the federal Medicare and Medicaid programs, the individual states have assumed oversight of managed care practices and financial arrangements.

Managed care has brought with it a smorgasbord of payment structures for health care providers. This is the opposite of national programs in Japan where providers are reimbursed according to fees established by the government. Perhaps while the quality management tools used by both the American and

Japanese health care systems are very similar, it is the system of provider reimbursement that makes their emphasis on cost and quality quite different.

The Japanese government determines what benefits are to be covered and the reimbursement amount paid to the physician for the provision of care. The creation of the Health Insurance Law provided health care coverage to major occupational groups, employers with fewer than five employees and the self-employed. The law also allowed companies with more than 700 employees to establish independent insurance societies for their employees.

The Japanese National Health Insurance Program provided for coverage to person's ineligible for other types of coverage such as retirees and the unemployed. When the aging population of Japan began to increase and the cost of their care rose 12 percent, the government shifted this cost to employment-based plans with the government (federal and local) financing 30 percent and employer groups picking up the balance. Including the 16 percent contribution to small companies, the Japanese government funds almost 50 percent of the health care debt (NFHIS).

Unlike American physicians who are reimbursed by the government, insurers and health care organizations at a multitude of rates, the Japanese physician is reimbursed by all payers at the same fee, for the same service regardless of the health care setting. As a result of standard fees, the practice of

cost shifting does not occur in Japan because providers are held by law to accepting the government's rates as payment in full. Instead, the income of a Japanese provider is supplemented through the dual role of physician/pharmacist and through the overutilization of services.

There is little attribution in the literature to TQC practices playing a major role in controlling Japanese health care costs to a level of 7 percent of it's GDP. On the other hand, while there is a great deal of data on the functions of quality management in U.S. health care, there is little evidence of its influence on reducing health care cost from its current 14 percent of GNP (Wolfson 86).

CHAPTER V

DISCUSSION

Quality assurance is not a new phenomenon in the United States. Hospitals have conducted some type of quality review on the medical services they offer since the early 1900's. Over time more formal methods of quality inspection were developed. Eventually, hospitals began to formally review the morbidity and mortality rates of their practitioners. With the advancement of technology and the increasingly high stakes of providing health care, the sophistication of quality inspection also continued to rise. Contemporary providers carry out the pursuit of quality for much the same reasons as the physicians of yesterday: the pressure of competition for technological advancement and the containment of cost for services rendered. Reflected in the historic literature is this search for quality that led the health care industry to look at the lessons learned by American and Japanese manufacturers.

Less than one hundred years ago the management of quality was based on moral principals brought over by the Europeans to the American colonies. The coming of the industrial revolution eventually formalized the inspection of quality by the creation of written processes and inspections, the invention of quality measurement and measurement instruments, and by the standardization of work processes. While the factories were flourishing, the practice of

medicine was still being transformed from a theory to a scientific process whereby standards of training, education and practice were developed.

The American College of Surgeons, in an attempt to systematically evaluate data about surgical patients and outcomes, soon created the Hospital Standardization Program (HSP). The HSP served as the forerunner to the present day Joint Commission on the Accreditation of Hospital Organizations. The documented successes of the HSP are what led the JCAHO to the practice of surveying applicant hospitals for compliance to established standards. In its original form, the intent of the HSP was to impose a self-assessment mandate upon hospitals. The Program developed and applied standards the JCAHO would later use as their foundation for accreditation decisions in determining compliance with the standards as an outcome measurement alternative (AHA 179).

In 1953, while American manufacturers were ignoring the lessons of quality management and variability measurement being taught by Deming in Japan, the JCAHO was busy publishing standards to help hospitals improve their delivery of care. But it was not until 22 years later, and after continued pressure on the health care system from the government, insurers and employers that the JCAHO revised its standards to include Quality Assurance. Emphasis on hospital-wide QA programs included monitoring and evaluating important aspects

of care, particularly those areas of medicine considered high volume/high risk, hence, high cost. The JCAHO encouraged hospitals to evaluate their own internal systems and processes by reviewing only those outcomes that fell out of compliance with the organizations' aspects of care, and ascertain what went wrong. At the same time Deming, Juran and Ishikawa were teaching total quality management techniques to Japanese industrialists. Their philosophies brought to the table statistical processes by which an organization could evaluate its internal systems and processes from a more proactive standpoint, and determine what improvements could be made to improve outcome performance. Not until the late 1980's did this new philosophy of total quality management/continuous quality improvement impact the American manufacturing industry and eventually, the American health care industry.

