

Changing Clinicians' Behaviors in an Academic Medical Center: Does Institutional Commitment to Total Quality Management Matter?

Leon Wyszewianski, Ph.D.,* and Eric W. Kratochwill, M.H.S.A.

Department of Health Management and Policy, School of Public Health, University of Michigan, Ann Arbor, Michigan

The purpose of this project was to determine whether changing clinicians' behaviors to reduce costs in a large academic medical center is facilitated by the prior existence of a total quality management program. Ten teams, made up primarily of clinicians, were charged with devising strategies for altering specific clinical behaviors to reduce costs without detriment to quality of care. Half the teams followed the center's total quality management approach. Team success was assessed by how well three key tasks were completed: problem definition, design of plan of action, and plan implementation. Two teams achieved outright successes, three had outright failures, and five were in between. Adherence to a total quality management approach was not found to be associated with team success. A much better predictor of success was the level of involvement and support by clinicians and managers; because that factor is largely controlled by institutional incentives, those incentives may need to be realigned before the effectiveness of a total quality management approach can be properly evaluated.

High cost care has long been a distinguishing feature of academic medical centers and, increasingly in recent times, its Achilles' heel. Most efforts to deal with the high cost care problem in academic medical centers have emphasized organizational restructuring. By contrast, the work we describe addresses the problem through changing clinical behaviors. We sought to determine whether, in attempting to change those behaviors, an institution's previously established total quality management program is a positive factor.

THE HIGH COST CRISIS IN ACADEMIC MEDICAL CENTERS

As long as high costs of care were accepted—if not welcomed—as a by-product of the unique mission and role of the nation's more than 120 academic medical centers, these institutions prospered. They were thus able to continue their traditional emphasis on the provision of sophisticated patient care, combined with heavy involvement in medical research and the education of physicians and other clinical professionals (1, 2). A decade ago, however, high costs of care became a major concern for academic medical centers, when their financial well being was threatened by developments that included Medicare's implementation of the DRG-based prospective payment system, along with major changes in the public funding of medical schools (3).

Although in the end academic medical centers successfully weathered the changes of the mid-1980s, they now face another, similar crisis (1, 4). As managed care organizations (MCOs) and other purchasers of care move aggressively to ally themselves with low cost providers, higher cost academic medical centers are being left out of such arrangements, and therefore are in danger of losing substantial numbers of patients—and the income they represent—at the very time they have come to depend as never before on patient revenues (5). The Clinton plan and some other health care reform plans proposed in 1994 would have largely averted such losses, by making special provisions for compensating teaching hospitals for their higher, education-related costs, much as Medicare had done under its prospective payment system. However, with the demise of health care reform legislation in late 1994 and the subsequent movement to impose strict limits on the growth of Medicare and Medicaid expenditures for many years to come, academic medical centers

Dr. Wyszewianski is Associate Professor and Eric W. Kratochwill is Senior Research Associate (currently Business Manager, University of Michigan Hospitals), Department of Health Management and Policy, School of Public Health, University of Michigan, Ann Arbor.

*To whom correspondence should be addressed at the Department of Health Management and Policy, School of Public Health, University of Michigan, Ann Arbor, MI 48109-2029.

have little choice but to deal directly with the threat posed by their higher costs of care.

Restructuring as a Response

The strategies that have been adopted by some academic medical centers in response to the current threat, and those that in the past have been urged on them by others, all place heavy emphasis on reorganization and restructuring (6–9). Although this is not always explicitly stated, a major purpose of many of these restructuring proposals is to better align the goals and operations of the major constituent elements of the contemporary academic medical center: the medical school, its affiliated hospitals, and the faculty practice plan. Such proposals also reflect a general preoccupation with finding optimal ways for properly configuring the complex web of relationships that characterize academic medical centers within and outside their own confines.

