USAID
FROM THE AMERICAN PEOPLE

TECHNICAL REPORT

Finding Common Ground:

Harmonizing the Application of Different Quality Improvement Models in Maternal, Newborn, and Child Health Programs

OCTOBER 2010

This report was commissioned by the Maternal and Child Health Division of the Bureau for Global Health of the United States Agency for International Development (USAID) and prepared by the USAID Health Care Improvement Project, which is made possible by the generous support of the American people through USAID and is implemented by University Research Co., LLC (URC). The report was authored by Youssef Tawfik (URC), Mary Segall (URC), Edgar Necochea (Jhpiego) and Troy Jacobs (USAID) and draws on contributions from BASICS, EngenderHealth, IMMUNIZATIONbasics, Jhpiego, John Snow, Inc., Management Sciences for Health, MCHIP, the PSP-One Project, Save the Children, and the USAID Health Care Improvement Project.

TECHNICAL REPORT

Finding Common Ground: Harmonizing the Application of Different Quality Improvement Models in Maternal, Newborn, and Child Health Programs

October 2010

Youssef Tawfik
Mary Segall
Edgar Necochea
Troy Jacobs

DISCLAIMER

The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Acknowledgements

This paper was prepared by the USAID Health Care Improvement Project (HCI) with the active involvement and support of Basic Support for Institutionalizing Child Survival (BASICS), EngenderHealth, IMMUNIZATIONbasics, Jhpiego, John Snow, Inc., Management Sciences for Health, the Maternal and Child Health Integrated Program (MCHIP), the Private Sector Partnerships for Better Health Project (PSP-*One*), and Save the Children. The authors are very grateful for the input, guidance, and reviews by Koki Agarwal, Al Bartlett, John Borrazzo, Betty Farrell, Jim Heiby, Lily Kak, Nahed Matta, M. Rashad Massoud, Winnie Mwebesa, Indira Narayanan, Jenny Sequeira, Diana Silimperi, Mary Ellen Stanton, and Patricia Taylor. The input by Lani Marquez and the editing by Beth Goodrich are appreciated.

An important achievement of this collaboration was the commitment of partners to move beyond their particular quality improvement (QI) model to find common ground to coordinate the use of QI to improve health care in developing countries. We hope this paper will facilitate greater collaboration among those who use QI models in the field.

HCI is funded by the American people through USAID's Bureau for Global Health, Office of Health, Infectious Diseases and Nutrition. The project is managed by University Research Co., LLC, (URC) under the terms of Contract Numbers GHN-I-01-07-00003-00 and GHN-I-03-07-00003-00. URC's subcontractors for HCI include EnCompass LLC; Family Health International; Health Research, Inc.; Initiatives Inc.; Institute for Healthcare Improvement; Johns Hopkins University Center for Communication Programs; and Management Systems International.

Recommended citation: Tawfik Y, Segall M, Necochea E, and Jacobs T. 2010. Finding Common Ground: Harmonizing the Application of Different Quality Improvement Models in Maternal, Newborn, and Child Health Programs. *Technical Report*. Published by the USAID Health Care Improvement Project. Bethesda, MD: University Research Co., LLC (URC).

Table of Contents

ABBREVIATIONS ii

EXECUTIVE SUMMARY iii

1 INTRODUCTION: RATIONALE FOR HARMONIZING QUALITY IMPROVEMENT APPROACHES IN USAID-ASSISTED COUNTRIES 1

2 DEFINING QUALITY IMPROVEMENT 1

3 BRIEF REVIEW OF SELECTED QI MODELS 3

4 COMMON ELEMENTS IN QI MODELS 7

5 ANALYZING QI MODELS IN TERMS OF THEIR BASIC ELEMENTS 7

6 DEVELOPING NEW QI MODELS: TRUE INNOVATION OR RE-INVENTION? 12

7 RECOMMENDATIONS TO PROMOTE COORDINATED IMPLEMENTATION OF QI MODELS IN DEVELOPING COUNTRIES 13

8 CONCLUSIONS 14

APPENDIX: DESCRIPTIONS OF COMMON QI ELEMENTS ACROSS QI MODELS 16

QI MODEL: CLIENT-ORIENTED, PROVIDER-EFFICIENT SERVICES (COPE®) 16
QI MODEL: FULLY FUNCTIONAL SERVICE DELIVERY POINT (FFSDP) 18
QI MODEL: HIVQUAL 20
QI MODEL: IMPROVEMENT COLLABORATIVE 22
QI MODEL: IMPROVING NEWBORN HEALTH 24
QI MODEL: PARTNER DEFINED QUALITY (PDQ) 26
QI MODEL: PRIVATE SECTOR QUALITY IMPROVEMENT PACKAGE 27
QI MODEL: QUALITY/ PROCESS IMPROVEMENT (QUALITY DESIGN/REDESIGN) 29
QI MODEL: REACHING EVERY DISTRICT (RED) 30
QI MODEL: STANDARDS-BASED MANAGEMENT AND RECOGNITION (SBM-R) 32

Abbreviations

BASICS	Basic Support for Institutionalizing Child Survival
CDC	Centers for Disease Control and Prevention
CDQ	Community Defined Quality
CIDA	Canadian International Development Agency
COPE	Client-Oriented, Provider-Efficient Services
DFID	Department of International Development (United Kingdom)
FFSDP	Fully Functional Service Delivery Point
HCI	Health Care Improvement Project
HIV	Human immunodeficiency virus
HIVQUAL	Approach to improve the quality of care delivered to persons living with HIV; developed by the New York State Department of Health AIDS Institute
IHI	Institute for Healthcare Improvement
MCHIP	Maternal and Child Health Integrated Program
MNCH	Maternal, newborn, and child health
MOH	Ministry of Health
MSH	Management Sciences for Health
NORAD	Norwegian Agency for Development Cooperation
OJT	On-the-job training
PDQ	Partner Defined Quality
PDSA	Plan-Do-Study-Act
PMTCT	Prevention of mother-to-child transmission of HIV
PSP-*One*	Private Sector Partnerships for Better Health Project
QI	Quality improvement
QIT	Quality improvement team
RED	Reaching Every District
SBM-R	Standards-based Management and Recognition
TA	Technical assistance
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
URC	University Research Co., LLC
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

Various quality improvement (QI) models are applied in the health field. All of them aim to improve the quality of health care but have different structures, steps, and terminology. This variation creates an impression of fundamental differences among the models, while in fact a closer look at their core contents reveals common elements. Failure to see the commonalities creates barriers to communication among QI partners, hinders coordination of QI efforts, and misses opportunities to achieve synergies to augment the collective results of QI programs.

This paper attempts to systematically review and compare QI models that have been applied extensively in maternal, newborn, and child health (MNCH) or are potentially effective models for MNCH programs. These models are: COPE® (Client-Oriented, Provider-Efficient Services), Fully Functional Service Delivery Point (FFSDP), HIVQUAL, Improvement Collaborative, Improving Newborn Health, Partnership Defined Quality (PDQ), Private Sector Quality Improvement Package, Quality Design/Redesign, Reaching Every District (RED), and Standards-Based Management and Recognition (SBM-R). The authors reached a definition of "quality improvement" that encompasses most models: *"a cyclical process of measuring a performance gap; understanding the causes of the gap; testing, planning, and implementing interventions to close the gap; studying the effects of the interventions; and planning additional corrective actions in response."*

The paper identifies the models' essential elements in an attempt to find common ground: a place where those who apply different QI models can discuss them with a common language and understanding. Such common ground can demonstrate the similarity of the various models and hence facilitate dialogue and coordination among partners, donors, and stakeholders who use or support the different models. Despite the apparent difference between models, they share many of the following elements:

1. **Standards:** QI models tend to have reference points adopted from international or national guidelines for the particular set of health services addressed by the QI model.
2. **Organizational drivers:** This may be persons, teams, and/or organizations that facilitate and support the QI process.
3. **Situation analysis:** An initial assessment is usually performed to identify deficiencies, deviations, or gaps between the standards and actual practices.
4. **Specific aims:** Each model has specific aims or objectives that provide a rationale and targets for what the QI effort is trying to accomplish. In several approaches, specific indicators are identified to help track progress toward reaching the overall goal.
5. **Identification and selection of interventions:** QI models include various tools to facilitate the identification and selection of interventions/changes to narrow the performance gap.
6. **Implementation of interventions:** QI models apply selected interventions or changes, usually with a deliberate set of steps, to close the gap between standards and actual practices documented during the situation analysis.
7. **Monitoring and documentation of results:** QI models include a system to track the differences in performance that result from an intervention over time. Such a system measures selected process indicators and/or health outcomes. Tools for monitoring and documenting QI results include repeated self-assessments, external audits, and run charts.
8. **Community involvement:** Since they address MNCH in developing countries, most of the QI models reviewed in this paper include a component to involve the community in activities such as advocacy, awareness-raising, and active participation in the QI process.

9. **Incentives and motivation:** Some QI models incorporate financial or non-financial rewards to inspire providers to change and sustain behaviors and practices according to standards.
10. **Scale-up plan:** After an intervention has been shown to improve performance according to standards and/or health outcomes, a scale-up plan may be devised to spread the interventions.
11. **Sustainability plan:** In addition, a sustainability plan may be undertaken to ensure that not only is the intervention scaled up but also institutionalized, so that health care providers continue to perform according to standards over the long term.

The selected models were analyzed using these elements as a framework to illustrate how each model, despite using differing structure or terminology, addressed the basic elements. The analysis demonstrates the similarity among models if described by their basic elements, but also points to unique features in some models. It concludes that despite the commonalities between models, each model may have a special emphasis or a point of entry to study or address quality gaps.

The authors recognize that the development of additional QI models will continue. They conclude that considering the similarity among the existing QI models, some "new" models would be largely repackaging of the existing intellectual content under different terminology or presentation to give the impression of innovation while the concepts are basically the same. The development of additional models that basically re-invent existing models should not be encouraged, as it would complicate coordination between QI programs. However, donors should support the development of new QI models that truly offer innovative concepts for achieving better health care results.

The authors believe that international organizations that develop and promote their own models have a responsibility to coordinate their QI efforts with other partners and provide guidance and orientation to countries in order to clarify the similarities and differences between models and help harmonize application of different models in a country.

Organizations implementing QI programs need to be flexible in their approach to QI. They are encouraged to learn about models developed by other organizations, think beyond the terminology that may vary from one QI model to another, and try to see the underlying concept, which may not be very different.

Stakeholders implementing QI approaches are encouraged to place special emphasis on monitoring the impact of QI interventions. Measuring process and outcome indicators over time will provide evidence for evaluating whether the QI interventions result in the anticipated change and will guide efforts to modify and improve the interventions. While this paper revealed a generally adequate monitoring of the results of the reviewed QI models, documenting the cost of QI interventions was largely neglected. It is recommended that documenting and analyzing these costs be an integral part of documenting results.

Policy makers may find it useful to create national level mechanisms that will coordinate the implementation of various QI programs in a country and to support the documentation of lessons learned and the identification of best practices.

1 Introduction: Rationale for Harmonizing Quality Improvement Approaches in USAID-assisted Countries

Various quality improvement (QI) models are applied in the health field. All of them aim to improve the quality of health care but have different structures, steps, and terminology. This variation creates an impression of fundamental differences among the models, while in fact a closer look at their core contents reveals common elements. Failure to see the commonalities creates barriers to communication among QI partners, hinders coordination of QI efforts, and misses opportunities to achieve synergies to augment the collective results of QI programs.