The influence TQM/CQI has had on the U.S. manufacturing and health care industries, and the Japanese manufacturing industry, is well documented in the business management literature. What is *not* well documented is the influence of the quality management techniques within the Japanese health care system.

Limitations

The stability of the Japanese system is attributed more to the role of the government than its practices of TQC. In the U.S., TQM practices came about as

a way to control cost. In Japan, TQC came about as the means to control cost and maintain quality.

The introduction of TQM to Japanese health care is a relatively new phenomenon and a major factor in the lack of data comparing the effects of industrial quality management to the practices of the medical field. There isn't an overabundance of information on the techniques of variability measurements that have translated from manufacturing to medicine. What the information suggests is that processes of TQM, initiated by hospitals backed by considerable wealth, were developed as the means by which to control cost and the provision of quality services to all Japanese citizens.

To perfect their knowledge of outcome data that could be obtained through the use of QM techniques, the Japanese began to share information with the U.S. medical industry through its association with major automobile manufacturers and the U.S. government. In turn, the U.S. practitioners adopted Hoshen Planning and the seven tools of quality that focus on the management processes of patient care and the most efficient methods for striking a balance between cost and quality.

The Japanese have surpassed the Americans in their efforts to control cost by meshing the quality management knowledge gained by its manufacturers with the quality knowledge gained by its medical community. An example is the

collaboration between health care and the electronic industry to develop strategic information systems created to facilitate the exchange of information to the quality process. The Japanese found American information systems outdated and laborious. Instead, they used their resources and expertise in electronics to develop and implement a network that can communicate in real time, unlike most American medical information systems which still gathers important data retrospectively.

Because of Japan's national fee schedule, the claims and reimbursement of medical services is a simple process requiring less complicated policies and procedures than those of the U.S. system. Also, because there is no need to market health care services to the Japanese people, who are *always* covered by a health care program, there is little use in maintaining costly and complex marketing systems. Instead, Japan has taken the savings of its resources and revenue and applied them to the development of strategic information systems that both industries can use to manage resources and performance .

Suggestions for Further Research

Regardless of the tremendous duplication of health care services and technology in Japan, the industry has maintained cost at seven percent of GDP. Part of the reason Japan is able to preserve health care revenue that would

otherwise be spent on marketing and claims processing, which continue to constitute a significant portion of U.S. health care expenditures. While Japan's national fee schedule has helped trim the claims processing budget, it has also contributed to problems in managing quality. Because all providers are paid at the same rate for the same service, there is little reason for the provider to be concerned with overutilization. Additionally, approximately 80 percent of the physician population has ownership in Japanese hospitals, clinics and equipment. Since hospitals and clinics are in tight competition with each other, both types of health care organizations overutilize the availability of the latest technology and treatments to lure patients.

Important information can be obtained through research of common diagnosis and treatments in the Japanese health care system and in determining whether or not TQC and strategic information systems (SIS) do impact the outcome and cost of care. This type of research can provide valuable data to other industrialized countries of the OECD who are also interested in adapting quality management techniques to their own individual health care systems. This exchange of information can be the impetus for additional theories and research on the effects of quality management for health care systems who are interested in improving processes and outcomes of care related to utilization and cost.

This concept may seem out of reach at first blush; however, when the leaders recognize the development of such concepts as global telemedicine, the exchange of international health care quality data does not seem so far fetched. Certainly the rules and regulations applied to telemedicine will be complex when taking into consideration the differences between these industrialized governments and their cultures.

However, all health care practitioners have one important thing in common: their belief in the use of the scientific method in the diagnosis and treatment of illness and disease. Quality management depends upon the ability to scientifically research the variables in medical and service processes, and to apply solutions that will improve the system and its functions. In that sense, quality management is a universal language that all can understand and benefit from. Future research will be able to both facilitate and benefit from that understanding.

APPENDIX 1

HEALTH INSURANCE COVERAGE IN JAPAN
(as of March 31st, 1991)

Insurance Plan	Percent of Population Covered
Government-managed	29.5
Society-managed (employer sponsored)	25.8
Seamen's	0.3
Day laborer's	0.1
Mutual aid associations	9.0
National health insurance	34.7
TOTAL	100.0

Source: National Federation of Health Insurance Societies. *Health Insurance and Health Insurance Societies in Japan 1992*, p. 66.

