

The authors describe a method—and provide the survey tool—for comparing quality improvement projects within and across organizations

QUALITY IMPROVEMENT TEAMS

A Survey of 92 Quality Improvement Projects

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In recent years, a number of studies have assessed the impact of improvement efforts on the organization.¹⁻⁷ The findings have been mixed, some showing that patient outcomes are more likely to be improved when organizations implement process improvement. Others show no difference among organizations that do and do not implement process improvement. Such variations in the results have increased interest in examining the processes of improvement that organizations use.

This article, based on 3 years of data collection, treats the project as the unit of analysis to describe a variety of improvement efforts and their impact on the organizations that sponsored them. In contrast to current studies of the impact of process improvement, the focus here is on the improvement method rather than the clinical process and patient outcomes, on the

steps involved in the planning and execution of the projects rather than the best clinical practices.

Methods

Source of Data

We based our analysis on a convenience sample of 92 improvement projects in 32 organizations. The characteristics of the organizations included in the study are reported in Table 1 (p 621). Most (80%) of the improvement projects were conducted by hospitals or clinics affiliated with hospitals, and the organizations reported an average of 7 years of using CQI.

Methods of Data Collection

For every semester from 1998 to 2000, we asked health administration, medical, and nursing students in our interdisciplinary quality improvement (QI) classes at Cleveland State University (Cleveland), Case Western Reserve University (Cleveland), and George Mason University (Fairfax, Va) to interview improvement teams in various organizations and report the performance of process improvement projects. We also asked participants in approximately 30 day-long industry conferences on rapid improvement techniques in Iowa to describe their own improvement teams; six of the participants complied.

Survey Questions

We developed a self-administered questionnaire to measure 70 characteristics of improvement projects

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Article-at-a-Glance

Background: Studies focusing on the impact of improvement efforts on the organization have yielded mixed results, which has increased interest in comparing the processes of improvement used. Data for a convenience sample of 92 quality improvement (QI) projects in 32 organizations were gathered from interviews and self-reported surveys from 1998 to 2000. A self-administered questionnaire was developed to measure 70 characteristics of improvement projects.

Results: Most (80%) of the improvement projects were conducted by hospitals or clinics affiliated with hospitals. The projects took an average of 13 months from the team's first meeting to the end of the pilot study. Project teams met 14 times (approximately once a month) and spent 1.5 hours per meeting. Some projects did not measure the impact, others did not

intend to have a specific impact, and still others measured but did not achieve the planned impact.

Discussion: Patients and employees may be benefiting from improvement projects, but organizations may not be leveraging these improvements to reduce cost of delivery or increase market share. Considerable variation in the projects' impact raises the question of the need to improve the improvement methods. Generalization from this study should be made with caution, as data were based on a self-selected convenience sample of organizations. Furthermore, respondents did not complete all items, and missing information may affect the conclusions. The data on current improvement practices that are provided in this study can serve as baseline data against which rapid improvement efforts can be judged.

(Appendix, pp 627–632). We also developed an accompanying manual,* which was provided to some of the respondents and was used for answering students' questions.

We did not conduct a test–retest reliability study of the questionnaire. However, we did modify it after piloting it with four projects before starting the data collection, to reduce differences in interpretation.

Results

Time Spent on Improvement

Some organizations abandon QI efforts out of frustration because it takes so long to get anything meaningful out of them.⁸ We collected data on the time it took for project teams to complete their tasks. Across 41 projects on which we had start and end dates, it took 504 days (approximately 17 months; range, 42 days–10.80 years; standard deviation [SD], 828 days) from the identification of the problem to the completion of the first pilot improvement—the so-called first tangible result. Because some projects had not finished, this estimate may change when all projects report their end dates. When asked if the pace of improvement was slower than expected, most said no,

which leads us to conclude that many may have accepted the 17-month period as the norm for improvement.

Responses for 67 projects indicated that of these 17 months, 104 days (3 months; range, 0–2.6 years; SD, 209 days) were spent thinking through and organizing the effort and inviting the improvement teams. A key defining point for projects is the end of the first pilot, when either data on progress have been collected or a second cycle of improvement has started. Respondents took an average of 392 days (13 months; $n = 46$; 31 days–10.8 years, SD, 779) to progress from the first meeting of the team to the end of the first pilot.

What do project teams do during these months? Figure 1 (p 621) shows that among the 92 projects we examined, teamwork and the use of flowcharts and storyboards were prevalent in most projects but that only a minority of the 92 projects repeated cycles of improvement, rolled out their change to the rest of the organization, or celebrated the success of their improvement efforts.