While not meant to present a comprehensive analysis of all QI models, this paper attempts to systematically review and compare nine illustrative QI models that were (or are) funded by the United States Agency for International Development (USAID) and used extensively in maternal, newborn, and child health (MNCH). A tenth model that has been applied to HIV care was also included because it is being adapted for wide application to maternal, newborn, and child health programs. The paper identifies the models' essential features in an attempt to find common ground: a place where those who apply different QI models can discuss them with a common language and understanding. Such common ground can demonstrate the similarity of the various models and hence facilitate dialogue and coordination among partners, donors, and stakeholders who use or support the different models.

Our ultimate purpose is to enhance coordination and synergies in the application of QI to improve MNCH services in developing countries. With that aim, the authors reviewed 10 different QI models—those most frequently used in USAID-supported MNCH programs—to identify and describe these models' basic elements and special features. Our goal is to share our findings among USAID projects and partners to facilitate communication and enhance coordination between QI programs in the field. Such coordination is particularly needed with the launch of the Global Health Initiative, the US Government vision for providing effective approaches to support global health programs. The Initiative promotes a new business model to deliver its dual objectives of achieving significant health improvements and creating an effective, efficient, and country-let platform for the sustainable delivery of essential health care and public health programs.

The appendix summarizes how each of the 10 models can be described in terms of 11 elements found in most QI models. For each model a table provides detail on how the model addresses the generic elements of QI as well as additional information of interest to those who would apply an approach.

2 Defining Quality Improvement

Attempting to find common ground between different QI models requires initial agreement on a definition for QI itself. The World Health Organization (WHO) defines the quality of health care as the "proper performance (according to standards) of interventions that are known to be safe, that are affordable by the society in question, and that have the ability to produce an impact on mortality, morbidity, disability and malnutrition."[1]

A more recent WHO publication suggests that quality health care is:

- Effective, delivering health care that adheres to an evidence base and results in improved health outcomes for individuals and communities, based on need;
- Efficient, delivering health care in a manner that maximizes resource use and avoids waste;

[1] Roemer MI and Montoya-Aguilar C. 1988. Quality Assessment and Assurance in Primary Health Care. WHO Offset Publication, Number 105, p. 54. Available at: http://whqlibdoc.who.int/offset/WHO_OFFSET_105.pdf.

- Accessible, delivering health care that is timely, geographically reasonable, and provided in a setting where skills and resources are appropriate to medical need;
- Acceptable/patient centered, delivering health care that takes into account the preferences and aspirations of individual service users and the cultures of their communities;
- Equitable, delivering health care that does not vary in quality by personal characteristics, such as gender, race, ethnicity, geographical location, or socioeconomic status;
- Safe, delivering health care that minimizes risks and harm to service users.[2]

This paper proposes a common definition of the process of "quality improvement" that encompasses most models used primarily to improve the effectiveness of health services, particularly MNCH care programs. Hence, in building on WHO's definitions of quality of health care and in examining the objectives of the models included here, QI can be defined as *"a cyclical process of measuring a performance gap; understanding the causes of the gap; testing, planning, and implementing interventions to close the gap; studying the effects of the interventions; and planning additional corrective actions in response."* The main implication of this definition is that strategies for QI are not "fixed." On the contrary, QI is a continuous and dynamic process that measures and responds to the results of interventions.

Table 1: Information sources for selected QI models

QI model	Source
Client-Oriented, Provider-Efficient Services (COPE®)	www.engenderhealth.org/pubs/quality/cope.php
The Fully Functional Service Delivery Point (FFSDP)	Laumonier-Ickx L. March 2006. *The Fully Functional Service Delivery Point in Afghanistan: Results of First Six-Month Improvement Cycle.* Rural Expansion of Afghanistan's Community-based Health Care Program (REACH), implemented by Management Sciences for Health. Available at: http://pdf.usaid.gov/pdf_docs/PNADF961.pdf
HIVQUAL Framework	http://www.healthqual.org/index.cfm/5116
Improvement Collaborative	http://www.hciproject.org/improvement_tools/improvement_collaboratives; http://www.ihi.org/IHI/Results/WhitePapers/TheBreakthroughSeriesIHIsCollaborativeModelforAchieving+BreakthroughImprovement.htm
Improving Newborn Health	http://www.basics.org/reports/FinalReport/Newborn-Final-Report_BASICS.pdf
Partnership Defined Quality (PDQ)	PDQ Toolbook (2005): http://www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/PDQ-Manual-Updated-Nigeria.pdf PDQ Facilitation Guide (2004): http://www.coregroup.org/storage/documents/Social_Behavior_Change/Save_PDQ_Facil_Guide.pdf PDQ Monitoring and Evaluation Toolkit (2010):

[2] Bengoa R, Kawar R, Key P, Leatherman S, and Saturno P. 2006. Quality of Care: A Process for Making Strategic Choices in Health Systems. Nonserial WHO publication, p 13. Available for order at: http://apps.who.int/bookorders/.

QI model	Source
	http://www.coregroup.org/storage/documents/PDQ_ME_Toolkit_ccformat_final_11-2010.pdf
Private Sector Quality Improvement Package	www.psp-one.com; see also Agha, Sohail. July 2009. The Impact of a Quality Improvement Package on the Quality of Reproductive Health Services Delivered by Private Providers in Uganda. Bethesda, MD: Private Sector Partnerships-One project, Abt Associates Inc. Available at: http://www.psp-one.com/files/5312_file_FINAL1_Impact_of_a_QI_Package..._Uganda_.pdf
Quality / Process Improvement (Quality Design/Redesign)	www.ihi.org; see also Massoud RM et al. 2001. A Modern Paradigm for Improving Healthcare Quality. *QA Monograph Series* 1(1) Bethesda, MD: Published for the U.S. Agency for International Development (USAID) by the Quality Assurance Project. Available at: http://www.hciproject.org/node/899.
Reaching Every District (RED)	See Reaching Every District (RED) approach: a way to improve immunization performance; available at: http://www.who.int/bulletin/volumes/86/3/07-042127/en/. See also: WHO Regional Office for Africa, *Implementing the Reaching Every District Approach: A Guide for District Health Management Teams*, 2008. Available at: http://www.who.int/immunization_delivery/systems_policy/AFRO-RED_Aug2008.pdf.
Standards-Based Management and Recognition (SBM-R)	http://www.jhpiego.org/media/focuson/sbmr_ovw200702.htm

3 Brief Review of Selected QI Models

Health programmers have been concerned with the poor quality of health care and have tried to identify approaches to improve such quality. Early on, some of these programmers were tempted to examine QI models used in the industrial sector, where the focus on quality is much sharper than in the health sector. They were impressed with the results that industrial models produced and wondered whether they could be adapted to produce similar improvements in health services. For example, in 1987, the National Demonstration Project for Quality Improvement in Health Care adapted QI industrial concepts to demonstrate similar improvement in health services in US hospitals. The Institute for Health Improvement (IHI), established in 1991, scaled up the application of QI in the US health care sector and worldwide. In addition, several other organizations working in the field of global health recognize that delivering high-quality health services is a pre-condition to achieving better results of health programs and have developed various QI models.

This review includes an illustrative number of QI models. We initially selected nine for this analysis using the following criteria: 1) the model had to have been supported by funding from USAID in its development and application to health problem(s) related to MNCH and 2) the model had to be shown to be effective in resolving health problems and improving service quality. A tenth model, HIVQUAL was added due to its wide and effective use in industrial and developing countries for improving the quality of HIV/AIDS programs that affect women and children's health. Recently, HIVQUAL was adapted for use in other health areas, such as MNCH, under the name of HEALTHQUAL. Applications

of HIVQUAL have been supported by the U.S. Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration.

This section provides a brief overview of each of the selected models. An additional description of each is in the appendix, and detailed information on each model, including tools and reference materials, is available on the web sites in Table 1. The models are listed here in alphabetical order. The next section highlights the elements common to all of the selected models.

The selected QI models are:

1. **COPE®) (Client-Oriented, Provider-Efficient Services)** This process and set of tools from EngenderHealth is bases on client's rights and provider's needs. It helps health care providers determine what needs improvement (i.e., problems) and strategize how to move from actual to improved practices. The second step, developing an improvement strategy, is based on an analysis of root causes of the problems identified. The COPE® process provides a practical set of tools for improving the quality of specific health services at a clinic or hospital: Either can use COPE® to find out how to make their services more efficient and more responsive to client needs. It is simple to use and easy to understand. The underlying principles of COPE® are: 1) develop i customer mindset, 2) involve all levels of staff and foster their ownership, 3) focus on systems and processes, 4) be cost conscious and efficient, 5) engage in continuous QI, and 6) develop staff and build their capacity. COPE enables staff to apply at several facilities through the following four steps: information gathering and analysis, action plan development and prioritization, implementation, and follow-up and evaluation.

   Conceived in 1987, COPE® was one of the first QI processes USAID funded to help health workers in clinics and hospitals use resources more efficiently and focus on improving the quality of health care services.

2. The **Fully Functional Service Delivery Point (FFSDP)** model describes a framework within the context of the community and the service organization. The framework: 1) identifies the characteristics of effective interactions between service providers and service users (clients) and 2) maps out the components that support the interactions so that clients can seek and providers can offer appropriate services. The implementation of the model starts with a practical situation analysis to identify performance gaps. The improvement process is implemented in a 9–18 month period. The model was developed by Management Sciences for Health (MSH) and has been applied in several countries since 1996.

3. The **HIVQUAL** model was developed by the AIDS Institute of the New York State Department of Health in the early 2000s. The intent was to assist health care facilities in developing a quality infrastructure that supports ongoing processes to improve the quality of HIV care. The model assumes that to achieve sustainable improvements in quality, activities must focus both on the structural, programmatic level and on the project level. Accordingly, the model incorporates two interdependent cycles: 1) a sequence of activities for developing a HIV quality management program or program cycle ("outer cycle") and 2) steps for conducting specific QI projects ("inner cycle"). This model posits that incorporating parallel cycles of activities at the program and project levels enables managers to build a sound HIV-specific quality infrastructure that supports the QI process. The HIVQUAL model includes: prioritizing improvement based on performance data; focusing on important patient outcomes and consumer needs; communication and accountability; and strengthening systems through process analysis. It has been found to be a practical guide for HIV programs, regardless of their service delivery model, patient caseload, or site location. It was recently adapted for use in other health areas, including MNCH, under the name HEALTHQUAL.

