BACKGROUND
The Quality Assurance Project (QAP) and its successor project, the USAID Health Care Improvement Project (HCI), have reached a stage in quality improvement work in Tanzania that lessons can be derived and shared with others. Clearly, the commitment of the Government and its agencies, the Ministry of Health and Social Welfare and its departments, have made these successes possible, setting an example for others.

The importance of this work cannot be overstated: Tanzania is a high-burden, low-income country facing a mature, generalized HIV epidemic. Overall prevalence in the sexually active population (age 15–49) is 7.0%, with more women infected than men (7.7% versus 6.3%). Approximately 1.4 million people have been infected, and about 400,000 need antiretroviral therapy (ART).

Comprehensive health care, including ART, was recognized as a right for all people with HIV/AIDS in November 2001. The Government responded by developing and adopting a care and treatment plan covering 2003–2008. The plan aims to put 400,000 Tanzanians with HIV on ART this year, to enroll 1.2 million in care, and to increase the number of treatment centers from 96 to 300.

The National AIDS Control Program (NACP), part of the Ministry of Health and Social Welfare, worked with HCI in 2007 to assess the practices of PEPFAR implementing partners countrywide: This situation analysis facilitated the development of national plan to ensure that services related to both ART and the prevention of mother-to-child transmission (PMTCT) were of high quality. The analysis showed that although several USG-supported partners were implementing quality improvement (QI) activities, not all were aligned with the national QI framework. They also varied in nature, thereby sending different messages. With such variability, QI would be neither institutionalized nor sustained.

QAP had implemented pediatric care, family planning, and infection prevention improvement collaboratives in Tanzania between 2003 and 2006 (see page 5). Additionally, PharmAccess (PAI), a Dutch initiative, showed that although several USG-supported partners were implementing quality improvement (QI) activities, not all were aligned with the national QI framework. They also varied in nature, thereby sending different messages. With such variability, QI would be neither institutionalized nor sustained.
NGO, assesses Tanzania facilities for accreditation to provide ART and PMTCT services. Consequently, the Ministry of Health and Social Work (MOHSW) asked PAI and HCI to work together with NACP to design a plan that would harmonize the implementation of a quality ART and PMTCT services nationwide. The draft plan was presented to NACP in late 2007 and continues as a living document, being developed further as new lessons and experiences are gained.

PARTNERSHIP FOR QUALITY IMPROVEMENT OF HIV/AIDS CARE AND TREATMENT

The plan provides that HCI and PAI will partner to support NACP in developing and implementing a national Partnership for Quality Improvement (PQI). The NACP and individual PEPFAR care and treatment partners will lead health care improvement collaboratives (see box and Figure I) in each of their respective regions. The situation analysis will guide planning for the Partnership by providing information on such issues as: variations in quality improvement practices, differing indicators in different regions, involvement of field-based staff in implementing quality improvement efforts for ART and PMTCT, involvement of regional and district health leadership in QI activities, and integration of monitoring, supervision, and accreditation activities.

All partners will harmonize their work with the assistance of Regional and Council Health Management Teams (RHMTs/CHMTs). In Tanga Region, PAI and HCI are building the capacity of the Health Management Teams and AIDs Relief, the lead care and treatment partner in that region. As of November 2008, HCI and PAI are ready to replicate processes already underway in Tanga to Morogoro and Lindi Regions. Over the next three years, such replication will be systematically spread to all of Tanzania (see Figure 2, “USG Care and Treatment Partners by Region”).