Patterns of Problem Solving

There is little literature on what works in defining problems, but the few studies that exist suggest steps to take to improve problem statements.⁹ A good starting point is to state problems in terms of the patients' experience,¹⁰ which avoids two deadly sins: blaming employees and embedding a

* For example, in response to the question "What is the budget of your organization?" the manual helps the respondent distinguish between the budget of a health care system in which he or she works and the specific hospital within the system. The manual can be obtained from the first author.

Table 1. Characteristics of Organizations

	Average	Standard Deviation	Minimum	Maximum	Number of Organizations
Employees	1,336	1,600	50	6,000	23
Budget	\$40,397,337	\$37,540,028	\$6,700,000	\$107,765,378	10
Inpatient admissions	10,181	17,800	320	68,000	16
Outpatient visits	177,251	454,584	200	1,300,000	8
Type of institution	Clinic or hospital	80%			30
	Multisite	3%			30
	Nursing homes	3%			30
	Not classified	13%			30
Years of experience with improvement	7	4	1	18	26
Percentage of patients from local area	79%		20	100	27

solution inside the statement of the problem. Among our projects, 64% ($n = 89$) of the problems were externally focused (that is, focused on customers' experiences), as opposed to being internally focused on employees' issues.

One way to improve problem statements is to make sure that they describe the problem and not a potential or a favored solution. Among our projects, 22% of the statements represented genuine searches for a solution, as opposed to tools of co-opting employees into a solution perceived by others. Restating problems as opportunities could accentuate both the positive and the negative aspects of a problem. The literature, reviewed elsewhere, showed that such restatements provide an expansion of the scope of the

problem for team members to examine¹¹; 22% of the restatements represented the problem both as a gap and as an opportunity.

Some projects focus on clinical problems without management input. This is unfortunate because it fails to take advantage of the organizational view that managers bring to clinical problems. Interdisciplinary input from both management and clinical perspectives could expand the pool of information available to the project teams. In the projects surveyed, 17% ($n = 90$) had both management and clinical input.

Many QI teams choose to focus on small and doable but not central problems common across the organization. It is conceivable that some central prob-

Activities in Improvement Efforts

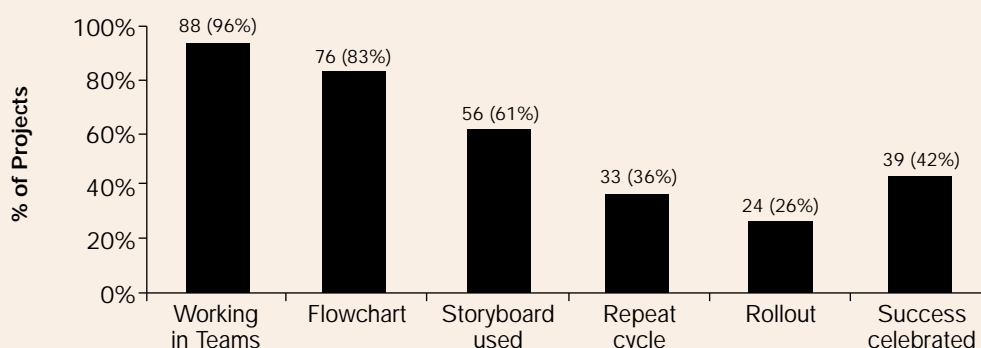


Figure 1. This figure shows the number (percentage) of the 92 projects that used selected activities in improvement efforts.

Table 2. Steps Followed to Make Meetings More Effective

	Why Is This Important?	Percentage of Projects	Number of Projects Reporting
Distribute an agenda	Seven-step meeting rules include setting an agenda prior to the meeting	87%	67
Meetings facilitated by an outsider	May help teams run more efficiently	10%	89
Meetings facilitated by a team member		82%	89
Polled team members before meetings	Reduces judging an idea based on who expressed it	67%	51
Postpone the evaluation of ideas	Improves creativity and prevents premature closure of information gathering	20%	81

lems could be solved quickly, but for the most part, organizational problems are large in scope and difficult to solve. QI teams sometimes choose easy problems to solve because they wish to have small and early successes to generate a continued effort. According to the self-report of project leaders, 35% of 89 projects focused on issues that were central to the organization's mission.

