Evaluation of the HIVQUAL Program: Results on the Process of Implementation and Factors that Predict Organizational Independence

Final Report

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Section One: Background and Overview

The HIVQUAL program was developed by the New York State AIDS Institute as a vehicle for building quality improvement (QI) capacity within HIV medical care programs, in order to improve the quality of care for persons living with HIV. In October 2000, the Health and Disability Working Group (HDWG) at the Boston University School of Public Health was funded by Health Resources Services Administration (HRSA) to conduct a two-year evaluation of the HIVQUAL program and provide recommendations for future implementation. The evaluation covered the time period between January 1, 1998 and December 31, 2001.

HIVQUAL is a program designed to teach a QI structure and implement QI projects using that structure. HIVQUAL has three major aims: to teach the HIVQUAL model of QI by conducting basic QI projects, to build QI capacity by integrating the HIVQUAL model into an organization's infrastructure, and to use the HIVQUAL QI projects to improve quality of HIV care. Successful HIVQUAL outcomes include implementation of the QI projects, integration of the HIVQUAL QI framework within the organization, and improved quality of HIV care. This evaluation attempts to address all of these outcomes.

HIVQUAL is a dynamic, changing program. At the time of this evaluation, the HIVQUAL program was based on an eight-step process culminating in an organization independently initiating QI activities and integrating the HIVQUAL model into its QI infrastructure. (Since then, the eight steps have been consolidated into six steps0. The eight HIVQUAL steps for developing a quality system were:

1. Develop a project plan,
2. Collect and analyze data,
3. Leadership sets project priorities,
4. Project team investigates the process,
5. Project team plans and implements pilot tests,
6. Leadership and project team systemize change,
7. Evaluate system change, and
8. Build a sustainable QI infrastructure.

The key to teaching the HIVQUAL model is the HIVQUAL consultant. The AIDS Institute contracts with a group of trained consultants who work with each organization to implement the HIVQUAL quality improvement model. Each consultant works with up to 35 organizations in different geographic areas of the country.

This national evaluation is the first attempt by an outside agency to create a comprehensive and structured description and analysis of the HIVQUAL Program. This report begins with a focus on the process of HIVQUAL implementation from the perspective of the participating organizations and HIVQUAL consultants. The outcomes in the early sections of this report are process outcomes that examine what influences an organization's ability to integrate and independently sustain the HIVQUAL QI model. After examining these process outcomes, the report then examines the impact of changes in process—specifically, implementing HIVQUAL and adopting the QI framework—on performance outcomes. Therefore, the next sections of the report focus on the changes in key HIV quality indicators by organizations at different levels of HIVQUAL implementation. Finally, in the discussion and conclusion, in addition to

summarizing the results, we provide some recommendations for future HIVQUAL implementation and evaluation.

This report is designed to answer the following questions:

1. What is the profile of organizations that participate in the HIVQUAL program, and what are some differences between organizations that participate in HIVQUAL and those who choose not to participate?
2. Does participation in other QI initiatives or periods of inactivity while involved in HIVQUAL serve as a barrier to successful HIVQUAL implementation?
3. What quality indicators do organizations chose to work on, and is there a relationship between indicator selected and improvement in both process and outcome measures?
4. What are the differences between organizations that reached different stages in the HIVQUAL program?
5. Does the implementation of HIVQUAL lead to better performance in implementing key HIV tests and procedures?
6. What are the factors that predict a site reaching independence, and what are the thresholds for reaching independence?

Because of the large number of issues addressed in the evaluation, this report begins with a detailed description of the overall evaluation methodology. Following the methodology, the report is divided into sections, with each section designed to address one of the key evaluation questions described above.

Section Two: Evaluation Methodology

Evaluation Sample

More than 250 organizations have participated in HIVQUAL since its inception. This evaluation reports on 112 organizations providing primary care to individuals living with HIV/AIDS. These 112 organizations were funded through the Health Resources Services Administration (HRSA) and met the following inclusion criteria:

- Funded through HRSA's Title III program of the Ryan White CARE Act;
- Invited to join the HIVQUAL initiative between January 1, 1998 and December 31, 2000;
- Not involved in the pilot evaluation of HIVQUAL completed in Pennsylvania.

To assess progress moving through the eight-step process described in the introduction of this report, at regular intervals, organizations are reviewed by the HIVQUAL consultants and placed at a particular step. For evaluation purposes, HDWG consolidated the eight steps into three stages. Organizations were assessed to be at one of the three stages of implementation depending upon their consultant's ranking of their step:

- Initial stage: the pre-quality improvement project organizations (steps 1-4);
- Advanced stage: the quality improvement project implementation organizations (steps 5-7); and
- Independent stage: organizations that had reached the stage of independently initiating QI activities (step 8).

For comparative purposes for the evaluation, in addition to the organizations actively involved in HIVQUAL, the evaluation team gathered data on organizations that chose not to participate in HIVQUAL and organizations that withdrew from HIVQUAL after beginning participation.

Data Sources and Data Collection

To conduct the evaluation, we used the following data sources:

1. Organizational Assessments
2. Consultant Activity Reports
3. Consultant Surveys
4. Organization Surveys
5. Program Status Reports
6. Performance Data

Some of the data sources were already in place when the evaluation began, while others were developed for evaluation purposes. The Organizational Assessments, Consultant Activity Reports, and Program Status Reports had been developed by the AIDS Institute and were already in place. In addition, the AIDS Institute collected Performance Data from the participating organizations. The Consultant Survey and Organization Survey were developed by HDWG specifically for the evaluation.

<u>Data Sources Collected by AIDS Institute</u>

Organizational Assessments assess organization QI readiness, and were completed at baseline and follow-up. Consultant activity reports document the amount of time a consultant reports working with each organization. The Program Status Report is a periodic report giving the

current HIVQUAL status of the organization as determined by the consultant. Performance data include results from chart reviews from each organization that report on the percentage of individuals who receive specific services that indicate high quality HIV care. Additional information about these data sources is provided below.

Organizational Assessment
The Organizational Assessment measures an organization's readiness for QI implementation. The Organizational Assessment is administered by the HIVQUAL consultant at baseline and annually thereafter. The baseline Organizational Assessment is completed at an initial orientation meeting after the organization commits to participating in HIVQUAL. During this meeting the consultant and organization staff work together to reach a consensus score for each Organizational Assessment question. There are a total of 12 questions grouped into 4 sub-scales of 3 questions each. The four sub-scales include organizational infrastructure, organizational sponsorship, resources, and performance data management. Each question has specific scoring criteria ranging from 1 to 5; higher scores indicate more advanced QI organizational readiness. The individual sub-scales are aggregated into a total Organizational Assessment score. (All questions on the Organizational Assessment are included in Appendix 4).

Most baseline and follow-up Organizational Assessments were available to use in the evaluation analyses. However, although the goal was to complete the Organizational Assessment on a yearly basis, there was some variation in when consultants administered the follow-up Organizational Assessment for two reasons. First, some organizations went through long periods of inactivity and the Organizational Assessments were delayed. Second, there was some consultant misunderstanding about when follow-up Organizational Assessments were to be completed. Some of the consultants administered the Organizational Assessment annually at the anniversary date of engagement, while others thought the follow-up was supposed to be completed only after the organization had implemented its QI project. Therefore, the follow-up Organizational Assessments used in this evaluation were completed an average of 18 months (range 7-40 months) after the baseline.

The evaluation team collected a total of 90 baseline assessments and 74 follow-up assessments. For the organizations that never participated in HIVQUAL (N=22), there was usually no baseline assessment and never a follow-up assessment, although a small number of organizations (N=2) were assessed at baseline before deciding not to participate. For organizations that withdrew there was usually no follow-up assessment. For ongoing participants (N=90), there were 88 baseline organizational assessments and 75 follow-up assessments, which translates to a 98% response rate on the baseline assessments, and an 83% response rate on the follow-up assessments.

Consultant Activity Reports
The Consultant Activity Report logs the time a consultant spends working with each organization. This report is based on records submitted by the consultant to the AIDS Institute. The reports document how many hours the consultant worked, either on-site or off-site, to assist the organization in implementing HIVQUAL. Available monthly Consultant Activity Reports were collected from the AIDS Institute by the evaluation team. We were able to collect at least some consultant activity data on 88 of the 90 organizations that participated in the HIVQUAL

program, a response rate of 98%. There was also some data available on 12, or 55%, of the 22 organizations that never participated in the intervention, but were enrolled in the evaluation.

Program Status Report
The Program Status Report is generated by the AIDS Institute. The report periodically documents each participating organization's HIVQUAL step status. HIVQUAL step status is determined by the consultant based on how advanced each organization is at independently implementing QI projects. For this evaluation, HDWG used the Program Status Report that documented organization status as of December 31, 2001. We were able to collect status data on all 112 organizations enrolled in this evaluation, a 100% response rate.

Performance Data
The Performance Data is submitted by participating organizations to the AIDS Institute. The organizations are provided with a protocol to follow in order to conduct a chart review of a random sample of medical records to examine whether quality care was delivered to patients. At the time of the evaluation, seven quality indicators were measured:

- M. Tuberculosis (PPD) screening within the previous year (PPD);
- Pelvic Exam: Women received a complete gynecological exam, including a Pap Smear, within the previous year (GYN care);
- HIV Staging: CD4 Count measured during the previous four months (CD4);
- HIV Staging: Viral Load measured during the previous four months (VL);
- Documentation of discussion about and receipt of Highly Active Antiretroviral Therapy, if clinically appropriate, within the past year (HAART therapy);
- Pneumocystis Carinii Pneumonia (PCP) prophylaxis: Placed on PCP prophylaxis if clinically appropriate (PCP); and
- Mycobacterium Avium Complex (MAC) prophylaxis: placed on MAC prophylaxis if clinically appropriate (MAC).

Organizations submit their performance data to the AIDS Institute before actively engaging in HIVQUAL (baseline) and on annual basic thereafter. For the evaluation, the AIDS Institute had data available for 1998, 1999, and 2000 that included baseline, year one follow-up, and year two follow-up on a subset of the organizations. Of the 90 active organizations, 69 organizations, or 77%, had baseline data available. One year follow-up data were available for 42, or 47%, of the organizations. Only 15 organizations (17%) had two year follow-up data available for the evaluation. The limited amount of data available is partially due to the fact that some organizations did not engage in HIVQUAL until 2000. In addition, early on, there were challenges in using the HIVQUAL software to submit data.

Due to the relatively small amount of performance outcome data available for the evaluation, we were able to conduct limited analyses in this area. Moreover, depending on the initial date of participation in HIVQUAL, the data available crossed the time span between 1998 and 2000, and changes were made in the way data were collected after 1999. These methodological differences in the way data were collected in 2000 made comparisons with 1998 and 1999 inappropriate; for these analyses we could only use performance data from 1998 and 1999.

Data Sources Developed by the Health and Disability Working Group

The consultant survey and organization surveys were developed between October 2000 and April 2001. The consultant survey was administered in the Spring of 2001, and the organization survey was administered between the June and October of 2001. Additional information on each of these instruments is provided below.

Consultant Survey

A survey of consultants was designed to capture the consultant's description of how each organization became engaged in HIVQUAL and how HIVQUAL implementation progressed. Topics included the willingness of an organization to participate, how the HIVQUAL staff engaged each organization, receptiveness towards having a consultant, and a description of the organization's major needs. Furthermore, details pertaining to data collection and quality improvement capacity were obtained. (A copy of the consultant survey is in Appendix 3).

HDWG administered the survey by telephone. Each consultant responded to the set of survey questions for each organization for which they were responsible. Some questions could not be answered for some organizations because the organization had not progressed to an advanced stage of participation. The evaluation team was able to interview each consultant about all, or the large majority of, her organizations. Of the 112 total organizations, we were able to obtain consultant survey data on 101 organizations, for a 90% response rate.

