

# Translating family satisfaction data into quality improvement\*

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**Background:** Improvement of clinical care requires measurement of key dimensions of health care quality and action based on these measurements. Families, data analysts, clinicians, and administrators all have important roles to play.

**Objective:** To outline an approach to the measurement and utilization of family satisfaction data so that these data can be translated into health care quality improvement initiatives.

**Design:** Using a synthesis of existing knowledge about translation of satisfaction data into improvement strategies, this approach starts with selecting and implementing a satisfaction survey that reflects the key processes, providers, and places for

the delivery of critical care. The survey results can be expressed in a way that prioritizes the opportunities for improvement. A comparison of results across sites, or use of a performance-importance grid, can assist in this prioritization process. High-priority items can then be addressed by the multidisciplinary intensive care unit team using a systematic, evidence-based approach to improvement that includes implementation strategies that have been proven to effectively change clinician behavior. (Crit Care Med 2004; 32:1922–1927)

**KEY WORDS:** family; health care surveys; quality assurance; health care; critical care

**A** scenario: Recently, several family members of patients cared for in your intensive care unit (ICU) have complained about problems related to communication with clinicians, participation in decision making, and logistics of the waiting room and visiting hours. Some ICU staff members have wondered whether recent restructuring within your hospital and high turnover of the nursing staff may have contributed to these problems. You believe that these complaints reflect systematic problems. You decide to approach these problems using the methods and tools of quality improvement.

Improvement of clinical care requires measurement of key dimensions of health care quality and action based on these measurements. According to the U.S. In-

stitute of Medicine, the key dimensions of health care quality are safety, effectiveness, timeliness, patient-centeredness, efficiency, and equity (1). In the ICU, difficulties communicating with very sick patients and ongoing communication with patients' family members mean that patient-centeredness includes family-centeredness. To manage this dimension of quality, it is necessary to measure the family's experience with the processes (2) and outcomes of care. The purpose of this measurement is to determine how families view quality and how they rate the performance of the ICU (3). We believe that the ultimate purpose of gathering information from families about their experiences, satisfaction, and perspectives on care is to use it to improve the quality of care. Data collected from families of ICU patients demonstrate wide variation in satisfaction among similar ICUs as well as consistent dissatisfaction with communication from physicians (4). Despite this tension for change, translating family satisfaction data into improved health care delivery is challenging.

Optimal collection, presentation, and use of family satisfaction data require understanding potential barriers to the use of this kind of information. Health care managers have identified several barriers to use of patient feedback. These include views that the data are not user-centered, the data are not linked to processes, and the organizational size, structure, and

strategies are not designed to use this information (5). In addition, there may be views that there is a lack of time to act on this information, staff are skeptical and afraid of learning about negative experiences, staff are not trained to use this information optimally, and physicians lack interest in this area (5). It is useful for critical care clinicians and administrators to anticipate these kinds of barriers before attempting to use family satisfaction data to improve quality.

The objective of this article is to outline an approach to the measurement and utilization of family satisfaction data so that satisfaction data can be translated into critical care quality improvement initiatives. The approach suggested in this article is just one of several models. In this article, the roles of families, data analysts, clinicians, and administrators are highlighted as information about family experiences in the ICU is collected and translated into health care improvements. The scenario presented at the beginning of this article will be used throughout as an example.

*Role of Families.* The experience of family members can be understood using several data collection methods: critical incident documents, focus groups, in-person or telephone interviews, written surveys, participant observation, and content analysis of letters and other archives (6). Families have expectations of care for their loved ones and for themselves,