Making Meetings More Effective

A nagging problem with QI is meetings and more meetings, which eat up a lot of time. The surveyed teams met an average of 14 times per project ($n = 75$; SD, 18), and each meeting took 1.5 hours ($n = 87$; SD, 1.5). On average, 62% of the projects ($n = 90$) judged their meetings to be short and well organized, and 53% judged them to be more productive than expected. Among the projects, 59% were judged to be more task oriented than social and fun.

Several recommendations on how to make meetings more effective can be found in the literature (Table 2, above):

- Distribute an agenda before the meeting starts¹²;
- Have a person facilitate team meetings¹³;
- Poll members (about their views on key issues) before meetings¹⁴; and
- Postpone the evaluation of ideas.¹⁴

Methods Used for Problem Analysis and Planning

There are two distinct methods of planning—focusing on “what is” and how to improve it and focusing on “what could be” and how to reach it. In the latter approach, one generates solutions before understanding the constraints of the process in detail. In this way, one's imagination is not restricted with “what is” and can be more expansive.¹⁵ “When people work backwards from what is really desired, they develop energy, enthusiasm, optimism and high commitment.”^{16(p 283)}

In 9% of the 92 projects, team members arrived at solutions before processes were charted. This suggests that they started with thinking through what the current situation is before they focused on what the future could be.

In only 52% of 90 projects did the teams describe the current situation in detailed flowcharts, which took an average of 75 days ($n = 65$; SD, = 164).

Data Collection Methods

Of the 88 projects that reported, 79% collected data to examine whether the change they had introduced was an improvement. The process of data collection took 62 days ($n = 48$; SD, 92).

Sampling can reduce data collection time. By focusing on a representative sample, fewer patients are

contacted, less time is wasted, and fewer data are analyzed. Among the 66 cases in which data were collected, sampling was done in 17% of the projects. One way to speed up data collection is to rely on numeric estimates offered by persons close to the process. Given time and resource pressures, staff observations of patients may be a reliable source of data that could replace the seemingly more “objective” surveys of patients.¹⁷ Of the 66 cases in which data were collected, 8% relied on subjective estimates to reduce data collection.

Still another way to speed up data collection is to plan for the effort before actual data needs are known. For example, teams could put employees on notice that they are about to receive a questionnaire from the team and that when they receive it they should conduct a brief survey and report the results to the team within hours of the request. Of the 66 projects in which data were collected, 17% planned for data collection ahead of time.

Rollout Methods

Once an improvement has been made, the organization can attempt to make the transition from small-scale to systemwide implementation, as did 26% of 92 projects. This rollout effort took 45 days ($n = 19$; SD, 52 days). One way to expedite rollout is to use cross-functional teams that include a broad organizational membership, as did 52% of 83 projects. Sometimes the membership of teams is changed so that more people can participate. In the remainder of the projects, teams were either clinical in background (45%) or nonclinical (4%).

Another way to expedite rollout of projects to the rest of the organization is to use a storyboard to communicate the improvement effort's impact. Forty-eight percent of projects either did not use a storyboard or did not display the storyboard until the improvement task was completed. Storyboards that unfold over time may engage employees' imagination early, before a solution is reached. The more employees who are involved in a team's deliberations, the more likely it is that they will implement the team's suggestions.¹⁸

Still another way to motivate other groups to adopt improvements in one unit of the organization is to go beyond rational arguments for change. Most QI teams believe that if they suggest improvements that are

in the interest of the organization and in the self-interest of the employees, then these improvements will be carried out. The surveyed teams tried to use several strategies for promoting change, which we categorized as self-interest arguments. Among the 91 reporting projects, 22% of the time the teams tried to persuade others to change by providing them with written reports of the project; 55% of the time they walked key employees through the report. Sixty-one percent of the teams reported that changing work norms (such as discharge forms or policies regarding the start and end of shifts) encouraged adoption of the change.

Spreading information about improvement outcomes is one way of encouraging change, but other methods reported by 91 projects include using the organization's communication channels (35%) or social gatherings (12%) to provide support for change, making symbolic changes, leading by example at top levels of the organization (16%), reminding key decision makers of the importance of change (37%), and adjusting departmental budgets (for example, paying someone to do a new task; 14%). One sure way to encourage change is to get early adopters to speak to others about it (35%).

Impact on Performance

Questionnaire items asked survey participants to report the impact of their improvement efforts on cost of care, patient satisfaction, access to care, market share, mortality, morbidity, and employee work life. Because some projects we examined did not measure outcomes, it is important not to mistake failure to report with failure to have an impact. To clarify this issue, in discussing the outcomes of projects we delineate the percentage of projects that did not measure each outcome.