Organization Survey

The evaluation team developed the organization survey and administered the survey by telephone. The overall goal of this survey was to assess an organization's HIVQUAL experience. The survey contained both quantitative and qualitative questions about a broad range of activities and aspects of HIVQUAL, including questions about organizational characteristics, size of the HIV patient populations, organizational quality improvement activities, data systems, HIV performance measures collected, and a range of questions about the experience of the organization both participating in HIVQUAL and with the HIVQUAL consultant. Organizations were at different participation levels at the time of the evaluation; therefore, four different versions of the organization surveys were developed, each addressing a different participation level:

- Organizations that chose not to participate in HIVQUAL;
- Organizations that had withdrawn from the HIVQUAL program;
- Organizations in the initial stages of HIVQUAL (steps 1-4), and
- Organizations in the advanced or independent HIVQUAL stages (steps 5 and above).

Each version of the organization survey had a core set of questions, and each version built on previous versions and added participation level-specific questions. The Program Status Report step score as of the Spring 2001 was used to determine the version of the Organization Survey that was conducted with each organization.

The simplest survey version was for non-participating organizations. It included information on general organizational characteristics and reasons the organization chose not to participate in HIVQUAL. The version for organizations at initial HIVQUAL stages addressed baseline data collection, data analysis, planning a QI project, and assessment of their HIVQUAL experience. Organizations that withdrew were asked the same questions as those at the initial stages, as well

as questions about why they chose to withdraw from the program. For organizations at advanced HIVQUAL stages, questions about the specific QI project initiative they were involved in and a final assessment of the HIVQUAL program were added. (A sample Organization Survey is included in Appendix 2). A total of 109 organizations were surveyed, a response rate of 97%. The three organizations not surveyed indicated that the entire HIVQUAL team had been replaced by new staff who were unable to supply historical information, and unable to identify individuals previously involved with the HIVQUAL program from whom information might be available.

Data Source Response Rates

The response rate for each data source is shown in Tables 1a, 1b and 1c below. Response rates for this report are categorized by final HIVQUAL status as measured by the December 31, 2001 Program Status Report. Response rates were calculated separately for non-participating and participating organizations because some data were not applicable for non-participating organizations. For organizations that withdrew, there were very few follow-up Organizational Assessments, as most withdrew prior to the date of the annual follow-up. For Performance Data, response rates were calculated out of the total number of organizations participating and therefore eligible for data submission (N=90). It is important to note that the AIDS Institute may possess additional data that was not available for the evaluation.

Table 1a. Response Rates For Data Sources: Non-Participants

Data Source	**Non-Participating Organizations** (N=22)
Baseline OA	2 (9%)
Follow-Up OA	0 (0%)
Consultant Activity Report	12 (55%)
Program Status Report	22 (100%)
Consultant Survey	20 (91%)
Organization Survey	22 (100%)

Table 1b. Response Rates For Data Sources: Participating Organizations

Data Source	**Withdrew** (N=22)	**Initial Stage** (N=25)	**Advanced Stage** (N=26)	**Independent** (N=17)	**Total** (N=90)
Baseline OA	21 (95%)	24 (96%)	26 (100%)	17 (100%)	88 (98%)
Follow-Up OA	8 (36%)	24 (96%)	26 (100%)	17 (100%)	75 (83%)
Consultant Activity Report	21 (95%)	25 (100%)	26 (100%)	16 (94%)	88 (98%)
Program Status Report	22 (100%)	25 (100%)	26 (100%)	17 (100%)	90 (100%)
Consultant Survey	22 (100%)	22 (88%)	23 (88%)	14 (82%)	81 (90%)
Organization Survey	20 (91%)	25 (100%)	25 (96%)	17 (100%)	87 (97%)

Table 1c. Performance Data Response Rates for Participants

	Number Eligible	Number Submitted Data	Response Rate
Baseline	90	69	77%
Follow-Up 1	90	42	47%
Follow-Up 2	90	15	17%

Key Outcome Indicators

As previously stated, HIVQUAL is a complex, dynamic and multifaceted program. Key outcomes include both performance outcomes—did performance on delivery of the seven patient care indicators improve--HIVQUAL is also extremely concerned with improvements in process outcomes, most specifically the ability of the organization to move through the HIVQUAL model to independence. The following are the core outcomes for this evaluation:

Performance Outcomes

Improvements in rates of the following measures of quality of care:

- M. Tuberculosis, (PPD) screening within the previous year (PPD);
- Pelvic Exam: Women received a complete gynecological exam, including a Pap Smear, within the previous year (GYN care);
- HIV Staging: CD4 Count measured during the previous four months (CD4);
- HIV Staging: Viral Load measured during the previous four months (VL);
- Documentation of discussion about and receipt of Highly Active Antiretroviral Therapy, if clinically appropriate, within the past year (HAART therapy);
- Pneumocystis Carinii Pneumonia (PCP) prophylaxis: Placed on PCP prophylaxis if clinically appropriate (PCP); and
- Mycobacterium Avium Complex (MAC) prophylaxis: placed on MAC prophylaxis if clinically appropriate (MAC).

Process Outcomes

- Ability to move through the HIVQUAL steps
- Relationship between HIVQUAL indicator selected and stage reached
- HIVQUAL stage reached, particularly reaching independence
- Ability to sustain the HIVQUAL model without consultant intervention
- Factors that predicted remaining in or withdrawing from HIVQUAL
- Thresholds for predicting independence

Data Analysis

Quantitative Analysis Overview

Quantitative data from all sources were coded and entered into an SPSS 10.0 database for analysis. All data were consolidated into a single database in order to conduct analyses that examined the relationships between the different data sources. Data were analyzed using standard statistical analytic techniques. To conduct the quantitative analysis, we utilized a prospective study design examining factors important to predicting final HIVQUAL status and

the ability of the organization to reach the HIVQUAL goal of independence. Analyses included descriptive univariate statistics, bivariate associations, and multivariate predictive models as appropriate.

Analytic Tests Used

Statistical significance between bivariate associations was tested using Pearson Chi-Square test for categorical variables, and Kruskal Wallis test for ordinal outcomes. The distribution of continuous variables was very skewed so although both Analysis of Variance (ANOVA) and Kruskal Wallis results were very similar, the Kruskal Wallis was more accurate. To compare differences between repeated measures, the Wilcoxin Signed Ranks test was used. Mulitvariate Logistic Regression analyses were done to predict an organization reaching independence and Receiver Operator Curves (ROC) were done to determine thresholds for statistically significant predictors of independence.

Preliminary Analyses

Prior to conducting comparative analyses between the four HIVQUAL stages (withdrew, initial, advanced and independent), a preliminary set of analyses were completed to understand and describe the entire sample. These included:

- Overall sample descriptors on all organizations (N=112);
- Comparisons between participating organizations (N=90) and non-participating organizations (N=22); and
- Comparisons between organizations in New York (N=21) or Puerto Rico (N=8), and other states (N=83) to determine if New York and Puerto Rico could be included in the larger analyses.

Comparative Bivariate Associations

After the preliminary analyses described above, comparative bivariate analyses were conducted to examine the association between an organization's final HIVQUAL status (withdrew, initial, advanced, independent) as of December 31, 2001 and a series of independent variables thought to affect the HIVQUAL level achieved. These variables fell into several categories: 1) environmental factors, 2) organizational factors, 3) commitment to HIVQUAL, 4) consultant factors, and 5) HIVQUAL impact:

1) Environmental factors encompassed structural factors external to the primary care clinic. These included type of organization (hospital, community health center or other), whether the clinic was located in an urban or non-urban area, whether the organization was a New York or non-New York site, and the number of HIV-infected patients served.
2) Organizational factors included general organizational features such as total baseline and follow-up organizational assessment scores, personnel changes, whether the organization was participating in the IHI continuous quality improvement program (another HRSA-funded QI initiative), or whether they had another HIV QI program in addition to HIVQUAL or IHI.
3) Commitment to HIVQUAL was measured by the number of staff involved in HIVQUAL, whether the organization thought the number of staff was sufficient, whether there was a data person assigned to or available for the HIVQUAL work, difficulty with data submission, and whether the organization joined HIVQUAL based on a recommendation from HRSA or the AIDS Institute or for another reason.

4) Consultant factors included the number of consultant hours per month (total, off-site and on-site), and whether the organization had a period of more than two months of inactivity during HIVQUAL participation.
5) HIVQUAL impact was measured by the number of months the organization had participated in the HIVQUAL program, whether the organization believed they experienced a positive or negative impact from HIVQUAL, and whether the organization's expectations were met by the HIVQUAL program.

Multivariate Models

After bivariate comparisons examined associations between an organization's final HIVQUAL status and the above independent variables, multivariate models were built to determine why an organization would be more likely to reach independence, compared to an organization that remained active but did not reach independence (remained in the initial or advanced stages of HIVQUAL). For these analyses, organizations that withdrew were excluded. Results from the bivariate analyses were examined, and indicators that did not show a numeric trend across the HIVQUAL stages were excluded from the multivariate model. In addition, if two indicators captured the same information, the indicator with a weaker relationship to final HIVQUAL stage was deleted so that there were only one or two representative variables per category. Finally, before building the multivariate models, bivariate associations between the independent variables were calculated to detect potential problems with multicollinearity.

The independent variables were entered into the multivariate logistic regression models as blocks; the blocks were representative of the categories used in the bivariate analyses. The following variables were chosen to represent each of the five independent variable categories:

1) Environmental factors: located in New York, hospital-based program;
2) Organizational factors: mean baseline organizational assessment, major personnel changes in the past year;
3) Commitment to HIVQUAL: number of staff involved with HIVQUAL implementation;
4) Consultant factors: total number of consultant hours per month, periods of inactivity greater than two months; and
5) HIVQUAL impact: number of months the organization had participated in HIVQUAL.

After each block, both the significance for the individual coefficient, the odds ratio (Wald statistic), and the increase in explained variance (Nagelkerke R Square) were examined.

Qualitative Data Analysis

To analyze the qualitative data, we used a process analytic framework and inductive logic to understand the responses to the open-ended questions in the organizational and consultant surveys. The goals of the qualitative analysis were to supplement and produce a more comprehensive illustration of the quantitative results, describe some of the processes that allow organizations to move from the planning stage to the implementation and measurement stages, analyze barriers organizations faced while moving through this process, and describe factors which affected HIVQUAL participation decisions.

After the data were collected, the results of the interviews were organized into conceptual categories representing the major areas of interest. To complete the qualitative analysis, we used

the Constant Comparative Method described by Glaser and Strauss (1967). According to this method, the initial conceptual categories are applied to new data and the categories are revised to reflect the addition of new data. Upon completion of this process, we identified a series of categories that reflected the different features of the clinics that have implemented or attempted to implement the HIVQUAL program. Although qualitative research results such as these are limited by the subjectivity associated with this approach, in program implementation research qualitative data are crucial for a full understanding of programmatic successes and challenges.

In the following sections of this report, the results of both quantitative and qualitative analyses are used to answer the six major evaluation questions listed in the introduction. Each section of results answers a different question. For descriptive analyses, results are stratified by final HIVQUAL Status from the December 31, 2001 Program Status Report. For some analyses, the advanced and independent organizations are combined. For others, they are separated as appropriate. The most important components of these results are provided in the summaries of results included in this report. Complete results of the analyses are contained in Appendices 1-4.

Section Three: Participating and Non-Participating Organizations

Research Question 1: What is the profile of organizations that participate in the HIVQUAL program, and what are some differences between organizations that participate in HIVQUAL and those who choose not to participate?

Overall Sample Description

The HIVQUAL organizations were located primarily in urban areas (82%) in 28 states; almost a quarter of the organizations were from New York (24%). The organizations were situated predominately in community health centers (52%) and hospitals (41%). There was a large range in the size of the HIV-infected patient population served (60 to 3,500 clients). In terms of preventive services provided, 98% of the organizations performed critical services such as HIV staging (using viral load and CD4 counts), or PCP or PPD prophylaxis. A much smaller number of organizations tested for the presence of Hepatitis A, B, or C (43%), or screened for sexually transmitted diseases (9%).

The 22 organizations that never participated in HIVQUAL served a range HIV-infected patient population between 60 to 3,125, with a mean of 807 and a median of 500. When asked why they never participated in HIVQUAL, reasons included IHI participation, insufficient staff, excessive time requirements, and the impression that HIVQUAL was not comprehensive enough to address their needs.

