Sustainability of Improvements in Maternal and Child Care and Institutionalization of Continuous Quality Improvement in Nicaragua

Introduction

This study measured the level of sustainability of improvements in maternal and child care and the institutionalization of continuous quality improvement (CQI) in the Ministry of Health (MINSA) of Nicaragua following 10 years (2000-2010) of technical assistance supported by the United States Agency for International Development (USAID) through its Quality Assurance Project (QAP) and Health Care Improvement Project (HCI). USAID requested that HCI conduct this study in order to apply the findings, in coordination with MINSA, to prioritize their continued support for CQI within specific health facilities in Nicaragua.

The study sought to answer, above all, the question of whether approaches to improving key health care processes that were introduced through USAID-supported CQI initiatives have been incorporated in and are used on a daily basis by health care workers in MINSA health facilities. The study also focuses on determining how the support system put in place to facilitate the ongoing application of CQI has enabled facilities to sustain improvement activities. Such a support system for CQI is reflected in the existence of basic managerial, organizational, and other conditions necessary for sustainability and institutionalization.

This study is the first of its kind for USAID in Nicaragua. Other USAID-supported studies in Nicaragua have focused on specific aspects of institutionalization. This study is a full analysis of the sustainability of quality care improvements and of the application of CQI itself through an examination of the many diverse components that comprise these two concepts.

Methods

The methodology for this study is both quantitative and qualitative, with variables related to clinical and CQI training, leadership creation, acknowledgment and recognition of CQI, standardization of care processes, adoption of core values for CQI, ongoing performance of CQI activities, and the institutionalization of standardized care processes. Measurable indicators were created for each of these variables. Data were collected using eight different instruments that included self-administered questionnaires, individual interviews, and focus group interviews.

The universe for this USAID/HCI study is the 16 out of Nicaragua’s 17 Local Integrated Health Systems, known as SILAIS for their Spanish acronym, that have undertaken CQI activities since 2000 with support from QAP or HCI. Of the 16 SILAIS in the universe, 10 SILAIS (62% of those SILAIS that participated in CQI) were selected by MINSA to be included in the study. These SILAIS included Boaco, Chinandega,
Chontales, Jinotega, Leon, Matagalpa, Nueva Segovia, North Atlantic Autonomous Region (RAAN), South Atlantic Autonomous Region (RAAS), and Rio San Juan. Four of these SILAIS had previously participated in a USAID-sponsored study related to health provider competency in obstetric and newborn care. The advantage of including these four SILAIS in the sample was the possibility of examining the relationship between clinical competence and CQI in these four SILAIS. In each of the 10 SILAIS sampled, two health centers that had participated in QAP- or HCI-supported CQI initiatives during 2000-2010 and the SILAIS hospital were selected for study, resulting in a total sample of 20 health centers (13% of the total 154 health centers in the country) and 10 hospitals (45% of the 22 hospitals that maternal and child health care in the MINSA system).

The health personnel sampled for the study consisted of health professionals working in the 30 facilities selected for the study that had been involved in the CQI process in the facility and had worked in their current position for over three months. The total sample size varied depending on the study instrument. For example, there were 37 respondents to the S0 survey (for CQI coordinators and facility heads), and 143 respondents to the S3 survey (for health personnel involved in CQI). Data were collected and entered into different databases, depending on the interview instrument, using Statistical Package for the Social Sciences (SPSS) software for Windows 18.0. Some 110 health personnel participated in 27 focus groups, which were recorded and transcribed. All qualitative data were analyzed by thematic area and used to determine the level of sustainability and institutionalization of CQI achieved in each facility and to generate recommendations for further strengthening CQI in Nicaragua.

Another important tool used to measure the overall degree of CQI institutionalization and sustainability was the Documentation, Analysis, and Sharing (DAS) tool developed by the USAID Health Care Improvement Project to measure the performance of these three critical tasks in CQI implementation. In addition, the study assessed each SILAIS with respect to progress achieved in institutionalizing improved care processes and sustaining care quality. Using a scale of 0 to 3 (where 0 = non-existent and 3 = very satisfactory, consistent and complete), a score was calculated for each SILAIS based on rating its three sampled facilities for: 1) documentation, analysis and sharing of learning from improvement activities; 2) institutionalization of improved care processes, and 3) sustainability of the improved performance. This analysis provided insights into areas where each studied SILAIS needed further strengthening.

