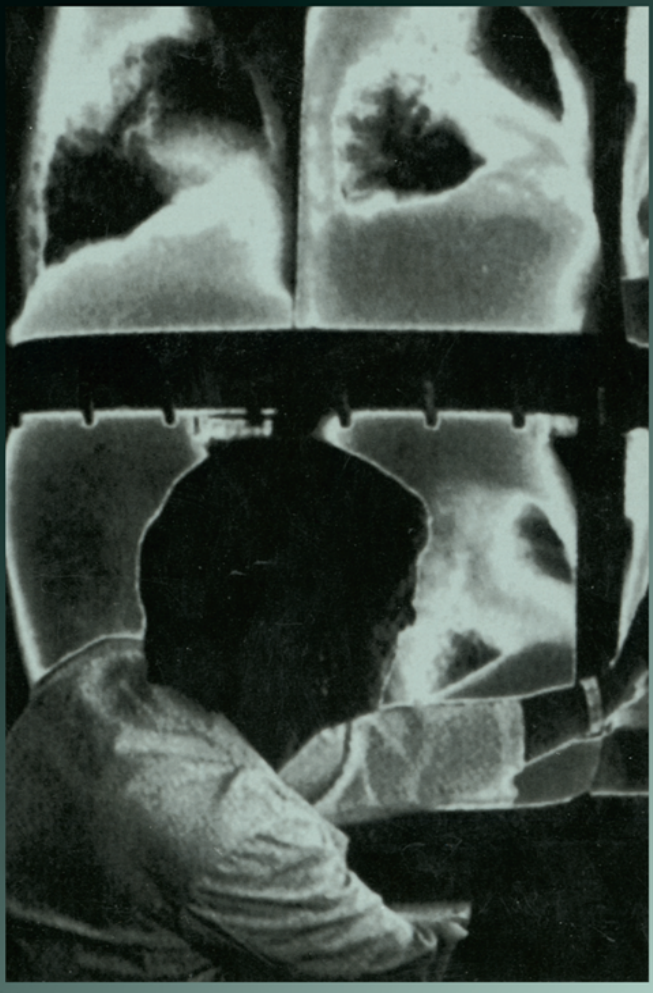
Total Quality in RADIOLOGY

A Guide to Implementation



Henry George Adams, M.D.
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DEDICATION

To those who contributed to the new management tools and philosophies: Dr. W. A. Sherwart, Dr. W. R. Deming, Dr. K. Ishikawa, Dr. J. M. Juran, Dr. P. B. Crosby, and to all those workers, past, present, and future, whose expertise will carry the new philosophy toward an ever improving healthcare system, this book is humbly dedicated.

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CONTENTS

Preface xi

PART I. THE BASICS

1. Introduction to Total Quality Management 3
   - Introduction 3
   - Historical Perspective 6
   - Quality Assurance vs. Quality Improvement 8
   - Deming's 14 Points Applied to Radiology 10
2. Creating Purpose in the Radiologic Practice 17
   - Vision 17
   - Mission 19
   - Guiding Principles 20
3. Seeking Continuous Improvement 25
   - What the Customer Wants 25
   - Measurable Department Logistics 28
   - Measurable Radiologic Science 36
   - Summary 41
4. Defining Process and the TQM Method 43
   - The Basic Process 43
   - FOCUS-PDCA 50
   - Total Quality Improvement Implementation Plan 59
5. Mastering the Tools of TQM 61
   - Flowchart 62
   - Cause-and-Effect Diagram 65
   - Histogram 66
   - Pareto Chart 67
   - Scatter Diagram 68
   - Trend Chart 70
   - Control Chart 70
   - Group Task and Decision-Making Tools 72
   - Summary 75

6. The Basics of Statistical Analysis 77
Doing It with Data 77
Basic Descriptive Statistics 78
Basic Statistics of Diagnosis 84
Summary 93

PART II. IMPLEMENTATION: MAKING IMPROVEMENT CONTINUOUS

7. The Process of Getting Started 97
Making the Transition from Business as Usual 97
The Fundamentals 98
Managing the Implementation 104
Pitfalls 108

8. Improvement in Department Logistics 113
Clarifying the Mission of the Department 114
Tackling Excessive Patient Waiting Time 114
Reducing Report Turnaround Time 130
Improving Patient Access 138
Solving Revenue Problems 142
Pitfalls 144

9. Improvement in Diagnosis and Therapeutics 147
Improving Breast Cancer Detection 148
Optimizing Magnetic Resonance Diagnosis 158
Cross-Functional Improvement Programs 164
Thoughts on Future Applications 168

10. Use of Personal Computers in the Improvement Process 173
Data Collection and Entry 174
Databases 174
Spreadsheets 181
Audits 184
Hardware Requirements 186

Appendix A: Quality Improvement Templates 187
Additional Readings 191
Index 195

AUTHOR PREFACE

The idea for this book was conceived while we wrestled new paradigms of management and the difficulty of how to begin the process of empowering those who had long been oppressed with our ineffective management styles. We discovered that implementation is a process just as manufacturing and service. As leaders in this venture, we served in the beginning as the suppliers, providing the input and taking action to provide a desired output to those who were out there doing their best every day, in many cases without the proper tools.