**\*See also p. 1975.**

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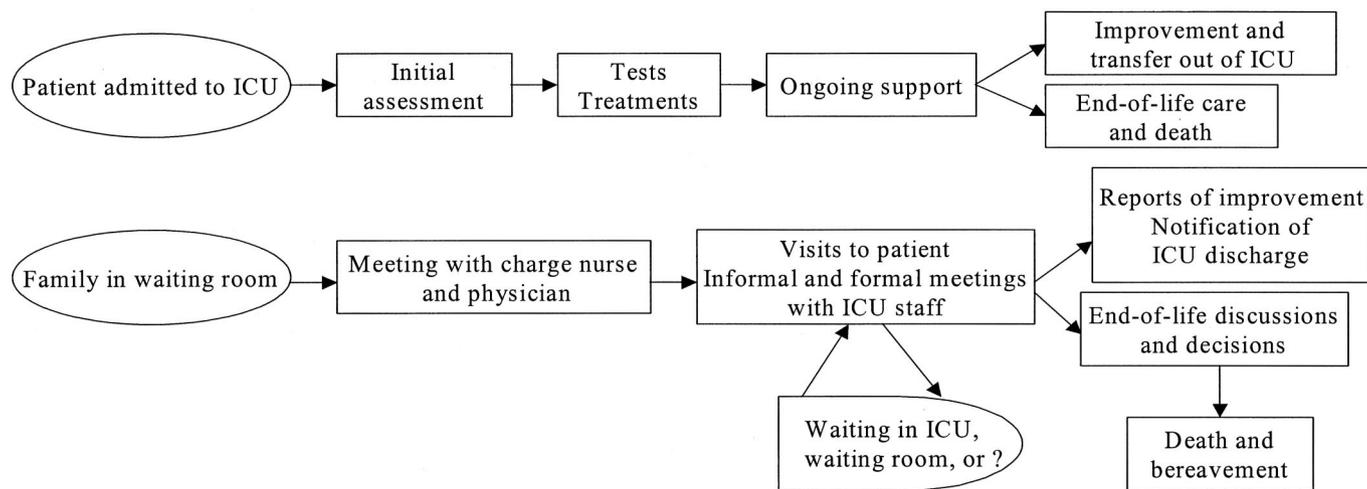


Figure 1. Key processes in patient/family/clinician interactions in the intensive care unit (ICU). This flowchart illustrates the general trajectory and possible outcomes for patients and families of patients in an ICU.

which include expectations about end-of-life care. These expectations sit at the interface between their experience of care (or their vicarious experience of their loved one's care) and their evaluation of care and are influenced by interpretation of symptoms, past experiences, vulnerability, knowledge, age, and ethnicity (7). Expectations are important because family satisfaction is likely determined by the gap between the families' expectations of service quality and their perceptions of the level of service quality (8). These relationships highlight the importance of educating families about structures, processes, and outcomes of critical care so that they may develop realistic expectations (9).

Regardless of the method used to collect data about family satisfaction, the questions asked should be aligned with the processes of family and patient care in the ICU so that reporting about experiences can be linked directly to these processes (2). For example, if a written survey is developed, it should be based on a flowchart of key health care processes from the perspective of the family members (2). These processes include admission to ICU by physicians and nurses, daily physical assessment by a variety of providers, daily attending rounds, and family meetings. The questions should elicit details about specific experiences, not just ratings of general experiences (10, 11). For example, questions about how clinical information was provided to families point directly to the processes of informal and formal family meetings. Reports of specific experiences are more amenable to action than are ratings of general

items. To be useful, quality measures, and especially process measures, should be scientifically valid, reliable, interpretable, available, and affordable (12–14).

*Back to the Scenario.* To begin to evaluate the families' experience in your ICU, you need to consider the key processes of care, from the families' perspective. Figure 1 outlines care provided to the family and to their critically ill relative. This figure illustrates the various players (patient, family, providers), processes (treatments, communication, decision making), places (ICU and ICU waiting room), and possible outcomes (death or transfer from ICU). In your search for family satisfaction surveys in critical care (15–17), you find a rigorously developed family satisfaction questionnaire (17) that has been used in a multiple-center study (4). The items in this questionnaire are linked to the key processes, providers, and places in critical care. For example, they include questions related to symptom management, the process of decision making, skill and competence of the various providers, communication by these providers, and the physical environment of the ICU. For each item, the respondent provides an ordinal response (i.e., excellent, very good, good, fair, poor). You decide to use this questionnaire to measure family satisfaction with care in your ICU.