Improvement strategies

PQI is implementing the health care improvement collaborative as a way to foster improvements in the quality of ART/PMTCT services. At the first learning session in Tanga in May 2008, regional, district, and facility teams identified gaps in quality—the weaknesses in the health care system that prevent patients from receiving quality HIV care. They agreed on improvement objectives, defined indicators of compliance with care standards, and developed work plans to bridge the quality gaps. HCI and PAI trained regional and district QI teams in Tanga to coach facility QI teams in every district. They also supported capacity development and sharing of best practices across districts, to encourage wider application of innovations developed by local teams. HCI and PAI supported the RHMT, CHMTs, and AIDs Relief to conduct a second learning session in September 2008 for teams in the initial four districts to share innovations, achievements, and challenges encountered in the previous four months.
and reinforce the culture of teamwork. The session also trained QI teams to analyze processes of care related to ART/ PMTCT, apply the Plan-Do-Study-Act Improvement Model in testing changes, and document the improvements made. Innovations shared by teams included introducing exit desks, changing patient appointment systems, extending clinic hours, and collecting performance data.

**Results**

The PQI partners have agreed on common objectives and performance indicators for ART/PMTCT, thanks to NACP’s technical leadership and insistence on a unified approach. The improvement collaborative approach made it possible to apply national standards across Tanga, and spread to Morogoro is set to begin. In Tanga, PMTCT has improved: The percentage of exposed infants receiving cotrimoxazole within two months of birth rose from 70% to 92%; the percentage of HIV-positive pregnant women who enrolled in PMTCT and treatment rose from 28% to 87% in six months in Bombo Hospital and from 15% to about 70% in eight months in Handeni Hospital. Data collection is a challenge for many health care providers, so partners are coaching to address this need quickly.

**Strategy for Scale-up of Continuous Quality Improvement**

The national scale-up strategy provides that the NACP, HCI, PAI, and the care and treatment partners build capacity among the RHMTs and CHMTs in QI and the collaborative approach. Such capacity will support implementation of an ART/ PMTCT Improvement Collaborative in a slice of one region. Subsequently, with support from NACP and the partners, the RHMTs and CHMTs will use their new skills to support facility-level QI teams in other areas of the region (see Figure 3). Later still, the NACP, HCI, and PAI will repeat this process with care and treatment partners in other regions until all of Tanzania is covered by the harmonized QI approach. The ultimate goal is a nationwide community of best practices that address the key quality gaps of access to services by eligible clients, client retention in services, improved outcomes of care and treatment, and thus survival and better quality of life.

The Partnership for Quality Improvement offers a practical strategy for improving HIV care at a national scale through a deliberate and phased spread strategy. Rapid application of QI requires deliberate actions by national authorities to use a single framework for improvement.

**The Future of PQI**

To ensure that quality ART and PMTCT services in Tanzania are sustained for years to come, the Partnership for Quality Improvement will institutionalize the practices and improvements made during its two to three years of implementation. Improvements will be developed at the facility level and although solutions to quality gaps may vary from site to site they will be adapted and replicated from one site to others, depending on the local situation. Practices that will be institutionalized include both site-specific quality improvements and site-specific QI processes. With time and effort, a culture of quality will develop in each site, engaging newly empowered workers to develop their own improvement ideas in various services and areas of their worksite.

[Figure 3. Spread of PQI activities in Tanzania]

<table>
<thead>
<tr>
<th>Year</th>
<th>Work includes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Identify gaps in quality</td>
</tr>
<tr>
<td>2</td>
<td>2. Develop improvement objectives and actions to bridge the gaps</td>
</tr>
<tr>
<td>3</td>
<td>3. Develop plans for RHMT, CHMTs, regional partner, facility-based QI teams and facility staff to fix the gaps</td>
</tr>
<tr>
<td>4</td>
<td>4. Coach and mentor</td>
</tr>
<tr>
<td>5</td>
<td>5. Share and spread best practices</td>
</tr>
</tbody>
</table>

**With time and effort, a culture of quality will develop in each site, engaging newly empowered workers to develop their own improvement ideas in various services and areas of their worksite.**

Local ownership and involvement fosters the process of institutionalizing and sustaining QI. NACP has been closely involved in supporting the RHMTs and CHMTs during the setting up of PQI and in coaching ART and PMTCT managers and multi-disciplinary server providers at involved facilities.