4. The **Improvement Collaborative** model is an application of the concept of quality/process improvement (see below) in multiple health facilities or sites. It integrates many of the basic elements of traditional health programming (standards, training, job aids, equipment, and supplies) with modern QI elements (team work, process analysis, monitoring of results, client satisfaction) to create a dynamic learning system where teams from different sites collaborate to share and rapidly scale up strategies for improving the quality and efficiency of health services in a targeted technical area (e.g., MNCH). This model's central innovation is the structured, shared learning among many teams working on the same problem area, a feature that promotes rapid dissemination of successful practices. With its emphasis on the spread and scale-up of improvements, the model offers a powerful new tool in the arsenal of proven QI methods. It was first developed by the Institute for Healthcare Improvement (IHI) in 1995 and has been applied extensively in developing country MNCH programs by University Research Co., LLC (URC).
5. **Improving Newborn Health:** The Basic Support for Institutionalizing Child Survival (BASICS) project developed this model in Latin America and the Caribbean through a regional approach covering three countries. Launched in the early 2000s, this model seeks to identify gaps in the prevention and treatment of newborn infections at the facility or community level and then introduces short cycles of change to evaluate the impact of such change on a small scale. If successful, the change(s) is then brought to scale. In addition to technical support from BASICS staff, consultants, and local coordinators, this model was introduced through distance-learning methodologies. The model has three major components: 1) competency-based training in maternal and newborn health care with follow-up supportive supervision and monitoring and evaluation, 2) distance learning using Elluminate,[3] and 3) multiple center/country support through an adapted collaborative approach with in-country support and facilitation.
6. **Partnership Defined Quality (PDQ):** Save the Children launched its "Community Defined Quality" initiative in 1996 to document the results of community involvement in efforts to improvement quality and the availability of health services. PDQ aims to improve service quality and accessibility through the greater involvement of the community in defining, implementing, and monitoring the QI process. Providers and community members work together to identify and address priority problems. PDQ posits that quality may be defined from different perspectives (clients', providers') and that providers and clients can work together as allies to address problems. It uses a four-step process applied before initiating the QI cycle:
    1. Building support to secure buy-in from all stakeholders;
    2. Exploring quality by using separate analyses with providers and community members, including non-users, to identify perceptions about quality;
    3. Conducting a "bridging the gap" workshop for representatives from both groups to share perceptions and develop a common vision for quality care; and
    4. Establishing a QI team representing both groups.
7. The **Private Sector Quality Improvement Package** is for a private provider (midwife, physician, or pharmacist) and his/her supervisor. Under the Private Sector Partnerships for Better Health Project (PSP-*One)*, from 2004–2009, this model was developed and found to be most effectively introduced through a formal structure—such as a professional association, network, public/private partnership, or franchise—that can be strengthened to support members. It includes: 1) a review of service statistics, 2) a self-assessment tool for the

[3] Elluminate is software that enables participants to listen to and follow a PowerPoint presentation on their computers and discuss content by typing comments and questions.

practitioner to identify quality issues, and 3) a linked action plan for the practitioner and supervisor to help solve issues identified through the self-assessment tool and problem-solving process.

8. **Quality/Process Improvement (also known as Quality Design/Redesign):** This model is based on the belief that to achieve better results, changes (improvements) must take place in the system or process that originally produced the unsatisfactory results. This model creates new services or processes or redesigns existing ones in a facility or at the community level. It targets a single health care service area (e.g., obstetrics, child health) and guides teams in: 1) identifying client needs, 2) setting design objectives, 3) creating (or significantly revising) a design that addresses the identified needs, and 4) implementing and monitoring the new design. This model's focus on quality management through a review and design of care processes grew out of the National Demonstration Project for Quality Improvement in Health Care in 11 hospitals in 1987; the eight-month process assessed the applicability of industrial QI methods to health care in developing countries.
9. **Reaching Every District (RED):** WHO, the United Nations Children's Fund (UNICEF), and other immunization partners developed and introduced the RED approach in 2002 to improve immunization systems in areas with low coverage. RED is a district health system strengthening approach to revitalize routine immunization by focusing on weaker performing areas (e.g. looking at pockets of unreached or hard-to-reach populations). The model has been used extensively by national immunization programs in Africa, WHO, BASICS, and the IMMUNIZATIONbasics project. The approach is now being expanded and adapted beyond immunization for MNCH interventions at the primary health care level by USAID's Maternal and Child Health Integrated Program (MCHIP). Its components include:
    1. The planning and effective management of human and financial resources;
    2. Reaching the target populations by improving access to and the use of services through a mix of service delivery strategies;
    3. Linking services with the community by engaging communities to ensure that health services are meeting their needs;
    4. Supportive supervision through regular on-site teaching, feedback, and follow-up with health staff; and
    5. The monitoring and analysis of data at the health facility and district levels to promote the use of data for action, especially during review meetings. The approach includes use of data tools for self-monitoring (e.g., charting of doses) and mapping population in each health facility.
10. **Standards-Based Management and Recognition (SBM-R)** is a practical management approach for improving the performance and quality of health services. It consists of the systematic, consistent, and effective use of operational performance standards as the basis for the organization and functioning of services. It follows four steps: 1) the establishment of and agreement on evidence-based performance standards with local stakeholders, 2) the implementation of these standards by facility teams through a gradual change management process that emphasizes identification of performance gaps and appropriate solutions, 3) periodic internal and external measurements to assess compliance with the standards, and 4) the rewarding of compliance with standards through recognition mechanisms. Using this approach, evidence-based best practices in key service delivery processes are introduced and reinforced. This model's focus is usually not a single interventions but the strengthening of integrated service platforms. Developed by Jhpiego, it was introduced in 1996 in Brazil, and its application gradually expanded beginning in 2000 and more rapidly since 2005.

4 Common Elements in QI Models

This section examines the selected models with the purpose of stripping them down to their basic "generic" elements. The analysis revealed that despite the presence of unique features in each model, each also has common elements at its core. Different models may use different terminology to refer to the same element, or some elements may not be explicitly mentioned in a model's description, yet they are included implicitly in most of them.

The basic elements common to most QI models include:

1. **Standards:** QI models tend to have reference points adopted from international or national guidelines for the particular set of health services addressed by the QI model.
2. **Organizational drivers:** This may be persons, teams, and/or organizations that facilitate and support the QI process.
3. **Situation analysis:** An initial assessment is usually performed to identify deficiencies, deviations, or gaps between the standards and actual practices.
4. **Specific aims:** Each model has specific aims or objectives that provide a rationale and targets for what the QI effort is trying to accomplish. In several cases specific indicators are identified to help track progress toward reaching the overall goal.
5. **Identification and selection of interventions:** QI models include various tools to facilitate the identification and selection of interventions/changes to narrow the performance gap.
6. **Implementation of interventions:** QI models apply selected interventions/changes, usually with a deliberate set of steps, to close the gap between standard and actual practices documented during the situation analysis.
7. **Monitoring and documentation of results:** QI models include a system to track the difference(s) in performance that result from an intervention over time. Such a system measures selected process indicators and/or health outcomes. Tools for monitoring and documenting QI results include repeated self-assessments and run charts.
8. **Community involvement:** Since they address MNCH in developing countries, most of the QI models reviewed in this paper include a component to involve the community in activities such as advocacy, awareness raising, and active participation in the QI process.
9. **Incentives and motivation:** Some QI models incorporate financial or non-financial rewards to inspire providers to change and sustain behaviors and practices according to standards.
10. **Scale-up plan:** After an intervention has been shown to improve performance according to standards and/or health outcomes, a scale-up plan may be devised to spread the interventions.
11. **Sustainability plan:** In addition, a sustainability plan may be undertaken to ensure that not only is the intervention scaled up but also institutionalized so that health care providers continue to perform according to standards over the long term.

In addition to these basic common elements, QI models offer differing specifications or features, each requiring its own level of effort and investment, as shown in the matrix for each approach in the appendix.

5 Analyzing QI Models in Terms of Their Basic Elements

The appendix highlights the common elements of each selected QI model. Each is described in terms of how it addresses the 11 basic elements of QI approaches. Country stakeholders (e.g., Ministry of Health, USAID, nongovernmental organizations, other international donors) can use the appendix to

coordinate and guide activities between different QI programs. The appendix will help them: 1) find common language to describe different QI steps, 2) select which model or models are appropriate for improving service quality for a particular situation, and 3) look for complementarities among models. Where a number of QI projects are underway in a country, stakeholders and/or participants could use the matrices to better understand how different models work and the extent to which they work the same way but use different terms.

This section summarizes the key similarities among the QI models and points out some of their unique features.

Presence and use of standards: While all models recognize the importance of service delivery standards and use them as a basis for improving quality, how the QI process introduces and relies on standards varies by model. Three models start with a self-assessment tool that relies on and addresses approved standards: COPE®, SBM-R, and the PSP-*One* QI Package. In these models, a self-assessment tool is developed and poses questions derived from the standards. QI teams engage in a process to assess the presence of performance gaps (whether staff are following standards and, if not, the extent to which they are not).

The Quality/Process Improvement and the Improvement Collaborative use the Plan-Do-Study-Act (PDSA) cycle to test the effectiveness of selected interventions in closing performance gap(s) using the agreed-upon standards as a reference. The concept of comparing the deviation between observed practices and expected standards is common in almost all QI approaches. For example, in Partner Defined Quality, clinical standards are established to help health workers know or learn about the expected targets to be achieved. PDQ does not explicitly use the term PDSA, yet the PDSA concept is applied to test and evaluate interventions on a small scale before implementing them at a large scale. In both the RED and the Improving Newborn Health models, standards for immunizations and newborn care are introduced through staff training and supervisors' use of checklists. In summary, standards are built into all QI models but in different ways: mainly through a self-assessment process, staff training, or supervisory follow-up. The HIVQUAL model adapted the PDSA cycle to "measure, test change, re-measure, and apply change" in an attempt to reinforce the importance of documenting that a particular intervention is successful before wide-scale implementation.

Organizational drivers: All models rely on organizational drivers to support the QI process, and such support typically includes the training of facility staff, external facilitation, and leadership providing direction and motivation for the QI initiative. The organizational drivers can be divided into internal and external improvement or change agents. Internal drivers may include certain motivated members of the health team or champions from the district management team or a nongovernmental organization. External drivers may include coaches, mentors, or facilitators appointed specifically to support the QI process. An external driver works closely with national counterparts, such as district health teams, to ensure the transfer of skills and capacity building of local staff. In most models, facility staff are empowered to identify problems and find solutions. The external support/organizational driver attempts to provide: 1) leadership/strategic direction, 2) ongoing management of the process; 3) clinical and QI expertise; and 4) capacity building, training, and support to the facility QI teams. During the process of QI implementation, the role of external support may evolve from inspector/auditor to supportive supervisor. The QI process organizational driver varies depending on the nature of the service provider: if public sector, the organizational driver could be district-level teams; in the private sector, a professional association, network, or franchise could be the driver. If the initiative is public-private, a coordinating advisory committee with representatives from both sectors may be the driver. Some models, such as the Improvement Collaborative, use the term "coach" to describe the QI support mechanism or staff while other models, such as HIVQUAL, use the concept of coaching and mentoring without using the term "coach." The COPE® model empowers the health team to play the role of the driver of the QI process.

Situation analysis: All models provide for comparing performance to standards or other reference points. What differs among models is whether the problems are identified internally by the facility/local entity or externally and presented to the facility team for resolution. In the COPE®, SBM-R, and PSP-*One* QI Package models, the facility team is given tools and training to conduct a self-assessment to identify performance gaps. In other words, the purpose of the self-assessment is to identify the extent to which health workers apply the service standards. The self-assessment exercise enables the staff to identify their service or system performance gaps. The teams are introduced to the self-assessment tool by asking whether they are doing certain procedures. For example, one question is, "Do you or your staff carry out this three-step process to prevent infection through instruments at your facility: (1) decontamination, 2) wash and rinse, and 3) sterilize or high-level disinfect the instruments?" This approach introduces staff to the infection prevention standard and then involves them in assessing whether and/or to what extent they carry out the steps according to the standard. In the Improvement Collaborative model, a problem is identified by the staff at the facility or through external assessment and then the facility teams use the PDSA cycle to test out different solutions. In the Quality Design/Redesign model, after a problem is identified, a process is selected to be redesigned as a response (hypothesis) to resolve a problem in system performance.

