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## **Epidemiology of Quality**

### Epidemiology of Quality

In recent years health care providers and purchasers have been forced to reposition themselves for a future that promises to support only those who are most efficient in providing services to survive. Major players have begun adopting W.E. Deming's management philosophy of Total Quality Management (TQM). In essence, TQM consists of mainly four components: defects prevention, customer satisfaction, continuous quality improvement (CQI), and team management (employee empowerment). TQM is schematically represented by the "Deming Chain Reaction":

Improve quality -> costs decrease because of less rework, fewer mistakes, fewer delays, snags, better use of machine time and materials -> productivity improves -> capture the market with better quality and lower price -> stay in business -> provide jobs and more jobs.

It should be noted, however, that the health care industry has concentrated on CQI and has only recently added the customer satisfaction component to its TQM perspective. Thus, the main difference between CQI and the many existing data-driven health care management tasks currently performed as quality assurance, quality improvement, risk management, and utilization review is that CQI is more comprehensive in scope and more proactive in outlook, by collecting data that can be used to strategically plan, monitor, and evaluate the delivery of services. It is the hope that CQI would increase efficiency without compromising the quality of medical care.

However, the transfer of Deming's principles from Business to the health industry has not been seamless, and its application is troubling to those who view health care as inaccessible, its quality as unaffordable, and its services as fragmented beyond belief. Although manufacturers profit from becoming more efficient, and improving the quality of a product could promise a ready market of satisfied customers (which also increases profits), it is unclear if the purpose of providing more efficient health services should be higher profits. Besides, a returning patient is not necessarily proof that the quality of the health services previously received was impeccable. Nevertheless, employers and consumers would like to see health service provider performance "report cards" so they can decide how to best spend their limited health care dollars. How these statistics are derived is the subject of V.A. Kazandjian's The Epidemiology of Quality.

In this book written for health care managers, Kazandjian promotes the use of epidemiological tools and techniques to conduct a growing specialty of health services research, -- outcomes research, which contributes to the data being collected for CQI. Outcomes research studies the delivery of services by using performance measures that use data on outcomes or processes of care, or both.

Organized into two major sections: "Applications of Epidemiological Techniques" (chapters 1-7) and "Reports From the Field," (chapters 8-16), the text gives theorists and practitioners the opportunity to share their research theories and experiences with interested readers. In chapter 1, Kazandjian defines Quality, and posits that evaluating the process of care is evaluating the appropriateness of care because "it is possible to do the wrong things very well."<sup>(3)</sup> His working definition of Value is "a combination of quality and cost."

Chapter 2 gives an overview of epidemiological concepts, and chapter 3 defines the concepts of Indicator as "an observation expected to indicate a certain aspect of performance" and Rate, including caveats regarding its construction and interpretation. Chapter 4 provides an overview of survey research methods and designs, and chapter 5 gives a history of quality management in health care and how to prepare a health organization for instituting a quality management program. Chapter 6 covers performance measures (condition-specific, satisfaction, general health status, system) data sources (administrative, medical record audits, enrollee surveys), and issues regarding public reporting of performance data, with examples of health-plan performance comparisons (i.e. InterStudy, CRISP, HEDIS). Chapter 7 covers a medical center's application of the "quality improvement theory" in its original business orientation.

The second major section of the book starts with the use of clinical and performance indicators in the hospital setting (chapter 8), and chapter 9 records the experiences of the corporate and medical communities of Cleveland, Ohio, with the collection and reporting of patient outcomes internally and to the community at large. Chapter 10 looks at implementing quality improvement in an ambulatory setting, using a population-based community approach. Chapter 11 is about the experiences of the British National Health Service with its 1990s initiative to reform the system. Chapter 12 details how public health uses population-based health data to plan, implement, and evaluate community-based programs, using tuberculosis as a case in point. Public report cards and the experiences of the New York Health Department's Cardiac Surgery Reporting System are presented in chapter 13. Chapter 14 includes the American Hospital Association's philosophical statement of an "accountable health care system," in the context of community health improvement. "Best clinical practice" is tackled in chapter 15's theoretical model of appropriateness for managing quality under cost constraints. In chapter 16, the author shares his view that population health status is a prime consideration when thinking about what the health service delivery system should accomplish.