Coaches from the RHMTs and CHMTs will continue to visit sites to ensure that improved practices are sustained.

**PMTCT AND HIV-FREE SURVIVAL THROUGH IMPROVED INFANT FEEDING PRACTICES**

In Tanzania, where HIV prevalence for antenatal women is estimated at 9.6% and one in seven children dies before age five, mother-to-child transmission of HIV is an important contributor to child mortality. Poor infant feeding practices contribute about a third of the transmissions. QAP undertook an operations
In December 2007, the NACP formally endorsed and branded the job aids as official NACP materials. Now, the MOHSW is progressively distributing the job aids throughout Tanzania in tandem with a whole-site training program.

Research study1–3 in collaboration with Bergen University of Norway and the Kilimanjaro Christian Medical Centre in Moshi District, Kilimanjaro Region, to find a way to reduce such transmission. The study objective was to improve infant and young child feeding in the context of HIV/AIDS through the effective use of the job aids and a training strategy. The strategy: 1) disseminated the job aids and updated international guidelines on HIV and infant feeding, 2) improved counseling related to infant feeding and counselors’ compliance with the guidelines, and 3) improved mothers’ adherence to feeding recommendations.

QAP developed job aids that PMTCT counselors could use to improve their counseling on infant feeding in the context of HIV/AIDS, including “take-home materials” that could be given to new mothers to remind them of best feeding practices for their infants. These job aids include a Q&A guide, five counseling cards, and brochures for mothers on exclusive breastfeeding and infant feeding options. Once the job aids were proven effective, QAP used PEPFAR funding to distribute them in three regions: Tanga, Morogoro, and Kilimanjaro. In December 2007, the NACP formally endorsed and branded the job aids as official NACP materials. Now, the MOHSW is progressively distributing the job aids throughout Tanzania in tandem with a whole-site training program.

The strategy includes a whole-facility training of trainers; trainers are PMTCT managers and service providers at regional and district hospitals in all districts of each region. The training covers maternity, maternal/child health, and pediatric care. Trainees return to their respective health centers and dispensaries and train PMTCT counselors there. Whole-facility orientation trains infant feeding counselors while sensitizing midlevel and senior managers and administrators to the importance of the guidelines and need for improving PMTCT.

To date, the national roll-out of infant feeding counseling has trained PMTCT counselors in 19 of Tanzania’s 26 regions. The PMTCT unit of NACP recently released guidelines for the PMTCT Program Management Monitoring and Evaluation, setting as one of the nine required monitoring indicators, “percentage of HIV-infected women receiving infant feeding counseling and support at the first infant follow-up visit.”

Responsibility for ongoing training will be transferred to facility managers, CHMTs and RHMTs, and health workers implementing PMTCT programs. The monitoring and evaluation plan will guide future project development and evaluation of the overall impact of the job aids and training. Also needed is the identification of other PMTCT and nutrition-related areas where job aids could improve providers’ counseling skills and their clients’ knowledge and practices. Essential to the overall goal of universal access to quality ART and PMTCT services is focus on developing capacity for the quality of PMTCT and infant feeding counseling.

While noting the progress made in the use of this study’s results, it is fitting to recognize contributing partners: the MOHSW PMTCT Secretariat, Tanzania Food and Nutrition Center, COUNSENUTH, WHO, UNICEF, EGPAF, AXIOS Foundation, AMREF, Columbia University, Medicins du Monde, Muhimbili University, KCMC, Anglican Church of Tanzania, University of Bergen, Regional Medical Officers, administrators and staff at regional and district-level health facilities and all important front line workers and the clients they serve.