Specific aims/goals: In some models, a specific health concern (e.g., declining immunization coverage) is identified and then a problem-solving process is developed to address the problem (e.g., achieve full immunization coverage). The RED model applies the QI elements specifically to increase the coverage and improve the effectiveness of immunization programs. It includes the important features of effective management, mobilizing resources, supportive supervision, and monitoring action and progress. Most QI models identify specific outcome and process indicators to help track progress toward reaching the overall program goal.

Process to identify, choose, and implement interventions: The earlier elements in the QI process focus on an analysis of the present situation and on clearly defining priorities and goals. Those elements are therefore about the "what" of a change process. They also provide a critical component in any strategy for improvement: clarity about what the strategy seeks to achieve. The next elements move attention from "what" to improve to "how" improvement can be achieved and sustained. They call for judgment and expertise to define the intervention and reach agreement about the process of implementation, which itself requires training, resources, monitoring, and supervision to be accomplished. All models use the concept of brainstorming and group discussion to identify interventions that would solve problems causing performance gaps. Some models—COPE®, PSP-*One* QI Package, Improving Newborn Health, and FFSDP— involve staff in a root cause analysis or fishbone analysis to identify the causes of the problem and propose interventions that respond to the root causes. All models rely on QI teams augmented with external supervision and support through a process of supportive supervision. The PDSA cycle as used by the Improvement Collaborative and HIVQUA avails a scientific problem-solving approach for reviewing the results of each discrete QI intervention through continuous monitoring of preselected indicators.

SBM-R's hallmark is a focus on adherence to standards of care. Staff receive copies of documents articulating standards of care and are trained in applying those standards; supervisors monitor staff to assess compliance with the standards. The PDQ focuses on engagement with the community and clients to understand their needs and to develop specific interventions for the community served by the health facility. It includes QI teams identifying and prioritizing their own solutions with local human and financial resources, conducting exit interviews with clients, and understanding the community perspective. All models emphasize the importance of leadership to guide the QI process and of developing organizational capacity at both the facility and national levels.

Monitoring and documenting results: All models use data and have some monitoring process to support the program implementation and to measure and document the impact of QI interventions.

Monitoring processes vary in the type of tools, frequency of measurements, and person responsible for monitoring. Tools range from periodic application of self-assessment (COPE®, FFSDP, Improvement Collaborative, PDQ, PSP-*One* QI Package, and SBM-R) to benchmarking and run charts (Improvement Collaborative, Improving Newborn Health, and RED) to flowchart analysis and error-proofing processes (Quality Design/Redesign).

Monitoring frequency ranges from monthly to annually. It starts with preparing the facility QI team to record and review the data and extends to external review and support by a supervisor or quality coordinator from the district level. All models recognize the need for providing technical or managerial support to the QI process in general and to monitor and document results in particular. For example, the "coach" concept referred to earlier is used by the Improvement Collaborative model to mentor the improvement teams in selecting and measuring indicators. While the term "coach" is not explicitly used in other models, the concept of supportive assistance is described in such models as HIVQUAL, Improving Newborn Health, and FFSDP.

Incentives and motivation: SBM-R is the only model that explicitly builds in a performance recognition process. It posits that changing people's behavior requires training and support and may be aided by incentives, both financial and non-financial incentives. Non-financial incentives include feedback and social recognition, such as ceremonies, plaques awarded to the facility, a write-up of the quality champions or change leaders and facilities that perform well. Establishing a recognition mechanism linked to achievement of indicators or performance goals with incentive pay is part of the effort to ensure a change's sustainability. While other models do not explicitly use the term "recognition" or "incentives," most do include an implicit mechanism to recognize achievement. For example, RED encourages the recognition of health staff who achieve their vaccination coverage goal.

Scale-up of models: Scaling up of the implementation of QI models is difficult absent national commitment and a process from the beginning to engage and build the capacity of local counterparts. In several models, district health managers and District Health Teams are the selected local counterparts to ensure scaling up of QI interventions tested at the health facility or community levels. The challenge facing all QI models is how to institutionalize the interventions within health workers' daily procedures at a scale beyond the initial targeted districts.

The potential for applying QI approaches at a large scale is claimed by different QI models, but demonstrated, large scale applications are still limited, for example, in the PDQ model, because it requires replication one site at a time given the variability in engaging each site. The model that anticipates going to scale from the start is the Improvement Collaborative. A large number of sites (as many as 100 or more) may be involved in a collaborative whereby each site receives guidance and iteratively tests hypotheses to resolve a problem common to all the sites. Building staff capacity at the local level is part of the design, and the reach is considerable given the number of sites typically included. Scale-up is feasible given that capacity has been developed at the district level to introduce the model to other sites. Other models (e.g., COPE®, SBM-R, FFSDP, PSP-*One* QI Package) rely on national and/or local support to expand the model to other sites.

Sustainability of models: Typically, external financial and technical resources are withdrawn after a period of testing and implementation of a QI model at a small or relatively large scale. However, ensuring the continuation of the improvement process beyond the life span of a specific QI project is challenging regardless of model. All examined QI models realize this challenge and take different measures to enhance the chance of sustaining the improvement process beyond a project's duration. Different models' sustainability can be viewed from technical and financial perspectives. Most QI models try to ensure technical sustainability by engaging the national and local leadership in the QI process to build capacity and commitment for the continuation of the process. In addition, most QI models include various activities to build the technical capacity of local counterparts to implement the process.

While all examined QI models seem to have succeeded in ensuring the technical, "non-financial" aspect of the sustainability challenge, their approach in addressing the financial sustainability has not been adequately described. With few exceptions—for example, including cost analysis of QI by the COPE® model—there is a general lack of information about the cost-effectiveness of applying different QI models that can help developing countries and donors in the financial planning of large-scale applications of such models. A cost-effectiveness analysis of the application of several Improvement Collaborative programs is in process and will enrich the discussion of the financial sustainability of QI models.[4,5]

Uniqueness of models: While all QI models share common elements, it is important to recognize that each model has certain unique features. For instance, while most models recognized the need for staff recognition, only SBM-R is explicit in having facilities develop and implement a reward system to recognize provider achievements.

Similarly, while most models recognize the importance of involving the community, only PDQ developed tools and processes to ensure that providers and community members work together to identify and address priority problems.

FFSDP highlights, more than other models, the importance of the instance of contact between service-provider and clients as a crucial opportunity to capture gaps in service quality, raise demand for high-quality services, and improve health outcomes.

EngenderHealth's COPE® model is the only one that has a tool and methodology to guide staff in a cost analysis of QI. Its Cost Analysis Tool helps staff measure the direct costs of providing a service or clinical procedure: Costs may include commodities, supplies, and medications. Data from this exercise can be instrumental in improving efficiency of providing services and can also be used to set user fees for various services and to negotiate subsidies. The COPE® approach highlights, perhaps in a more prominent way than other models, the importance of engaging the health workers who are actually offering a service to be improved in identifying barriers and suggesting solutions to improve it.

As mentioned, the Improvement Collaborative approach puts greater emphasis on creating a dynamic learning environment: This is done through "learning sessions," where teams from different sites collaborate to share and replicate successful interventions to improve the quality and efficiency of health services in a technical area. This model's central innovation is the structured shared learning among many teams working on the *same* problem area. This feature promotes rapid dissemination of successful practices and enhances the chance of spreading best practices among a large number of teams.

The HIVQUAL model calls for less community involvement and greater committed, trained staff at the central level. It thus must be used selectively and only where this level of central support exists. External technical expertise is required to conduct the situation analysis, select and design program interventions, and use its monitoring tools, including the HIVQUAL3 software program. A national or regional program with technical assistance and resources to support a national application of HIVQUAL would be most appropriate for this model. In comparison, some other models mention the use of computers, if available, to monitor the impact of interventions, yet they make the process simple enough to use without a computer.

---

[4] USAID Health Care Improvement Project. 2008. The Improvement Collaborative: An Approach to Rapidly Improve Health Care and Scale Up Quality Services. Published by the USAID Health Care Improvement Project. Bethesda, MD: University Research Co., LLC (URC). Available at: http://www.hciproject.org/node/1057.

[5] Franco L et al. 2009. Results of collaborative improvement: Effects on health outcomes and compliance with evidence-based standards in 27 applications in 12 countries. *Collaborative Evaluation Series*. Published by the USAID Health Care Improvement Project. Bethesda, MD: University Research Co., LLC (URC). Available at: http://www.hciproject.org/node/1397.

The RED approach puts special emphasis on the district level as an important management unit to implement health programs at a reasonably large scale. It hence fosters a close relationship with the local District Health Team to ensure local ownership of the process.

The PDQ model places special importance on involving the community in identifying its own perception of "quality" before designing a QI process.

Thus, one may conclude that despite the commonalities between models, each may have a special emphasis or a point of entry to study or address quality gaps. WHO[6] defines six entry points that decision-makers may work through in order to build a strategy for quality: 1) leadership, 2) information, 3) patient and population engagement, 4) regulation and standards, 5) organizational capacity, and 6) models of care. Each QI model analyzed here deals with these domains with different degrees of emphasis.

6 Developing New QI Models: True Innovation or Re-invention?

This paper selected only a handful of QI models to analyze, although several others are in use to address different health issues. Since health organizations are free to develop additional models for QI, the question becomes whether such models would be an innovation to QI or merely a re-invention of already-existing models.

A 2009 review of QI methodologies[7] reports a high degree of underlying commonality of approaches in at least four main areas: First, almost all use the PDSA cycle or a slight variation. Second, most use a common set of QI tools and techniques in each stage of the PDSA cycle, such as fishbone diagrams, flowcharting, and brainstorming. Third, most acknowledge the organizational dimension of improvement, that is, the need for supportive leadership from senior managers and clinicians and clear organizational commitment to the aims of QI. Fourth, most recognize the importance of involving frontline clinical staff in QI. However, some models are broader in scope (e.g., platforms of services) while others are more focused (specific service delivery issues). Still others put more emphasis on the starting point (compliance with standards), others on the improvement process (how quality is defined and how the improvement is achieved), and others on the design/re-design of processes. These commonalities and differences should be considered when analyzing specific situations and choosing a QI approach. Given that there is much common ground among existing QI methodologies but also that new QI ideas will continue to move in and out of fashion, the phenomenon may be to some extent more re-invention than true innovation. Differences in terminology may accentuate an appearance of innovation and conceal the essential similarity of concepts.

Some argue that a single QI approach may not be sufficient to solve all the quality issues of an organization or country and that a combination of approaches may be necessary to address the various barriers to providing quality service in different fields and at different levels. This may be the case in some situations. Nevertheless, Walshe's review suggests that given the widely variable effectiveness of individual QI methodologies and the likely causes of that variation, there is probably more to be gained by adopting a given QI methodology and sticking with it; developing skills and experience in its use; and building engagement, commitment, and organizational capacity in its application.

---

[6] Roemer and Montoya-Aguilar 1988, cited above.