Cost. Across the 92 projects, a small percentage of improvement efforts resulted in tangible cost savings. Yet only 33 (36%) were intending to save costs; 27% of them collected no data on cost savings, 33% reported that it was too early to see the cost savings, 27% reported that they have saved potential future costs, and only 6% (2 projects) reported that they have reduced current costs, as reflected in their budgets. (Table 3, p 624). In summary, most projects did not intend to save costs, and among those that did, most did not succeed.

Client satisfaction. Among the 92 improvement initiatives, 70 (76%) were targeted to improve clients'

Table 3. Impact of Improvement Efforts

	Reduced Cost	Client Satisfaction	Market Share	Care Outcomes	Employee Work Life
Percentage of 92 projects targeting this area	36% (33 projects)	76% (70 projects)	21% (19 projects)	56% (56 projects)	50% (46 projects)
Percentage of projects targeting this area that reported measured success	6%	16%	37%	23% improved access 0% improved mortality 7% improved morbidity 9% improved health status	48% made work convenient 59% better defined roles 59% made people more aware of others' work
Percentage of 92 projects that reported measured success	2%	12%	8%	Up to 13%	Up to 30%

satisfaction with services, of which only 11 projects (16%) were successful—with an average improvement of 32% (SD, 28%).

Sales or market share. Nineteen (21%) of the 92 projects had a focus on improving sales or market share, of which 7 projects (37%) reported an average of 28% (SD, 27%) improvement in market share.

Patient services. The majority—56 (61%)—of the 92 projects reported improvements in patients' outcomes, including access, morbidity, and reductions in patient anxiety, waiting time, and use of patient restraints.

Employee work life. Among the 92 projects examined, 46 (50%) improved employees' work life; of these, 48% made the work more convenient, 43% made work less redundant, 59% better defined employee roles, and 59% made employees more aware of each other's work.

Discussion

In one of the few large comparative studies of improvement that use projects as the unit of analysis, we have provided a method for comparing improvement projects across organizations. The inclusion of the data collection tool (Appendix) can help others conduct similar studies. The data suggest that patients and employees may be benefiting from improvement projects but that organizations may not be leveraging these improvements to reduce cost of delivery or increase market share. Similarly, when chief executive officers and directors of quality assurance/improvement departments in

61 hospitals were asked about the impact of their own QI efforts, they perceived their efforts leading to better patient outcomes but not to better financial outcomes.¹ QI experts complain of the lack of sizable impact of process improvement efforts¹⁹; the data suggest that in some areas they are right. In addition, we found considerable variation among projects in terms of their impact on outcomes; randomized trials of continuous quality improvement have also shown mixed results.^{1,2,20} Such extensive variation in the projects' impact suggests a need to improve the methods of improvement.

Still, caution is warranted in generalizing from this study because the data were based on a self-selected convenience sample of organizations. In addition, the projects chosen may not have been representative of the rest of their organizations. More than half of the projects reported were still under way, resulting in good recall of current practices but incomplete data regarding long-term impact. For these projects, we asked respondents if it was too early to report end results. Despite this correction, it is possible that if longer-term data had been available, the findings would have been different. Longer-running projects are more likely to be under way at the time of study and therefore possibly more likely to have been included—and more likely than shorter projects to have a large impact. The self-report nature of the data may reflect biased recall of successes and failures. Furthermore, respondents did not complete all items, and missing information may affect the conclusions.

What Makes for a Successful QI Project?

Although 92 improvement projects are not enough to reach conclusions about how successful and less successful ones compare, the findings do suggest hypotheses that can be tested in future studies. The data suggest a number of problems with how improvement teams select an area to work on. Many organizations do not focus on centrally important issues. People inside the organization may rate projects as less serious than do people outside the organization.²¹ It is possible that these employees are working on important problems but do not see it that way. If the perception of these employees is valid, then we need to refocus improvement efforts on central problems, even if such problems are difficult and intractable. If improvement teams can focus better, we may expect better results.

The length of the projects varied widely, as Sales et al also found in a survey of projects at 31 hospitals, where length ranged from 1 month to 66 months—and costs ranged from \$148 to \$18,590.²² Wide variation in project length points to opportunities for improving project management. Data on length of projects can be used in identifying the factors that contribute to length of improvement efforts and in designing faster cycles. For example, our data showed that process improvements take many long meetings held over several months. There was roughly a month delay between meetings. Why is the time between meetings so long, and could teams meet more frequently? Unfortunately, we do not have data on why these delays occurred, but perhaps many tasks needed to be done between meetings or the improvement efforts were not considered high priority (because they were not dealing with organizations' central issues).