BUILDING QI CAPACITY OF MUHIMBILI NATIONAL HOSPITAL

Muhimbili National Hospital (MNH) has over 900 beds and 800 full-time registered nurses and doctors, organized in nine directorates with 39 departments. A MNH and Axios baseline facility assessment conducted in 1999 and a further study in 2004 found declining clinical care, poor quality, low staff motivation and morale, and inadequate infrastructure and poor equipment maintenance. In 2006, the hospital executive director asked QAP, now HCI, to implement a QI program for the entire hospital.

The program was vetted by all departmental heads. QAP and clinical experts trained staff from all levels in QI approaches and clinical guidelines. A multidisciplinary QI team was established in each department. These teams developed a few, doable QI indicators so they could monitor progress in fixing the quality gaps; undertook a baseline assessment to determine the status of the gaps; and initiated Plan-Do-Study-Act cycles (see Figure 1) to test changes aimed at reducing the identified gaps.

QI teams in all departments continue to collect and use data related to the QI indicators to make improvements at the service level. Evidence indicates improvements in service efficiencies, reductions in waiting times, improved triaging, and higher motivation and morale of staff. The hospital has committed funds for continued QI activities, and hospital management has recognized with gratitude improvements evident in the systems and outcomes of care.

PEDIATRIC HIV/AIDS CARE AND HOSPITAL IMPROVEMENT

Over 200,000 of Tanzania’s children have HIV/AIDS, and their mortality rate is high due to compromised immune response to common childhood illnesses. The MOHSW unit responsible for the Integrated Management of Childhood Illness (IMCI) and WHO/Tanzania initiated a program in late 2004 to improve pediatric care for children with HIV/AIDS and other conditions in 23 referral facilities in Dar es Salaam, Morogoro, and Coast regions. With PEPFAR funding and using the improvement collaborative approach, QAP introduced the WHO Referral Care Manual for the Management of the Child with a Serious Infection or Severe Malnutrition (RCM). QAP worked with the MOHSW IMCI unit to standardize case management of patients in referral facilities; this work introduced HIV/AIDS screening tools and critical care pathways to facilitate care and monitoring of compliance with guidelines.

Objectives
To reduce case fatality of children presenting at these referral facilities, the collaborative sought to improve the ability of these facilities to identify children with HIV infection and other serious illnesses and treat them according to the RCM standards. Steps used included: 1) improving the identification and management of HIV/AIDS and associated conditions in children; 2) improving compliance with standards for case management of HIV, malaria, acute respiratory infection, diarrhea, meningitis, measles, and severe malnutrition; and 3) developing systems to ensure coordination of care for pediatric AIDS throughout the continuum of care.

Activities
After adapting the RCM guidelines and updating the treatment curriculum to the Tanzanian setting, the collaborative trained providers in case management as recommended by the RCM. QAP trained providers in QI and in how to monitor improvements in pediatric care using RCM-based indicators. QAP provided monthly coaching in QI and supported compliance with standards through review of randomly selected records. It taught RHMTs/CHMTs to oversee hospital QI activities. Systems were improved to identify, test, and refer HIV-exposed or positive patients, including newborns needing follow-up care.

Screening for HIV testing, initiation of pneumocystis Carinii Pneumonia prophylaxis, and referral to HIV care and treatment centers have improved in all participating facilities.

Results
Screening for HIV testing, initiation of pneumocystis Carinii Pneumonia prophylaxis, and referral to HIV care and treatment centers have improved in all participating facilities. Triage of pediatric patients increased from about 65% in February 2005 to nearly 100% by April 2006; the most recently available data show this high rate was sustained at least until December 2007.

Figure 4 shows that more children with HIV/AIDS are being identified and referred to care and treatment centers for ART and prophylaxis. Since referral facilities tend to start at higher rates of compliance with standards (49–80% in Figure 4) due to their more highly trained staff and greater resources, they have less room for...
improvement, reaching 87–91% in this example. Nonetheless, the figure reflects the link between compliance with standards and results showing significant reductions in case fatality.