For the 22 organizations who withdrew from the HIVQUAL program, the number of HIV-infected patients ranged from 130 to 3,500, with a mean of 740 and a median of 500. Length of participation prior to withdrawing ranged from one month to 42 months, with a mean duration of 14 months and a median of 13 months. Reasons for withdrawing from HIVQUAL were primarily related to the time commitment. Comments from these organizations included that HIVQUAL was excessively time consuming, although it was viewed as a good program to use to initiate QI and data analysis.

There were 25 organizations in the initial stages of HIVQUAL implementation (steps 1-4). The number of patients with HIV at these organizations ranged from 80 to 1,600, with a mean of 392 and a median of 250. Length of participation in HIVQUAL ranged from 9 month to 39 months, with a mean duration of 22 months and a median of 18 months.

The advanced group (steps 5-7) numbered 26 organizations. The number of patients with HIV at these organizations ranged from 85 to 2,500, with a mean of 640 and a median of 378. Length of participation ranged from 13 month to 44 months, with a mean duration of 34 months and a median of 39 months.

Finally, there were 17 organizations that were considered to have reached independence (step 8). At these organizations, the number of patients with HIV ranged from 199 to 1700, with a mean of 576 and a median of 500. Length of participation ranged from 16 to 44 months, with a mean duration of 36 months and a median of 39 months.

Comparison of Participants and Non-Participants

Organizations that chose not to participate in HIVQUAL (N=22) were compared with HIVQUAL participants (N=90, including those who withdrew, and those in the initial, advanced and independent stages). These comparisons are shown in Table 2.

Table 2. Comparison of Participants and Non-Participants

Independent Variable	Participants	Non-Participants	P value*
	N=90	N=22	
Environmental Factors			
Percent in hospital	48%	15%	**.004***
Mean number of clients	807 (814)	582 (576)	.14
Percent urban organizations	84%	75%	.65
Organizational Factors			
Personnel changes in past year	59%	59%	.97
Other QA program	78%	77%	.93
Participate in IHI	18%	9%	.59
Preventive Services			
Viral load/CD4 counts	98%	100%	.47
PCP prophylaxis	98%	100%	.47
PPD screening	98%	100%	.48

*Significant difference using Kruskal Wallis Tests for ordinal outcomes, and Fishers Exact Test for categorical outcomes ($p<.05$)

Participant and non-participant organization characteristics were similar in many ways. There were no significant differences in the following: the mean number of clients served, the percentage of urban vs. rural organizations, the percentage who reported major organizational or personnel changes during the previous year, the percentage of preventive services performed (98% to 100% of organizations in both groups reported doing viral load/CD4 counts, PCP prophylaxis, or PPD screening), the percentage of organizations with another internal QI program, or the percentage who also participated in the IHI initiative.

However, there were some differences between the two groups. Organizations that participated in HIVQUAL were significantly more likely to be hospital based (48%) than organizations that did not participate in HIVQUAL (15% hospital-based). The other major differences were in the perceived impact of personnel changes and needed QI support. Even though both groups had the same percentage of personnel change (59%), and were similar in level of QI support, there was a difference in the perceived impact of these factors on HIVQUAL participation. Only 53% of the participating organizations believed that their personnel changes impacted HIVQUAL work, whereas 86% of non-participants reported that the change was an important consideration in choosing not to participate in HIVQUAL. Similarly, even though the reported level of QI support was similar between participants and non-participants, 60% of participants joined HIVQUAL because they wanted additional QI support; whereas 55% of non-participants did not join HIVQUAL because they felt their QI needs were already met. The perception of personnel changes and QI needs were asked differently on the organizational surveys for the participants and non-participants, therefore, these variables are not included in Table 2 because direct statistical comparisons are not appropriate.

Comparisons of Organizations in New York and Puerto Rico

HIVQUAL participant organizations in both New York (N=21) and Puerto Rico (N=8) were hypothesized to be different from the other locations. Therefore, there were questions about including their results in the analyses for this evaluation. New York organizations were hypothesized to be different because HIVQUAL was initiated in New York, and therefore many of the organizations had a longer exposure to the program. In addition, the state mandates that primary care clinics serving HIV-infected patients cooperate with the state's AIDS quality improvement initiatives as a requirement for Medicaid participation, which meant that these clinics were already reporting on the HIVQUAL performance indicators to the AIDS Institute.

Puerto Rico organizations were hypothesized to be different due to distance from any consultant, difference in primary language and the consultant role. The Puerto Rico organizations had less contact with HIVQUAL staff due to travel costs, and HIVQUAL training was provided by both HIVQUAL consultants and HIVQUAL management personnel, while in other locations all HIVQUAL training was provided by the HIVQUAL consultants. Furthermore, the evaluation interviews were completed in partially in Spanish. To determine whether New York and/or Puerto Rico needed to be excluded from the analyses, analyses were conducted that compared organizations from New York or Puerto Rico to organizations in other states.

Table 3 below shows that there were some differences between New York organizations and organizations in other states. Organizations in New York had significantly more months of participation, committed significantly more staff to supporting HIVQUAL, and were more likely to have organizations reach independence. They also served more HIV-infected patients, and had lower baseline Organizational Assessment scores. However, all of these differences could be controlled for in multivariate analyses; therefore the New York organizations were included in the overall analyses.

There were even more differences between the Puerto Rico organizations and organizations in other locations. The Puerto Rico organizations (Table 4 below) had significantly more months of participation than the other organizations and were significantly more likely than other places to have periods of inactivity while they participated in HIVQUAL. However, despite the high level of inactivity, a higher percentage of organizations in Puerto Rico reached independence. A major concern about Puerto Rico related to the evaluation was that the consultant time estimates from the Consultant Activity Reports for Puerto Rico were inaccurate because management personnel did not document hours worked with each organization. Because this could not be controlled for, Puerto Rico was not included in the comparative analyses.

Table 3. Comparison of Organizations Outside New York State to those Inside New York State

Independent Variable	Organizations Outside New York	Organizations Inside New York	P value*
	N=64	N=21	
Environmental Factors			
Percent in hospital	44%	59%	.43
Mean number of HIV+ Patients	511 (525)	794 (679)	**.05 ***
Organizational Factors			
Mean baseline organizational assessment	37.5 (11.2)	29.6 (7.6)	**.003 ***
Personnel changes in past year	36%	57%	.09
Commitment to HIVQUAL			
Mean staff involved	4.5 (3.1)	6.3 (3.7)	**.03 ***
Staff involvement sufficient	30%	33%	.75
Consultant Factors			
Mean total hours/month	3.4 (1.9)	3.3 (1.4)	.84
Inactivity >2 months	44%	38%	.65
HIVQUAL Impact			
Mean months participated	22.6 (13.0)	37.1 (6.9)	**<.001 ***
HIVQUAL expectations met	67%	76%	.44

*Significant difference using Kruskal Wallis Tests for ordinal outcomes, and Pearson Chi-Square Test for categorical outcomes ($p<.05$)

Table 4. Comparison of Organizations Outside Puerto Rico to those Inside Puerto Rico

Independent Variable	Organizations Outside of Puerto Rico	Organizations Inside Puerto Rico	P value*
	N=77	N=8	
Environmental Factors			
Percent in hospital		Not measured	NA
Mean number of clients	611 (594)	288 (166)	.13
Organizational Factors			
Mean baseline organizational assessment	34.9 (10.3)	41.3 (16.6)	.14
Personnel changes in past year	42%	38%	1.0
Commitment to HIVQUAL			
Mean staff involved	4.9 (3.2)	5.0 (4.7)	.94
Staff involvement sufficient	69%	75%	1.0
Consultant Factors			
Mean consultant hours/month	19.6 (23.2)	12.8 (11.7)	**.03 ***
Inactivity >2 months	38%	88%	**.01 ***
HIVQUAL Impact			
Mean months participated	25.2 (13.6)	36.1 (2.5)	**.03 ***
HIVQUAL expectations met	68%	88%	.43

*Significance difference using Kruskal Wallis Tests for ordinal outcomes, and Fishers Exact Test for ategorical outcomes ($p<.05$)

Section Four: Barriers to HIVQUAL Implementation

Research Question 2: Does participation in other QI initiatives or periods of inactivity while involved in HIVQUAL serve as a barrier to successful HIVQUAL implementation?

Participation in Other Quality Improvement Initiatives

During the time that HIVQUAL was being implemented, many of the organizations were approached to participate in an alternative QI program sponsored by HRSA and conducted by the Institute for Health Care Improvement (IHI). In evaluating HIVQUAL, it was important to understand whether participation in multiple HRSA-sponsored QI programs had any impact on HIVQUAL progress. Information about whether the organization participated in IHI was obtained in three ways: from the organizational survey, from the consultant survey, and from a list provided by HRSA. Because the different data sources conflicted, the report from HRSA was considered the standard and used in the analyses.

It appears that participation in other initiatives was not a barrier to successful HIVQUAL implementation. No association was found between participating in IHI and the HIVQUAL stage reached. (See Table 7, page 25). However, IHI participation did impact HIVQUAL participation. Of the organizations that decided not to participate in HIVQUAL, 57% said they did so because IHI already met their needs, and 43% of the organizations that withdrew from HIVQUAL said it was due to participation in IHI or because they had another internal QI program. Still, qualitative data indicated that several of the organizations that remained actively involved in both HIVQUAL and IHI found the two programs complementary, and stated that their organizations benefited from being in both programs.

Periods of Inactivity

Analysis also indicated that periods of inactivity with HIVQUAL had no impact on successful implementation, as results showed no difference in stage reached between those with and without periods of inactivity (Table 7, page 25). However, despite the high degree of success of the HIVQUAL program, it was striking that many organizations (N=38 or 44% of those who were active) experienced periods of inactivity of greater than two months during their HIVQUAL participation. Organizations were asked to explain their reasons for these inactive periods. These data were analyzed qualitatively. Reasons for inactivity included:

- Attention needed by other projects;
- Uncertainty about continued participation in the HIVQUAL program;
- Lack of support for HIVQUAL at the leadership level;
- Staff reluctance to participate and complete the work required;
- Resource limitations (staff time, money, personnel changes);
- Participation in IHI, and inability to focus on both QI programs;
- Computer problems (hardware and software); and
- Lack of computers within the organization.

Section Five: Quality Indicators

Research Question 3: What quality indicators do organizations chose to work on, and is there a relationship between indicator selected and improvement in both performance and process outcome measures?

HIVQUAL Quality Improvement Projects

Once an organization reaches Step 5, they begin to select and initiate pilot QI projects. The QI projects differed by site; the only mandate was that they measure one of seven key HIVQUAL indicators. The seven HIVQUAL indicators were selected by a panel of experienced physicians as indicative of high quality care in the medical records of HIV positive individuals. The seven indicators were:

- M. Tuberculosis (PPD) screening within the previous year (PPD);
- Pelvic Exam: Women received a complete gynecological exam, including a Pap Smear, within the previous year (GYN care);
- HIV Staging: CD4 Count measured during the previous four months (CD4);
- HIV Staging: Viral Load measured during the previous four months (VL);
- Documentation of discussion about and receipt of Highly Active Antiretroviral Therapy, if clinically appropriate, within the past year (HAART therapy);
- Pneumocystis Carinii Pneumonia (PCP) prophylaxis: Placed on PCP prophylaxis if clinically appropriate (PCP); and
- Mycobacterium Avium Complex (MAC) prophylaxis: placed on MAC prophylaxis if clinically appropriate (MAC).

In conducting the analyses related to the indicators, the CD4 and VL indicators were combined into one HIV Staging category (CD4/VL).

Table 5 below provides information on the QI projects undertaken by organizations at the advanced stage (Steps 5-7) and organizations that reached independence (Step 8). Overall, most organizations in both groups selected a QI project designed to improve rates of PPD screening or GYN exams. There was no significant association between the type of project chosen and whether the organization was at the advanced stage or had reached independence. It is important to note here that, at the time of the evaluation, only 43 of the organizations had implemented a QI project. Therefore, it is difficult to prove significance with such small numbers when stratified across the seven categories of quality indicators.