Changing Clinical Behaviors as a Response

In contrast to such restructuring solutions, the work we describe focuses on how to ensure, as part of an overall strategy for reducing the costs of care in academic medical centers, that clinicians actually adopt practices that result in lower costs without detriment to quality. Our premise is that, if the goal is to reduce the costs of care, then, no matter what else is done, success will ultimately depend on whether clinicians adopt approaches to the provision of care that result in fewer resources being used while at the same time delivering care that is as good as, or even better than, before.

On this issue, however, the literature is less specific and the debate less well engaged than on issues of restructuring. Most of what has been written deals primarily with what, in general, needs to be done in this area and about overall goals, as typified by this statement: “The academic medical centers should not be permitted to use educational goals as an excuse not to deal with inefficiencies and excessive costs . . . They will have to minimize the cost of their most complex and specialized care without sacrificing quality” (1). In contrast, the discussion of strategies for actually reaching such goals is typically generic and indirect, with only a relatively few exceptions, notably the description of the program instituted by Strong Memorial Hospital in Rochester, New York, which attempted to capitalize on, rather than work against, the special culture and incentives of academic medical centers (10).

The Clinical Efficiency Initiative

The effort described here—to which we refer as the clinical efficiency initiative (CEI)—sought to define an explicit strategy for reducing costs that focuses on changing clinical behaviors. It builds on an earlier program that was tested at three community teaching hospitals. That program achieved relatively good success in both enlisting clinician cooperation and changing physicians’ clinical behaviors. Where failures occurred, most of them were attributable—somewhat to the surprise of those who formulated the strategy—to a lack of resolve on the part of management and instances in which clinicians’ initiatives and actions were not properly supported by managerial actions (11).

At the academic medical center at which the new strategy was tested, such management-related problems were expected to be substantially less likely to occur, in large part because hospital management at the medical center had already made a strong commitment to a total quality management (TQM) agenda, and was actively seeking to include within TQM a wider spectrum of clinical activities. What follows reports on the extent to which those expectations proved to be well founded.

METHODS

The project site is a large academic medical center in the Midwest that in 1991, when the CEI began, had a total of almost 900 inpatient beds and employed over 11,000 people, of whom more than 700 were physicians and other faculty. The medical center enrolled over 1,500 medical students, residents, fellows, and other graduate students. Its faculty and staff were providing over 700,000 patient visits per year, and its research faculty received close to \$100 million in grants per year. The faculty practice plan was generating over \$230 million in gross annual revenues.

In the 5 years before the start of the CEI, hospital management at the medical center had implemented a nationally recognized total quality management program, primarily in its administrative and support services areas. By 1991 the medical center’s leadership believed the institution’s experience and success with TQM in nonclinical areas placed it in a strong position to extend TQM principles to the center’s core clinical activities, as many in the field were urging be done and as the medical center’s leaders themselves believed they would have to do to achieve higher quality and efficiency of care (12–14).

Key Features of the Approach

A lead team was established for the CEI consisting of physicians, nurses, and managers; physicians were in the majority on the team. The CEI lead team was charged by the dean of the medical school and the hospital's chief executive officer with identifying specific issues to be addressed by the CEI, selecting teams to address them, and providing a central point for the assessment and support of all CEI efforts.

The first six issues identified by the lead team in 1991 and 1992 are listed in Table 1. The six issues were selected from a longer list generated earlier in 1991 by the chairs of the clinical departments at a retreat at which they had brainstormed about clinical problems and issues that ought to be addressed at the medical center. In making its selection, the lead team relied on a set of explicit criteria that included: potential clinical and financial impact of addressing the issue successfully; extent to which at least one respected clinician is available to lead the effort on the issue; extent of consensus as to what constitutes optimal management of the clinical aspects of the issue; overall probability of successfully addressing the issue; availability of relevant data; and estimate of the time required to resolve the issue.

A total of 10 issues were addressed between 1991 and 1993 under the aegis of the CEI. They are listed in Table 1. As shown in that table, the efforts directed at the 10 issues were organized in terms of either a 7-step process, a 3-step process, or a combination of the two, which we call the hybrid process. The different approaches were used because, as part of the CEI, the 7-step process was to be compared with the 3-step process to determine which is more effective in achieving changes in clinical behaviors.