The other way to reduce time spent on improvement is to make meetings more efficient. Could the teams have met for less than an average of 1.5 hours for each meeting? The data showed that some of the teams took a number of positive steps to make meetings shorter and more effective. They distributed agendas before the meetings. Some even polled team members about their views prior to the meeting. But teams did not employ one of the simplest and easiest methods of making meetings shorter and more productive—postpone evaluation until all ideas are expressed.¹¹

The findings of this study can be compared with the experience of the Institute for Healthcare Improvement (Boston) Breakthrough Series, in which teams from multiple organizations meet regularly to define and address common problems. Data show that breakthrough projects take less time per improvement (15 months for 18 improvements)²³ and achieve more rapid cycles through a number of steps, including reduced data collection. It is important to gather additional information on the difference between breakthrough projects and other improvement efforts.

Most of the teams represented in the survey reported here used flowcharts, which prolonged the improvement efforts by an average of 2.5 months. We do not have sufficient data to examine the advantage of conducting flowcharts. As we collect additional data, we should be able to address whether teams that spend more time on flowcharts have better outcomes. It is possible that postponing flowcharts until a solution is selected, as entailed by Nadler's IDEAL system design,¹⁵ may make improvement efforts faster and more radical.

Most of the teams also collected data, which on average took more than 2 months. As mentioned earlier, breakthrough projects do not collect data before generating solutions. Avoiding data collection or merging data collection into other activities that are already underway may reduce length of improvements. If data have to be collected, effort should be made to make such data collection efficient. Most of the teams did not follow techniques for reducing data collection effort. For example, teams did not use sampling and did not plan for data collection beforehand. Nor did teams rely on subjective estimates from process owners, an approach that could decrease the data collection effort.

Surprisingly, most of the teams did not even try to roll out their improvements to other organizational units, perhaps because they did not consider their problems relevant to other units or because it was too early to do so. Improvement teams that did try to roll out their successes to other units did so using very traditional methods. They motivated others based on appeals to rational arguments and by making policy changes. Other approaches (for example, use of communication channels, social networks, learning by imitating) were not used as frequently. Given how difficult it is to persuade others to adopt new changes, it

is important to use a wide variety of methods for motivating change.

Future Directions

This study documents a large amount of variation in improvement methods from which, as more data are collected, we may be able to relate to variation in actual improvement. In a study of methods of improvement, where there is wide variation in success, it is natural to ask which practices lead to success. One could divide the sample into successful and failed projects and examine which steps are most likely to lead to success. The current sample size is too small to do so. Therefore, this article describes the process of improvement but does not address what leads to success. We will continue our data collection, and when we have sufficient data, we will report on factors associated with

success of improvement projects. We should be able to determine whether specific approaches to improvement do in fact result in shorter cycle times and better organizationwide outcomes. Much advice has been offered on how to conduct QI faster and better,^{11,24-27} but critics are asking for evidence that the proposed methods of speeding up improvements work.²⁸ The data on current improvement practices that are provided in this study can serve as baseline data against which rapid improvement efforts can be judged. As the database grows, we will be able to report which of the various practices are having an impact in the field. To facilitate this process, we have organized a Web site where organizations can report on their improvement efforts (see www.onlineimprovement.com/production/index.html). Our hope is to guide process improvement based on what works. **J**

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Appendix. A Survey of Improvement Practices*

We gather this information in order to advise you about how to improve your organization faster. This questionnaire does not assign blame to individuals or attribute failure to projects. The information you supply is confidential and not shared with your organization except through you. Furthermore, the information will not be reported elsewhere in ways that would identify your organization.

What can you expect?

You will receive a written report from us. The report will compare your improvement process to your peer organizations. It will contain improvement benchmarks against which you can judge your practices. We will also advise you to implement specific practices so that your organization can improve faster.

How many projects should be reviewed?

We asked that you use the enclosed forms, or copies of the enclosed forms, to review at least four of the *most recently completed* improvement projects in your organization. You would need to complete a separate form (sections C & D) for each project. At a minimum, you must provide *information on four projects so that we can examine patterns* across projects. You can ask others (key individuals intimately familiar with the specific project) to complete section C and D. You can also ask them to mail their reports directly to us so that their input is kept confidential and anonymous. Please list the titles of projects you wish to report and names of people completing the reports:

Project title	Name of person reporting	Telephone number
1.		
2.		
3.		
4.		
5.		
6.		