Table 5. Quality Improvement Projects Completed by Advanced and Independent Sites

Selected Indicator	Advanced	Independent
	N=26	N=17
PPD	64%	60%
GYN care	55%	60%
Dental	9%	7%
CD4/VL	9%	13%
HAART therapy	9%	0%
PCP	5%	7%
MAC	5%	0%

Despite the small numbers, a set of analyses on the HIVQUAL indicators was conducted to begin to provide information about the relationship between the indicator selected and success in improving rates of service delivery. These analyses compared organizations that chose to work on improving a certain indicator to organizations that did not choose that indicator, to determine if the percentage of individuals who received those services improved. The total number of organizations (N=33) that both selected an indicator and had baseline and follow-up data are provided below:

- PPD (N=15)
- GYN exam (N=12)
- Dental (N=2)
- CD4 and VIRAL Load (N=1)
- HAART Therapy (N=0)
- PCP (N=2)
- MAC (N=1)

These numbers are even smaller than the 43 organizations that had implemented a QI project, as 10 of the organizations that had implemented a QI project had not provided follow-up data to the AIDS Institute at the time of the evaluation.

To conduct analyses to examine improvement, there were only two indicators selected as QI projects, PPD and GYN exam, for which the evaluation team had enough baseline and one-year follow-up data to make comparisons. Table 6 below compares organizations that chose PPD as their QI project to organizations that did not choose PPD, and organizations that selected GYN care as their QI projects to organizations that did not select a GYN care QI project. For each group, the average percentage of patients who received the service is indicated at baseline, prior to the implementation of the QI project, and at follow-up, after the QI project had been implemented. Although the percentages of both PPD screening and GYN exams increased at the sites that selected QI projects aimed at improving those indicators, the increases were not statistically significant. Among the organizations that selected a QI project aimed at increasing rates of GYN exams, percentages increased 2%, while among the organizations that did not select a QI project aimed at increasing GYM exams, GYN exam rates increased 3%, an even higher rate. On the other hand, among organizations that selected a project to improve rates of PPD screening, there was a 12% increase in PPD screening rates, while organizations that did not select a PPD project had a 4% decrease in PPD screening rates. Although none of these results were significantly significant, it is clear that at the time of the evaluation, there was not enough data available to make any inferences about the relationship between HIVQUAL indicator selected and changes in screening rates.

Table 6. Receipt of GYN and PPD Services

Selected Indicator	Baseline average percentage	Year 1 Follow-Up average percentage	P value*
GYN exam chosen (N=12)	72%	74%	.86
GYN exam not chosen (N=9)	75%	78%	.52
PPD chosen (N=15)	49%	61%	.07
PPD not chosen (N= 6)	55%	51%	.75

*Significant difference using Wilcoxon Signed Ranks Test ($p<.05$)

Section Six: HIVQUAL Stage Reached

Research Question 4: What are the differences between organizations that reached different stages in the HIVQUAL program?

Comparisons between Organizations that Withdrew and those that Remained Active

An important process outcome for this evaluation was the status attained by each organization. Key HIVQUAL process outcomes are to become independent in HIVQUAL implementation and to use the HIVQUAL model to independently complete additional QI projects. To examine the success of organizations in reaching different stages in the HIVQUAL program, we had enough data to include 82 organizations; of these 22 (27%) withdrew from HIVQUAL, 23 (28%) were in the initial HIVQUAL stages, 23 (23%) reached the advanced HIVQUAL stages, and 14 (17%) were able to reach independence.

We first ran analyses to examine any differences between organizations that withdrew and organizations that remained active in HIVQUAL. These results are incorporated within Table 7 (page 25). In comparing organizations that withdrew to the three active groups combined, there are some statistically significant differences and some additional numeric trends that are not statistically significant. Significant differences included the following:

- A smaller percentage of organizations that withdrew from HIVQUAL were located in New York (5% withdrew versus 35% for all active organizations);
- Organizations that withdrew committed a smaller number of staff to HIVQUAL. The mean number of staff involved was significantly less (withdrew, mean=3; active, mean=5);
- Organizations that withdrew were less likely to believe that the number of staff involved was sufficient to fully implement HIVQUAL (50% versus 75%);
- Organizations that withdrew were less likely to have a data person on staff available to complete the HIVQUAL work (22% versus 41%);
- Organizations that withdrew were less likely to report a positive impact from HIVQUAL (39% versus 86%); and
- Organizations that withdrew were less likely to have had their expectations from participating in HIVQUAL met (44% versus 75%).

Qualitative data gathered from the organization illustrate these quantitative results. The survey gathered information about the reasons for withdrawal. Most reasons were internal to the organization itself rather than related to dissatisfaction with HIVQUAL. For example, 47% of organizations that withdrew said this was due to internal problems, such as personnel changes and lack of computer infrastructure, and 37% of organizations withdrew because they preferred to participate in IHI and did not have the time or resources to participate in both programs. As stated earlier, organizations that withdrew commented that personnel changes affected organizational support for HIVQUAL. Several of the organizations that withdrew also stated that they originally joined HIVQUAL because HRSA recommended or strongly suggested it, indicating that there might have been a relationship between external motivation to join and ultimately dropping out.

Comparisons between Organizations that Did and Did Not Reach Independence

After comparing organizations that withdrew with those that remained involved with HIVQUAL, we then compared among the organizations that remained actively involved in the HIVQUAL program. These results are incorporated in Table 7 (page 25). Organizations that continued in HIVQUAL but did not reach independence (initial and advanced) differed in some ways from the organizations that reached independence in relation to the five independent variable categories of environmental factors, organizational factors, commitment to HIVQUAL, HIVQUAL impact, and consultant factors.

Environmental Factors

The most meaningful statistical difference in environmental factors was that a larger proportion of organizations at the advanced (52%) and independent (36%) stages of HIVQUAL were located in New York, compared to those at the initial stage (17% located in New York). In addition, a statistically significant difference was seen in the mean number of HIV-infected clients served between organizations that did and did not reach independence, with smaller numbers served by the organizations that reached independence.

Organizational Factors

In terms of the organizational factors, there were significantly higher baseline and follow-up Organizational Assessment scores for the organizations that reached independence than those organizations that did not reach independence.

Commitment to HIVQUAL

Of the measures of organizational commitment to HIVQUAL, the only indicator for which a statistically significant linear trend was seen was related to number of staff involved on the HIVQUAL team within the organization. Organizations that reached independence had more staff committed to HIVQUAL (mean=8) than those at the less advanced stages (initial and advanced means=5).

HIVQUAL Impact

Organizations that reached independence had participated in the HIVQUAL program significantly longer (mean=35 months) than those at the other stages (initial, mean=21 months; advanced, mean=34 months). In addition, almost all of organizations that were at the independent (94%) and advanced stage (96%) believed that HIVQUAL involvement had a positive impact on the organization, compared to organizations at the initial stage (70%). Finally, there was a significant linear relationship between stage reached and whether expectations were met (initial=56%, advanced=82%, independent=93%).

Consultant Factors

Despite the importance of the consultant to the HIVQUAL process, there were no significant differences in consultant factors between organizations that did and did not reach independence. Reported consultant hours (total, off-site and on-site) were similar. Organizations believed the consultant was helpful regardless of their stage in the HIVQUAL program. As organizations moved toward independence, fewer reported periods of inactivity (initial=35%, advanced=36%, independent=21%), and fewer were likely to feel that the consultant did not devote enough time

to the organization (initial=13%, advanced=18%, independent=8%), but these trends were not statistically significant.

Table 7. Final HIVQUAL Status by Independent Variables

	HIVQUAL Stage				
Independent Variable	**Withdrew**	**Initial**	**Advanced**	**Independent**	**P value***
	N=22	N=23	N=23	N=14	
Environmental Factors					
Percent in hospital	46%	41%	44%	71%	**.21**
Located in NY	4.5%	17%	52%	36%	**.002**
Mean number of clients	740 (758)	402 (421)	701 (650)	611 (392)	**.04**
Organizational Factors					
Mean baseline OA	36.5 (10.2)	31.4 (9.1)	33.1 (11.5)	40.8 (7.4)	**.01**
Mean follow-up OA	35.0 (11.7)	35.6 (8.6)	38.7 (8.8)	50.4 (6.6)	**<.001**
Mean difference between baseline and follow-up OAs	1.8 (10.6)	4.0 (8.7)	6.0 (10.1)	8.8 (4.2)	.42
Personnel changes in past year	50%	44%	41%	29%	.66
Another QI program in place	75%	87%	77%	79%	.77
Commitment to HIVQUAL					
Mean staff involved	3.2 (2.1)	4.8 (2.9)	4.5 (2.8)	7.9 (3.8)	**<.001**
Staff involvement sufficient	50%	87%	59%	79%	**.04**
Joined HIVQUAL because of HRSA or AIDS Institute	39%	26%	36%	14%	.23
Consultant Factors					
Mean total hours/month	3.3 (2.0)	3.4 (1.1)	4.3 (2.0)	3.4 (1.3)	.33
Inactivity >2 months	56%	35%	36%	21%	.25
Consultant time not enough	35%	13%	18%	8%	.20
Consultant helpful	89%	100%	91%	86%	.38
HIVQUAL impact					
Mean months participated	13.9 (11.7)	20.6 (9.1)	34.3 (10.8)	35.4 (8.5)	**<.001**
Positive impact from HIVQUAL	39%	70%	96%	94%	**<.001**
Negative impact from HIVQUAL	28%	30%	55%	50%	.21
Expectations met	44%	56%	82%	93%	**.01**

*Significance difference using Kruskal Wallis Tests for ordinal outcomes, and Pearson Chi-Square test for categorical outcomes

Section Seven: Performance Outcomes

Research Question 5: Does the implementation of HIVQUAL lead to better performance in implementing key HIV tests and procedures?

To provide a general overview of how performance on each of the quality indicators changed for organizations involved in HIVQUAL, Table 8 below shows the average frequency with which each of the quality indicators was documented in patient records for sites that remained involved in the HIVQUAL program and had baseline and one year of follow-up data for 1998 and 1999 (N=22). Although the QI projects focused just on a single quality indicator, data on all seven of the quality indicators was collected from each of the organizations. Therefore, the data results in this section of the report apply to all of the indicators, whether or not that was the indicator the organization chose to improve.

As shown in Table 8, performance on all indicators except for MAC prophylaxis improved, and there were statistically significant increases in PCP prophylaxis and testing for CD4 count and viral load. Instability of the MAC prophylaxis indicator was probably due to the smaller average number of charts that were reviewed at follow-up (N=3) because placement on MAC prophylaxis was not clinically indicated.

Table 8. Receipt of Service and Charts Reviewed

Indicator	Average % Documented at Baseline	Number of Charts Sampled at Baseline	Average % Documented at Follow-up	Number of Charts Sampled at Follow-up	% Change in Documentation
GYN exam	73%	25	77%	28	4%
PPD	51%	43	57%	48	6%
PCP	82%	13	92%	13	10%*
MAC	50%	3	42%	3	-8%
Viral Load	78%	41	89%	48	11%*
CD4 Count	81%	41	88%	47	7%*
HAART Therapy	64%	33	69%	35	5%

*Significant difference using Wilcoxin Signed Ranks Test ($p<.05$)

Although more complete data regarding performance are available from the AIDS Institute, the numbers above suggest how HIVQUAL implementation may affect performance. Using these numbers, we examined the relationship between HIVQUAL status attained and changes in performance. For these analyses, comparisons were made between organizations that reached independence and organizations that remained in the HIVQUAL but did not reach independence (N=43), to determine whether changes in performance were associated with the organization's level of QI proficiency (See Table 9 below).

Results of these analyses show that, in general, there was an increase in the percentage of individuals receiving appropriate preventive services regardless of whether the organization had reached independence. For organizations at the initial or advanced stages of HIVQUAL implementation, there were significant increases between baseline and follow-up in placement on

PCP prophylaxis, and testing for CD4 Count and Viral Load. For organizations that reached independence, there were significant increases between baseline and follow-up for screening for PPD and CD4 Count testing. Although the numbers are small, preliminarily these data indicate no relationship between HIVQUAL status and performance, and a positive relationship between HIVQUAL participation and performance.