The 7-step process incorporates most of the features of TQM approaches that by 1991 had already been implemented in several areas of the medical center. By contrast, as described below, the design of the 3-step process was based on other concepts and approaches. Experience with the two processes led the project team to the conclusion that combining the features of the two may be best; hence the adoption of the hybrid process for the issues addressed in the latter part of the project. Although in broad concept the 7-step process and the 3-step process share some similarities, they nevertheless differ in several respects.

The *3-step process* was originally devised for the project mentioned earlier that sought to enlist clinician cooperation to improve quality and efficiency at three

Table 1
Basic characteristics of the ten teams

Team	Focus	Process Followed	Date of First Meeting
1. Inpatient Consultation	Develop strategies to improve the coordination of inpatient multispecialty care	7-Step	October 1991
2. Partners in Care	Develop strategies to ensure that patients have the knowledge to participate in decisions about their care	7-Step	February 1992
3. Home Infusion Care	Develop and implement strategies to optimize the use of the institution's home care program	3-Step	March 1992
4. Same Day Surgery	Identify barriers to same day surgery and develop and implement strategies to overcome them	3-Step	May 1992
5. Medical Records	Create standards and training for clinicians regarding medical record documentation to improve its utility for clinical care	3-Step	July 1992
6. ICU Efficiency	Develop and implement strategies to increase efficiency in the utilization of the ICUs	3-Step	July 1992
7. Venous Access	Identify and reinforce the highest reasonable level of quality and service standards for venous access services	3-Step	August 1993
8. ICU Infection Rates	Develop approaches to reduce venous access-related infection rates in the ICU	Hybrid	August 1993
9. Cardiology Services	Improve the quality and efficiency of inpatient and outpatient cardiology services	Hybrid	August 1993
10. Blood Drawing	Improve the quality and efficiency of blood drawing services	Hybrid	October 1993

community teaching hospitals (11). This approach traces its roots to the work of Williamson et al. (15) and Eisenberg (16). Its three steps are:

1. Examine the evidence relevant to the problem being addressed and, in light of that evidence, specify the approach to be taken in carrying out the team's charge.
2. Design a detailed strategy for implementing the approach that includes:
 - a. A statement of the clinical criteria and standards that underlie the team's approach.
 - b. A plan for implementing the strategy, consisting of:
 - an educational component, and
 - a procedure to assure and continually reinforce adherence to the new clinical behaviors.
3. Review the results of the initial implementation and, if necessary, modify the strategy to achieve desired outcomes.

The *7-step process* is derived from work done originally at Florida Power and Light (17). It is one of many versions of the basic strategies developed by TQM pioneers W. Edwards Deming and James M. Juran that hospitals have adopted in recent years (18, 19). The seven steps are:

1. Identify a theme or problem area and the reason for working on it.
2. Select a problem and set a target for improvement.
3. Identify and verify the root causes of the problem.
4. Plan and implement countermeasures that will correct the root causes of the problem.
5. Confirm that the problem and its root causes have been decreased.
6. Standardize to prevent the problem and its root causes from recurring.

7. Plan what to do about any remaining problems, determine how to replicate the countermeasures elsewhere, and evaluate the team's effectiveness.

In an effort to be flexible in applying TQM concepts and approaches to clinicians, teams following the 7-step process did not necessarily adhere to all the ways in which such a TQM-associated strategy would have been carried out elsewhere in the medical center. On the other hand, a few selected TQM techniques were used as part of the 3-step process.

Table 2 lists the specific characteristics on which the 3-step and 7-step processes differ. Teams using the 7-step process hewed for the most part to procedures that have become associated with TQM, such as having a team leader who has been through special team leader training, and holding meetings at regular intervals, usually weekly. They also made use of the full complement of analytic and other tools associated with TQM.