Results

Development of CQI Capacity

The process used to develop CQI capacity was similar in all 10 SILAIS participating in the study, even though each SILAIS began this process at a different time. The different types of trainings used to orient staff to CQI were similar in each SILAIS: initial trainings early on in the process, regular trainings following the initial trainings (weekly, monthly, etc.), and then additional trainings for new staff. The main difference between the 10 SILAIS in terms of training was whether the trainings were offered as workshops (not offered on regular basis) or offered in the form of “continuous education” (weekly, monthly, quarterly, etc.). In most of the facilities sampled, staff reported in focus groups that new staff are trained in the CQI process.

In the vast majority of facilities sampled (94%, or 28 out of 30), key informants reported that there was a CQI leader in their facility. Of 38 interviewees, 94.7% commented that the CQI leaders make sure

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1 HCI tools for assessing documentation, analysis, and sharing of learning from improvement activities at the QI team level and at the program or regional level are available at: http://www.hciproject.org/node/1688 and http://www.hciproject.org/node/1689.
that CQI indicators are monitored, 92.1% said leaders are responsible for organizing meetings, and 89.5% said that leaders supervise staff involved with CQI. The responsibility that leaders complied with the least was documenting the care improvement activities carried out at the facility. This activity was reported to be completed only 60.5% of the time by CQI leaders. Of the eight most important responsibilities for CQI leaders, the lowest average number of responsibilities undertaken by CQI leaders was in the health units from RAAS (39.2%), Jinotega (66.6%), Leon (71.42%), and Matagalpa (76.19%). Those SILAIS which had CQI leaders who undertook greater than 90% of their responsibilities were in (ascending order) Nueva Segovia, Chinandega, Boaco, and RAAN.

Recognition and reward for efforts and activities related to CQI were not reported to be very common in the facilities included in this study. Of the personnel involved in CQI activities, 57% responded as being “in disagreement” with the statement that they received respect, recognition or rewards for efforts and activities in CQI.

Intermediate Impact/Indicators of Sustainability and Institutionalization

Acquiring key values related to CQI is important as an intermediate indicator to achieving sustainability and/or institutionalization. This study measured the level of perception and importance of four different CQI values: genuine interest in quality improvement, interest in improving user satisfaction, team work, and respect for ideas or input from staff. In general, most health facilities within all SILAIS had the opinion that all of these values were important. About half of the key informants interviewed said that facilities in their SILAIS practiced these values “all the time”.

Another important intermediate indicator of institutionalization of CQI is the training received in CQI and in meeting clinical standards. Of the physicians and nurses interviewed who provide maternal and child health services, over 70% in most of the SILAIS studied reported to have received trained on following clinical standards. Only Boaco (59%) and Chinandega (66%) had slightly lower levels of training in clinical standards.

The level of experience in CQI was measured by asking respondents how many different CQI activities they “can do” (experience) and how many CQI activities they “know how to do without problems” (knowledge and ability). Level of experience was highest in Nueva Segovia and Leon. Level of knowledge and ability was highest in Leon and Chontales. There was not a high level of difference between SILAIS with respect to team functioning, measured by the proportion of team members that have remained part of the CQI team and by the number of CQI meetings held as planned.

The results for a final intermediate indicator—support for CQI provided from authorities (MINSA officials, higher level personnel in the health facility, etc.)—varied among the 10 SILAIS, with RAAN and Jinotega showing lower levels of support from higher authorities.

Evidence of Sustainability and Institutionalization

One of the first indicators used to measure the evidence of sustainability and/or institutionalization was the level of performance of facilities in each SILAIS in terms of compliance with clinical standards. A database maintained by USAID/HCI of indicators reported by the facilities in each SILAIS was used to measure the performance of selected vital clinical standards related to MCH, HIV and family planning. The results show that seven out of the 10 SILAIS included in the study are complying with these selected vital clinical standards above a level of 80%. The average level of compliance for the SILAIS of Jinotega (70.21%), Boaco (76.76%) and Matagalpa (55.38%) were below the 80% level.