We also discovered that satisfying the customer is more important than we ever believed before and that the customer within our organization is as important as the one receiving our product.

In our walk with Total Quality we also discovered there was no one source of information which facilitates the learning and understanding of TQM. Also, examples of implementation and experience were nonexistent. With this book we hope we have corrected this deficiency.

Reading this book will not make your radiology department better but it may make you a better manager and/or radiologist. It will give you the basic tools to begin the process of change toward continuous improvement so that you can lead the improvement of your organization.

It is not a panacea or remedy for health care reform but a preventive program against failure with a purpose of promoting continued success in the face of difficult times. In these times of remarkable change our best weapon of defense is knowledge and proof of what is in the best interests of good patient care. The analysis derived from the tools of TQM can yield us the knowledge needed to combat naive proposals that may harm the public good.

Our fervent wish is that this book rekindles that fire of excellence we all had when we began our professional careers, nurtures the notion that we can make a difference in health care outcomes, and most of all we hope our patients all benefit from it.

Henry George Adams, M.D.
Sudhir Arora, M.D.

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Part I

THE BASICS

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1

INTRODUCTION to TOTAL QUALITY MANAGEMENT

INTRODUCTION

Is the practice of radiology in the United States heading toward a state of crisis? Do external influences threaten to remove the autonomy of the practice enjoyed since the discovery of the X-ray? Is the economic structure of today's practice changing unfavorably? Are inroads in the practice of radiology being made by individuals not trained in diagnosis? Many would respond affirmatively, but why?

Healthcare cost currently represents about 13% of the Gross Domestic Product (GDP) in the United States, which is the highest percentage among the five other major industrialized countries. If the cost continues to escalate at the present rate, by the turn of the century it may be 16 to 20% of the GDP. What do we have to show for this? Despite an inordinate financial outlay, the infant mortality rate in the United States is the highest compared to the same five countries. We do not even rank among the top ten countries with the lowest infant mortality rate. In addition, over 37 million Americans are either uninsured or underinsured for healthcare. The high cost of healthcare, which some measure as the most expensive per capita in the world, certainly harms the poor and underinsured. In addition, it has the potential to hinder the success of businesses which drive this economy in the world marketplace.

The American healthcare consumer is becoming much more intelligent and informed regarding his or her care and is demanding more for the expense. Public confidence in leaders of organized medicine has fallen from 73% in the mid-1960s to 33% in 1986. The vast majority of Americans believe that the increased cost of healthcare is not justified, and they believe that rising costs can be reduced by better organization and management, without cutting the quality of care. Failing that, there

is rising public interest in mandated controls on costs. This interest is being transmitted to public policymakers who affect government-subsidized healthcare programs.

Cost and quality control mandates are already in place for radiologists as a result of the public perception of poor quality. The Breast and Cervical Cancer Screening Mortality Prevention Act of 1990 is the direct result of the public outcry for improved quality. This act mandates certain standards in mammography and Pap smear screening. The Breast Cancer Quality Improvement Act of 1992 requires all mammography sites to be certified.

Some states (Michigan, New Mexico) have already passed laws requiring certain standards for mammography screening. In others (Kentucky, District of Columbia), insurers require accreditation before payment of mammography fees.

Whether or not this can be considered misdirected control of costs, physician reimbursements are coming under more intense downward pressure under the Resource Based Relative Value Scale (RBRVS) in an effort to reduce costs without concern for quality. One can only interpret from this that the future of radiologic practice, where radiologists are told not only how much they will be paid for their work but also how they are to accomplish it, is here today.

Highly advanced technology has proliferated throughout the healthcare system and added to the cost of care, sometimes without benefit in the outcome of a patient encounter. Some find this state-of-the-art technology unnecessary; others demand it as a sign that they are receiving "quality" care. Excessive malpractice suits and awards have fueled overutilization of these diagnostic technologies.

The financial health of healthcare institutions is also of concern. Nearly 700 hospitals in the United States went out of business in the 1980s. Reasons for these closures include reduced federal reimbursements for Medicaid and Medicare patients, the high cost of emergency trauma care, caring for uninsured patients who are unable to pay, and in some cases a shortage of healthcare workers. This is convincing evidence that the U.S. healthcare system, and along with it radiology and its high-cost imaging procedures, is in crisis.