[7] Walshe K. 2009. Pseudoinnovation: The Development and Spread of Healthcare Quality Improvement Methodologies. *International Journal for Quality in Health Care* 21(3):153–159.

7 Recommendations to Promote Coordinated Implementation of QI Models in Developing Countries

Considering the number of available QI models and their promotion by their developers under different names, it can be very challenging and potentially confusing for health managers to select a model or group of complementary models. Thus, we conclude that international organizations that develop and promote their own models have a responsibility to coordinate their QI efforts with other partners and provide guidance and orientation to countries in order to clarify the similarities and differences between models and help reach a harmonized application of different models in a country.

Organizations implementing QI programs need to be flexible in their approach to QI. They are encouraged to learn about models developed by other organizations and think beyond the terminology that may vary from one QI model to another and try to see the underlying concept. Although different terms may be used, in most cases QI approaches include common elements as described here.

Regardless of the different titles and names given to different QI models, progress might be fostered by an agreement on a general definition of QI and the essential elements that are required of any effective QI approach. This paper suggests a definition of QI and descriptions of its elements.

Stakeholders implementing QI are encouraged to emphasize monitoring the impact of QI interventions. Measuring process and outcome indicators over time will provide evidence for determining whether the QI interventions resulted in the anticipated change and will guide efforts to modify and improve the interventions. While this paper reveals a generally adequate monitoring of the results of the reviewed models, documenting the cost of interventions appears largely neglected. It is recommended that registering and analyzing the cost of QI interventions be an integral part of documenting results.

Countries may find it useful to create national level coordination mechanisms (e.g., QI Coordination Group/Task Force/Working Group) to lead the coordinated implementation of various QI programs in a country and support documenting lessons learned and identification of best practices. The scope of work of such a mechanism could include: 1) create an awareness and culture of QI; 2) foster coordination among different QI interventions; 3) summarize experiences, lessons learned, and best practices from the collective application of QI models; and 4) reach beyond the USAID community to coordinate effective use of QI approaches across donors and programs in the health sector. Such a coordinating mechanism should link with other international organizations, such as UNICEF, WHO, CDC, the World Bank, United Nations Population Fund (UNFPA), the UK Department for International Development (DFID), the Canadian International Development Agency (CIDA), and the Norwegian Agency for Development Cooperation (NORAD), in order to involve them in QI activities and coordinate with their approaches for improving quality.

A practical way to coordinate various QI models in a country is to implement each model in a specified geographic or administrative area. We recommend that a map be developed showing where QI projects (whether supported by bilateral or global projects) are being implemented, noting who/what entity is implementing them, and in which district/region. Such information would assist national managers in avoiding the overlap of implementing different QI models in a single geographic location. Applying different models in specific areas could contribute to enriching a country's overall experience in improving the effectiveness of health care.

At the global level, an online resource center/repository would be valuable to serve as a venue for sharing QI achievements and lessons learned. Such a repository could include reviewed and contributed articles, quality assessment and monitoring tools, descriptions of QI interventions, technical presentations from workshops, and discussion forums and online chat functions for questions and answers about QI experiences and challenges. The site could also list training and other events concerning quality by region. The Health Care Improvement Portal launched in 2009 by the USAID

Health Care Improvement Project could serve this purpose since it invites other practitioners of QI to post reports, tools, and publications about their QI experiences.

Donors should support only truly QI innovation, not repackaging. The paper recognizes that the development of additional QI models will continue. It concludes that considering the similarity among the existing QI models, some "new" models would be largely repackaging of the existing intellectual content under different terminology or presentation to give the impression of innovation while the concepts are basically the same. The appearance of additional models that basically re-invent the existing models should not be encouraged as it will complicate the task of coordination between QI programs without adding new concepts. However, donors should support the development of new QI models that truly offer innovative concepts to achieving better health care results.

At some point, the different organizations working in quality may also want to conduct rigorous impact evaluations, such as randomized trials, of quality interventions. This is not a simple task and must be undertaken where the conditions are appropriate. The benefits of such evaluations could be potentially high, reinforcing the case for quality interventions in health programs.

8 Conclusions

The body of work in the field of quality improvement in health care in developing countries has grown significantly and in many different ways over the last 25 years. Understanding our similarities and differences as we move forward will help us collaborate in our health care improvement efforts. This report is an effort to create understanding and enable a simplified, more-coordinated way to bring quality health care services to those in need in developing countries. We recognize, however, that the field can never be fully understood, much less recorded, and that it continues to evolve. This paper offers a definition of QI and lists the elements common to any QI approach.

The appendix provides a framework for understanding common QI elements. We hope it will be useful to practitioners as they attempt to sort out similarities and differences between different QI models. It could also be used as a checklist to determine what aspects of improving service quality a particular model is addressing and what elements are not being addressed.

The recommendations in Section 7 can help organize stakeholders in the field and globally to work together and share resources to address service quality issues. Country level QI coordinating bodies would advance such organization, collaboration, and resource sharing. The creation of a web site specialized in QI in health programs in developing countries would provide an important vehicle to facilitate the creation of a community of practice to share information and experience, access tools, and answer questions. A regular dialogue between QI partners on the application of QI models would foster a more robust exchange among practitioners, timely debate, and continuous updating of the information presented here.

An important remaining question is how we progress from one project dedicated to improving an aspect of care to overall health system strengthening. Hopefully, the answer is that by building capacity at the national, district, and facility levels through QI project initiatives, the capacity of local staff will be developed to apply QI concepts to strengthen the system as a whole. We recognize the need to have the following inputs and processes in place to ensure an effective QI process:

- Standards or reference points for services;
- QI champions;
- Data collection and monitoring of changes/results over time;
- Essential infrastructure, medications, supplies, and equipment;
- An adequate and appropriately skilled workforce;
- Incentives for performance in the public and private sectors; and

- Community involvement to create demand for high-quality services and sustain results.

While the recommendations and requirements are considerable, their presence combined with adherence to high standards for the field of international health care improvement itself would appreciably lessen the worldwide suffering that results from poor quality health care.

Appendix: Descriptions of Common QI Elements across QI Models

QI Model: COPE® (Client-Oriented, Provider-Efficient Services)

Element	Description of element as implemented in this model
1. Standard or reference point	This model is based on a framework of clients' rights, staff needs, self-assessment process, and tools based on international standards.
2. Organizational drivers to drive the design process and identify organizational support for it	This model prepares supervisory personnel to optimize facility teamwork to maintain ongoing implementation and monitoring of solutions to problems causing sub-standard performance. The facilitative supervisor 1) enables staff to manage the QI process, 2) enables staff to meet clients' needs, and 3) works with staff to pursue/achieve institutional goals.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	The health care delivery situation is analyzed using an assessment of clients' rights and staff needs. A self-assessment guides support staff to review the way they provide services during their daily tasks. EngenderHealth has developed several tools to identify gaps in practices and guide facility staff in bridging them, including self-assessment guides, record-review checklists, client-interview guides, and client-flow analysis forms needed to conduct a COPE exercise in different clinical areas. EngenderHealth has also develop a Community COPE® tool, a Quality Management Tool, and a cost analysis tool.
4. Development of specific aims/ health goals	Specific aims are based on findings from local/national health surveys that define the Ministry of Health's (MOH's) or institution's health goals plus clients' rights and staff needs.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	COPE® includes root cause analysis, prioritization of performance gaps to be addressed, and development of feasible action plans that would help to address gaps that could lead to a life-threatening situation and implement activities that could gain early and effective successes and then progress to gaps that require more complex problem solving.
6. Implement selected interventions	The process of implementing interventions includes whole-site training, an approach aimed at meeting a site's learning needs. Such training links supervision and training and emphasizes teamwork and sustainability using a range of training strategies, e.g., on-site group-based training, centralized training, cascade training to transfer the knowledge and skills using the different types of training such as knowledge updates, skills training, orientations , and coaching/mentoring. In addition, in-reach is applied to build relationships among related services in a facility through staff orientation, referrals, linkages between a facility's departments, and clear signage to ensure that clients who visit a facility do not miss opportunities to access information and services for all their reproductive health needs.
7. Monitoring and documentation of results	COPE® and its assessment tools create a continuous feedback loop. Supervisors and staff measure changes in the quality of services over the previous year using the Quality Management Tool. This assessment determines the degree to which clients are being afforded their rights and staff needs are being met. The assessment may also identify additional problems, which would be incorporated into the facility's action plan.
8. Community involvement: Extent and process of involving community	Community COPE is a variation of COPE conducted by staff of a facility where the regular COPE was introduced. Helps to understand the community's needs and its definition of quality services; to close the gap between the community's definition of quality and actual performance of the site; to foster a partnership between the community and a site, and to involve community in the QI process at the facility.

Element	Description of element as implemented in this model
9. Incentives and motivation	Not explicitly addressed.
10. Plan scale-up of interventions	The model is site based, so plans for scale-up must be part of the national/ district plan to ensure that budgetary and personnel requirements are met.
11. Plan for ensuring sustainability once QI process has been initiated	Once COPE® has been initiated, sustainability is supported through staff empowerment (see Element 7) and supervisory liaison between the site and higher levels of administrative and financial systems. Staff are supported to maintain the process; improvement is seen from their efforts; and staff are recognized periodically to reinforce positive outcomes.
Other: Conditions under which this model is best applied	This model works best if applied where: 1) supervisory skills need strengthening in facilitation and fostering teamwork; 2) an ongoing, user-friendly, cost-effective QI process is needed; 3) a forum is in place for sharing results and recognizing successes; 4) the community is seen/valued as an integral part of the process; and 5) capacity and commitment to maintain the process throughout the health care system lead to more informed/strategic investments of funds and staff to achieve and maintain quality services.
Other: Level of effort/time	Initial technical assistance (TA) for introducing facilitative supervision takes 5 days, and advising staff on how to use the QI process and tools takes about 3. Thereafter, efforts are ongoing with most assessments done while services are in progress; time is needed to tally findings, analyze root causes, develop relevant interventions, and implement interventions (such implementation can occur during lulls in service delivery). Progress monitoring occurs every 3 months, and the Quality Management Tool is applied annually.
Other: Cost	Costs are incurred for: 1) initial TA for facilitative supervision and guidance on implementing the model and using the tools; 2) travel for external staff unless regional/local expertise is available; 3) stationery, reproduction of forms, snacks, and transport of external, supporting supervisors; and 4) transport for site visits during facilitative supervision, training, and post-training follow-up.