Figure 5 shows that case fatality rates have fallen for AIDS, malaria, and pneumonia: the jagged lines may reflect difficulties in collecting and reporting data, but the depiction of a trend toward lower fatality rates is believed to be accurate.

Spread of this pediatric improvement intervention has been completed in 12 sites in Arusha, Tanga, and Manyara regions and ongoing support transferred to the MOHSW.

HCI’s partners in this effort included the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF); Columbia University; the Clinton Foundation; the MOHSW IMCI unit; PASADA; the Regional Medical Offices of Tanga, Dar Es Salaam, Arusha, and Manyara regions; WHO; UNICEF; and the Kilimanjaro Christian Medical Center.

**OTHER COMPLETED IMPROVEMENT COLLABORATIVES**

**Family Planning Improvement Collaborative**

In response to missed opportunities for family planning (FP) services among clients seen in various facilities in the Dar es Salaam Region, QAP with the Dar Regional Medical Office of Health and the MOHSW Reproductive and Child Health Services (RCHS) division initiated an FP collaborative in nine facilities in three districts. The objective was to increase the number of users of modern FP methods and strengthen linkages between FP and other services within facilities in order to reduce missed opportunities to promote birth spacing and prevent HIV infection.

Steps included: improving availability of modern FP methods, improving visibility of FP services, networking with other care areas to maximize opportunities to provide FP and HIV/AIDS information to all RCHS clients at each facility, improving competence to provide FP counseling, and incorporating voluntary counseling and testing services into selected sites.

Key activities included improving use of the “Report and Request System” of tracking and ordering FP methods, providing key FP and HIV messages to all RCHS clients during the group health talk, updating providers on FP methods, providing job aids to guide counseling, and training providers in QI and the use of data for decision making.

The FP collaborative resulted in: fewer stock-outs (see Figure 6) and more FP
Quality Improvement in Tanzania

clients getting their preferred method; improved RCHS client knowledge about birth spacing and dual protection; increased numbers of referrals to FP; improved privacy during FP services; improved screening for FP methods; increased numbers of clients undergoing voluntary counseling and testing for HIV; stakeholder consensus on the technical content of the job aids; and strengthened relationships between facilities and district RCHS supervision teams.

The collaborative’s final learning session was in July 2006 and was attended by senior officials of the MOHSW and the Dar es Salaam Regional Health Office. All tools developed in the collaborative for: baseline FP services assessment, monitoring of compliance with standards, health talks, exit interviews, and data collection and consolidation were shared, along with the results achieved by the participating teams.

Infection Prevention Collaborative
QAP provided support in 2003–2004 to the MOHSW and the Dar es Salaam Regional Medical Office of Health for the implementation of an infection prevention improvement collaborative at the three district hospitals in the Dar es Salaam Region (Amana, Mwananyamala, and Tememe) and one private hospital (Mikocheni mission teaching hospital). This collaborative established infection prevention teams and implemented the WHO/AFRO Policies and Guidelines for Infection Prevention in the hospitals’ labor wards and surgical services. A series of job aids to reinforce key preventive measures was designed to promote and support adherence to standards and behavior change.

Figure 6. Reductions in Stock-outs: Nine facilities

![Figure 6](image)

**Building Evidence to Support Quality Improvement**

HCI is currently supporting three operations research studies in Tanzania:

**Flash-heating of Breast Milk (MAKILIKA or Maziwa ya Mama ni Kinga Lishe Kamili):** Linked to the MOHSW program to increase capacity for improved infant feeding counseling for PMTCT and HIV-free survival, a two-year study funded by the U.S. National Institutes of Health is assessing the feasibility and efficacy of having HIV-positive mothers flash-heat their breast milk during the introduction of complementary foods. The study will determine whether HIV transmission is reduced and whether infants’ nutritional status improves.