Regarding CQI implementation, another important indicator of sustainability and institutionalization was determined by asking teams how many of 13 different CQI activities they regularly carry out, with the correct frequency, and if they have applied CQI to other areas than the ones in which CQI efforts were first introduced. Of the 30 facilities under study, 20 carry out 80% or more of the 13 CQI activities while the other 10 carry out less than 80%; 14 carry out the activities with the required frequency; and seven of the 30 (23%) have implemented CQI in a new area.
In four SILAIS (RAAN, RAAS, Chontales and Jinotega), additional data collection was carried out to repeat a study done in 2005 on clinical knowledge and skills among staff providing maternal and newborn care and family planning services. The results show that staff in these four SILAIS have all demonstrated improvements in their clinical skills and knowledge related to maternal and newborn care compared to the competency findings in 2005. However, the situation is different for family planning knowledge and skills: only the staff in the facilities in RAAN have shown improvements in their skills and abilities, whereas in RAAS, Chontales, and Jinotega, staff have actually shown small decreases in their measured skills and abilities related to family planning.

The number of trainings and number of people trained is another indicator of the sustainability of CQI. According to USAID/HCI records, for the 2005-2010 period, the total number of trainings held was 367, and the average number of participants per course was 7.8. The highest number of trainings in the area of maternal and newborn care were in Chontales (30 trainings), Chinandega (28 trainings), Leon (26 trainings), and Jinotega (21 trainings). In family planning, the highest number of trainings were undertaken in Leon (7 trainings) and Chinandega (5 trainings). For HIV, the highest number of trainings were undertaken in Chinandega (18 trainings) and Nueva Segovia (11 trainings). The greatest number of total health professionals trained per SILAIS in maternal and newborn care was in Chinandega (827), Leon (739), Chontales (517), and Jinotega (368). In family planning, the highest number of health professionals trained was in Leon (236) and Matagalpa (150). In HIV, the highest number of health professionals trained was in Chinandega (400) and Nueva Segovia (230).

Finally, through the application of the DAS tool and rating on criteria for sustainability and institutionalization, we assigned each SILAIS an overall score indicating the level of sustainability/institutionalization achieved. Each SILAIS could score between 0 and 9 points (3 points for the highest performance on each level of success) on three different aspects of sustainability and institutionalization: 1) Documentation, Analysis, and Dissemination; 2) Institutionalization of the Care Process; and 3) Sustainability of the Quality Improvements. Each SILAIS was then ranked according to the mean score they received in each of these three categories; these results are shown in Figure 1. According to these results, RAAN, Chinandega, Nueva Segovia, and Rio San Juan were the SILAIS who on average scored the highest, reaching close to a category 2 (satisfactory). The lowest score was found in Matagalpa, which averaged just about unsatisfactory across the three sets of criteria.

**Figure 1: Average Score on Sustainability and Institutionalization Criteria**

<table>
<thead>
<tr>
<th>SILAIS</th>
<th>Documentation, Analysis and Sharing</th>
<th>Institutionalization of care processes</th>
<th>Sustainability of improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAAN</td>
<td>2.11</td>
<td>1.75</td>
<td>2.00</td>
</tr>
<tr>
<td>Chinandega</td>
<td>2.00</td>
<td>1.58</td>
<td>2.00</td>
</tr>
<tr>
<td>Nueva Segovia</td>
<td>1.78</td>
<td>1.67</td>
<td>2.00</td>
</tr>
<tr>
<td>Rio San Juan</td>
<td>1.89</td>
<td>1.50</td>
<td>2.00</td>
</tr>
<tr>
<td>Chontales</td>
<td>1.56</td>
<td>1.75</td>
<td>2.00</td>
</tr>
<tr>
<td>RAAS</td>
<td>1.89</td>
<td>1.42</td>
<td>1.67</td>
</tr>
<tr>
<td>Boaco</td>
<td>1.44</td>
<td>1.75</td>
<td>1.67</td>
</tr>
<tr>
<td>Jinotega</td>
<td>1.44</td>
<td>1.67</td>
<td>1.67</td>
</tr>
<tr>
<td>Leon</td>
<td>1.44</td>
<td>1.58</td>
<td>1.67</td>
</tr>
<tr>
<td>Matagalpa</td>
<td>1.33</td>
<td>1.50</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Impact on the Population