*Data Analyst's Role.* The data analyst's role is to analyze and summarize the questionnaire results in a format that will be actionable. This format depends on the purpose of the data collection (6). For example, if the purpose is to explore family perspectives in an open-ended way,

then a simple descriptive presentation may be adequate. However, if the purpose is to correlate family perspectives with other variables (such as patient or family descriptors), then a scatterplot is most useful. If the purpose is to illustrate causal relationships, then a control chart over time or presentation of comparative data between groups for results arising from a randomized trial may be most useful. A control chart is a graph that illustrates measurements over time and allows for the identification of special causes of variation in those measurements.

Next, data analysts and end-users must decide whether they wish to present data as a "report card" or as an "instrument panel" (18). Report cards are summative evaluations of clinical outcomes that reflect past performance and are often used to compare health care organizations and to assist citizens and providers in deciding where to receive and deliver care, respectively. Instrument panels are formative evaluations of processes, outcomes, and costs that reflect a snapshot of current performance and can be used for decision making within an organization (18). A hybrid format that documents both summative and formative measures is the "balanced scorecard" (19). Family satisfaction data may be a component of any of these formats. Formats most useful to clinicians are those that show not only past and present performance but also which actions will lead to improvement. Formats most likely to lead to improvement are those that allow clinicians to anticipate needs for clinical

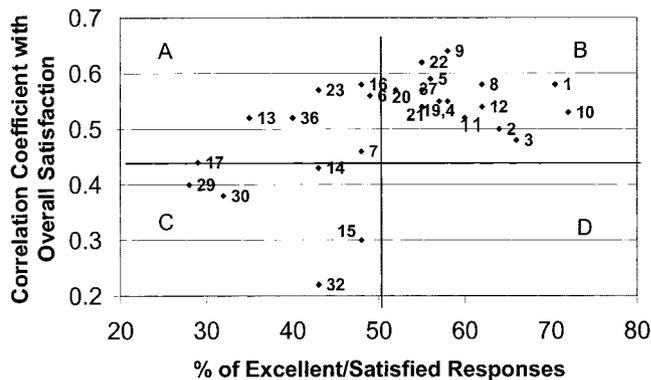


Figure 2. Performance-importance grid for items in the Canadian intensive care unit family satisfaction survey (4). Each point refers to an individual item in the family satisfaction survey. The y-axis identifies the correlation coefficient for each item with overall satisfaction. The x-axis identifies the performance score (percent of patients who rated the item excellent or satisfied for each item). For example, points in quadrant A represent those items that are highly correlated with overall satisfaction but had the lowest performance scores. This combination of high correlation coefficient and low performance score identifies opportunities for improvement.

care, information, and assistance from staff (9).

Although the format of data presentation facilitates improvement, data themselves drive specific improvement projects. Data analysts and clinicians need to express the data in a way that will help to prioritize improvement opportunities. For example, showing the percentage of respondents who were very satisfied with a particular service, who were moderately satisfied, and who were dissatisfied shows the full spectrum of responses (2, 20). Ratings or proportions can be expressed as percentage of the maximum possible score to illustrate the potential for improvement (21). Furthermore, results may need to be stratified by diagnostic group, illness severity, or length of stay because these influence family satisfaction (22).

Once the data have been formatted meaningfully, the next task is to prioritize action based on this information. For example, expressing the performance score for a specific item along with its associated importance coefficient can be used to calculate the impact of the item. The importance coefficient is the regression coefficient for that item as an independent predictor of overall satisfaction. The impact score is the product of the performance score and the importance coefficient and can be used to prioritize action (22). For example, if completeness of information provided by ICU staff was frequently rated as poor ("high" performance score in this case) and had a high importance coefficient, this item would be a high priority for improvement. A

