

Continuous Quality Improvement for Continuity of Care

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Background. Continuous quality improvement (CQI) techniques have been used most frequently in hospital operations such as pharmaceutical ordering, patient admitting, and billing of insurers, and less often to analyze and improve processes that are close to the clinical interaction of physicians and their patients. This paper describes a project in which CQI was implemented in a family practice setting to improve continuity of care.

Methods. A CQI study team was assembled in response to patients' complaints about not being able to see their regular physician providers when they wanted. Following CQI methods, the performance of the practice in terms of provider continuity was measured. Two "customer" groups were surveyed: physician faculty members were surveyed to assess their attitudes about continuity, and patients were surveyed about their preferences for provider continuity and convenience factors.

Results. Process improvements were selected in the critical pathways that influence provider continuity. One year after implementation of selected process improvements, repeat chart audit showed that provider continuity levels had improved from .45 to .74, a 64% increase from 1 year earlier.

Conclusions. The project's main accomplishment was to establish the practicality of using CQI methods in a primary care setting to identify a quality issue of value to both providers and patients, in this case, continuity of provider care, and to identify processes that linked the performance of health care delivery procedures with patient expectations.

Key words. Continuous quality improvement; quality assurance, health care; continuity of patient care; physician-patient relations.

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Continuous quality improvement (CQI), also known as total quality management (TQM), represents a new framework for managing the quality of production of goods and services. Continuous quality improvement is now making inroads into the service sector of the American economy, including health care organizations.¹ The Joint Commission on Accreditation of Healthcare Organizations has adopted the CQI philosophy as the cornerstone of its "agenda for change."^{2,3} The American Hospital Association has developed a guide to assist hospital design and implementation of CQI programs.⁴ Several case studies have described the implementation of the Deming method in hospitals.^{5,6} There are, however, few descriptions of how to implement this approach successfully in primary care settings.⁷ This article is a report of the research findings and quality improvement results from a CQI project to improve continuity of care in the

Family Practice Center at the University of North Carolina School of Medicine.

Continuity is an important issue in health care. The concept and its many dimensions have been studied theoretically and empirically by health services researchers, as well as by primary care specialists.⁷⁻⁹ In family medicine, continuity is considered a basic principle, and has been defined most often in terms of the interpersonal relationship that develops between a patient and a physician over time.¹⁰ Continuity of care has been shown to improve outcomes of care, including patient compliance, while reducing costs.¹¹⁻¹³ Continuity has been identified as one of four main dimensions of patient satisfaction,¹⁴ and has been linked to quality assessment through its association with what Donabedian calls the "interpersonal process" of health care delivery.¹⁵

Most research studies of continuity have dealt with issues of definition, measurement, and effects on health status and resource utilization. This article, however, focuses on how to improve continuity in an ambulatory care setting, and on the organizational processes and systems that either promote or detract from continued contact between patient and personal physician. The method described here uses an interdisciplinary quality-

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improvement team, an approach consistent with the type of quality assessment and improvement activities being mandated by the Joint Commission. It provides an example of the movement in quality assessment away from monitoring against standards and the detection of adverse events, and toward an approach that promotes improvement of the whole distribution of outcomes in response to patient-specified definitions of quality.

Methods

The Family Practice Center is the group practice of the Department of Family Medicine at the University of North Carolina. In August 1991 a project team of eight members was assembled, and over a 6-month period, CQI methods were used to investigate the causes of continuity problems and to make recommendations aimed at improving the level of continuity provided at the Family Practice Center.

The FOCUS-PDSA Cycle

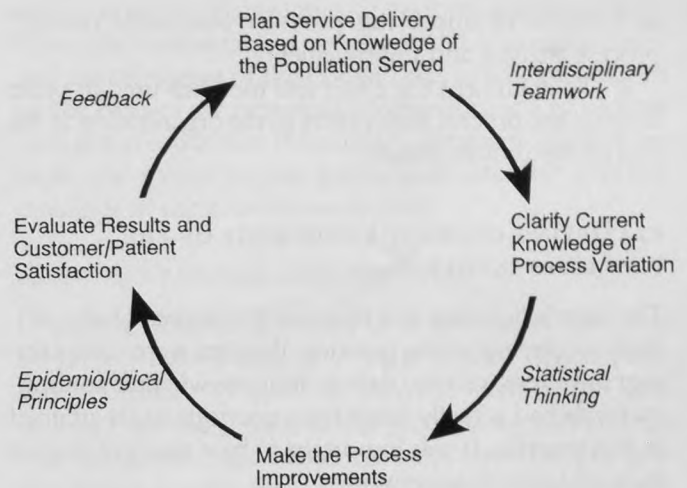
The CQI process is a cyclical approach that aims at continuous efforts to improve products or services. An adaptation for health care of the Deming/Shewhart quality improvement cycle is shown in the Figure.¹⁶ The basic method used here by the team members was a further refinement of this approach, known as the FOCUS-PDSA cycle, an acronym that describes the steps listed below:

- Find a quality improvement opportunity.
- Organize a team that knows the processes involved.
- Clarify current knowledge of the process and its variation.
- Understand causes of process variation.
- Select the process improvement.

- Plan the process improvements.
- Do the data collection, analysis, and improvements.
- Study the data for process improvement and customer outcome.
- Act to hold the gains made.

FINDING A QUALITY IMPROVEMENT OPPORTUNITY

Finding a system or process that needs to be improved is the first step in the cycle. A basic tenet of CQI is that quality improvement ideas should originate with the end users or "customers" of the organization. Therefore, the practice manager made a review of the previous 9 months of patient feedback about the practice. Seventy-five percent of the complaints came from patients who were displeased because they had been unable to see their regular physicians when they wanted, and, instead, had seen an unfamiliar doctor. These patients, in other



The Health Care Quality Improvement Cycle, adapted from the Shewhart and Deming quality improvement cycles, illustrates how process analysis and evaluation of results are fed back into the planning of services for continuous improvement of quality.

words, complained about a lack of provider continuity. The choice of continuity as an area for quality improvement was reinforced when a large source of worker's compensation referrals threatened to cancel its contract with the Family Practice Center unless the practice increased provider continuity for its employees. In the employer's opinion, the difficulty of coordinating treatment when an employee saw one physician for a first visit, and one or more different physicians for follow-up visits, was contributing to an unacceptably high rate of absenteeism.

ORGANIZING A TEAM THAT KNOWS THE PROCESS INVOLVED

Organization of a team meant forming an interdisciplinary group whose members have functional knowledge of the problem under consideration. The team was made up of three physicians, a clinical pharmacologist, the practice manager, the quality assurance coordinator, and a nurse supervisor. The seven team members were assisted by a consultant from the university hospital's Department of Management Engineering. When necessary, the team invited other Family Practice Center staff to participate in discussions at the meetings. The team met for 1½ hours every other week for 6 months. The team's goals as articulated at the first meeting were:

1. To define the problem of continuity in this practice. Two customer groups were of particular concern: the faculty physicians (internal customers), and the patients (external customers).
2. To apply the tools and analytical methods of CQI

as a means of improving provider continuity through process analysis and improvement.

3. To document the effort and methods used in order to share the process with others in the organization at the end of the project period.

CLARIFYING CURRENT KNOWLEDGE OF THE PROCESSES INVOLVED

The team's first task was to assess the degree of *discontinuity* occurring in the practice. Patients were complaining, but there were no data to indicate whether continuity levels had actually fallen from previous levels attained in this practice. It was important to base the next step on facts and not on assumptions.

A chart audit was performed in order to provide information on usual provider continuity, defined as the percentage of total visits during which a patient sees his or her regular physician. The audit method used was the same as that used for an audit performed on this practice in 1984 and published as part of an article in *The Journal of Family Practice* in 1986.¹⁶ Visits were divided into three categories, health maintenance, chronic illness, and acute care, based on the expected duration of the problem and the purpose of the examination. A sample of 125 randomly selected charts was audited for the period from July 1, 1990, to June 30, 1991. This sample size was adequate to achieve a precision of $\pm 7\%$ at a confidence interval of .90. The "usual provider" was determined by noting the physician named on the face sheet as the assigned physician of record or, when this was not available or was inaccurate, by a reviewer's assessment of the clinical notes as to which physician most regularly attended the patient. A comparison of the data from 1984 and 1991 audits is given in Table 1.

The finding of decreased provider continuity levels surprised several team members, but verified customer feedback and concern. The decline was most pronounced for acute care visits in which the level of continuity fell from .55 to .29. For all visits combined, continuity decreased from .61 to .45.