APPENDIX 2

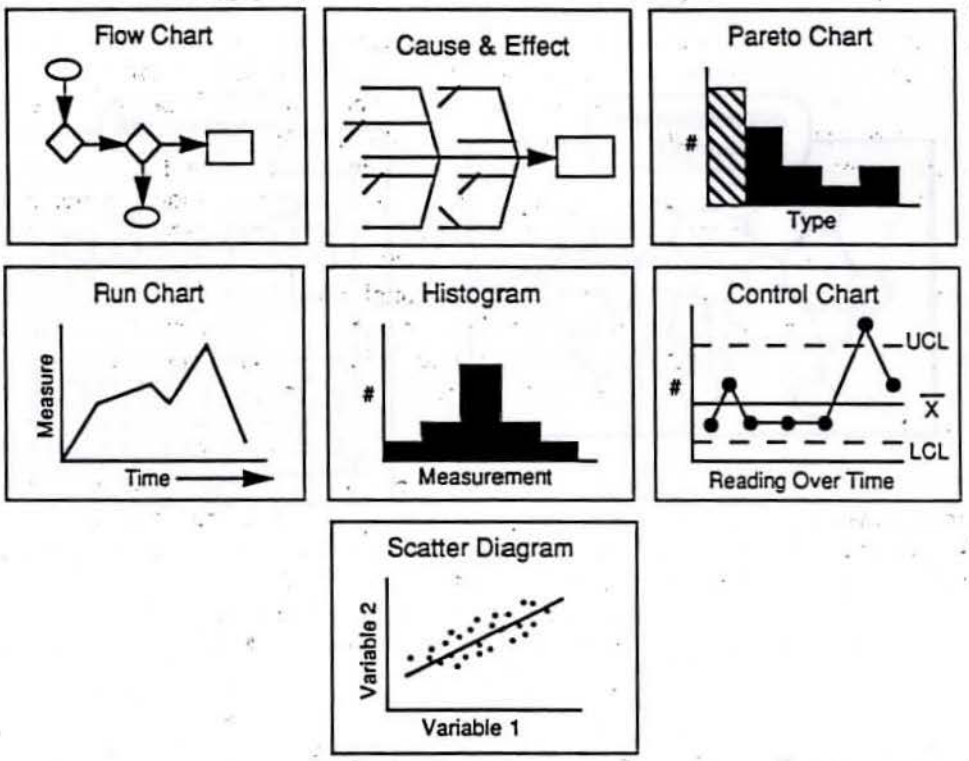
FINANCING HEALTH INSURANCE IN JAPAN
(as of March 31st, 1992)

Insurance plan	Premiums	
	Employee	Employer
Government-managed insurance	4.1	4.1
Society -managed insurance (average)	3.6	4.7
Seamen's	4.4	4.4
Mutual aid association's (ave. range)	4.1 to 4.5	4.1 to 4.5

Source: National Federation of Health Insurance Societies. *Health Insurance and Health Insurance Societies in Japan 1992*, p. 12, and Charles D. Spencer & Associates, *International Benefits Informatin Service*, 1992.

APPENDIX 3

The Seven Quality Control Tools



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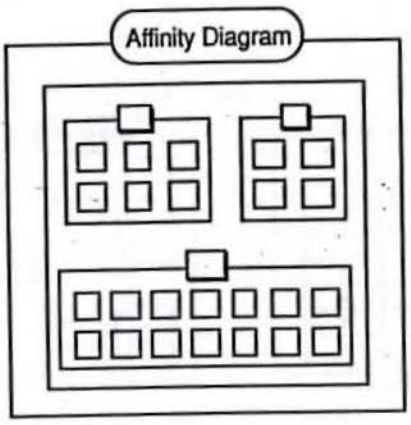
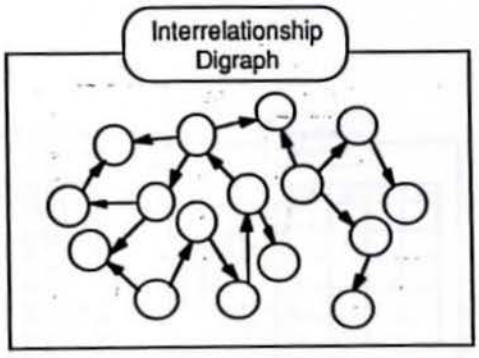
APPENDIX 4