performance-importance grid is a visual aid that expresses the same concept (23). Raw performance scores are plotted against the associated importance coefficient, and items that fall in the "low performance-high importance" quadrant point to opportunities for improvement. Another strategy to prioritize items is to address those items that most strongly predict maximum satisfaction vs. moderate satisfaction (24). This strategy is based on the theory that the concerns of a moderately dissatisfied consumer are more amenable to improvement than those of a vehemently hostile consumer. A third strategy is to compare performance for individual items between an index organization and benchmarks from other organizations (best achievable practices) to identify opportunities for improvement (25). Specifically, performance of an organization is significantly different from that in other surveyed organizations if it is outside the 95% confidence limits around the average value for that performance item. Alternatively, expressing the results in terms of overall average, minimum, and maximum allows units to see how they compare to the best achievable performances as well as the worst.

*Return to the Scenario. How can you translate the information obtained from the family satisfaction survey into local improvement strategies? First, the proportion of respondents at your site who answered excellent, very good, and poor could be presented for each item. To assist in prioritizing action, a performance-importance grid could be developed (23)*

(Figure 2). The correlation coefficient reflects the extent to which an individual item is related to overall satisfaction with care (the higher the coefficient, the stronger the correlation). Each individual item can be plotted on this grid according to its correlation coefficient and the percent "excellent" or "completely satisfied" responses for that item. Quadrant A represents those items that were highly correlated with satisfaction and had a low rate of "excellent" or "completely satisfied" responses. Quadrant B represents those items that were also highly correlated with satisfaction but had a high rate of "excellent" or "completely satisfied" responses. Quadrant C represents those items that were not highly correlated with satisfaction and had a low rate of "excellent" or "completely satisfied" responses. Quadrant D represents those items that were not highly correlated with satisfaction and yet had a high rate of "excellent" or "completely satisfied" responses. The advantage of this format is that it clearly enables you to see which items you can target for change strategies. Points in quadrant A represent high-priority items that, if improved, would most likely yield an increase in overall family satisfaction. Points in quadrant B represent high-priority items that already have good satisfaction ratings. Points in quadrants C and D represent low-priority items that have opportunities for improvement and high satisfaction ratings, respectively. Using this approach, the original concerns about communication, participation in decision making, and waiting room logistics can be prioritized.

Figure 3 illustrates an alternative method of demonstrating the results of the family satisfaction questionnaire. If you have access to the results from other ICUs, your performance on each item can be reported compared with the overall average, minimum, and maximum (best achievable performance) of ICUs in the sample.

*Role of Administrative Leaders and Clinicians.* Although satisfaction data are collected by surveyors and analyzed and formatted by analysts, it is the job of leaders to present this information to frontline staff. Rather than simply sending out tables or figures and assuming that staff will interpret them properly, it has been recommended that each staff member receive a written report that includes the following elements: statement of the overall goals of the questionnaire;