In contrast, the teams using the 3-step process followed a design intended to minimize the burden on physicians and other clinicians while still ensuring that they actively participate in all key decisions; hence the emphasis in the 3-step process on holding as few meetings as possible, and on relying heavily on staff for data collection and analysis activities. The only TQM-associated tools used consistently in the 3-step process were flowcharting and brainstorming, because flowcharting could be done by specially trained staff, and brainstorming could be taught to the teams on the spot, as needed.

As reflected in Table 2, the *hybrid process* is an amalgam of the two other processes. It relies on many more TQM tools and techniques than the 3-step

Table 2
Key Distinctions among Types of Teams

Features	Type of Team		
	3-Step	7-Step	Hybrid
Leader must have completed TQM Team Leader training	No	Yes	Yes
Members must have completed TQM Team Member training	No	Yes	No
Facilitator present who completed TQM Team Facilitator training	Yes	Yes	Yes
Frequency of team meetings	Only as necessary	Regularly; often weekly	Regularly, though not necessarily weekly
Primary responsibilities of Team members	Review and discuss data and information provided by staff. Make decisions about and facilitate	Collect, review, analyze and discuss data. Make decisions about and facilitate implementation	Review and discuss data and information provided by staff. Make decisions about and facilitate implementation
Degree of staff and consulting support	Substantial	More than in traditional TQM team	Substantial
Use of flowcharting and brainstorming techniques	Yes	Yes	Yes
Use of fishbone diagram and other TQM tools and techniques	No	Yes	Yes

process, while at the same time it places greater reliance on staff and has a meeting schedule that is more flexible than that of the 7-step process.

Analysis Strategy

We assessed the extent to which the 10 teams successfully completed three key sequential stages implicit both in the 3-step process and the 7-step process: problem definition, design of a plan of action, and plan implementation. As shown in Figure 1, we define four possible outcomes for each team's efforts in relation to the three stages. *Failure* occurs when a team never gets past the stage of attempting to specify precisely the problem it should address. When a team successfully defines a problem but does not generate a plan for dealing with it, the result is defined as *near failure*. An *unrealized success* refers to the situation where a team specifies a plan of

action but the plan is never implemented. To achieve *success*, a team must have completed all three stages specified in Figure 1, including plan implementation.

RESULTS

Total Quality Management

Based on the criteria just described, the work of the 10 teams was assessed. As shown in Table 3, the teams are evenly divided across the four possible outcomes, with two or three teams in each column. When successes and failures are examined in terms of whether adherence to TQM procedures made a difference, no clear pattern emerges. Teams following the 3-step process, which had the least TQM content, are spread across all four outcome categories, as are the teams that followed processes that had substantially higher TQM content, the 7-step process and the hybrid process (Table 4).

Clinicians' and Managers' Involvement and Support

Because reliance on TQM approaches was found not to be associated with the pattern of teams' success and failure, we sought to determine what accounted for it.