Fundamental changes are needed in the ways the healthcare industry conducts business. Tort reform is not the only answer. Adjudicated and legislated policies are not an acceptable answer. The best defense for the healthcare profession is a good offense. As providers, we can apply our scientific skills and leadership to improve the medical knowledge base and provide a better product. As administrators, we can apply new management skills to root out problems in productivity, improve satis-

faction of our customers, and better serve the needs of our patients. These answers imply a return to the basics of the industry: the needs of patients and the quality of care.

Total Quality Management (TQM), which focuses on the needs and expectations of customers and the continuous improvement of the product, applies as well to radiology as it has to many Fortune 500 industries. By adopting the principles of TQM, other industrial organizations have reduced operating expenses while improving consumer satisfaction and company profitability. To survive in the decades ahead, the healthcare industry, and radiology along with it, can build upon the valuable experience gained by other service industries: improved quality leads to improved productivity, which leads to greater market share.

A wide variety of terms have been used for quality management, including Total Quality Management (TQM), Total Quality Control (TQC), Total Quality Leadership (TQL), Total Quality Improvement (TQI), Statistical Quality Control (SQC), and Continuous Quality Improvement (CQI). The term is less significant than the substance. The intent is the same: to improve the product and increase market share.

TQM is a structured, systematic approach in which all employees are utilized as a source of ideas in order to continuously improve processes, services, and products. The system integrates the development, maintenance, and improvement of quality in a never-ending cycle to produce a product or service that satisfies the customer's needs and expectations.

The quality of any product can be gauged by multiple objective criteria, such as durability, conformance to standards, reliability, performance, and serviceability. The quality of a service is perceived by the customer and is often measured against customer expectations. Because expectations (what is acceptable) are always changing, the system mandates continual awareness of customer needs and requirements and implementation of appropriate action; hence, the term continuous improvement.

TQM is based on the following premises:

- Due to their intimate knowledge of job conditions, those workers closest to the problem are more likely to know what is wrong with a process and how to fix it.
- Every person in the organization wants to be a valuable contributor and wants to do a good job.
- Such contributions provide the employee a sense of ownership and reduce adversarial relationships between workers and management.

- Processes, not people, are the root of quality problems. The system is the cause of the problem 85% of the time; the cause is personnel 15% of the time (the 85/15 rule).
- A structured problem-solving process using statistical means produces better long-term solutions than an unstructured process.
- Quality improvement is everyone's job because all processes can be improved; in healthcare, all processes are interrelated by one common factor: the patient.
- Practicing in an environment of fear is counterproductive and leads to poor performance in the long run.
- 80% of the problems are the result of 20% of the causes (the 80/20 rule).

This book goes beyond methods for ensuring quality. Meeting standards is no longer sufficient to stay in business. We must move beyond measuring quality and toward improving it—continuously. It is our intention to introduce the radiologist and radiology administrator to the fundamentals of TQM, present the basic tools of TQM as they apply to the practice of diagnostic radiology, and demonstrate how simple statistical methods with a focus on improving processes can transform a radiologic practice with long-standing frustrations into a business with long-term rewards.

HISTORICAL PERSPECTIVE

The need for quality products and services has existed since the beginning of civilization. Prior to the Industrial Revolution, however, quality controls were implemented either by consumer inspection of goods or by the artisan's concept of what the consumer wants and the desire to maintain his reputation. The Industrial Revolution led to greater production output, which mandated implementing quality inspection to ensure adherence to specifications for materials, process, and finished goods.

In the late 19th century, Frederick Winslow Taylor formulated a system of "Scientific Management." According to Taylor's system, specialists formulated technical and work standards and required workers to follow these specifications. Although this system led to a considerable increase in productivity, it resulted in stagnation of quality improvement. The system was based on the premise that the worker is unmotivated and needs a system of controls and continual direction. It did not take into account worker potential and the desire to contribute.

Dr. W. A. Shewhart from Bell Laboratories is credited with the inception of quality control as we know it today. Among other contributions, in the late 1930s he created the control chart, which was put to use during the Second World War and was instrumental in the United States being able to produce massive quantities of reliable, state-of-the-art military equipment economically. After the war, when the United States was the only major industrialized nation that could produce the goods that the remainder of the recovering world needed, American production management began to focus on quantity rather than quality. Increased quality was equated with decreased productivity, and the standard became the least acceptable quality to market a product. Depending on individual perspective, this attitude may or may not have found its way into medicine during this period of time.