QI Model: Fully Functional Service Delivery Point (FFSDP)

Element	Description of element as implemented in this model
1. Standard or reference point	The FFSDP model comprises a set of quality standards that can be adapted to the level of development of a health system for any country and services.
2. Organizational drivers to drive the design process and identify organizational support for it	External drivers are trained supervisors/facilitators; they introduce FFSDP the first time the district or facility uses it, training district supervisors and facilities in its use. After initial implementation, district and especially facility staff become the drivers, managing FFSDP implementation. They are critical to success. The external facilitators: 1) adapt the FFSDP model, 2) provide leadership and strategic direction, 3) provide technical content to resolve performance gaps and QI expertise, and 4) prepare QI teams and QI master trainers in using FFSDP.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	A baseline, external evaluation is conducted before FFSDP implementation and every 6 months thereafter (6 months is the length of an improvement cycle). A supervisor and health facility staff conduct two internal assessments between external evaluations to assess improvements and identify remaining deficiencies to be improved. To address the deficiencies, the site team develops a 6-month work plan.
4. Development of specific aims/ health goals	The development of specific aims and health goals and the subsequent QI plan are guided by the national policy and health strategy.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	Following an internal facility assessment, each facility develops a set of interventions that the facility team will implement over the next 6 months to address the performance gaps observed during the last external evaluation and subsequent 2 internal assessments.
6. Implement selected interventions	Besides the monitoring and supervision aspects of FFSDP, its educational component provides supportive technical assistance to health providers. This component tells health providers exactly what actions are needed to reach each quality standard. In most cases this requires establishing or improving management support systems. To help facility staff in this process, an educational document provides a series of tools, such as plans, charts, maps, and registers, that serve as examples for establishing a management support system.
7. Monitoring and documentation of results	The external facilitators develop a matrix for use as an assessment tool for both the internal assessment and external evaluation. Most standards receive a positive score when: 1) forms and procedures are in place and used and 2) activities are planned and performed as planned. Next, data from the assessments are entered into a central database; facility-level data on each criterion are converted to a graph for each facility. A copy of the graph, showing gains or losses in achieving quality goals is provided to the relevant site. The MOH uses a monitoring checklist in parallel; it includes the key FFSDP standards.
8. Community involvement: Extent and process of involving community	FFSDP addresses community systems and support with a health management team that includes health facility staff, community representatives, community health workers, and/or community outreach staff.
9. Incentives and motivation	The FFSDP manual's educational and tool components support health providers in findings ways to reach each standard of quality, giving staff a sense of being guided and helping them feel motivated. The 6-month cycles of internal assessments and development of work plans demonstrate to staff that rapid improvements are possible. External evaluations confirm their

Element	Description of element as implemented in this model
	improvements and provide recognition. Community satisfaction is also rewarding to health care staff.
10. Plan scale-up of interventions	A plan for scaling up the introduction of FFSDP to more facilities is part of its design. A plan for scale-up of interventions to improve services at each site is also part of the design and is gradually attained through the technical assistance provided to health care staff by supervisors and evaluators. More sophisticated standards can be introduced once most standards are attained by most sites.
11. Plan for ensuring sustainability once QI process has been initiated	Sustainability is achieved through 5 aspects: 1) Staff become the drivers because the model focuses on behavior change on the part of a facility's medical staff, who are very clinically and curatively oriented, and on the part of the supervisors, who become "facilitators" to introduce the management tools and preventive practices that can help improve service delivery. 2) Community involvement increases demand for the Basic Package of Health Services, particularly by the target groups. 3) Through the FFSDP educational document, health providers learn the steps to improve health care quality. 4) Including key quality standards in the national monitoring checklist helps ensure sustainability of standards and measurement of performance against them. 5) FFSDP highlights exemplary "model health facilities," where staff from other sites can learn from the model facilities.
Other: Conditions under which this model could best be applied	Favorable conditions include: 1) A national health policy and health strategy are clearly defined. Improvement objectives are shared. 2) A critical mass of QI champions is available to be trained and will adequately support QI teams. 3) An implementation package can be clearly defined. 4) Regular monitoring and shared learning can be supported. 5) A spread strategy is in place, as are organizational structures. FFSDP has been shown to be very effective, particularly in (but not limited to) post-conflict situations.
Other: Level of effort/time	FFSDP provides for a time-limited improvement strategy, typically achieving significant results within 9–18 months, although improvements are often seen much earlier. It requires the engagement of management, technical support, and committed QI teams at the regional level and at sites. Progress is reviewed monthly and evaluation reports are prepared bi-annually.
Other: Cost	Not available

QI Model: HIVQUAL

Element	Description of element as implemented in this model
1. Standard or reference point	The HIVQUAL model follows 6 primary steps in a project cycle that are similar to the PSDA cycle. In the first step, QI facility team members collect and review performance measurement data and identify specific indicators for process improvement. Data collection methods are identified, and collection tools are designed to measure the current level of performance.
2. Organizational drivers to drive the design process and identify organizational support for it	To have an effective QI program, the quality management plan developed under this model recognizes the need for a QI infrastructure and staff involvement. The model supports two interdependent cycles: the facility's HIV Quality Improvement Program and that of the HIV program's QI projects.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	A situation analysis is conducted of current performance, using the tools described in Element 1.
4. Development of specific aims/ health goals	The results from the situation analysis (analysis of the data collected as noted in Element 1) are shared with the HIV quality committee, which helps the team set realistic process improvement goals and make informed improvement decisions. In the HIVQUAL model, a quality management plan is developed that includes the need for annual quality goals. These are the endpoints or conditions toward which the facility will direct its efforts and available resources during project work. Quality goals help staff focus on improving aspects of care and are the priorities of the quality program.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	Potential problem areas are identified from the information gathered by the team members in investigating the process being reviewed and by charting the sequential steps of the process flow for better understanding. With the information gathered, team members select potential solutions for "pilot testing"—a small-scale implementation of a change.
6. Implement selected interventions	The pilot test (Element 6) is used to determine whether the change works and whether it should be implemented program-wide for all HIV programs. During this step, the team plans for and implements pilot tests (through PDSA cycles), and then assesses the impact of those changes to ensure that they result in improvements.
7. Monitoring and documentation of results	Pilot test results are reviewed and evaluated. The team reviews the pilot test results with the HIV quality committee and other stakeholders (those who have a vested interest in the process). Together, they discuss whether the change should be implemented system-wide. A software program, HIVQUAL3, was developed to facilitate measurement of quality in the HIVQUAL approach. This software program is a Microsoft® Access application that provides an efficient means of measuring and reporting clinical performance. The software includes indicators based on clinical practice guidelines developed by the New York State Department of Health AIDS Institute and its expert advisory committees. Indicator definitions are consistent with public health guidelines.
8. Community involvement: Extent and process of involving community	The needs of the community as a concept may be addressed in the situation assessment, the development of quality health goals, and quality statement (e.g., What do we want to be for our community and our patients?). Also, the quality infrastructure may include a member from the facility QI committee who represents community interests and wishes. However, emphasizing involvement

Element	Description of element as implemented in this model
	of community participation in a facility's ongoing QI activities is not explicitly addressed or emphasized in the model.
9. Incentives and motivation	The comparative data generated through the software program provides a powerful stimulus to facilities by recognizing the successes of those with higher scores. In the HIVQUAL Workbook, a staff training guide includes a tool kit that provides examples of a variety of non-financial and financial incentives to motivate staff to participate in QI activities. The basis of the incentives is to help mitigate resistance to change through a variety of techniques—from providing staff training and education about the change, providing continuous feedback and support to staff, and standardizing the practice to providing incentives to best performers or "champions of the change" and letters of recognition or small monetary incentives (e.g., gift cards or movie passes) to staff who support improvements. In the tool kit, recognizing staff efforts is cited as critical, given that they are the backbone of the HIV quality program. Services are encouraged to recognize staff efforts regularly to reinforce the importance of their QI work.
10. Plan scale-up of interventions	As mentioned under elements concerning implementation of interventions and monitoring of results, the results of the pilot test are reviewed and evaluated. The team reviews the pilot test results with the HIV quality committee and other stakeholders (those with a vested interest in the process) to discuss whether the change should be implemented system-wide.
11. Plan for ensuring sustainability once QI process has been initiated	Sustainability is part of the cycle of the HIV quality committee activities. Once team members decide that a piloted intervention is successful and should be scaled up, these successful project-related improvements then become part of the daily work process in an effort to sustain the improvements over time. Team members also assess the project's effectiveness against the original plan and make plans to re-measure performance at regular intervals and monitor improvements. The model recognizes that concerted efforts are required to ensure that QI gains are sustained. The Workbook provides tips that can help sustain QI gains: • Assign one member of the improvement project team to monitor progress and routinely report back to the quality committee. • Assign specific performance thresholds to trigger follow-up activities. • Decide on a simple format that can be used to generate an on-going status report for the quality committee, staff, and consumers. • Provide simple incentives such as letters of recognition or small monetary incentives (e.g., gift cards or movie passes) to staff who support improvements. • Highlight the advantages of the new process whenever possible
Other: Conditions under which this model could best be applied	Favorable conditions include: Sufficient commitment and resources at the system level to drive the model through the 6 steps of its project cycle. Adequate resources at the system level to provide consultants to train and introduce the tools and software to monitor the progress at the facility level.
Other: Level of effort/time	Not available
Other: Cost	Not available

QI Model: Improvement Collaborative

Element	Description of element as implemented in this model
1. Standard or reference point	Clinical and other service delivery standards are individually considered by facility-based QI teams as they apply the PDSA cycle. Agreed-upon national standards are used where available. Where standards in use at a facility (or in a district or country) are not up-to-date and/or evidence based, clinical experts are engaged before and during the course of a collaborative to encourage the MOH to update inappropriate standards and to inform health care providers of the content and application of such standards.
2. Organizational drivers to drive the design process and identify organizational support for it	In addition to support from the MOH and the district/regional level, this model provides the following organizational drivers: 1) leadership and strategic direction; 2) ongoing management; 3) clinical and QI expertise; and 4) support and direction to QI teams in applying the model and PDSA.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	A baseline assessment is typically carried out, either in all or a sample of sites that will participate in the collaborative.
4. Development of specific aims/ health goals	An "area" of health care (e.g., MNCH) is specifically targeted before collaborative launch in negotiations with the MOH and other stakeholders. An expert group of clinical and QI experts identifies specific aims for the collaborative, based its analysis of the existing best practices or interventions that are available and feasible in the setting to achieve significant improvements in the targeted area; this becomes the collaborative's "implementation package" (also known as a "change package"). The expert group agrees on specific, carefully defined, and measurable aims (e.g., "active management of the third stage of labor is applied in 100% of deliveries") that will be pursued through the collaborative and the indicators that will be used to gauge achievement toward the aims.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	Representatives from participating facilities come together at the first learning session to learn about the implementation package, collaborative aims, and improvement methods. Site teams then develop their own plan to put in practice the implementation package and improve their performance on the indicators measured by all teams in the collaborative. Each team applies the PDSA cycle to devise its own hypotheses on the barriers to improved performance, proposes interventions, tests them, and monitors the results over time using run (time series) charts.
6. Implement selected interventions	At learning sessions or through other communication channels with other collaborative participants at other facilities, participants share their successes and failures so that best practices will spread to the entire collaborative. Teams continue testing changes, measuring their results against the indicators defined in Element 4, and meeting periodically over a short period (usually 9–18 months). When a collaborative is successful and expands to more sites, the new sites often adopt the solutions and best practices developed by the demonstration sites.
7. Monitoring and documentation of results	PDSA provides for monitoring and documenting the results of tested interventions. All teams participating in the collaborative are expected to monitor progress against the collaborative's key indicators and report their results to the higher levels of the health system. Monitoring continues, ideally, until an acceptable level of success is achieved and participants believe