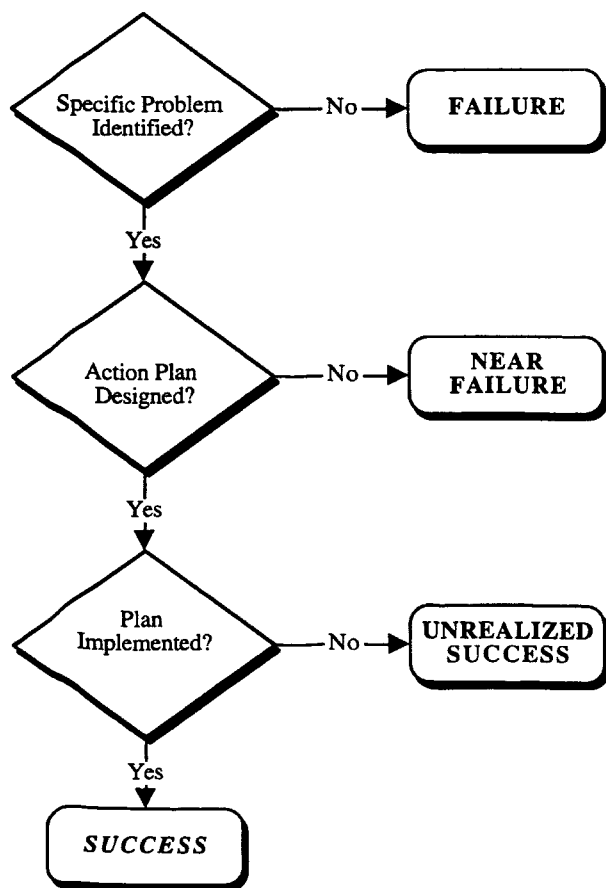


Fig. 1. Definition of team success in relation to key tasks.

Table 3

Classification of Teams in Relation to Success and Failure Categories

Successes	Unrealized Successes	Near Failure	Failures
Same Day Surgery	Patient Care Preferences	Venous Access	ICU Efficiency
Blood Drawing	Inpatient Consultation	Medical Records	ICU Infection Rates
	Home Infusion Care		Cardiology Services

Table 4

Degree of Success of 3-Step Teams versus Other Teams

Type of Team	Successes	Unrealized Successes	Near Failures	Failures	Total
3-Step	1	1	2	1	5
7-Step and Hybrid	1	2	0	2	5
Total	2	3	2	3	10

Based on previous work and our own observations during this project, we identified as a likely factor the extent to which key clinicians and managers were actively involved in and supportive of the efforts of individual teams.

We distinguished clinicians from managers by the *roles* they play, rather than being guided strictly by their credentials or training. We define as clinicians those who relate to the work of the teams as *care-givers*; put another way, these are the individuals whose clinical behaviors the teams sought to alter. By contrast, managers are all those whose most important relation to the work of a team is in terms of their ability to deploy, allocate, and assign resources. By that definition, we count as part of management not only professional managers, but we also include physicians who by virtue of being clinical department chiefs control the personnel and other organizational resources that are key to a team's development and implementation of a plan.

We evaluated, for each team, the extent to which clinicians and managers who either were on a team or had to work closely with the team became involved in the work of the team and provided material and moral support to the team's efforts. For *clinicians*, we examined: key clinicians' record of attendance at team meetings; whether there was at least one "influential clinician" who was willing to lend his or her time and attention to the team's work; willingness of "influential" as well as other clinicians to advocate, vis-à-vis their professional colleagues, changes in clinical practices, in accordance with their teams' recommendations. Similarly, for *managers*, we examined: extent to which the staff support provided by management to a team was adequate to the task, in terms of both availability and skills; and extent to which managers were willing and able to provide the resources and the political support and to make the changes that were necessary for implementing a team's plan of action.

Although when so defined our concept of clinicians' and managers' support for teams is not subject to precise quantification, we found that for each team we could characterize relatively readily the overall support by clinicians and by managers as either *strong* or *weak*. Such a dichotomized measure of support, when related to team success, yielded results that were consistent with our initial expectations. For example, team success was found to be associated with strong support from clinicians.

However, the most striking relationships emerge when the support of clinicians and that of managers are considered simultaneously: they jointly account for all four types of outcomes (Table 5). As might be expect-

Table 5
Relation between Team Success and Level of Support Provided by Clinicians and Managers

		Management Support	
		Strong	Weak
Clinicians' Support	Strong	<i>Successes:</i> Same Day Surgery Blood Drawing	<i>Unrealized successes:</i> Partners in Care Inpatient Consultation Home Infusion Care
	Weak	<i>Near failures:</i> Venous Access Medical Records	<i>Failures:</i> ICU Efficiency ICU Infection Rates Cardiology Services

ed, *successes* are achieved when both clinicians' and managers' support is strong. Conversely, *failure* occurs when the support from both clinicians and management is weak. On the other hand, *unrealized successes* result when a plan was formulated with the strong support of clinicians, but the necessary resources were not brought to bear on it by managers, leaving the plan unimplemented. *Near failures*, on the other hand, occur when no plan emerges from the effort for lack of sufficient clinician involvement and commitment, even though managers' support is strong.