Table 9. Performance Indicators by HIVQUAL Status Reached

	Initial and Advanced (N=30)		Independent (N=13)	
Indicator	**1998 average percentage**	**1999 average percentage**	**1998 average percentage**	**1999 average percentage**
GYN exam	70%	80%	75%	76%
PPD	43%	50%	50%	70%*
PCP prophylaxis	84%	94%*	93%	96%
MAC prophylaxis	56%	43%	59%	50%
Viral Load	84%	91%*	83%	88%
CD4 count	86%	91%*	83%	87%*
HAART Therapy	62%	72%	70%	67%

*Significant difference using Wilcoxin Signed Ranks Test ($p<.05$)

Section Eight: Attaining Independence

Research Question 6: What are the factors that predict a site reaching independence, and what are the thresholds for reaching independence?

Predicting Independence

Expanding on the bivariate results, multivariate models were built to examine factors that could predict an organization reaching independence in HIVQUAL implementation. The results from these analyses are included in Table 10 below. In these analyses, we controlled for whether the organization was in New York and for the consultant assigned to the organization. New York status was controlled for due to the differences between New York and the other states discussed in an earlier section. Consultant was controlled for in order to deal with possible bias attributable to differences in how consultants evaluated organizational status.

Factors Associated with Independence

Overall, multivariate analyses showed that only three indicators were significantly associated with an organization reaching independence: the number of staff members who participated in HIVQUAL, the number of months the organization participated in HIVQUAL, and the baseline OA. After controlling for multiple factors, an increase in one staff member increased the organization's likelihood of reaching independence by 80%. Also, for every additional month an organization was involved in HIVQUAL, the organization was 40% more likely to reach independence. The number of months that an organization was involved in HIVQUAL explained the most variance (27%) in predicting whether an organization would reach independence. The overall fit of the model indicates that 74% (r^2=.74) of the variation between organizations that did and did not reach independence could be explained by these factors.

Table 10. Logistic Regression Predicting Independence

Independent Variable	Odds Ratio (CI)
Total Baseline OA	1.2 (1.0-1.3)*
Number Staff Involved	1.8 (1.2-2.9)*
Months participated	1.4 (1.1-1.7)*
Nagelkerke R Square	0.74

Thresholds for Independence

To determine thresholds for the significant predictors that increase the likelihood of an organization reaching independence, ROC curves as well as sensitivity and specificity levels were calculated. Indicators calculated included staffing level, staff to client ratio, months participating in HIVQUAL, and baseline organizational assessment score. The results are shown in Table 11. The staff to client ratio was the worst predictor with a very low c statistic (.47) and specificity (39%). The best predictor of independence was the number of staff (c statistic=.80). In terms of staff, a threshold of 5.5 people produced the best specificity (76%) and sensitivity (71%). The second best predictor of independence was the baseline OA (c statistic=.77). At a score of 35, this indicator had a lower specificity (70%) but a higher sensitivity (79%) than the number of staff. The number of months the organization participated in HIVQUAL was comparable to the baseline OA score as predictor of independence (c statistic=.71) but the

specificity was poor for most thresholds. The best predictor was participation for 26.5 months with a specificity of 52%.

Table 11. Thresholds for Predicting Independence

Independent Variable	C statistic	Sensitivity	Specificity	Threshold
Number of staff	.80	71%	76%	5.5 people
Staff :Client ratio	.47	79%	39%	1:55
Months participating	.71	86%	52%	26.5 months
Baseline OA	.77	79%	70%	35

Role of the Consultant

The HIVQUAL model could not be taught and implemented without the consultants. All organizations were asked about their perception of the consultant role. The responses to these data were analyzed qualitatively. Overall, the consultants were considered invaluable. Most comments were positive. Organizations found the consultants to be:

- Very knowledgeable and accessible;
- Helpful in the development of the database and in use of the software;
- Trustworthy, supportive and professional;
- Helpful in the development of QI interventions; and
- Very serious regarding their responsibility to make the project a success.

There were also some suggestions for areas in which the consultants could improve:

- Organizations wanted increased consultant time and site visits at regular intervals;
- Organizations wanted access to a website for technical assistance when the consultant is not available;
- It was suggested that consultants spend more time on database training;
- Consultants need to have a better system of communication when an organization is transferred from one consultant to another;
- Organizations would have preferred that the consultants be more involved in the QI project and the follow-up;
- Staff needed more training on QI in general; and
- Organizations that are participating in multiple HRSA-sponsored QI initiatives would have liked some coordination between programs.

None of the organizations believed that the consultant spent too much time with them. As shown in Table 12 on the following page, there was a somewhat linear trend in terms of the organization's perception of adequacy of staff time spent and progress toward independence. The percentage of organizations that said the amount of consultant time spent was sufficient increased as the organization status moved toward independence.

Table 12. Time Devoted by Consultant

	Withdrew	Initial	Advanced	Independence
Too much	0	0	0	0
Not enough	35%	16%	20%	12%
About right	65%	84%	80%	88%

Section Nine: Discussion and Recommendations

Overall, HIVQUAL has been successful in several ways. First HIVQUAL has assisted organizations to move toward independence in QI implementation. The factors most associated with successfully implementing the QI intervention and the ability to integrate the HIVQUAL model into the overall QI structure included the following:

- The number of staff involved in HIVQUAL;
- The number of months the organization participated in HIVQUAL; and
- Baseline Organizational Assessment scores, which indicate that where an organization is at baseline is an important predictor of success.

Number of Staff
Even after controlling for all other factors, the number of staff committed to HIVQUAL was a critical factor in reaching independence. The more staff involved, the more likely the organization would reach independence. Organizations that had over 6 people involved in HIVQUAL also had a higher likelihood of maintaining the QI initiative in their organization. Although time spent was important, the total number of hours spent on HIVQUAL was less important than ensuring that a critical mass of individuals was involved in the initiative. This finding is consistent with the idea that success in implementing a program such as HIVQUAL does require considerable staff time, commitment and resources.

Length of Participation
The longer an organization was involved in HIVQUAL, the more likely the organization was to independently implement the QI activities. Organizations that participated for more than two years had the highest likelihood of reaching independence. This finding is consistent with the QI literature which indicates that many controlled QI interventions may not show a positive result because there was not enough time to make organizational changes. This finding also underscores the importance of the key tenet of HIVQUAL: conceptually and structurally integrating HIVQUAL and the QI model into the organization's overall structure.

Organizational Readiness
The preliminary step prior to beginning to implement the HIVQUAL protocol was for each consultant to obtain an understanding of each organization's readiness to participate fully in the program, including their ability to collect baseline data and implement a QI initiative. Not surprisingly, the level of readiness and sophistication at baseline was associated with independence. Organizations that reached independence had higher baseline OA scores overall as well as higher mean scores for each of the OA questions (See Appendix 4).

Consultant Role
Most of the organizations found the consultant role to be extremely useful. Where the consultant spent her time--on-site or off-site--did not seem to make a difference. There was not much variation within different HIVQUAL stages in the number of hours the consultant spent on the organization, typically a total of three to four hours per month. Almost all organizations would like more consultant time. Even a small percentage of the organizations that reached independence felt that the consultant did not spend enough time with them.

The relationship between attaining independence and performance is less clear. At the time of the evaluation, we had very limited baseline and follow-up data from organizations that selected a particular quality indicator, implemented their QI interventions, and provided follow-up data to the AIDS Institute. The rates for providing appropriate preventive services did increase for sites that remained actively involved in HIVQUAL. However, this improvement did not appear to be associated with the organization's level of QI proficiency as measured by reaching the independent stage of HIVQUAL. In addition, there was no statistical relationship between selecting a particular quality indictor and an increase in that indicator as measured by chart reviews. However these data are based on small numbers and further analysis with more organizations over a longer period of time is needed. An interesting result in the data was improvement in performances across sites that remained in HIVQUAL, despite status attained. It may be simply that any exposure to QI improves performance.

Despite all of the positive effects attributable to HIVQUAL, there are also areas for improvement. Because of HIVQUAL's focus on measuring process, some of the important successes are difficult to document. In addition, the investigation raised some questions and issues regarding the HIVQUAL program that make evaluation difficult. The primary concern is consistency. Because each consultant is responsible for different types of organizations at different levels of sophistication and different geographic locations, the consultant role necessarily varies. While this flexibility is important for programmatic success, it challenges the less process-oriented aspects of the evaluation process. It also makes it more difficult to document success in a quantitative manner.

The following are important issues to consider in using the results of this evaluation to make HIVQUAL a stronger program:

- There were some inconsistencies in consultant approach. Each consultant has developed a slightly different interpretation and application of certain HIVQUAL standards, such as at what step defines independence. It will be important to standardize consultant interpretation of standards, without losing the important flexibility required to implement a program in the real world.
- There were some differences in definition and interpretation of the steps. Despite the need for flexibility in order to adapt to the needs of each organization, there must be a uniform definition of how each step is defined and what it means to progress to the next level.
- The Organizational Assessment could be an extremely valuable tool to measure change in an organization's quality improvement program over time. However, this tool was used somewhat inconsistently. The timing of completing the follow-up organizational assessments needs to be consistent.
- Stronger consultant activity data could be extremely useful in explaining how long it takes and what activities are associated with getting an organization to independence. However, the consultants have produced these reports without uniform guidelines, making assessment using these tools difficult.
- Standardization in the time of data collection for the performance data must be addressed. The major issues are to determine at what intervals data collection should occur and specifically how the indicators are measured. Organizations have submitted their data inconsistently, with some submitting follow-up data after the improvement project has

been completed and others submitting after one year enrolled in the HIVQUAL program. In addition, some decisions about measurement changed over the years. Standardization in these areas is necessary in order to make comparisons.

- More outcomes need to be measured that examine changes in actual performance of the organizations. Additional performance data needs to be obtained and compared to HIVQUAL status to measure whether HIVQUAL implementation improves quality of care.
- Additional investment in consultant time by HRSA would also strengthen the HIVQUAL program. Almost all organizations wished they had more time with their consultant, and it was a key predictor of independence.
- In addition to increasing investment in consultant time, an additional investment by HRSA that would add to the HIVQUAL program is for HRSA to provide support for data collection through increased staffing at the individual organizations, thereby making data collection a priority and increasing its timeliness and usefulness.

In sum, organizations are very satisfied with the New York State AIDS Institute's HIVQUAL program, and find it a useful tool for implementing HIV-specific quality improvement activities. Although they were not detectable statistically, the most important barriers to successfully implementing HIVQUAL were increased work load and the perceived lack of need for additional QI within an organization. A positive result of this evaluation is that the important factors for an organization reaching independence are factors that are under the control of the organization: staff, time and leadership support. Another positive finding is that experience with the HIVQUAL intervention does make a difference in improving performance. These findings indicate that, theoretically, if an organization commits adequate staff to HIVQUAL, continues with the program long enough, and the leadership supports QI, they can be successful, and that this success is correlated with improved outcomes.

Appendices

Appendix 1:

- Consultant Activity Report Data
- HRSA IHI Information
- Consultant Information

Appendix 2:

- Organization Survey Instrument
- Organization Survey Results

Appendix 3:

- Consultant Survey Questionnaire
- Consultant Survey Results

Appendix 4:

- Organizational Assessment Questions
- Baseline Organizational Assessment Results
- Follow-Up Organizational Assessment Results

Appendix 1:

- Consultant Activity Report Data
- HRSA IHI Information
- Consultant Information

Data from the Consultant Activity Reports (cumulative throughout evaluation)

HIVQUAL Status					
Consultant Data	**Never**	**Withdrew**	**Initial**	**Advanced**	**Independent**
Average total hours/month consultant reported	3.4 (3.6)	3.4 (1.9)	3.2 (1.2)	3.9 (2.1)	2.9 (1.6)
Average total off organization hours/month consultant reported	1.2 (0.9)	1.2 (0.8)	1.3 (0.8)	1.5 (0.6)	1.1 (0.7)
Average total on organization hours/month consultant reported	2.2 (1.4)	2.2 (1.5)	1.9 (0.9)	2.4 (1.8)	1.8 (1.1)

IHI Status by HIVQUAL Stage Attained

HIVQUAL Status					
IHI Group	**Never Participated** (N=22)	**Withdrew** (N=22)	**Initial** (N=25)	**Advanced** (N=26)	**Independent** (N=17)
Intervention	9%	32%	4%	12%	29%
Control	14%	5%	16%	23%	12%
Not in IHI intervention	77%	64%	80%	65%	59%

Consultants by HIVQUAL Stage Attained

HIVQUAL Status					
Consultant	**Never**	**Withdrew**	**Initial**	**Advanced**	**Independent**
Consultant A	41%	5%	36%	0%	0
Consultant B	23%	32%	28%	35%	24%
Consultant C	14%	59%	16%	4%	29%
Consultant D	23%	5%	12%	50%	29%
Puerto Rico	0%	0	8%	2%	18%

Appendix 2:

- Organization Survey Instrument
- Organization Survey Results

HIVQUAL ORGANIZATION SURVEY

(Version used with organizations at or beyond Step 5)

Description of your involvement with HIVQUAL:

WE ARE PARTICIPATING IN HIVQUAL AND ARE AT OR BEYOND STEP 5.