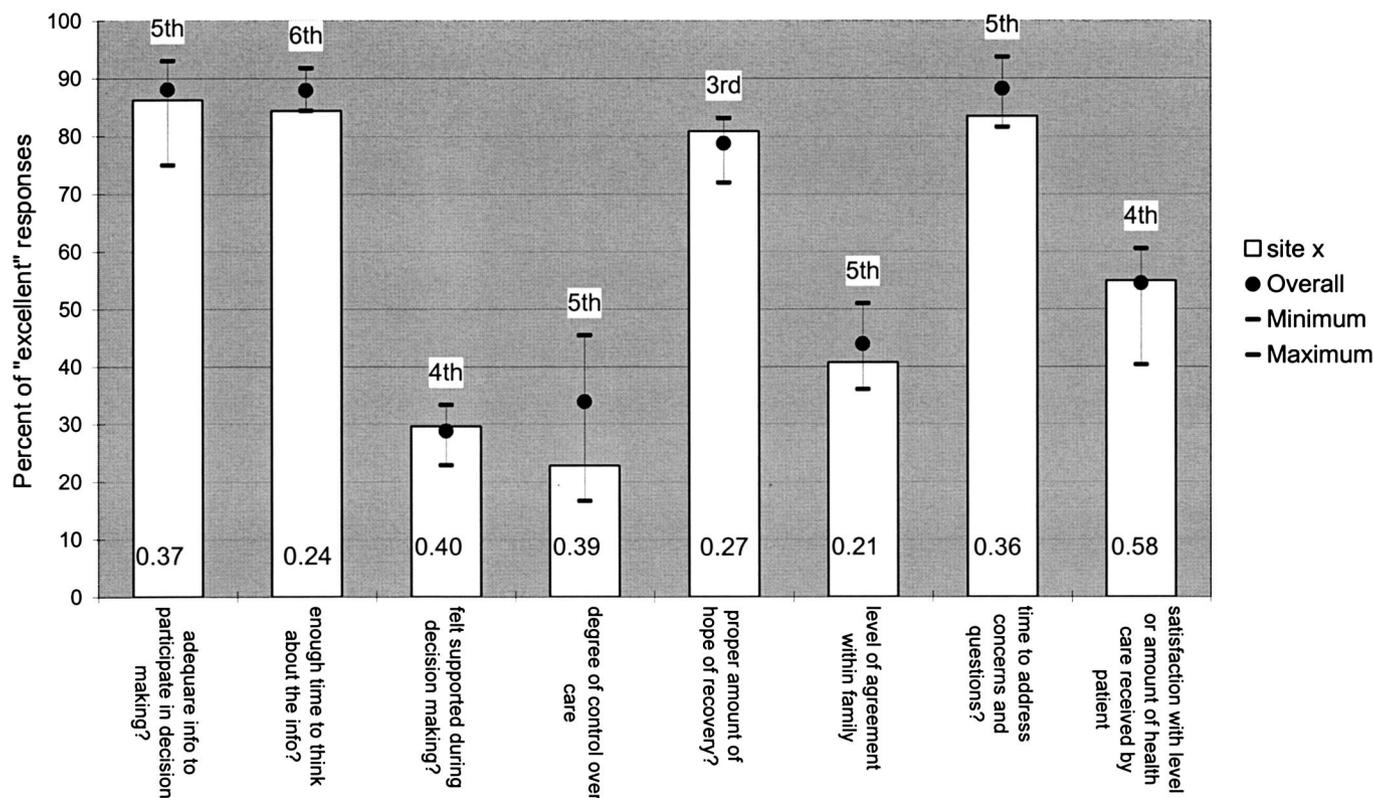


Figure 3. Example of data presentation showing individual site data, overall average, range across sites, and importance score for each item of a family satisfaction survey. The number above each error bar is the rank of this site among six participating sites. The value at the bottom of each bar is the correlation coefficient with overall satisfaction for that item. Using this figure, individual sites can compare their performance with that of other sites.

description of the study period, questionnaire development and validation, and response rate; detailed description of the items assessed on the questionnaire; explanation of the individual scores including a highlighting of areas that are prioritized for improvement; relationship between these priorities and the overall mission, values, and vision of the hospital (and ICU); and guidelines for acting on the data (21). Additional strategies to ensure clarity of understanding include question-and-answer sessions for staff and poster presentations of the results. One strategy to create a tension for action is to express actual performance in the context of what the staff think the performance should be (23). This strategy requires that before they see the actual scores, staff members be asked what they think the individual scores should be. In addition, an ICU can be challenged by a leader inviting the staff members to choose two high-priority items that the staff intend to improve by a meaningful increment (e.g., 10%) over a defined period of time (23).

Action based on family satisfaction data requires an explicit approach to improvement. Although this action is often

coordinated by leaders, it is really a team responsibility. There are several published approaches to improvement, but the model developed by Langley et al. (26) is the most well known and has been adopted by the Institute for Healthcare Improvement. The framework for this model is three questions: a) What are we trying to accomplish? (aim); b) How will we know that a change is an improvement? (measures); c) What changes can we make that will result in improvement? (action). Each test of change is conducted using the plan, do, study, and act cycle.

A second approach to improvement is to prioritize the opportunities and then conduct a root cause analysis (27). This root cause analysis involves additional interviews and/or focus groups with family members of ICU patients. For example, family members could be asked in a face-to-face interview why they responded the way they did to specific questions and for any suggestions.