DISCUSSION

Our results are likely to disappoint anyone harboring the expectation that through TQM alone the high cost problems faced by academic medical centers will be resolved. In the CEI, use of TQM approaches was not consistently associated with success: the five teams that relied on the approaches most closely tied to TQM did not achieve a pattern of success much different from the five teams relying on other approaches. Perhaps more importantly, among both kinds of teams, only one in five achieved success as we defined it (see Table 4).

Similarly, contrary to initial expectations, the project site's nationally recognized TQM program and its stated commitment to making necessary changes in order to achieve higher quality and efficiency did not translate into invariably strong managerial support for all 10 teams. In fact, managers provided strong support at a rate somewhat below that of the medical center's clinicians (4 versus 5 out of 10), even though, a priori, the clinicians were not expected to devote much of their time or resources to this type of endeavor. Both groups lent their strong support to teams only about half the time, and both groups did not necessarily strongly support the same teams (Table 5).

However, merely because TQM did not meet the exacting standard of being all-conquering does not mean that TQM was ineffectual, or worse. On the contrary, it could be argued that the site institution's experience with and commitment to TQM was a positive factor in achieving such successes as the CEI experienced. But bolstering that argument with solid proof would require a different study, one with a more rigorous and elaborate research design.

Role of TQM

Within the scope of this project, the following can be stated about the role of TQM, based on our observations and the results obtained:

- The problems that led to a lack of success for several teams had less to do with the relative strengths and weaknesses of TQM than with such factors as what the team was asked to do at the outset. Too often the statement of the problem or issue that was given to the team to address proved frustratingly vague or far too broad.
- The extent of clinician support may be overstated in the data in Table 5, and, conversely, that of management may be understated, due to differing prior expectations: the design of the CEI was molded by the view that clinicians would be reluctant participants, but that managers would assume the role of enthusiastic cheerleaders and facilitators. The classification of teams in Table 5 can be interpreted as reflecting the extent to which teams met or did not meet those unequal expectations, as opposed to relating to a more absolute, common standard. Thus the reported results may well understate the support and accomplishments of managers and, for similar reasons, the positive contributions of TQM tools and techniques.

Other Observations and Conclusions

The CEI, in addition to its implications for the role and value of TQM in this kind of endeavor, points to other observations and conclusions:

- The common presumption that physicians and other clinicians are likely to resist anything related to TQM was not borne out in this instance. Teams that hewed closely to TQM approaches were just as successful—and unsuccessful—as those that did not (see Table 4). Moreover, two techniques currently closely associated with TQM, brainstorming and flowcharting, were used by all teams (see Table 2). Not only was there essen-

tially no resistance to the two techniques by clinicians, but almost all clinicians involved in the CEI readily accepted them and many, in fact, found them to be useful.

- Even at its best, a well established TQM program may not be enough to guarantee that managers will muster the resources and political will that are necessary to support efforts to increase the efficiency of clinical activities. The results from the CEI suggest that an active TQM program may not necessarily impel managers to perceive fully their own need to contend with often difficult and painful change whenever efforts are made to have clinicians alter their clinical behaviors.
- The CEI showed once again an important though unsurprising verity: clinicians' support is crucial to successfully move in the direction of greater efficiency in clinical activities. In this regard, we also observed at this one academic medical center something that is apt to be true at most such centers: the members of the medical faculty all too often are given, individually and collectively, few organizational incentives to work on improving the efficiency of care. Their chief rewards still come almost exclusively from publishing and obtaining research grants. How true this is, of course, varies across clinical departments, but until and unless the overall pattern of incentives is changed, most of the clinicians who actively support efforts like the CEI will do so almost invariably *despite* of the prevailing reward structure. This is an issue for which embracing TQM approaches at the institutional level is unlikely, by itself, to be the solution.