A. Contact Information for Feedback

This section asks you questions that help us contact you to provide you with written feedback.

- | | |
|--------------------------|--|
| 1. First name: | 7. E-mail address: |
| 2. Last name: | 8. Your telephone: |
| 3. Name of organization: | 9. Facsimile: |
| 4. Organization unit: | 10. Position: |
| 5. Street address: | 11. May we contact you if we do not understand some of the answers provided in this survey? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. City and zip code: | |

B. Organization information

This section asks questions that help us select other organizations that can serve as benchmarks to you.

12. What type of organization are you working for (select all that apply)?
- | | | |
|--------------------------------------|---|---|
| <input type="checkbox"/> Hospital | <input type="checkbox"/> University or teaching institution | <input type="checkbox"/> Consulting |
| <input type="checkbox"/> Clinic | <input type="checkbox"/> Nursing home | <input type="checkbox"/> Other, please specify: |
| <input type="checkbox"/> Health plan | <input type="checkbox"/> Home health agency | |
13. How many employees work within your organization?
14. What is the approximate annual budget of your organization?
15. How many patients receive services from your organization within a year?
16. Do you face serious market competition?
- | | |
|--|--|
| <input type="checkbox"/> No | <input type="checkbox"/> Yes |
| <input type="checkbox"/> Not yet, but soon | <input type="checkbox"/> I do not know |
17. What percentage of your market comes from local, regional, national, or international sources (give approximate percentages)?
- | | |
|--|---|
| <input type="checkbox"/> Local (city or metropolitan area where you are located) ____% | <input type="checkbox"/> National (not in the region you are located) ____% |
| <input type="checkbox"/> Regional ____% | <input type="checkbox"/> International ____% |

Appendix. A Survey of Improvement Practices* (continued)

18. How many years has your organization tried to use total quality management (continuous quality improvement) or similar methods of improvement?

Please copy the following pages and complete a set for each of the improvement projects you are reporting to us. Report at least four so that we can examine patterns across them.

C. What Happened, When?

This section asks you to describe the way in which improvement process worked in your organization.

19. Project title:

20. What is today's date? (*Throughout this survey enter all dates as MM/DD/YY*)

21. What role did you have in this project?

☐ Team member

☐ Project sponsor

☐ Facilitator or consultant

☐ Team leader

☐ Other, specify:

In the following, give approximate dates for each of the requested activities. If the activity has not been done, instead of a date write "Not done." Write "?" if you do not remember the date and cannot guess the date. Note that we are not looking for precision; approximate dates will do. Remember to enter dates in the MM/DD/YY format.

Activity	Planned date	Date done	Comments
22. Organization was informed about policies for quality improvement			
23. The problem/opportunity was first identified			
24. The administration identified or accepted the problem opportunity as needing attention			
25. Project team members were invited to address the problem/opportunity			
26. Project team met for the first time			
27. Project team stated the problem/opportunity			
28. Data were collected and analyzed to show the extent of the problem/opportunity			
29. Story board or other media were used to alert the organization to the problem/opportunity			
30. Project team started examining and charting the existing processes ("as-is conditions")			
31. Project team completed the examination or charting of the existing processes			
32. Project team generated several possible ways to change existing processes			
33. Project team selected an improvement to try on a pilot basis			
34. Proposed change tried in a limited, controlled, small-scale pilot			
35. Started collecting data on whether the pilot change was an improvement			
36. Finished collecting data on whether pilot change was an improvement			
37. Another change tried in a limited, controlled, small-scale pilot (2nd pilot)			
38. Started collecting data on whether 2nd pilot change was an improvement			
39. Finished collecting data on whether 2nd pilot change was an improvement			
40. Storyboard (or other companywide reports) displayed whether change led to improvements			
41. Pilot improvement was adopted by the unit in which it was tried (limited rollout)			
42. Pilot improvement used by other organizational units (rollout)			
43. Project participants were thanked and recognized publicly			
44. Improvement team stopped regular meetings			

45. Does your organization routinely track benchmarking data? ☐ Yes ☐ No

46. How did the organization identify the improvement opportunity?

☐ Employee suggestions

☐ Benchmarking against peer organizations

☐ Customer suggestions

☐ Examining internal measures of performance

47. Write the exact text of the problem/opportunity that the team used in its deliberations:

Appendix. A Survey of Improvement Practices* (continued)