A third approach to improvements is gap analysis (8). In this approach, the gap between a family member's expected level of service quality and his or her perception of the level of service quality actually received is analyzed by dividing it into its

components. Understanding and closing each of these gaps is a strategy for closing the overall gap between expectations and perceptions of service quality. For example, the first component gap is between the family members' expectations and the health care providers' perceptions of those expectations. Understanding and closing this gap involve acquiring accurate information about family members' expectations.

A fourth approach to improvement is quality function deployment (28). This is a formal and explicit planning strategy to identify qualities demanded by family members, identify measurable characteristics and performance measures of these qualities, and link the performance measures to key organizational functions and tasks that are necessary to satisfy the demanded qualities. For example, family satisfaction data would help to identify qualities demanded by family members. This information could then be used to identify performance measures and in turn to identify organizational functions and tasks.

Regardless of the approach to improvement chosen, it is the responsibility of leaders and their clinical teams to de-

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velop innovative changes in processes of care that will address the concerns of families. Successful changes can then be implemented and incorporated into daily work using strategies that have been proven to alter clinicians' behavior (29). Despite this systematic approach, sometimes interventions aimed at improving family satisfaction do not achieve that aim (30). These "failures" are the impetus for new ideas for change and/or new implementation strategies.

*Back to the Scenario.* Each of the priorities for improvement should be the focus of an improvement effort that uses an explicit approach. The model of Langlely et al. (26) is one approach. For example, if improvement in communication with family members is an opportunity for improvement, a multidisciplinary improvement team would develop a statement of aim (e.g., to provide more information more often to family members), a statement of how they will measure improvement (a brief questionnaire to families, oral or written, about adequacy of information provided), and a statement of what changes they will make to result in improvement (place a poster in waiting room to identify ICU team members and their roles, designate time for family conferences after patient rounds, etc.). Then, using the "plan, do, study, act cycle," they will plan a change (e.g., designating protected time for family conferences after patient rounds) by making a prediction of how this change will improve care and deciding how, where, and when to introduce

the change, as well as who will be involved. In the "do" phase, the change is introduced and observations (both expected and unexpected) are collected. These observations could be a small sample of family satisfaction data regarding only the items of interest related to the process that is being improved, such as the brief questionnaire described previously. If the change was the designation of time for family conferences, evaluation might include a brief survey of family members to find out if this change allowed them to obtain more information and to have their concerns heard by the health care team. In the "study" phase, observations are analyzed and compared with the prediction, and in the "act" phase, new ideas for changes are developed and a new cycle of change is initiated. Successful changes from these cycles can then be implemented using multiple active strategies such as "academic detailing," opinion leaders, and audit and feedback.

To illustrate the trends in measurements and the impact of improvement strategies, results for key survey items and the associated improvement efforts could be plotted over time in the form of a control chart. These charts along with those for other dimensions of quality can then become part of an instrument panel or balanced scorecard for the ICU and the hospital as a whole. Presentation of this information to both ICU staff and families documents the efforts made by the ICU staff to measure a key dimension of quality and to act on these measurements.

## CONCLUSIONS

As citizens demand more accountability for the use of public funds and assurance that the health care system is working effectively and efficiently, hospitals and other health care organizations are actively engaged in measuring their performance, including patient satisfaction with care. In the ICU setting, patients themselves are often too ill to communicate, so the perspective of families is most relevant. We previously demonstrated that most family members are satisfied with care provided in the ICU, although significant performance variation exists in certain domains (4). This finding supports the notion that family satisfaction may be a worthwhile target for quality improvement initiatives.

We have outlined a systematic approach to the collection, presentation, analysis, and interpretation of data from family satisfaction surveys in critical care, and we have illustrated how these data can be translated into prioritized health care improvements. This is but one approach to improvement, and it has not been tested formally. This systematic approach may provide a starting point for ICU clinicians responding to the perspectives of the families of their patients.

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