Name of Organization: _____

Contact Person:

Name: _____

Title: _____

Telephone: _____

Email: _____

1. **How many HIV positive clients do you currently serve?**

2. **What percentage of your total patient population does this represent?**

3. **During your participation in HIVQUAL, how much time was spent on the following (hours per month):**

   - **Meeting time** _____
   - **Data collection** _____
   - **Data entry** _____
   - **Data cleaning and manipulation** _____
   - **Telephone time with consultant** _____
   - **In-person time with consultant** _____
   - **Implementing the intervention** _____
   - **Documentation/Paperwork** _____
   - **Other** _____

4. **Briefly outline your reasons for choosing to participate in HIVQUAL?**

5. **How long have you participated in HIVQUAL (# of months)**

6. **Has there been any periods of inactivity for greater than 2 months while participating in HIVQUAL? If yes, please explain.**

7. **What HIVQUAL quality improvement project did you choose?**

8. **Why did you decide to select this project?**

9. **What did your intervention consist of?**

10. **How many individuals within your agency are actively involved in the HIVQUAL program?**

11. **Is the level of staff involvement adequate to fulfill the program's requirements?**

12. **Do you have a person within your team who is responsible for HIVQUAL data entry and submission? If yes, what position does this individual hold?**

13. **Have you experienced any barriers or difficulties with the submission of the data? If yes, please explain.**

14. **Are you finding your HIVQUAL consultant helpful?**

15. **What do you perceive as particularly helpful?**

16. **How could your consultant improve her services?**

17. **How would you describe the amount of time the HIVQUAL consultant devoted to your organization?**

18. **Do you participate in the IHI HIV Quality Assurance Program? If yes, do you currently have a quality improvement program for HIV services other than IHI in place?**

19. **Have you documented any improvements in HIV Care in the last year? If yes, please describe briefly.**

20. **Which of the following clinical indicators do you routinely measure?**

    - **Staging (VL/CD4)**
    - **HAART Therapy**
    - **PCP prophylaxis**
    - **MAC prophylaxis**
    - **Gynecological Care**
    - **PPD**
    - **Other _____**

21. What system(s) do you currently use to document your HIV data?

- **Access**
- **Excel**
- **SPSS**
- **Lotus**
- **Other _____**

22. Do you conduct chart reviews?

23. Did your agency's HIV program experience any major organizational or personnel changes during the past year? If yes, please describe briefly.

24. Did this have an impact on your decision to participate in HIVQUAL?

25. Please describe any positive impact on your organization from participating in HIVQUAL.

26. Please describe any negative impact on your organization from participating in HIVQUAL.

27. What expectations did you have from participating in HIVQUAL and were these expectations met?

28. Do you think that through your participation in HIVQUAL you have learned to incorporate continuous quality improvement into your overall organizational structure?

29. Was HIVQUAL successful for you?

30. Please explain.

Results from Organization Survey (completed June-October, 2001)

For all responses, the following N should be used for each HIVQUAL status variable unless otherwise indicated:

- Never: N=22
- Withdrew: N=20
- Initial: N=25
- Advanced: N=25
- Independent: N=17

Location, Patient Population, Length of Involvement, Staff

	HIVQUAL Status				
Variable	**Never**	**Withdrew**	**Initial**	**Advanced**	**Independent**
Percent in New York	23%	5%	16%	46%	29%
Mean number of HIV+ patients	807 (814)	740 (758)	392 (405)	640 (635)	576 (368)
Mean number months participated	0	4.3 (3.3)	7.7 (3.3)	12.2 (5.8)	10.7 (4.7)
Mean number staff involved with HIVQUAL	0	3.2 (2.1)	4.8 (2.9)	4.8 (3.5)	7.1 (3.8)

Time Spent

	HIVQUAL Status			
Activity	**Withdrew (hours)**	**Initial (hours)**	**Advanced (hours)**	**Independent (hours)**
Meeting time	2 (1.4)	5.2 (6.1)	3.4 (1.8)	2.5 (1.9)
Data collection	11.5 (12.0)	12.9 (11.5)	15.4 (17.2)	3.3 (2.5)
Data entry	5.5 (0.7)	6.7 (5.2)	14.7 (16.1)	2.0 (1.0)
Data cleaning/manipulation	2.0	6.5 (4.1)	4.5 (4.3)	2.0 (1.0)
Consultant meetings via telephone	4.0	2.0 (1.3)	1.4 (0.7)	1.0
Consultant meetings in person	3.0	1.3 (0.6)	1.5 (1.2)	1.7 (1.2)
Implementing HIVQUAL QI intervention		4.8 (1.3)	12.9 (17.8)	10.2 (7.1)
Documentation/paperwork	5.0	2.0 (1.1)	4.6 (4.9)	2.5 (1.3)
Other	1.0	2.0		
Range of Total hours	26.5 (23.3) 10-42	26.4 (19.2) 8-61	33.4 (25.7) 4-74	15.8 (12.8) 2-32

Reasons for Participating in HIVQUAL

HIVQUAL Status				
Reason	**Withdrew**	**Initial**	**Advanced**	**Independent**
HRSA recommendation	39%	24%	32%	18%
Wanted basic QI structure	44%	44%	40%	71%
Wanted advanced QI structure/data system	0	16%	20%	6%
Other agency/outside recommendation	11%	16%	4%	6%
Other	6%	0%	4%	0%

Expectations of HIVQUAL Participation

	Withdrew	**Initial**	**Advanced**	**Independent**
Expectations were met	44%	60%	84%	88%
Expectation: Wanted to implement QI program	63%	47%	52%	47%
Expectation: Compare HIVQUAL with other QI program	13%	13%	19%	0%
Expectation: Other	25%	40%	29%	53%

Reasons for Not Participating in HIVQUAL

	Never
Needs already met	55%
Too much work at this time	30%
Want something more comprehensive or sophisticated	30%
Want something more practical	20%
HIVQUAL does not meet needs	15%
Other	50%

Understanding of Benefits of HIVQUAL Participation

	Never
Yes, understood benefits	40%
Did not understand benefits	53%
HIVQUAL was not compatible with current systems/plans	37%

Reasons for Withdrawing from HIVQUAL

	Withdrew
IHI or other program involvement	43%
Too time consuming	0%
Internal problems	57%

Consider Participation Again in the Future

	Withdrew
If program better coordinated	29%
Need to be contacted again to join HIVQUAL	29%
Maybe--positive comment	29%
Probably not--negative comment	14%

Periods of Inactivity Greater than Two Months

	HIVQUAL Status			
	Withdrew	**Initial**	**Advanced**	**Independent**
Inactivity > 2 months	56%	40%	40%	35%
Inactivity due to other priorities	20%	30%	30%	17%
Inactivity due to personnel changes	50%	40%	30%	33%
Inactivity due to software problems	0%	0	30%	33%
Inactivity for another reason	30%	30%	10%	17%

Quality Indicator Selected

	HIVQUAL Status	
Indicator	**Advanced**	**Independent**
PPD	64%	60%
GYN exam	55%	60%
Dental (option for some sites only)	9%	7%
CD4/VL	9%	13%
HAART Therapy	9%	0%
PCP	5%	7%
MAC	5%	0%
Other	5%	0%

Why was indicator selected?

	Advanced	Independent
Lowest indicator	68%	67%
Thought it was clinically relevant	27%	20%
Other	5%	13%

Content of QI Intervention

	Advanced	Independent
Reminders	41%	33%
Increased follow-up	27%	27%
Patient education/Staff training	18%	13%
Other	14%	27%

Adequacy of Staff Involvement

	Withdrew	Initial	Advanced	Independent
Staff Involvement is not sufficient	50%	84%	60%	82%
If no, too many QI activities	11%	0%	0%	0%
If no, insufficient staff for workload	56%	75%	100%	67%
If no, other	33%	25%	0%	33%

Team Member Responsible for HIVQUAL Data Entry/Submission

	Withdrew	Initial	Advanced	Independent
Person responsible for data entry and submission	22%	44%	28%	41%
If yes, Data manager	50%	31%	43%	67%

Barriers to HIVQUAL Data Submission

	Withdrew	Initial	Advanced	Independent
Have difficulties with data submission	28%	20%	48%	24%
If yes, Software	60%	40%	58%	75%
If yes, Increased Data & Turnaround time	40%	20%	17%	0%
If yes, Other	0%	40%	25%	25%

Consultant Strengths

	Withdrew	Initial	Advanced	Independent
Consultant was helpful	89%	100%	92%	88%
If yes, Very accessible	0%	16%	30%	7%
If yes, Knowledgeable/ organized & task oriented	68%	40%	35%	60%
If yes, Organized/task oriented	19%	12%	9%	13%
If yes, Accessible and knowledgeable	13%	20%	22%	7%
If yes, Accessible and organized	0%	12%	4%	13%

Areas for Consultant Improvement

	Withdrew	Initial	Advanced	Independent
More responsive	22%	8%	4%	12%
More involved	17%	16%	28%	12%
Responsive and involved	11%	20%	12%	0%
Other	6%	0%	0%	0%
No suggestions	44%	56%	56%	77%

Amount of Consultant Time Spent

	Withdrew	Initial	Advanced	Independent
Too much	0	0	0	0
Not enough	35%	16%	20%	12%
About right	65%	84%	80%	88%

Participation in IHI/Other Quality Improvement Programs

	Never	Withdrew	Initial	Advanced	Independence
Participated in IHI	64%	55%	12%	24%	47%
Other internal QI program	62%	44%	100%	0%	75%
No other QI program	30%	33%	0%	17%	25%
External program—not IHI	39%	22%	0%	33%	0%

Did Participation in IHI Cause You Not to Participate in HIVQUAL?