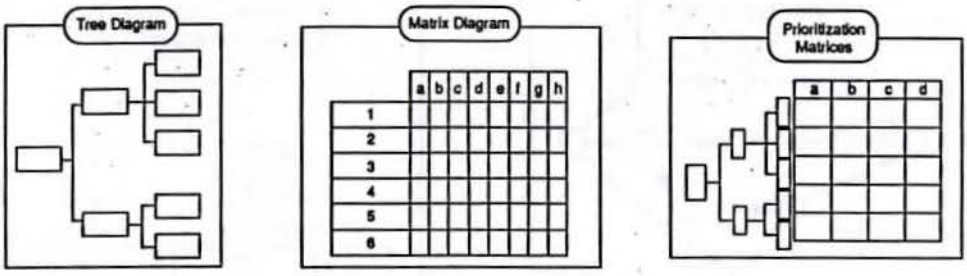
The Affinity Diagram and the Interrelationship Digraph





APPENDIX 5

The Tree Diagram, Matrix Diagram, and Prioritization Matrix



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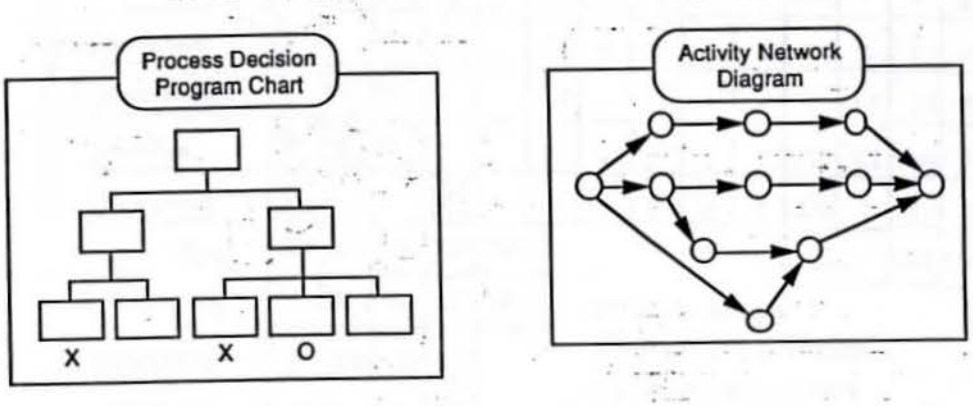
APPENDIX 6

The Process Decision Program Chart and the Activity Network Diagram



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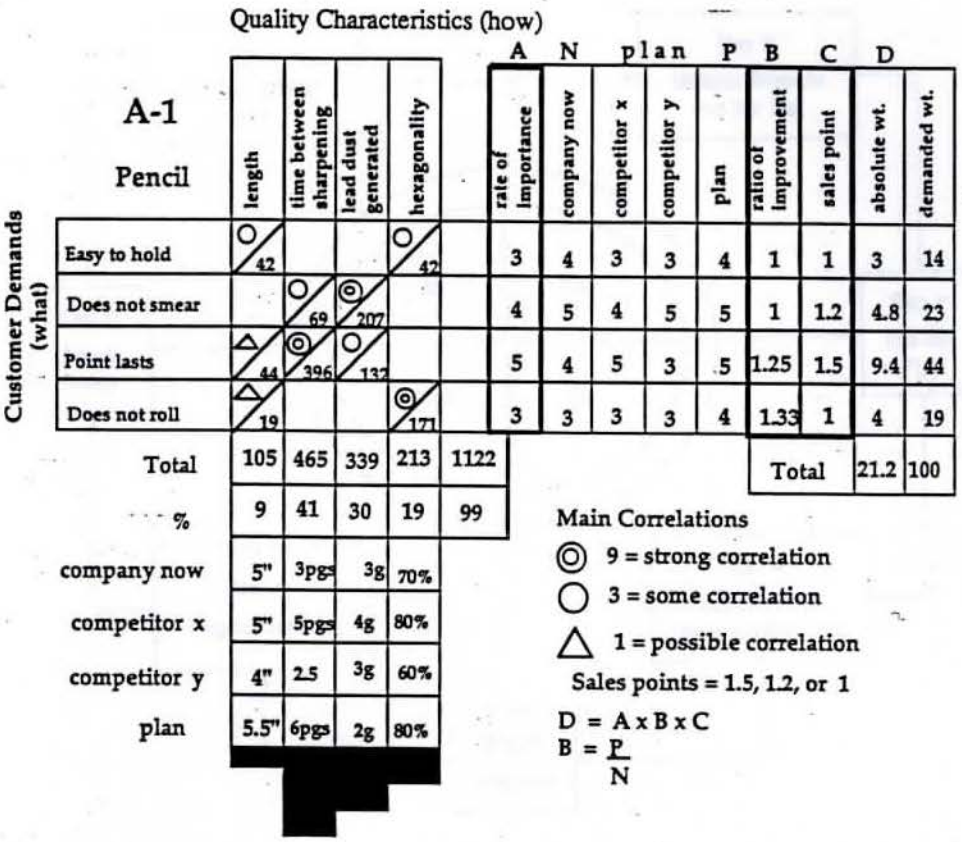
APPENDIX 7