Element	Description of element as implemented in this model
	the change has been institutionalized. Documentation takes the form of run charts (based on data entered in Microsoft® Excel tables) that indicate both changes in the measurement of an indicator (the line in the chart) and notations of significant events (e.g., the date of a learning session). HCI is testing journals and other methods to capture more documentation than will fit on a run chart.
8. Community involvement: Extent and process of involving community	The link to the community is usually through health care providers who are assumed to understand community needs/desires. A facility team may also decide to use exit interviews or include community members on the QI team. More recently, HCI has begun implementing collaboratives with community-based teams made up of community volunteers, service beneficiaries, community leaders, and representatives of health facilities.
9. Incentives and motivation	This model relies on the success of the facility-based teams (comprising care providers) to find ways to deliver better health care services. Motivation to achieve better results in a collaborative is provided by the sense of friendly competition that develops between facilities. Teams are also motivated by presenting their results to their peers at learning sessions.
10. Plan scale-up of interventions	Scale-up is built into the model by involving many sites—typically 10 to 50—at the start of a collaborative. Also typically, a collaborative begins as a "demonstration collaborative," and with success more teams—typically 10 to 50 but as many as 100—are added, resulting in a "spread collaborative." (The latter addresses the same problem and adopts and adapts best practices from the former.)
11. Plan for ensuring sustainability once QI process has been initiated	Sustainability is built into the model by having many facilities and their district and national managers working together on the same health problem. This practice develops the capacity of many health care facility staff in QI methods, so they can continue working on new problems, even if transferred to a facility that has had no QI exposure. The model's success and ability to demonstrate measured achievements has in several cases stimulated further MOH buy-in, thus building sustainability.
Other: Conditions under which this model could best be applied	This model works best if the teams are adequately supported (in addition to learning sessions, QI experts and/or district managers provide supervision and coaching), the package of interventions is clearly defined, monitoring is regular, spread is achieved, and the driver (Step 2) is robust.
Other: Level of effort/time	This model is time limited: Significant results are typically apparent in 9–18 months. Management and technical support and QI teams invest their time/effort.
Other: Cost	No data are currently available, but HCI is now undertaking cost-effectiveness analyses of collaborative improvement.

QI Model: Improving Newborn Health

Element	Description of element as implemented in this model
1. Standard or reference point	BASICS adapted its generic standards and tools (including reference manuals, supervision checklists, and monitoring and evaluation tools) for essential newborn care, extra care for low-birth rate babies including Kangaroo Maternal Care, resuscitation for birth asphyxia, prevention and treatment of neonatal sepsis, and selected aspects of maternal care, taking into account country context. In selected countries, such as El Salvador and the Democratic Republic of the Congo, the country policies/norms and standards were updated.
2. Organizational drivers to drive the design process and identify organizational support for it	Drivers include a coordinating advisory committee, which includes the country MOH and key stakeholders and other partners, QI/supervisory teams of technical and administrative staff, and BASICS technical support personnel.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	An evaluation is performed during training and subsequent supportive supervision, and surveys are carried out in selected areas documenting the application of practices at implementation sites and deviations from the standards.
4. Development of specific aims/ health goals	The main goal is to improve newborn care and survival, including basic preventive essential newborn care, extra care for low-birth weight babies, resuscitation at birth, and neonatal sepsis, and integrate it with selected aspects of maternal health, such as antenatal care, clean delivery practices, active management of the third stage of labor, postpartum maternal and newborn care, and with other components, such as PMTCT and family planning.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	In Latin American and the Caribbean, a hypothesis (proposing an intervention that would improve care) is developed at the facility and/or in the community to address specific neonatal problems. Facility teams hold brainstorming sessions and use fishbone and "why" diagrams to identify gaps. Thereafter, priority is given to those interventions that could be implemented through internal changes at the hospital; next, those that require some external resources are implemented; and finally those that require long-term planning are. In most other countries a set of interventions to be implemented to promote essential newborn care is defined, and implementation strategies typically include advocacy, adaptation of tools, training with follow-up supervision and monitoring and evaluation and sharing of results and lessons learned.
6. Implement selected interventions	The process used to address performance gaps provides for: 1) supervisory visits with predefined skills checklists with a scoring system to address performance gaps; 2) on-the-job updates; and 3) "group supervision" bringing together several health workers at a health center/hospital (useful to engage more personnel and collect, share, and review data to evaluate improvement/ changes).
7. Monitoring and documentation of results	Monitoring tools include: 1) a set of core indicators adapted from the global list and 2) a set of data collection tools adapted for newborn health. Monitoring processes include: 1) benchmarking to monitor practices and 2) run charts such as those showing the proportion of admissions due to suspected nosocomial infections (hospital) and newborns visited within 3 days (community), plus numbers referred and outcomes. A challenge in some countries is that the indicators and tools, especially in a

Element	Description of element as implemented in this model
	relatively new area such as newborn health, are not yet a part of the national health management information system, so collecting data poses challenges. In selected countries data collecting tools have been revised and advocacy carried out to include them in the country information system.
8. Community involvement: Extent and process of involving community	Community level problems are also addressed in the approach in a manner similar to the steps noted above for facilities.
9. Incentives and motivation	Not explicitly addressed.
10. Plan scale-up of interventions	Advocacy and early involvement of as many in-country partners as possible helps to develop consensus and promote expansion of selected interventions, adaptation of tools, and support for the implementation process. Results and lessons learned were shared with partners periodically and at the end of the project through a multi-country workshop.
11. Plan for ensuring sustainability once QI process has been initiated	The model ensures the early involvement of in-country donors, particularly those interested in newborn, child, and maternal health. QI teams are empowered to be change leaders in their hospitals or organizations; they in turn can support further expansion and sustainability (with support from the MOH and others). The monitoring of progress and showing results of efforts help sustain participants' engagement, as does public recognition by authorities.
Other: Conditions under which this model could best be applied	MOH cooperation and resources are available to pay for training and support the updating of supervisors' skills to assess clinical practices. Motivation can be fostered to perform supervisory visits. The MOH is willing to invest in and adapt new practices for efficient training and supportive supervision, such as: 1) group supervision to cover more health workers; collect and review data to document changes and groups identify challenges and share experiences of solutions to problems2) distance learning to reduce training costs, 3) taking a regional approach where applicable, 4) sharing learning and experiences about both facility- and community-based interventions promoting links between the two and having a common purpose, 5) close involvement of in-country coordinators, 6) QI team freedom to make decisions, and 7) in-country partnerships to foster sharing resources.
Other: Level of effort/time	Not available
Other: Cost	Not available

QI Model: Partnership Defined Quality (PDQ)

Element	Description of element as implemented in this model
1. Standard or reference point	A site-based quality improvement team (QIT) links to agreed-upon standards and then defines indicators that are easily measurable by community members.
2. Organizational drivers to drive the design process and identify organizational support for it	An external organization drives a process to: 1) develop the capacity of QITs; 2) provide leadership; 3) seek buy-in from influential stakeholders for the QI process; 4) compile concerns on quality needs from providers and the target community group; 5) facilitate a workshop to find common concerns and agree on a shared vision; and 6) guide progress of the QITs.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	The QIT is tasked with addressing quality and applies the Plan-Do-Study-Act (PDSA) cycle. This includes conducting an assessment to identify deviations between standards and practices (and deficiencies in practices) and can link to any other QI methodologies.
4. Development of specific aims/ health goals	The QIT receives a mandate to address issues related to quality—e.g., focus on a specific technical area (e.g., family planning services)—or instructions to improve the quality of care at a given facility.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	Each QIT identifies and prioritizes its facility's realistic solutions with local human and financial resources. Results are monitored and compared over time. This requires building the QIT's capacity to solve problems and manage both others and resources.
6. Implement selected interventions	Each QIT develops an action plan and engages with the community as needed to implement the plan to solve problems using local resources.
7. Monitoring and documentation of results	A continuous monitoring process uses: a QIT self-assessment checklist; a supervisory list addressing QIT functioning; and exit interviews with clients.
8. Community involvement: Extent and process of involving community	The community participates in activities to analyze quality; activities are designed in part to solicit community perceptions of quality.
9. Incentives and motivation	Not explicitly addressed.
10. Plan scale-up of interventions	The site of implementation is the health facility with the community it serves. The model can be used to scale up the PDQ processes by replicating PDQ in other health facilities.
11. Plan for ensuring sustainability once QI process has been initiated	Sustainability at the local site/community is built into the process. The external organization provides guidance until the QIT becomes functional. QITs often continue working independently on new problems.
Other: Conditions under which this model could best be applied	The community wants and is able to provide input and create a vision to ensure services are used by all, including marginalized groups. Support from key stakeholders includes community willingness to provide support and be involved in facility processes. Sufficient time is allocated to properly implement the model.
Other: Level of effort/time	PDQ is initially labor intensive, taking approximately 3 months to complete the PDSA cycle before establishing QITs. The model initially requires external guidance for technical and management support to QITs and during review meetings. Also required are committed QITs.
Other: Cost	Not available

QI Model: Private Sector Quality Improvement Package

Element	Description of element as implemented in this model
1. Standard or reference point	The model is applied to private sector health care providers who may work independently or as facility staff. It provides a self-assessment tool, the results of which serve as the standard or goal. The tool lists questions organized by "dimensions of quality," e.g., patient safety. Providers' answers guide the process of improving service quality.
2. Organizational drivers to drive the design process and identify organizational support for it	A formal structure—such as a national professional association, network, or franchise—is the driver that introduces and supports the model's introduction.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	The self-assessment and analysis of the responses provide a situation analysis. Responses to the self-assessment questions indicate any deviations between the desired clinical practice and actual practice.
4. Development of specific aims/ health goals	Providers set goals based on the responses and analysis. A root cause analysis of performance gaps (the gap between a practice and the desired practice) guides the development of an action plan that targets health goals.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	The health facility supervisor (or private practitioner), service providers, and MOH representatives brainstorm solutions and mobilize resources that would help resolve performance gaps.
6. Implement selected interventions	An action plan identifies the person(s) responsible for the agreed solutions/ interventions to the performance gaps and sets a time frame for implementation. In clinics, supervisors ("Quality Coordinators") support staff in implementing the interventions specified in the action plan.
7. Monitoring and documentation of results	Each quarter, Quality Coordinators and facility-based Quality Teams monitor service statistics and the number and type of performance gaps resolved, indicating the dimension of quality involved.
8. Community involvement: Extent and process of involving community	One of the dimensions of quality assessed in the self-assessment tool relates to the facility's relationship with the community, but the emphasis is more on assessing how to market services to the community and less on involving the community in efforts to meet community needs.
9. Incentives and motivation	Internal recognition motivates the staff, as does learning how to do a better job through the use of the self-assessment process, empowerment, and guidance from supervisors.
10. Plan scale-up of interventions	Interventions are shared across and throughout the association, network, or franchise membership. Scaling-up within an association or network requires funds for training, duplicating the assessment tool, and follow-up by district-level MOH personnel to support the supervisors to hold periodic meetings with clinic staff to review findings from the self-assessment and to work on resolving performance gaps. Scale-up is limited by financial resources and supervisors' time (the supervisors may also be private practitioners).
11. Plan for ensuring sustainability once QI process has been initiated	Financial resources from the association, network, or franchise are required to sustain the process and cover continued training, duplication of the self-assessment tool, and supportive supervision. While the model is efficient, costs and effort are required.
Other: Conditions under which this model could best be applied	Supportive conditions are: 1) interest and resources of a professional association, network, or franchise to provide ongoing support and oversight

Element	Description of element as implemented in this model
	to its members; 2) the commitment and willingness of private providers to review and improve the quality of the services they provide; 3) public sector commitment to establish public-private partnerships to resolve performance gaps and share service statistics; and 4) organizational leadership support to introduce changes and spread them to all members.
Other: Level of effort/time	This model is efficient in improving service quality for providers who typically do not receive any external oversight or support. Participants need to keep the answers to the self-assessment questions 1) focused on content areas, 2) concise, and 3) relevant. Problem ownership is shifted to the private provider with directed external support from the professional association, network, or franchise. The quarterly review of progress also requires effort and time.
Other: Cost	Please see Element 11.