	Never
IHI did not affect HIVQUAL part	43%
IHI met needs	57%

Clinical Indicators Measured

	Never	Withdrew	Initial	Advanced	Independent
HIV Staging (VL/CD4)	100%	95%	96%	100%	100%
HAART therapy	100%	100%	96%	100%	100%
PCP prophylaxis	100%	95%	96%	100%	100%
Mac prophylaxis	100%	100%	96%	100%	94%
GYN care/pap smears	100%	100%	92%	100%	100%
PPD prophylaxis	100%	95%	96%	100%	100%
Hepatitis A/B/C	46%	55%	44%	36%	35%
Mammogram	0%	5%	4%	4%	6%
Sexually transmitted diseases	0%	10%	8%	16%	12%
Other indicators	59%	60%	56%	52%	41%

Data Systems for Documentation

	Never	Withdrew	Initial	Advanced	Independent
Access	50%	30%	32%	24%	41%
Excel	14%	30%	16%	24%	24%
Lotus	0%	0%	8%	4%	0%
URS	5%	0%	0%	16%	12%
Other	91%	65%	72%	56%	59%

Chart Reviews Conducted

	Never	Withdrew	Initial	Advanced	Independent
Yes	100%	80%	92%	84%	94%
No	0%	20%	8%	16%	6%

Major Organizational/Personnel Changes in Past Year

	Never	Withdrew	Initial	Advanced	Independent
Had major personnel changes	41%	50%	44%	40%	29%
Changes had effect on HIVQUAL	11%	80%	45%	40%	40%
Changes had no effect on HIVQUAL	44%	20%	36%	30%	40%
Positive personnel changes	44%	0%	9%	30%	20%
Other	0%	0%	9%	0%	0%

Personnel Changes and Impact on HIVQUAL Participation

	Never	Withdrew	Initial	Advanced	Independent
Positive Impact	86%	39%	72%	96%	94%
Negative Impact	14%	28%	32%	52%	47%

HIVQUAL Positive Organizational Impact

	Withdrew	Initial	Advanced	Independent
Monitor standard of care	71%	39%	38%	13%
Benchmark, comparisons	0%	17%	13%	31%
Improve process of program	29%	22%	50%	56%
Other	0%	22%	0%	0%

HIVQUAL Negative Organizational Impact

	Withdrew	Initial	Advanced	Independent
Software	0	13%	8%	0%
Data collect problem	0	0%	15%	0%
Work initiative	60%	75%	54%	50%
Other	40%	13%	23%	50%

Helpfulness of HIVQUAL in Incorporating QI into Organizational Structure

	Advanced	Independent
Yes incorporated HIVQUAL	68%	73%
Yes, but QI already integrated	19%	9%
Yes, use HIVQUAL model regularly	50%	27%
Yes, impacted agency beyond HIVQUAL	19%	27%
Other	13%	36%

HIVQUAL Successes

	Advanced	Independent
HIVQUAL was successful	87%	89%
Confirmed organizations own strengths	0%	25%
Improved benchmarking	8%	8%
Showed organization where they could improve	31%	17%
Not helpful	15%	0%
Improved organizational skills	46%	50%

Appendix 3

- Consultant Survey Questionnaire
- Consultant Survey Results

HIVQUAL CONSULTANT SURVEY

Consultant:

Organization:

Type of organization: **Hospital** **Health Center** **Other:**

# of HIV infected individuals served: _____

State: _____

Location: **Urban** **Rural** **Suburban**

Primary contact person(s): _____

Title/Degree: _____

E-mail address: _____

Contact Telephone #: _____

Date first organizational assessment completed: _____

IHI participation: _____

1. **Briefly describe the process of engaging the organization:**

2. **How receptive was the organization to participating in HIVQUAL?**

3. **How receptive was the organization to having consultant intervention?**

4. **What were some of the major needs of the organization in implementing HIVQUAL?**

5. **Quality improvement indicator/project selected:**

6. **Briefly describe the work process involved in completing the project:**

7. **Describe how participating in HIVQUAL improved the QI program:**

8. **Do you think the improvement obtained through HIVQUAL could be sustained without your involvement?**

9. **What additional interventions you have applied to further improve the QI program?**

10. **Why were these additional interventions not applied?**

11. **Number of times data was submitted:**

12. **Were there any barriers or difficulties with submission of the data? If so, what were they?**

13. **Did this organization have a specially assigned data manager available?**

14. **Additional comments regarding this organization:**

Results From HIVQUAL Consultant Survey (completed Spring 2001)

For all responses, the following N should be used for each HIVQUAL status variable unless otherwise indicated:

- Never: N=20
- Withdrew: N=22
- Initial: N=22
- Advanced: N=23
- Independent: N=14

Step Reached

	Withdrew	Initial	Advanced	Independent
0	9%	0%	0%	0%
1	9%	14%	4%	7%
2	50%	41%	4%	0%
3	14%	14%	4%	0%
5	14%	32%	31%	7%
6	0%	0%	22%	29%
7	0%	0%	22%	14%
8	5%	0%	13%	43%

Type of Organization

	Never	Withdrew	Initial	Advanced	Independent
Hospital	15%	45%	41%	43%	71%
Community Health Center	65%	55%	59%	48%	21%
Other	20%	0%	0%	9%	7%

Location

	Never	Withdrew	Initial	Advanced	Independent
Urban	75%	82%	91%	78%	86%
Rural	10%	9%	0%	13%	0%
Suburban	15%	9%	9%	9%	14%

IHI Participation

	Never	Withdrew	Initial	Advanced	Independent
Yes	40%	45%	5%	22%	46%
No	60%	55%	95%	78%	54%

Receptiveness to HIVQUAL Participation

	Never	Withdrew	Initial	Advanced	Independent
Very much	29%	50%	50%	64%	79%
Moderately	14%	36%	36%	32%	21%
Not very	57%	14%	14%	5%	0%

Receptiveness to Consultant Intervention

	Never	Withdrew	Initial	Advanced	Independent
Very much	0%	50%	50%	59%	64%
Moderately	29%	36%	23%	41%	29%
Not very	71%	14%	27%	0%	7%

Quality Improvement Indicator/Project Selected

	Advanced	Independent
None	0%	9%
OB/GYN	35%	18%
PPD	35%	46%
PPD and OB/GYN	20%	27%
HAART Therapy	0%	0%
Dental/Opthal	5%	0%
Internal indicator	5%	0%

Can Improvement be Sustained without Consultant Involvement

	Withdrew	Initial	Advanced	Independent
No	100%	80%	31%	18%
Yes	0%	20%	69%	82%

Data Manager Assigned to HIVQUAL

	Withdrew	Initial	Advanced	Independent
Yes	56%	38%	35%	62%
No	44%	62%	65%	38%

HIVQUAL Contribution to QI Program

	Withdrew	Initial	Advanced	Independent
Initiated QI in organization	33%	0%	50%	55%
Increased staffing	0%	0%	6%	0%
Strengthened organization QI program	0%	20%	28%	36%
Improved specific indicator	33%	0%	0%	0%
Other	33%	40%	0%	0%
Do not know	0%	0%	6%	0%
No improvement	0%	40%	11%	9%

Additional Interventions Consultant Could Have Applied

	Initial	Advanced	Independent
More team building	0%	17%	0%
Long range planning	0%	17%	0%
Refresher class	0%	0%	18%
Clarified responsibilities	25%	17%	0%
Other	50%	17%	9%
Not available to answer	0%	17%	18%
More time/visits	25%	17%	27%
Infrastructure issues	0%	0%	18%
None	0%	0%	9%

Why Interventions Were Not Applied

	Initial	Advanced	Independent
Moved too fast	0%	0%	13%
Not enough time/money	0%	55%	50%
Other issues with HIVQUAL	33%	9%	13%
Other	0%	9%	13%
Not applicable	33%	27%	13%
Staff turnover	33%	0%	0%

Barriers with HIVQUAL Data Submission

	Withdrew	Initial	Advanced	Independent
HIVQUAL software	88%	83%	67%	78%
Not enough resources	13%	17%	22%	0%
Not enough help from consultants	0%	0%	0%	11%
No barriers	0%	0%	11%	6%

Appendix 4

- Organizational Assessment Questions
- Baseline Organizational Assessment Results
- Follow-Up Organizational Assessment Results

Organizational Assessment Questions

Infrastructure

1) **Does the organization have a system in place to assess the quality of HIV patient care?**
2) **Does the HIV program use a CQI philosophy in its quality assessment?**
3) **Has the CQI approach been used to achieve any improvements in the quality of HIV care?**

Sponsorship

1) **Does the organization's overall leadership support CQI?**
2) **Does the HIV program's leadership support CQI?**
3) **Is a focus on quality integrated into the structure of the organization?**

Resources

1) **Are there development activities and/or training available for staff on CQI?**
2) **Are there resources available for quality improvement?**
3) **Are resources available for ongoing measurement and evaluation of quality improvement activities?**

HIV performance data management

1) **To what extent is HIV clinical data presently measured by HIV program?**
2) **To what extent is HIV clinical data captured by information systems?**
3) **Is there management support and/or resources available for HIV performance data?**

Baseline Organizational Assessment Results

The results are divided by the status reported as of December 2001 and exclude organizations that never participated in HIVQUAL.

Overall Information from the Baseline Organizational Assessment (N=85)

	Withdrew	Initial	Advanced	Independent
Average Total Baseline Organizational Assessment	36.5 (10.2) N=20	32.4 (10.1) N=23	32.9 (12.6) N=25	42.0 (7.3) N=17

Infrastructure

System to Assess Quality of HIV Patient Care

	Withdrew	Initial	Advanced	Independent
Nothing in place	9.5%	44.0%	11.5%	0%
1-2 quality indicators	28.6%	28.0%	34.6%	17.6%
HIV QI plan linked to overall organization QI	38.1%	16.0%	38.5%	41.2%
Most clinicians/ staff can describe performance on QI indicators	14.3%	4.0%	3.8%	11.8%
Performance tracked over time, regular reviews	9.5%	8.0%	11.5%	29.4%
Mean Score (standard deviation)	2.9 (1.1)	2.0 (1.2)	2.7 (1.1)	3.5 (1.1)

Level of CQI Philosophy in HIV Quality Program

	Withdrew	Initial	Advanced	Independent
No evidence of any improvement activities	4.8%	16.7%	15.4%	5.9%
No analysis of underlying cause	14.3%	41.7%	42.3%	11.8%
Some efforts to address clinical quality issues	42.9%	20.8%	19.2%	17.6%
Use of multidisciplinary teams is commonplace	23.8%	16.7%	15.4%	58.8%
CQI focus exists in daily work	14.3%	4.2%	7.7%	5.9%
Mean Score (standard dev)	3.3 (1.0)	2.5 (1.1)	2.6 (1.2)	3.5 (1.0)

Improvements in Quality of HIV Care

	Withdrew	Initial	Advanced	Independent
No evidence of improvements	14.3%	25.0%	26.9%	5.9%
1-2 HIV care-related Issues improved	19.0%	45.8%	38.5%	23.5%
Staff describe a number of performance improvements	52.4%	12.5%	15.4%	23.5%
Evidence of ongoing monitoring and improvement	4.8%	12.5%	7.7%	29.4%
HIV-related quality improvements directly linked to CQI	9.5%	4.2%	11.5%	17.6%
Mean Score (standard deviation)	2.8 (1.1)	2.2 (1.1)	2.4 (1.3)	3.3 (1.2)

Sponsorship

Agency Leadership Support for CQI

	Withdrew	Initial	Advanced	Independent
Little or no interest in performance	9.5%	12.5%	15.4%	0%
Leadership gives lip service to CQI	28.6%	20.8%	23.1%	11.8%
Leadership shows commitment through at least one action	9.5%	29.2%	23.1%	23.5%
Leadership shows commitment through multiple actions	33.3%	16.7%	23.1%	35.3%
Leadership has internalized CQI	19.0%	20.8%	15.4%	29.4%
Mean Score (standard deviation)	3.2 (1.3)	3.1 (1.3)	3.0 (1.3)	3.8 (1.0)

HIV Program Leadership Support for CQI?