Quality Function Deployment Matrix



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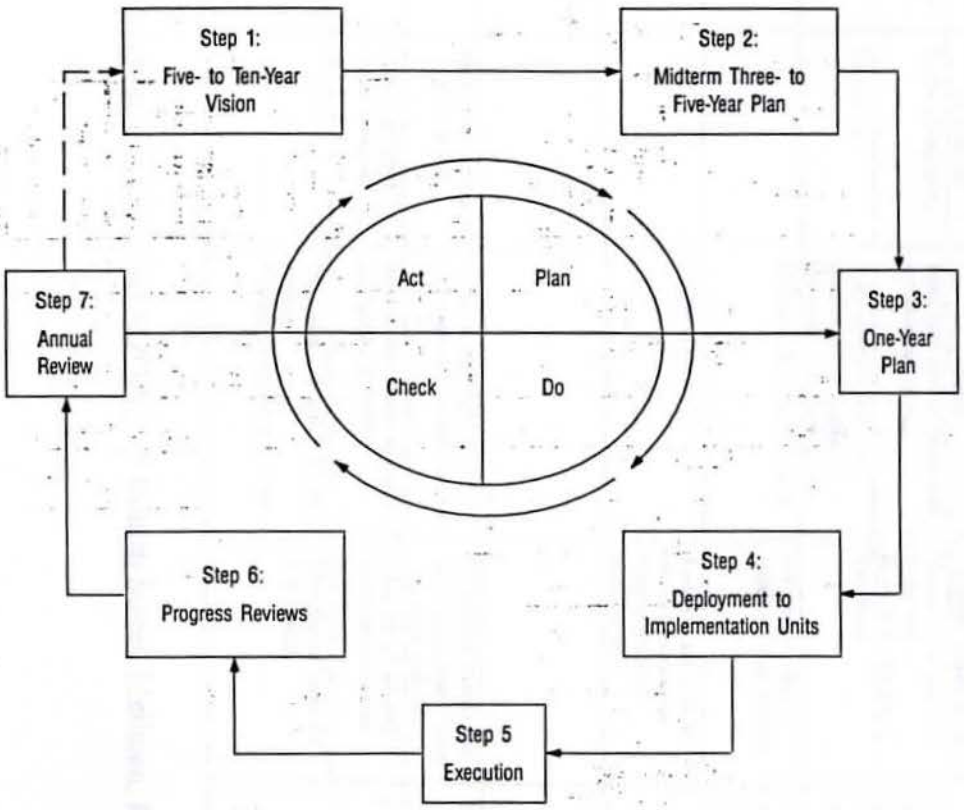
APPENDIX 8