48. In each row, check the box closest to your evaluation of the problem/opportunity statement in Question 47:

Describes how a group of employees contribute to or can solve the problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Describes how the system or processes contribute to the problem
Provides details	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	States the problem in general terms
Describes the experience of customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Describes performance of employees
A problem that management can address without clinical input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clinical problem/opportunity
Describes a gap in current operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Describes opportunity for future operations
Includes a general direction for a solution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Raises questions and concerns but no answers
Most central problem the organization faces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Small, doable problem not important to the survival of the organization

49. How much effort did various people put into the project? In the following, enter the effort in terms of number of hours each group spent on the project during various components of the project. If two people spent 4 days during problem identification, write 8. Write 0 if no one from the group was involved in the specified phase of change. You do not need to be precise; give your best guess. If you cannot guess, write "?."

Group	Involved during			
	Problem identification	Solution generation	Pilot testing of change	Organizationwide implementation
Upper administration				
Project sponsor				
Project team leader				
Clinical team members				
Nonclinical team members				
Process owners outside of team				
Group facilitator				
Outside experts				
Other, please describe:				

50. How did the time associated with the effort compare to what was budgeted or expected at the start of the effort?

- ☐ Radically less than expected
 ☐ As expected
 ☐ More than expected
☐ Less than expected
 ☐ Radically more than expected

51. We often have to calculate the approximate investment in the improvement effort. To do so, we need the approximate hourly rate for individuals in the following categories:

Upper administration: ____ / hour
 Project sponsor: ____ / hour
 Project team leader: ____ / hour
 Clinical team members: ____ / hour
 Nonclinical team members: ____ / hour
 Process owners outside of team: ____ / hour
 Group facilitator: ____ / hour
 Outside experts: ____ / hour
 Other: ____ / hour

52. Approximately how many times did the project team meet during the project?

Appendix. A Survey of Improvement Practices* (continued)

53. How many hours long was an average meeting?

- | | | |
|---|----------------------------------|-----------------------------------|
| <input type="checkbox"/> Less than 1 hour | <input type="checkbox"/> 4 hours | <input type="checkbox"/> 8 hours |
| <input type="checkbox"/> 1 hour | <input type="checkbox"/> 5 hours | <input type="checkbox"/> 9 hours |
| <input type="checkbox"/> 2 hours | <input type="checkbox"/> 6 hours | <input type="checkbox"/> 10 hours |
| <input type="checkbox"/> 3 hours | <input type="checkbox"/> 7 hours | |

54. Which of the following was done prior to a typical face-to-face meeting (check all that apply)?

- ☐ Meeting time and agenda were distributed.
- ☐ Documents or reports that were supposed to be discussed in the meeting were distributed ahead of time.
- ☐ A person met, called, or e-mailed all team members and polled them on key issues to be discussed in the meeting.
- ☐ Only meeting time and place was set.

55. Did the team consciously try to rethink or delay decisions it had already arrived at?

- | | | |
|------------------------------------|---------------------------------|-----------------------------------|
| <input type="checkbox"/> Never | <input type="checkbox"/> Often | <input type="checkbox"/> Not sure |
| <input type="checkbox"/> Sometimes | <input type="checkbox"/> Always | |

56. In each row, check the box closest to how team members would characterize their meetings:

Long and time-consuming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Short and well organized
More productive than they expected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not as productive as they would have liked
Fun and social	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Task oriented
Dominated by views of one person or subgroup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Respecting interdisciplinary differences and views

57. How much work was done in between project meetings?

- | | |
|-----------------------------------|---------------------------------------|
| <input type="checkbox"/> Not much | <input type="checkbox"/> A great deal |
| <input type="checkbox"/> Some | <input type="checkbox"/> Most work |

58. In how much detail did the project team describe the existing work processes?

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Not much | <input type="checkbox"/> Detailed flowcharts |
| <input type="checkbox"/> Some details | <input type="checkbox"/> Detailed descriptions |

59. When did the project team describe the process it was planning to improve (usually done through flowcharts)?

- | | |
|--|--|
| <input type="checkbox"/> Not done | <input type="checkbox"/> After arriving at solutions |
| <input type="checkbox"/> Before generating solutions | <input type="checkbox"/> All along |

60. How did the group select changes to pilot test?

- | | |
|---|---|
| <input type="checkbox"/> Ideas were discussed as they came up | <input type="checkbox"/> No particular pattern was followed |
| <input type="checkbox"/> Discussion was postponed until a list was made of possible changes | <input type="checkbox"/> Unknown |

61. Did a person facilitate most team meetings?

- | | |
|---|-----------------------------------|
| <input type="checkbox"/> Yes, a member of the team did | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes, someone from outside the team did | <input type="checkbox"/> Not sure |

62. Were data collected to examine whether the pilot change had led to improvement?

- ☐ No
- ☐ Yes

If yes, which of the following was done during the data collection?