	Withdrew	Initial	Advanced	Independent
No involvement from HIV leadership	9.5%	12.5%	3.8%	0%
Leadership reviews month/quarterly statistics	4.8%	25.0%	19.2%	5.9%
Leadership like CQI concept, tried some components	19.0%	45.8%	50.0%	29.4%
Leadership actively supports CQI	38.1%	8.3%	11.5%	35.3%
Leadership stresses being proactive	28.6%	8.3%	15.4%	29.4%
Mean Score (standard deviation)	3.7 (1.3)	2.7 (1.1)	3.2 (1.0)	3.9 (0.9)

Focus on Quality Integrated into Organizational Structure

	Withdrew	Initial	Advanced	Independent
No attention paid to quality	4.8%	12.0%	3.8%	0%
Quality a stand-alone issue	19.0%	16.0%	30.8%	17.6%
Staff are interested in QI and willing to be involved	66.7%	52.0%	34.6%	47.1%
People consider QI part of their job	0%	16.0%	19.2%	29.4%
Organization has experience with self-directed work teams	9.5%	4.0%	11.5%	5.9%
Mean Score (standard deviation)	2.9 (0.9)	2.8 (1.0)	3.0 (1.1)	3.2 (0.8)

Resources

CQI Development Activities/Training Available for Staff

	Withdrew	Initial	Advanced	Independent
None	23.8%	41.7%	23.1%	5.9%
Staff can only take advantage of free or low cost training	28.6%	16.7%	34.6%	17.6%
Program has a few staff who can train others	28.6%	33.3%	30.8%	41.2%
All HIV staff receive CQI training	14.3%	0%	3.8%	35.3%
Training in quality is a priority	4.8%	8.3%	7.7%	0%
Mean Score (standard deviation)	2.5 (1.2)	2.2 (1.2)	2.4 (1.1)	3.1 (0.9)

Resources Available for Quality Improvement

	Withdrew	Initial	Advanced	Independent
No extra resources	14.3%	29.2%	19.2%	0%
Staff time available but grudgingly	14.3%	12.5%	46.2%	23.5%
Staff time available but work made up	42.9%	33.3%	19.2%	17.6%
QI considered part of staff's work	23.8%	16.7%	3.8%	58.8%
QI considered a priority	4.8%	8.3%	11.5%	0%
Mean Score (standard deviation)	2.9 (1.1)	2.6 (1.3)	2.4 (1.2)	3.4 (0.9)

Resources for Ongoing Measurement and Evaluation of Quality Improvement Activities

	Withdrew	Initial	Advanced	Independent
No evaluation of QI impact	15.0%	20.8%	26.9%	0%
QI evaluation takes place but not systematically	30.0%	37.5%	42.3%	23.5%
Ongoing evaluation between staff -- leadership not involved	20.0%	20.8%	15.4%	23.5%
Program leadership reviews results and provides feedback	25.0%	12.5%	7.7%	52.9%
Staff conducts own evaluation of CQI without prompting	10.0%	8.3%	7.7%	0%
Mean Score (standard deviation)	2.9 (1.3)	2.5 (1.2)	2.3 (1.2)	3.3 (0.8)

HIV Performance Data Management

HIV Clinical Data Measurement

	Withdrew	Initial	Advanced	Independent
No clinical data measurement occurs	19.0%	16.7%	19.2%	0%
Organization uses 1-2 clinical indicators	19.0%	4.2%	23.1%	11.8%
Organization uses 3-4 indicators	19.0%	29.2%	15.4%	29.4%
Organization uses 5-6 indicators	14.3%	29.2%	23.1%	29.4%
Organization uses all HIVQUAL indicators	28.6%	20.8%	19.2%	29.4%
Mean Score (standard deviation)	3.1 (1.5)	3.3 (1.3)	3.0 (1.4)	3.8 (1.1)

HIV Clinical Data Captured by Information Systems

	Withdrew	Initial	Advanced	Independent
No HIV clinical data captured	14.3%	17.4%	32.0%	0%
Some clinical performance info provided	28.6%	30.4%	16.0%	17.6%
Detailed clinical info provided	14.3%	8.7%	16.0%	23.5%
Clinical info system, but does not cover HIV specific data	9.5%	13.0%	8.0%	29.4%
Clinical info system provides data on HIV performance	33.3%	30.4%	28.0%	29.4%
Mean Score (standard deviation)	3.2 (1.5)	3.1 (1.6)	2.8 (1.7)	3.7 (1.1)

Management Support and/or Resources Available for HIV Performance Data

	Withdrew	Initial	Advanced	Independent
No computers or computers are slow	4.8%	13.0%	20.0%	0%
Few or shared computers are available	19.0%	8.7%	16.0%	17.6%
Data staff is available to HIV program on ad-hoc basis	33.3%	17.4%	20.0%	23.5%
Windows 95/98 computers available	14.3%	39.1%	32.0%	41.2%
Dedicated data staff for HIV program	28.6%	21.7%	12.0%	17.6%
Mean Score (standard deviation)	3.4 (1.2)	3.5 (1.3)	3.0 (1.4)	3.6 (1.0)

Follow-up Organizational Assessment Results

The results are divided by the status reported as of December 2001 and exclude organizations that never participated in HIVQUAL.

Overall Information from the Follow-up Organizational Assessment (N=73)

	Withdrew	Initial	Advanced	Independent
Average Total Follow-up Organizational Assessment	35.0 (11.7) N=8	34.0 (9.8) N=24	38.1 (8.9) N=25	51.7 (6.7) N=16

Infrastructure

System to Assess Quality of HIV Patient Care

	Withdrew	Initial	Advanced	Independent
Nothing in place	0%	25.0%	3.8%	0%
1-2 quality indicators	50.0%	29.2%	23.1%	0%
HIV QI plan linked to overall organization QI	12.5%	37.5%	34.6%	25.0%
Most clinicians/ staff can describe performance on QI indicators	12.5%	8.3%	26.9%	12.5%
Performance tracked over time, regular reviews	25.0%	0%	11.5%	62.5%
Mean Score (standard deviation)	3.1 (1.4)	2.3 (1.0)	3.2 (1.1)	4.4 (0.9)

Level of CQI Philosophy in HIV Quality Program

	Withdrew	Initial	Advanced	Independent
No evidence of any improvement activities	12.5%	20.8%	7.7%	0%
No analysis of underlying cause	12.5%	25.0%	19.2%	0%
Some efforts to address clinical quality issues	25.0%	37.5%	30.8%	18.8%
Use of multidisciplinary teams is commonplace	50.0%	16.7%	23.1%	31.3%
CQI focus exists in daily work	14.3%	4.3%	19.2%	50.0%
Mean Score (standard dev)	3.1 (1.1)	2.5 (1.1)	3.3 (1.2)	4.3 (0.8)

Improvements in Quality of HIV Care

	Withdrew	Initial	Advanced	Independent
No evidence of improvements	37.5%	25.0%	0%	0%
1-2 HIV care-related Issues improved	12.5%	37.5%	42.3%	0%
Staff describe a number of performance improvements	25.0%	16.7%	23.1%	12.5%
Evidence of ongoing monitoring and improvement	25.0%	20.8%	23.1%	37.5%
HIV-related quality improvements directly linked to CQI	0%	0%	11.5%	50.0%
Mean Score (standard deviation)	2.4 (1.3)	2.3 (1.1)	3.0 (1.1)	4.4 (0.7)

Sponsorship

Agency Leadership Support for CQI

	Withdrew	Initial	Advanced	Independent
Little or no interest in performance	0%	8.3%	11.5%	0%
Leadership gives lip service to CQI	75.0%	29.2%	19.2%	6.3%
Leadership shows commitment through at least one action	0%	20.8%	30.8%	6.3%
Leadership shows commitment through multiple actions	12.5%	29.2%	23.1%	37.5%
Leadership has internalized CQI	12.5%	12.5%	15.4%	50.0%
Mean Score (standard deviation)	2.6 (1.2)	3.1 (1.2)	3.1 (1.2)	4.3 (0.9)

HIV Program Leadership Support for CQI?

	Withdrew	Initial	Advanced	Independent
No involvement from HIV leadership	12.5%	4.2%	0%	0%
Leadership reviews month/quarterly statistics	37.5%	16.7%	11.5%	0%
Leadership like CQI concept, tried some components	0%	45.8%	23.1%	6.3%
Leadership actively supports CQI	12.5%	25.0%	38.5%	25.0%
Leadership stresses being proactive	37.5%	8.3%	26.9%	68.8%
Mean Score (standard deviation)	3.3 (1.7)	3.2 (1.0)	3.8 (1.0)	4.6 (0.6)

Focus on Quality Integrated into Organizational Structure

	Withdrew	Initial	Advanced	Independent
No attention paid to quality	0%	8.3%	4.0%	0%
Quality a stand-alone issue	50.0%	41.7%	12.0%	0%
Staff are interested in QI and willing to be involved	37.5%	33.3%	60.0%	25.0%
People consider QI part of their job	0%	16.7%	20.0%	37.5%
Organization has experience with self-directed work teams	12.5%	0%	4.0%	37.5%
Mean Score (standard deviation)	2.8 (1.0)	2.6 (0.9)	3.1 (0.8)	4.1 (0.8)

Resources

CQI Development Activities/Training Available for Staff

	Withdrew	Initial	Advanced	Independent
None	25.0%	12.5%	3.8%	0%
Staff can only take advantage of free or low cost training	25.0%	54.2%	30.8%	0%
Program has a few staff who can train others	25.0%	25.0%	50.0%	43.8%
All HIV staff receive CQI training	25.0%	8.3%	15.4%	25.0%
Training in quality is a priority	0%	0%	0%	31.3%
Mean Score (standard deviation)	2.5 (1.2)	2.3 (0.8)	2.8 (0.8)	4.0 (0.9)

Resources Available for Quality Improvement

	Withdrew	Initial	Advanced	Independent
No extra resources	12.5%	16.7%	7.7%	0%
Staff time available but grudgingly	25.0%	16.7%	19.2%	0%
Staff time available but work made up	25.0%	37.5%	38.5%	18.8%
QI considered part of staff's work	25.0%	25.0%	30.8%	37.5%
QI considered a priority	12.5%	4.2%	3.8%	43.8%
Mean Score (standard deviation)	3.0 (1.3)	2.8 (1.1)	3.0 (1.0)	4.3 (0.8)

Resources for Ongoing Measurement and Evaluation of Quality Improvement Activities

	Withdrew	Initial	Advanced	Independent
No evaluation of QI impact	12.5%	16.7%	3.8%	0%
QI evaluation takes place but not systematically	12.5%	20.8%	19.2%	0%
Ongoing evaluation between staff -- leadership not involved	37.5%	33.3%	42.3%	12.5%
Program leadership reviews results and provides feedback	25.0%	29.2%	30.8%	37.5%
Staff conducts own evaluation of CQI without prompting	12.5%	0%	3.8%	50.0%
Mean Score (standard deviation)	3.1 (1.2)	2.8 (1.1)	3.1 (0.9)	4.4 (0.7)

HIV Performance Data Management

HIV Clinical Data Measurement

	Withdrew	Initial	Advanced	Independent
No clinical data measurement occurs	12.5%	8.3%	0%	0%
Organization uses 1-2 clinical indicators	12.5%	12.5%	30.8%	0%
Organization uses 3-4 indicators	12.5%	8.3%	7.7%	6.3%
Organization uses 5-6 indicators	25.0%	20.8%	15.4%	18.8%
Organization uses all HIVQUAL indicators	37.5%	50.0%	46.2%	75.0%
Mean Score (standard deviation)	3.6 (1.5)	3.9 (1.4)	3.8 (1.3)	4.7 (0.7)

HIV Clinical Data Captured by Information Systems

	Withdrew	Initial	Advanced	Independent
No HIV clinical data captured	0%	25.0%	3.8%	0%
Some clinical performance info provided	50.0%	20.8%	34.6%	6.3%
Detailed clinical info provided	37.5%	12.5%	11.5%	18.8%
Clinical info system, but does not cover HIV specific data	0%	12.5%	19.2%	25.0%
Clinical info system provides data on HIV performance	12.5%	29.2%	30.8%	50.0%
Mean Score (standard deviation)	2.8 (1.0)	3.0 (1.6)	3.4 (1.4)	4.2 (1.0)

Management Support and/or Resources Available for HIV Performance Data

	Withdrew	Initial	Advanced	Independent
No computers or computers are slow	12.5%	16.7%	3.8%	0%
Few or shared computers are available	25.0%	16.7%	26.9%	0%
Data staff is available to HIV program on ad-hoc basis	37.5%	16.7%	30.8%	31.3%
Windows 95/98 computers available	25.0%	20.8%	34.6%	18.8%
Dedicated data staff for HIV program	0%	29.2%	3.8%	50.0%
Mean Score (standard deviation)	2.8 (1.0)	3.3 (1.5)	3.1 (1.0)	4.2 (0.9)

4) Is there management support and/or resources available for HIV performance data?

	Withdrew	Initial	Advanced	Independent
No computers or computers are slow	12.5%	16.7%	3.8%	0%
Few or shared computers are available	25.0%	16.7%	26.9%	0%
IS staff is available to HIV program on ad-hoc basis	37.5%	16.7%	30.8%	31.3%
Windows 95/98 computers available	25.0%	20.8%	34.6%	18.8%
Dedicated IS staff for HIV program	0%	29.2%	3.8%	50.0%
Mean (standard deviation)	2.8 (1.0)	3.3 (1.5)	3.1 (1.0)	4.2 (0.9)

Chi square =23.6 (p=.02) Kruskal Wallis Test=11.0 (p=.01)