Hoshin System for the Continuous Improvement of Planning



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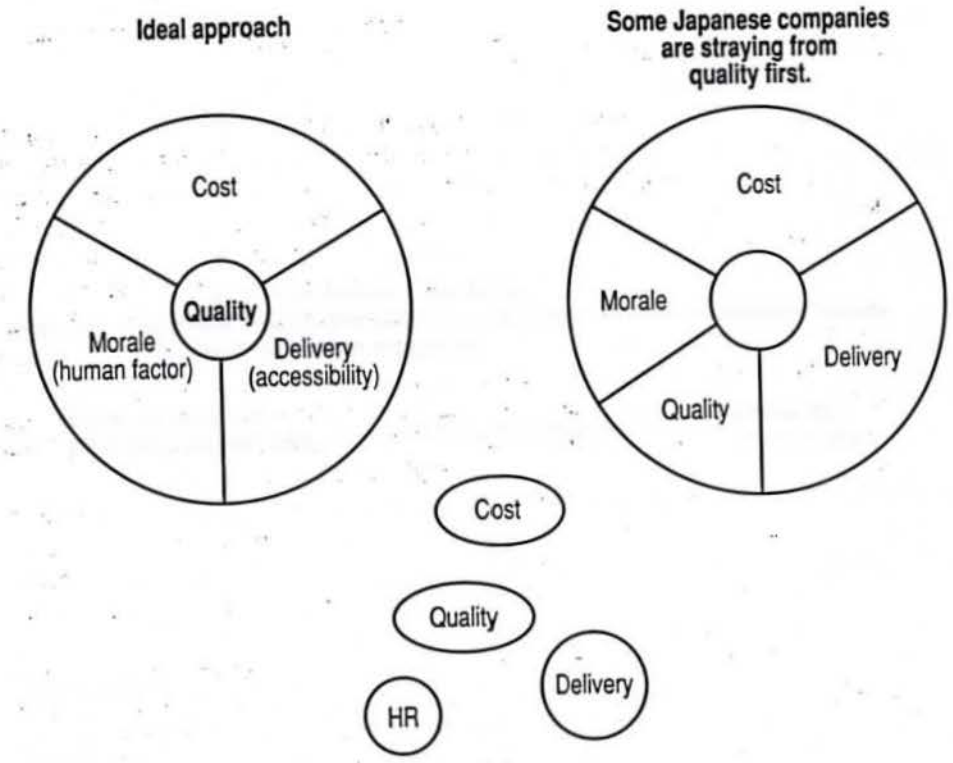
APPENDIX 9

Japan Study Trip, July 1991

	Juki	Komatsu	Kose	Toyota Auto Loom	Alsin Seiki	Nippon Zeon
Relation to strategic plan	Strategic 7-8 years strategic integrated with rolling 3-year midterm.	5-year rolling plan	Same-both start at 3-year and are static, no rolling	10-year rolling vision 5 year vision focus on 3-year plan.	5-year fixed vision strategic plan tied in	Focus on midterm.
Top/down Bottom/up	Fully integrated top/down bottom/up	Top/down.	Fully integrated-heaviest bottom/up with employee handbook to track progress.	Top/down.	Top/down with increasing "bubble up."	Top/down.
Problems			Difficulty in doing long-term.	Not always a direct activity in a top Hoshin.	Improving relationships between business strategy and functional Hoshin.	
Changes over time			Length of focus.	3 years to get up to speed took 1.5 years to set original goals for midterm plans.		
Time Spent	Each manager 90 min./mo. to review, 2-3 days each 6 mo. for analysis 3 days/yr to review and work on next year's plan					
Specific lessons learned	Fully integrated quality, cost, delivery, personnel plans.	Don't use flag charts extensively.	*Use of employee handbook *Example of how fixed works.	Combined Hoshin and daily management items on same focus.	Separate Hoshin for sales research and production.	QCDM deployment
Unique aspects	Target/means matrix showing 3-year rolling targets.	Cross-functional committees monitor.	Index to rate quality of results and quality of means.	*Midyear adjustment. *Planning office sets guidelines.	5-year fixed vision.	Deployment charts.
Variation	Strategic outside Hoshin until 3-year midterm plan.		*Strategic and Hoshin always identical. *Nothing longer than 3 years.	"At a glance" chart for item control.		Use of A-1 charts to help generate annual Hoshin objectives.

APPENDIX 10

Approaches to Quality Management



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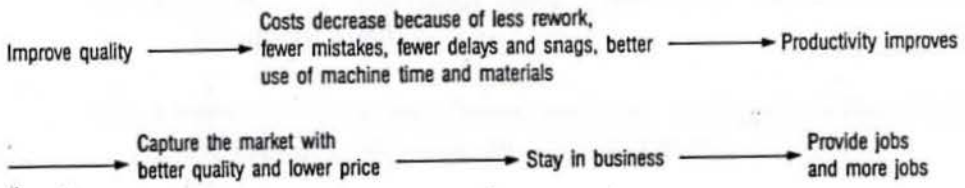
APPENDIX 11

Deming's Quality Chain Reaction



Adapted from W. Edwards Deming, Out of the Crisis. Cambridge, MA: MIT Center for Advanced Engineering Study, 1989, p.3.

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