This excellent text brings together what is currently known about the theory and practice of research used for CQI. It would make an excellent reference for any administrator of a health care facility implementing TQM. It is also an excellent text for nurses involved with facility accreditation and CQI departments. Health services researchers and health educators working in health care or worksite settings, or both, can also benefit from this book.

The major strength is chapter 8, "Hospital Use of Clinical and Organizational Performance Indicators," which can serve as the "abstract" of the book. This chapter is a must-read for anyone working as a health professional. The authors (A.M. Warwick, A.M. Langford, and J.A. Reitz) managed to cover, with clarity, in only 21 pages, the entire concept of CQI and its application in a health setting, supplemented with precise operational definitions and relevant graphic presentations. Chapter 12, "The Public Health Paradigm," is an excellent overview of what public health is all about, and the American Hospital Association statement in chapter 14 is strikingly good in providing a more community-oriented perspective about health care services that is currently unrecognized today by those involved with the delivery of health care.

The weaknesses of the book include the failure of many authors to operationally define the terms they use and the lack of a theme with which to tie all the chapters together. Although Dr. Kazandjian does bring together unparalleled examples of how health data are currently being used to improve the quality of health care in a variety of settings, he does not effectively develop his initial premise that epidemiology can provide useful tools and techniques in the management of health data for purposes of continuous quality improvement.

Nevertheless, Kazandjian's book is timely as an epidemiological perspective seems appropriate because the provision of services (all types) is adopting a more population-based outlook. Regional health care delivery systems are being developed to service consumer networks. Patient populations are, thus, seen as parts of a larger community in which health services are only one type of many services required to maintain the health status of a community.

TQM as a health care management tool, in general, is complicated by the use of multiple terms for a single concept (i.e., care maps, critical paths, treatment algorithms for practice guidelines), and this usage has been a major problem in the development and use of clinical performance measures (indicators) for outcomes research. Of 2,000 citations dealing with such measures, 1,287 individual performance measures were identified. This, of course, does not seem so overwhelming next to the more than 100 "quality of care" definitions identified so far.

Analysis of the characteristics of outcomes measures shows few categorical data are being collected, with little emphasis on health risks states. Few process measures were devoted to periodic screening, as were communication measures emphasizing how well physicians communicated to patients about who is responsible for their care. All this suggests that outcomes research could benefit from a refinement of its current methodologies. For example, categorical data would enable data presentation of counts and frequencies as well as provide some independent variables for regression analyses. Health risk states data can be used to stratify subpopulations of interest and identify appropriate numerator and denominator populations as well as allow for data trending and comparisons of study statistics with national population and surveillance statistics.

Monitoring the utilization of preventive measures as periodic screening is an important part of epidemiological surveillance activities that assess the ability of a community to meet the health needs of its citizens. Finally, without some restructuring of the current health care delivery system to coordinate ALL community services that impact on health status, it is essential that everyone knows where to go to receive adequate care without the fear of getting lost in the maze of multiple settings and providers.

Although epidemiology could provide the "form" within which outcomes research can function well, there are caveats. First, because epidemiological studies (i.e. cross-sectional, cohort, case control) are observational, they are limited in reducing uncertainty regarding the true causes of disease. Second, epidemiology itself is riddled with multiple definitions, even for its more common concepts (i.e. "incidence rate" and "prevalence"). Thus, until standard definitions are developed and used consistently by outcomes researchers, it will probably be best that all terms be clearly defined so that we are all comparing mangos with mangos and not mangos with kiwis.

Finally, as outcomes research becomes more standardized with better methodology, health educators will play a crucial role in helping the public to better understand the statistical approaches used to monitor and improve health services. These educators will be pivotal in developing consumer education interventions regarding how to better use "provider report cards" for making health care choices, as well as helping the public understand that efficiency in health service delivery is the assurance that appropriate care is quality care provided in a timely manner and that it does not have to cost an arm and a leg.

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