- ☐ Sampling of respondents
- ☐ Reliance on numerical estimates of persons close to the process
- ☐ Use of data routinely collected about the performance of the process
- ☐ People who collected the data were informed of data collection procedures before knowing what data should be collected

Appendix. A Survey of Improvement Practices* (continued)

63. When did employees in other units of the organization first hear about this project?
- ☐ At start and end of project
 - ☐ At end of project
 - ☐ Throughout the project
 - ☐ No organized attempt was made to inform other units of the organization
64. Did the administration or team members take any of the following steps to encourage others in the organization to adopt the recommendations of the team (mark all that apply):
- ☐ No specific steps were taken
 - ☐ Work norms and policies were changed to encourage adoption of the recommendations
 - ☐ Written team reports were distributed widely
 - ☐ Examples were set at top of organization
 - ☐ Team member(s) walked key other employees through the report or possible change
 - ☐ Key decision makers were repeatedly reminded of the potential advantage of change over several months
 - ☐ People interested in adopting the recommendations were invited to meet socially together and discuss their issues
 - ☐ Budget was allocated for change
 - ☐ Early adopters were recognized and praised publicly and asked to speak about their experiences
 - ☐ Media (e-mail, newsletters, videotapes, etc) were used to portray a positive image for change
 - ☐ Other, please specify:

D. Did It Work?

In this final section we ask you to estimate the impact of the improvement project. We ask you to provide the percentage of improvement compared to baseline values. Please complete a separate section D for each project.

65. Was the intent of the pilot project to save costs?
- ☐ I am not sure
 - ☐ No
 - ☐ Yes
- If yes, were there any savings?
- ☐ No data are available.
 - ☐ It is too early to tell.
 - ☐ Yes, potential future costs have been avoided. Give the percentage of reduction in future costs: _____%
 - ☐ Yes, real costs have been avoided, and as a consequence the budget for the unit has been modified. Give the percentage by which the unit budget was reduced: _____%
66. Was the intent of the project to improve client satisfaction?
- ☐ I am not sure
 - ☐ No
 - ☐ Yes
- If yes, (select and answer all that apply)
- ☐ No improvements made in customer satisfaction.
 - ☐ Too early to tell.
 - ☐ The project improved customer satisfaction by _____%.
 - ☐ There was improvement in customer satisfaction, but these improvements have not been measured.
 - ☐ Not sure whether the project made any improvements in satisfaction of customers.
67. Was the intent of the project to increase sales or market share?
- ☐ I am not sure
 - ☐ No
 - ☐ Yes
- If yes, (select and answer all that apply)
- ☐ No improvements were made
 - ☐ Too early to tell.
 - ☐ The project improved sales by _____%.
 - ☐ There was improvement, but these improvements have not been measured.
 - ☐ Not sure whether the project made any improvements.

Appendix. A Survey of Improvement Practices* (*continued*)

68. Has the project improved the quality of products/services offered by this unit?

- ☐ I am not sure
- ☐ No
- ☐ Yes

If yes, (select and answer all that apply)

- ☐ The project increased patients' access to services by ____%.
- ☐ The project reduced mortality of patients by ____%.
- ☐ The project reduced morbidity of patients by ____%.
- ☐ The project increased patients' health status by ____%.
- ☐ The project improved _____ by ____%.

69. Has the project improved the employees' quality of work life?

- ☐ I am not sure
- ☐ No
- ☐ Yes

If yes, (select and answer all that apply)

- ☐ Employees' work is more convenient.
- ☐ Employees have to do less because redundant activities have been streamlined.
- ☐ Employees' roles are better defined, communication is more enhanced, and interpersonal conflicts are reduced.
- ☐ Employees are more aware of each other's work.
- ☐ Employees socialize more with each other.

Thank you. This completes the survey of one project. The information you have provided will be combined with four other projects and used to find patterns across the improvement efforts. The information you have provided is kept confidential. Neither you nor the project will be identified in our reports. May we contact you if we do not understand some of your responses? Yes, at telephone number: _____ No _____

Our report will be sent to your designated organization's contact person.

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