Total quality control was introduced in Japan in 1946 by U.S. occupation forces. To overcome the unreliability of the Japanese telephone system, the former Bell Labs engineers on General Douglas MacArthur's staff transplanted the American method of quality control to the Japanese telecommunication industry. Despite early problems, the method produced promising results and was adopted by other Japanese industries. In addition, in 1950 General MacArthur invited Dr. W. Edwards Deming to Japan to conduct a population census. During his visits, Deming gave a series of lectures on statistical quality control to top business and academic leaders, providing advice on the importance of recognizing dispersion in statistics, the use of control charts for process control, and the use of the plan, do, check, act (PDCA) cycle (known in Japan as the Deming cycle but actually an adaptation of the Shewhart cycle).

Dr. J. M. Juran's visit to Japan in 1954 helped convince Japanese business leaders to consider quality control as a management tool and started the total quality control movement. The results speak for themselves. The remarkable shift in perception of products "made in Japan" from the early 1960s to the present is testimony enough.

Deming's and Juran's principles were reintroduced in the United States after a quarter century of demonstrable quality improvement in Japanese industry. In the 1980s, TQM was successfully implemented by many Fortune 500 companies in the United States. The earliest American implementation of TQM was in the manufacturing industry, but more recently the techniques have been successfully translated into such service industries such as finance, hotels, and healthcare.

QUALITY ASSURANCE vs. QUALITY IMPROVEMENT

Figures like this tell the management how things have been going, but they do not point the way to improvement.

W. Edwards Deming

Defining quality in healthcare is not an easy task. Many have devoted considerable effort in that regard and yet little agreement exists as to what constitutes quality in healthcare. Some define it as the success of a procedure or the result of therapeutics. Many patients, however, have been dissatisfied with their care because they felt mistreated personally. The organization that touts the training and skill of its radiologists will still experience difficulties if patients are not satisfied with how they are treated during the encounter.

TQM embraces the concept of improving quality, rather than assuring it. It is frequently said that quality cannot be assured—it must be built in. Those organizations that continue to just meet standards will soon fall behind those that meet new improved standards of care. In a competitive marketplace, the former will not be in business for long in the coming healthcare environment.

The implementation of Quality Assurance (QA) in the healthcare industry over the past decade was an important step in reinforcing standards of care, where standards had previously been loosely applied. Unfortunately, the focus of QA was on the individual provider as the source of poor outcomes (the bad apple theory).

Despite this obvious shortcoming, there were some positive aspects. Attention was directed toward high-priority clinical care (high volume, high cost, and problem prone), toward the development and use of relevant clinical indicators, and toward the analysis of appropriate and effective care.

However, interrelated governance, managerial, and support processes were virtually ignored, leaving the practitioner solely accountable for actions over which he or she had little control. Action was frequently initiated only after a problem was identified, and no recognition was given to the difference between "doing things right" and "doing the right thing," a problem in standards-driven systems.

As an example, in QA the radiologic complication rates would be examined; if within normal range, everything would be considered acceptable and focus would be directed elsewhere. If the rate exceeded

the standard, the radiologist would bear the consequences. Systems contributions were irrelevant. The doctor was responsible.

In continuous improvement, efforts would be directed toward reducing the existing rate even further, irrespective of the standard, by identifying the wide variety of contributions resulting from the process of providing the radiologic product. The physician's contribution is but a part of the process.

As part of its agenda for change, the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) is addressing the need to focus on the interrelated processes that impact the delivery of care and on the increased role of top management and medical staff leadership in improving quality rather than just meeting standards. In a critical change, which is consistent with Deming's philosophy, the accreditation manual stresses that quality is an organization-wide responsibility and that most people are motivated and competent in carrying out their assignments. Everyone is responsible for quality and its continuous improvement, not just the QA department or the providers.

JCAHO is formulating new concepts of quality in hospitals that will focus on patient outcomes. How this is achieved is of less importance to the Commission.

Quality Improvement (QI) programs can answer many of the shortcomings of the QA system. QI is developed locally in response to the needs of the organization. It focuses on the process of the delivery of care and in particular acknowledges the need for continual improvement. The system fosters integrated analysis of efficiency and effectiveness. It strives to nurture the professional instinct for continuous self-assessment and improvement among healthcare professionals. It emphasizes supplier–customer relationships and customer satisfaction.

QI recognizes variation over a period of time and encourages evaluation of the pattern of variation, so that appropriate measures toward improvement can be implemented. For example, a film repeat rate of 6% that has been declining over a period of months does not require new corrective measures, whereas a film repeat rate of 6% that has been increasing over several months requires immediate attention.

This all sounds very nice, but how does one go about creating this change in the way business is presently conducted? The transformation to TQM first requires a commitment from top management. Management's adoption of Deming's 14 points provides the method and an appropriate place to start.