**Sensitivity and Specificity of the WHO HIV Screening Algorithm:** Experience with the use of the WHO algorithm for screening children thought to have HIV, as well as results of earlier studies, shows varying results, recommending further studies to validate the algorithm. Such a study was developed and implemented as part of the Pediatric HIV/AIDS Care and Hospital Improvement Collaborative (see article, page 5). Data were collected November 12, 2007–March 31, 2008. The study recruited 413 participants who met the IMCI HIV clinical criteria. Data analysis is ongoing.

**Sequential Validity of Self-Assessment in Monitoring Compliance with Standards of Care:** Self-assessment by QI teams to monitor compliance with standards of care has been used with success in developed countries, and its use in developing countries has yielded varying degrees of success. In Tanzania, because of problems identified in the Health Information Management System, especially involving patient records, HCI and NACP are measuring the validity of self-assessment over time. The study will determine whether the level of performance in the use of self-assessment can improve with coaching. The study’s feasibility component has demonstrated that indeed such a study is feasible in Tanzania conditions. The protocol for the main study has been revised based on the results of the feasibility assessment and is due to be completed in ten months.
Field Office Quality Improvement Team
Dr. Davis Rumisha, Public Health Specialist, HCI Chief of Party; Dr. Festus Kalokola, Pediatrician and Senior Quality Improvement Advisor (former HCI Chief of Party); Dr. Deborah Ash, Deputy Director and Infant Feeding/Nutrition Advisor; Dr. Stephen Hobokela, Quality Improvement Advisor; Dr. Elizabeth Hizza, Obstetrician/Gynecologist, Technical Advisor, Quality Assurance; Ms. Waverly Rennie, Senior Communication and Behavior Change Communication Technical Advisor; Ms. Faridah Mgunda, Registered Staff Nurse/Midwife, Family Technical Associate; Mr. Jared Mussanga, Quality Improvement Field Officer; Edgar Turuka, Monitoring and Evaluation Specialist; Mr. Richard Lupembe, Finance and Administrative Officer; and Ms. Alice Tiampati, Secretary and Data Clerk.

Home Office Technical Support and Oversight
Dr. Stephen Kinoti, Senior Quality Assurance Advisor and East Africa HIV/QI Associate Director, provided technical and management leadership in the quality of pediatric HIV and pediatric services, ART/PMTCT, and FP collaboratives; Ms. Peggy Koniz-Booher, Senior Nutrition and Behavior Change Communication Advisor, provided technical advice and field support to the infant feeding and HIV-free survival linked to PMTCT.

Special Tributes
The founder and first Country Director, Dr. Raz Stevenson, is credited with launching the URC quality improvement program in Tanzania and giving it a strong start over 2003–2005. Dr. Festus Kalokola, Country Director 2005–2008, directed the development and growth of the program. We welcome Dr. Davis Rumisha, incoming Chief of Party for the HCI Project and wish him success as the program further expands.

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The contractor team for the USAID Health Care Improvement Project includes URC (prime contractor), EnCompass LLC, Family Health International, Initiatives Inc., Johns Hopkins University Center for Communication Programs, and Management Systems International. For more information on HCI’s work in Tanzania, please contact Dr. Davis Rumisha at: drumisha@urc-chs.com

For more information on the work of HCI, please visit www.hciproject.org

Dissemination of HIV/AIDS Toolkit
QAP supported the compilation, duplication, and dissemination of a CD-ROM that offers over 390 HIV and AIDS tools and resources for Tanzania’s program managers. The CD-ROM, A Collection of HIV and AIDS Tools and Resources for Programme Managers in Tanzania—2006, was developed in partnership with the Tanzania Commission for AIDS (TACAIDS) and reviewed by the Tanzania Development Partners Group on AIDS. It provides a “one-stop shop” for many HIV/AIDS national guidelines, policies, surveillance, and program tools and resources for program management and implementation. The toolkit has been widely disseminated in Tanzania since its launch at the National Multi-Sectoral AIDS Conference in Arusha in December 2006.