Table 1. Provider Continuity Levels for Three Types of Visit in 1984 and in 1991

Visit Type	1984	1991	Change 1984-1991 (%)
Health maintenance	0.86	0.74	-0.12 (14)
Chronic illness	0.71	0.61	-0.10 (14)
Acute care	0.55	0.29	-0.26 (47)
Overall UPC* (all visits combined)	0.61	0.45	-0.16 (26)

*Usual provider continuity (UPC) is the ratio of visits with the regular physician to total visits.

Table 2. Items on Physician Survey of Continuity of Care Requesting Agree/Disagree Responses

1. Continuity of care improves the quality of care.
2. Continuity of care enables the achievement of specific health objectives such as prevention and early detection of disease.
3. Better information on life values and the environment of our patients through continuous provider-patient relationships improves patient compliance.
4. Continuity of patient care reduces unnecessary service and therefore optimizes health care service utilization.
5. In today's social and economic environment continuity of care is not as important to patient satisfaction as it once was.
6. In today's social and economic environment continuity of care is not as important to patient care outcome as it once was.
7. We should retain continuity of care as a principle of family practice in the Family Practice Center and strive to teach medical students and residents of its value.

Next, two surveys were undertaken. The patient survey consisted of two pages of checklist items along with two open-ended questions about patients' likes and dislikes. Two hundred twenty-nine completed questionnaires were obtained from a total of 769 patients who visited the Family Practice Center during the 2 weeks of the study. The sample size exceeded the 193 needed to achieve a precision of $\pm 5\%$ at a confidence interval of .90. The faculty survey asked respondents to indicate on a 5-point Likert-type scale whether they agreed or disagreed with the opinion stated (Table 2). A final question asked respondents to indicate what they expected as an overall level of continuity. Twenty-six questionnaires were distributed and 25 completed questionnaires were returned.

In summary, these surveys revealed the following: (1) provider continuity is a desirable experience for most Family Practice Center patients; a large majority (78%) of the patients prefer continuity over the convenience of being seen the same day by an unfamiliar physician, even if they have to wait a week to see their provider; (2) patients are able to identify those circumstances in which continuity is most desirable, and distinguish these from situations in which the convenience of being able to walk in or be seen the same day they call is most important to them (Table 3); (3) physicians believe nearly unanimously that provider continuity improves quality of care, contributes to cost-effectiveness, and helps prevent serious illness; and (4) physicians expect that the Family Practice Center should achieve overall levels of provider continuity above 70% on a regular basis.

By the end of this phase of the CQI process, the collected information suggested that patient preferences were congruent with physician attitudes, whereas actual practice performance failed to meet either group's expectations.

Table 3. Patient Preferences of Continuity vs Convenience

Continuity Preferred	Convenience Preferred	No Preference
Yearly physical exam	A very painful problem	Symptom is frightening Problem has lasted >3 days
Chronic conditions possible	The visit will result in missed work	Medication reaction
Hospital stay possible	An acute injury—cut or sprain	Awake all night before visit
Medicine is ineffective		
Required physical examination (work-related)		

NOTE: To be included in either the continuity or convenience preferred groups, a situation must have been selected by >70% of the study population.

UNDERSTANDING THE CAUSES OF PROCESS VARIATION

The next step in the CQI process was analysis of problems of performance variability. A key idea of CQI is that any problem may have multiple causes, but that through careful analysis it is possible to narrow these down to the critical few causes where most of the troubles lie. To help locate and define problems with processes, CQI offers a number of tools, such as brainstorming, nominal group techniques, cause-and-effect (Ishikawa) diagrams, Pareto diagrams, and flow charts.

Through employment of these tools, it was discovered that variability was built into the call-in scheduling process, and that this was a "root cause" of discontinuity. Call-in scheduling had become overly complex and difficult to manage with any consistency. A flow chart of the process as it existed at the time of the 1991 audit was constructed by the team. This showed that patients often had to talk with two or more receptionists or nurses before obtaining an appointment. Direct observation and interviews with clerks revealed that in most cases the clerks assumed that the patient wanted to see the first available physician (urgency) and often offered the patient an unfamiliar doctor at their preferred time (convenience). In the absence of specific instructions from practice management to offer patients the continuity option, the clerks took the route that was most convenient and least time-consuming to themselves. Further, the task of scheduling call-ins was shared by four clerks who had

several other assigned duties to perform simultaneously. Given the complexity of the process, it was much easier and less disruptive of their other tasks to schedule call-ins on the basis of the next available provider at a given time than it was to identify the primary physician and then try to fit the patient's time preferences into the available openings in the provider's schedule.