Since the year 2000, the year marking the start of USAID’s technical assistance in CQI through the Quality Assurance Project, in partnership with other projects and cooperation agencies, health professionals at both the policy and clinical levels have regularly updated clinical standards, guidelines and protocols related to maternal and child health. Drawing on these standards and protocols, quality improvement teams at the facility level have consistently applied CQI tools to continually monitor whether clinical protocols are met and have when needed have implemented changes or improvements to achieve an acceptable level of performance.

The study also looked at the evidence for impact of CQI and all the other activities related to quality improvement have had on the health of the population served. Using data from USAID/HCI’s 2010 annual report, as well as MINSA statistics and results from ENDESA 2006/2007, we can seem some impact on population health since implementation of key CQI activities.

Examining first maternal mortality per 100,000 live births, there has been sustained decrease in maternal mortality in the last 10 years (2000 – 2010), from 98 maternal deaths per 100,000 live births to 69 maternal deaths per 100,000, with the most significant decrease in the last four years, from 76.5/100,000 live births to 69/100,000 live births.

Infant, child, and neonatal mortality are also key indicators to measure population health. In Nicaragua, over the period 1990-2006, infant mortality dropped from 50 deaths/1,000 live births to 29 deaths/1,000 live births, and child mortality decreased from 72 deaths/1,000 live births to 35 deaths/1,000 live births. Neonatal mortality has remained more stable dropping from 20 deaths/1,000 live births to only 13 deaths/1,000 live births over the period 1990 to 2009. The most recent drop in neonatal mortality from 15 deaths/1,000 live births in 2008 to 13 deaths/1,000 live births in 2009, was due to an improvement collaborative strategy directed specifically at neonatal and obstetric complications in nine prioritized SILAIS.

With respect to family planning, as of November 2010, compliance with eligibility criteria in the use of family planning methods according to stated norms reached 95%, up from 78% in the beginning of 2009, according to data consolidated from 32 health facilities.

The final measure used for impact on population health was the number of rapid HIV tests in the general population and for pregnant women. For the general population, rapid tests for HIV went from 6,367 tests in 2005 to 103,956 tests in October of 2010. For pregnant women, the number of tests increased from 1,987 to 60,213 over the same period.

Conclusions and Challenges

The findings of this study of the institutionalization of CQI and sustainability of improvements achieved in Nicaragua have shown that while each of the 30 facilities and 10 SILAIS studied have different qualities and achievements, all have reached some level of sustainability of best practices and institutionalization of CQI leading to improved health outcomes.

The largest impact that the 10 years of technical assistance from QAP and USAID/HCI has had can be seen in the progress achieved in two aspects: the sustainability of clinical best practices and the institutionalization of the development of clinical skills and abilities and CQI.

The study, above all, demonstrates the benefits of strengthening skills and abilities in implementing CQI in order to have a larger influence on achieving sustainability of best practices and eventually improved population health. Even though shortage of human resources and other health system weaknesses constitute important limitations in this process, there are a number of health improving opportunities that can be achieved through better use of CQI. The fact that CQI is implemented and measured at the level of the health facility, even though each facility develops at a different pace, allows for the identification of certain challenges as well as optimizing conditions, already in place or in the process of
being developed, that can be used and replicated to achieve sustainability and institutionalization of CQI at the national level.

**Recommended Citation and Further Information**


It summarizes the full study report in Spanish:


The full study report in Spanish and this English summary are available at: [http://www.hciproject.org/node/2485](http://www.hciproject.org/node/2485).