Therefore, to the extent that a major restructuring of an academic medical center actually helps address the crucial question of incentives for clinicians—as well as for managers—the traditional emphasis on restructuring as a solution may well be justified. Thus the financial merger of the hospital with the medical school, something several of these institutions have recently done (20), may be an important step forward, even if it is not the panacea for all cost and quality problems that some may hope it to be.

Our experience with the CEI suggests that efforts to change clinicians' behaviors in an academic medical center may indeed be helped by institutional commitment to TQM and by having a successful TQM program in place. At the very least, those features are more likely to be a help than a hindrance. But with or without TQM, the key to success in this area appears to be where it has always been: (a) in managers' commitment to change and their ability and willingness to fight for change, and (b) in

whether incentives—for clinicians and everyone else involved—are aligned so that improvements in the efficiency of care are appropriately rewarded. Only after those are properly addressed do questions of approach really matter, and only then the merits and the appropriate role of TQM and related approaches become truly relevant and can be studied meaningfully.

ACKNOWLEDGMENTS

The institution at which this project was carried out provided funding and other material assistance, for which we are very grateful. We are also indebted to our colleague, Paul Sonda, M.D., for his insightful comments about earlier versions of the manuscript.

References

1. Kassirer JP. Academic medical centers under siege. *N Engl J Med* 1994;331:1370–1371
2. Iglehart JK. Rapid changes for academic medical centers (first of two parts). *N Engl J Med* 1994;331:1391–1395
3. Ginzberg E. Academic health centers: A troubled future. *Health Aff* 1985;4:5–21
4. Iglehart JK. Rapid changes for academic medical centers (second of two parts). *N Engl J Med* 1995;332:407–411
5. Anderson G, Steinberg E, Heyssel R. The pivotal role of the academic health center. *Health Aff* 1994;13:146–158
6. Ebert RH, Brown SS. Academic health centers. *N Engl J Med* 1983;308:1200–1208
7. Jones K, Sloate SG. Academic health center hospitals: alternative responses to financial stress. *Health Care Manage Rev* 1987;12:83–89
8. Munson FC, D'Aunno TA. Structural change in academic health centers. *Hosp Health Serv Adm* 1989;34:413–425
9. Fox PD, Wasserman J. Academic medical centers and managed care: Uneasy partners. *Health Aff* 1993;12:85–93
10. Franklin PD, Panzer RJ, Brideau LP, Griner PF. Innovations in clinical practice through hospital-funded grants. *Acad Med* 1990;65:355–360
11. Wyszewianski, L., et al. The cost and quality project. Manuscript in preparation.
12. Laffel G, Blumenthal D. The case for using industrial quality management science in health care organizations. *JAMA* 1989;262:2869–2873
13. Berwick DM. Continuous improvement as an ideal in health care. *N Engl J Med* 1989;320:53–56
14. Berwick DM. Controlling variation in health care: A consultation from Walter Shewhart. *Med Care* 1991;29:1212–1225
15. Williamson JW, Hudson JI, Nevins MM. *Principles of Quality Assurance and Cost Containment in Health Care*. San Francisco: Jossey-Bass, 1982.
16. Eisenberg JM. *Doctors' Decisions and the Cost of Medical Care*. Ann Arbor, MI: Health Administration Press, 1986.
17. Qualtec, Inc. *Team Leader Training Course*. Miami, FL: Florida Power & Light, 1989.
18. Sahney VK, Warden GL. The quest for quality and productivity in health services. *Front Health Serv Manage* 1991;7:2–40
19. Gaucher EJ, Coffey RJ. *Total Quality in Health Care*. San Francisco: Jossey-Bass, 1993.
20. Robinson M. Perestroika at Hopkins: New environment in microcosm. *Medicine and Health Perspectives*, June 26, 1995.