SELECTING PROCESS IMPROVEMENTS

In all, five different processes or systems were identified by project team members as parts of the "critical pathway" necessary to optimize provider continuity. They included the call-in scheduling process, the patient-provider assignment and identification process, the provider scheduling process, the resident physician reassignment processes, and the staff and receptionist training and education processes.

Implementation of the recommended process improvements was begun in the third month of the project. Among these were redesign of the call-in appointment and triage procedures to simplify patient and staff decisions about whom the patients will see, and to promote continuity; staff retraining to ensure that patients are offered an explicit opportunity to see their usual physicians and, if necessary, given a choice between waiting to see their physicians and being seen by the urgent care physician; and reorganizing faculty and residents into smaller practice groups and locating these in specific hallways to facilitate patient-provider identification. Others, including the adoption of a computerized clinical database that relates outpatient visits with hospital specialty clinic data, laboratory results, and pharmacy services, are scheduled for implementation in the near future.

Results

The results of a second audit of 125 randomly selected charts, performed 12 months after the first audit, are shown in Table 4. The dates for visits covered in this audit are from July 1, 1991, to June 30, 1992. Levels of provider continuity in this sample improved for all three

Table 4. Provider Continuity Levels Historically (1984), Prior to CQI (1991), and After CQI (1992)

Visit Type	1984	1991	1992	Change from 1991-92 (%)	95% CI
Health maintenance	0.86	0.74	0.95	0.21 (28)	0.21 ± .12
Chronic illness	0.71	0.61	0.84	0.23 (38)	0.23 ± .04
Acute care	0.55	0.29	0.57	0.28 (97)	0.28 ± .37
Overall UPC (all visits combined)	0.61	0.45	0.74	0.29 (64)	0.29 ± .09

CQI denotes continuous quality improvement; UPC, usual provider continuity; CI, confidence interval.

visit categories compared with the earlier audit, even exceeding the levels of provider continuity that prevailed in 1984. Continuity for health maintenance, chronic illness, and acute illness visits improved by 28%, 38%, and 97%, respectively. The percent change in the acute illness category was not statistically significant because of the high variance in this category. There was a 64% increase in overall continuity, from .45 to .74, which was significant. Concomitantly, by the end of the project, patient complaints about lack of continuity had sharply decreased. During the months of June, July, and August of 1992, there were no complaints.

Discussion

There are several limitations to the current study that warrant discussion. The CQI method, while employing scientific reasoning, is not comparable in scientific rigor to the well-designed clinical trial. There is no control population and no one is blinded to the study. In fact, every effort was made during this project to encourage change and improvement by publicizing the events and intermediary findings within the organization. Furthermore, it is uncertain whether the improvements noted in the levels of continuity were the result of the specific actions taken in the CQI project or whether they had occurred spontaneously or as the result of other, unaccounted-for influences or effects. Further research on the applicability of the CQI method to health care organizations is needed. For the present, it seems reasonable to conclude that the process improvements that resulted from the CQI method were a contributing factor to the increased levels of continuity.

Comments

Continuous quality improvement techniques have been used most frequently in hospital operations such as pharmaceutical ordering, patient admitting, and billing of insurers, and less often used to analyze and improve processes close to the clinical interaction of physicians and their patients. To some degree this is due to administrators' fear of driving away physicians and physicians' reluctance to become involved in what seems to be a managerial rather than a clinical activity.¹ Some physicians have been intimidated by the amount of committee time involved. One might anticipate that these barriers to the adoption of CQI techniques would be accentuated in the outpatient and ambulatory care settings where there

tends to be less management support and fewer resources available for monitoring and data gathering.

The results of this project should encourage other primary care groups to use a CQI approach to identify quality issues of value to both providers and patients, such as continuity of care, and to identify and study processes that produce the performances that do or do not meet their expectations. The project's main accomplishment was to establish the practicality of using CQI methods in the ambulatory care setting. The project team members saw that systemic organizational weaknesses had a measurable and direct effect on the quality of care delivered, and that, although complex, the causal systems responsible for poor quality are, with effort, understandable. More important, once these complex interrelationships were understood, the practice was able to make adjustments rapidly to return the service to old levels of performance, and to do even better.

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