QI Model: Quality/ Process Improvement (Quality Design/Redesign)

Element	Description of element as implemented in this model
1. Standard or reference point	Standards are part of the PDSA cycle that facility-based, multidisciplinary quality design teams use to review work processes and test proposed improvements.
2. Organizational drivers to drive the design process and develop organizational support for it	Drivers are trained facilitators who guide the teams and include leadership and support from hospital management: They develop the QI strategy and motivate people. Leaders and team members meet to align goals.
3. Situation analysis to identify deficiencies and deviations between the health care standard(s) and health care provider practices	A problem-solving approach is applied and focuses on the user. This model and its tools identify gaps, essentially performing a situation analysis. The health care process to be designed/redesigned is selected based on problems in system performance, health statistics, and/or client needs that are revealed in identifying the gaps.
4. Development of specific aims/ health goals	First, the goals and objectives of the process design/redesign are defined. Second, internal and external clients are identified who will benefit from the process design. Focus groups (which may include clients) identify client needs and then prioritize them using a voting process. Third, key elements of the new design that will respond to clients' priority needs are identified for each activity planned for the newly designed/redesigned process.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	Team members investigate the process being reviewed and chart its sequential steps to better understand it. The resulting flowchart helps reveal potential problem areas. From here, members identify and prioritize possible causes of the problems. Once causes are identified, interventions are devised.
6. Implement selected interventions	This model uses process tools to manage meetings, follow up, and support the process of implementing agreed interventions.
7. Monitoring and documentation of results	The teams collect data resulting from the newly devised and implemented processes and evaluates whether the redesigned process meets client needs. The flowchart (see Element 6) is used to link client needs and each activity on the flowchart. An error-proofing process is applied: It tests the design for robustness and reliability.
8. Community involvement: Extent and process of involving community	This element is not explicitly addressed, but community members would likely be involved as external clients under Element 4.
9. Incentives and motivation	Not explicitly addressed.
10. Plan scale-up of interventions	Not explicitly addressed.
11. Plan for ensuring sustainability once QI process has been initiated	The quality design/redesign process tests the design for reliability but does not contemplate an ongoing redesign process. Once teams master the steps in process redesign, they often apply the approach to other processes.
Other: Conditions under which this model could best be applied	Supportive conditions include 1) high-level support (i.e., hospital's top management), 2) mid-level champions, 3) leadership that anticipates possible staff resistance to change and addresses it in a change management plan, 4) strong training and follow-up, 5) selecting problems that are at the core of organizational priorities, and 6) resources to mobilize to support inputs.
Other: Level of effort/time	This model requires TA support to apply the tools of process analysis and redesign. The time required depends on the complexity of the process being addressed: A simple one can be redesigned in a few weeks in QI team meetings; a complex one could require many months and iterative testing of design features before results become apparent.
Other: Cost	Not available.

QI Model: Reaching Every District (RED)

Element	Description of element as implemented in this model
1. Standard or reference point	USAID's IMMUNIZATIONbasics project collaborated with WHO Africa's Regional Office and UNICEF to help refine guidelines that describe the RED approach, which has a district-level systems-strengthening focus. RED's components are: 1) the planning and management of human and financial resources; 2) reaching the target populations by improving access to and the use of services through a mix of service delivery strategies; 3) linking services with the community by engaging it to ensure that health services meet its needs; 4) supportive supervision through regular, on-site teaching, feedback, and follow-up with health staff; and 5) the monitoring and use of data for action and for decision-making during review meetings (data tools are included for self-monitoring (e.g., charting of doses) and mapping the catchment population of each health facility).
2. Organization driver(s) to drive the design process and identify organizational support for it	Requires functional facility teams with a supportive supervisory system. Ideally, countries implementing RED will target pockets of the un-reached/ hard-to-reach and provide weaker-performing districts and facilities with extra support.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	Districts and facilities receive a series of tools to conduct an annual review of immunizations and develop costed micro-plans (e.g., supervisory visit plans, schedule of immunization days, plans for managing cold chain) that detail the human and financial resources needed to address local problems and improve and sustain high levels of immunization performance.
4. Development of specific aims/ health goals	National service delivery standards and indicators are adapted collaboratively by districts and health facilities to address a major health problem, in this case, a weak, national immunization program.
5. Identifying and selecting realistic, feasible interventions to address performance gaps	Supervisors help districts and facilities review access and utilization gaps in their catchment area and choose an appropriate mix of fixed, outreach, and mobile services as part of annual micro-planning. The fifth component (see Element 1) encourages the regular use of data to identify and develop locally appropriate solutions to performance problems and gaps (with particular focus on equity of services).
6. Implement selected interventions	Health staff is supported to implement agreed interventions through supportive supervision, regular on-site mentoring, tracking progress, documenting feedback, and collaborative problem solving. Use of peer motivators is also encouraged to reinforce learning and share what has worked in similar settings.
7. Monitoring and documentation of results	Monitoring activities and tools include: 1) tracking drop-out rates and progress against monthly and annual targets, 2) micro-plans, 3) checklists for self- assessment, and 4) discussion with supervisor. The processes of monitoring for action and supportive supervision allow districts and health facilities to: 1) collaboratively review their goals, 2) encourage the analysis and use of data at all levels for decision-making, 3) regularly monitor progress, and 4) encourage performance improvement throughout the year.
8. Community involvement: Extent and process of involving community	The third component (see Element 1) encourages districts and facilities to better collaborate and plan with communities to ensure that health services are meeting community needs.
9. Incentives and motivation	Monthly and annual district meetings and regular supportive supervision visits highlight facilities' performance records and encourage peer mentoring and

Element	Description of element as implemented in this model
	internal problem solving; self-assessment checklists help guide health providers to better understand how to make small, "do-able" improvements with support from their supervisors.
10. Plan scale-up of interventions	The RED model aims to revitalize and sustain management and delivery of immunization services in all districts and facilities, but ideally it also targets/ prioritizes and provides extra assistance to weaker-performing districts and facilities. The approach is also being expanded beyond immunization to other health care services.
11. Plan for ensuring sustainability once QI process has been initiated	Designed to be affordable to MOHs, the RED model has been introduced in Africa and elsewhere. Upon cessation of MOH support, districts are expected to use their own resources to continue micro-planning, supportive supervision, community work, and monitoring to plan future actions. Decentralized health systems have district-level resources for this purpose. Still, periodic reinforcement and revitalization efforts are required to sustain the five components. Also, the peer motivator aspect allows districts/facilities to see how others are making improvements with similar resources and constraints.
Other: Conditions under which this model could best be applied	Favorable conditions include: 1) the MOH is interested in improving the quality of a program or service that is already at scale (e.g., immunization); 2) health services are decentralized, ensuring some resources at the district level; 3) resources for at least two planning cycles are available to introduce the model and work with districts and facilities to adapt and use it; and 4) resources are available to mobilize state/provincial health teams to supervise districts and for district health teams to work with/ supervise health facilities.
Other: Level of effort/time	Ongoing effort is required, since this is a district system-strengthening approach. RED is intended to be flexible, with the country adapting the intensity of the 5-component structure based on local circumstances. Regular on-site mentoring, supportive supervision, monthly review, and use of data are key to maintaining gains. In Nigeria, a local government area was able to show improvements within 6 months.
Other: Cost	In Bauchi State, Nigeria, activities to operationalize all 5 components in a local government area (total population: ~ 250,000) cost about $17,000 over 9–12 months (excluding salaries of health staff). The costs included establishing a supportive supervision system, training/mentoring/follow-up, reproducing job aids, and establishing regular health facility links with communities.

QI Model: Standards-Based Management and Recognition (SBM-R)

Element	Description of element as implemented in this model
1. Standard or reference point	Explicit, detailed performance standards—defined in terms of inputs, processes, and outputs—are established at the beginning and included in the assessment tool.
2. Organization driver(s) to drive the design process and identify organizational support for it	Teams of front-line providers and managers in each service or unit compare their current performance to the standards to identify where they can improve their performance. Individuals can also use the standards to improve their performance.
3. Situation analysis to identify deficiencies and deviations between the health care standards and health care provider practices	SBM-R uses a combination of periodic internal and external assessments to verify compliance with the standards. These assessments are applied as part of the PDSA cycle. Assessment results are discussed by the teams to identify performance gaps and develop improvement plans.
4. Development of specific aims/ health goals	The model establishes specific aims/goals at the beginning of the process. The performance standards are developed for service delivery processes that are relevant to achieving desired goals (e.g., to reduce neonatal mortality).
5. Identifying and selecting realistic, feasible interventions to address performance gaps	After performance gaps are identified (see Element 3), their causes are grouped in three categories: 1) knowledge and skills, 2) resources, and 3) motivation. Feasible and specific interventions are developed to address the gaps and are included in an improvement plan with a time line and responsible staff designated.
6. Implement selected interventions	Teams implement interventions. Stakeholder involvement (including community participation), resource mobilization, and motivation (reward and recognition) of staff are key elements of implementation.
7. Monitoring and documentation of results	Routine monitoring of compliance with standards is conducted through the use of an assessment tool. Results are expressed in percentage terms. In a parallel fashion, selected indicators are tracked to verify progress.
8. Community involvement: Extent and process of involving community	SBM-R has been more focused on the health facility, but significant experiences of community involvement have been implemented in several places. In these situations organized community groups/representatives have participated in the development of the standards, the periodic assessments, support for improvements, and recognition activities.
9. Incentives and motivation	SBM-R uses a combination of three types of rewards for significant progress or satisfactory performance: feedback, social recognition, and material recognition. These rewards are provided to teams, facilities, and individual providers according to their performance in relation to the pre-determined standards.
10. Plan scale-up of interventions	The process is relatively simple and easily adopted by new facilities. Most SBM-R experiences have been conducted at a large scale (e.g., the national level).
11. Plan for ensuring sustainability once QI process has been initiated	The process is institutionalized through the normal supervision and monitoring systems of a country that has successfully implemented SBM-R.
Other: Conditions under which this model could best be applied	The process is particularly useful in settings with relatively low adoption and standardization of evidence-based best practices. Also, it is useful when new services are being introduced. In its most focused form (very few, targeted standards), it can be used to improve any specific aspect of service delivery.
Other: Level of effort/time	The initial phase (usually first year) normally requires significant levels of

Element	Description of element as implemented in this model
	facilitation (e.g., one coach per province). Over time the need for facilitation decreases.
Other: Cost	No cost studies available. Anecdotal information suggests that more than a third of improvements according to the standards can be implemented at no or low cost to the facilities.

USAID HEALTH CARE IMPROVEMENT PROJECT
University Research Co., LLC
7200 Wisconsin Avenue, Suite 600
Bethesda, MD 20814

Tel: (301) 654-8338
Fax: (301) 941-8427
www.hciproject.org