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TECHNICAL REPORT

Improving Maternal, Newborn, Child Health, and Family Planning Programs through the Application of Collaborative Improvement in Developing Countries:

A Practical Orientation Guide

MARCH 2012

This guide was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by Youssef Tawfik, Thada Bornstein, Lani Marquez, Jorge Hermida, Maina Boucar, and Katlyn Donohue of URC. It was developed under the USAID Health Care Improvement Project, which is made possible by the generous support of the American people through USAID.

Front cover:

Top: A coach working with a quality improvement team in Uganda. Photo by Annie Clark, URC.

Center: A member of a quality improvement team explains her team's results to other quality improvement teams in Afghanistan. Photo by Mirwais Rahimzai, URC.

Bottom: Hospital teams in the obstetric and newborn care complications collaborative discuss their results in a learning session in Huehuetenango, Guatemala. Photo by Mélida Chaguaceda, URC.

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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.

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Abbreviations

AMTSL	Active management of the third stage of labor
ANC	Antenatal care
EOC	Essential obstetric care
FP	Family planning
HCI	USAID Health Care Improvement Project
IHI	Institute for Healthcare Improvement
KMC	Kangaroo mother care
LBW	Low birth weight
MNCH	Maternal, newborn and child health
NGO	Non-governmental organization
PDSA	Plan-Do-Study-Act cycle
QI	Quality improvement
SC	Steering committee
TAG	Technical advisory group
URC	University Research Co., LLC
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

Modern quality improvement methods benefit from the value of teamwork, supportive coaching of teams, process analysis of services, and the use of data to monitor results and decision making. Based on these values, the collaborative improvement approach has taken these principals further by adding the features of multiple quality improvement teams working on the same objective, shared learning, friendly competition, and rapid scale-up of improvement. Collaborative improvement recognizes that team members who are providing a certain service bring valuable insights regarding the process of service delivery, and hence they are more likely to come up with innovative ideas to improve the process and the service outcome. When applied to the health field, the approach empowers health staff themselves to identify performance gaps, suggest and test ideas to improve results in a specific period of time, and share their experience and learn from others.

This guide provides an orientation to health professionals in developing countries who select to use the collaborative improvement approach to increase the effectiveness of health services such as maternal, newborn, child health, and family planning. The guide is not meant to summarize literature or assemble implementation tools. It is meant to provide practical guidance to potential users of the approach, particularly in the area of maternal, newborn, child health, and family planning, so that they can implement it successfully and measure its impact, with little or no external technical assistance.

Collaborative improvement is an organized network of a large number of sites (e.g., districts, facilities or communities) that work together for a specified period of time to rapidly achieve significant improvements in a focused topic through shared learning. Since several sites participate together in collaborative improvement, the results achieved in any of them are spread to the remainder in the same learning community. The participating sites re-organize their delivery systems to allow the effective implementation of changes that have been shown to be efficacious in order to improve a specific health service or outcome. Individual teams at different facilities rapidly test how to operationalize the implementation of changes, observe, and share their effect with other teams in the collaborative. Other teams also implement the changes in their own environment and observe effect. This process results in the identification of the specific changes to the process of health service delivery that yield the most desired improvement. Each team may adapt the changes to its local context for institutionalizing their implementation in its health facility or site to achieve lasting improvement. During the collaborative improvement, teams from different health facilities or sites come together in “Learning Sessions” to share their improvement ideas and results they have achieved. The intervals between Learning Sessions are known as “Action Periods” and are periods of intense activity as each team tests changes and measures results.

While the design of each collaborative improvement effort may vary depending on the unique aspects of the setting or the specific condition addressed, collaborative improvement efforts share some common essential components. Collaborative improvement uses the Model for Improvement which guides the improvement process through answering three fundamental questions:

- 1. What are we trying to accomplish?** To specify the aims (measurable objectives) of the improvement effort.
- 2. How will we know that a change results in an improvement?** To identify the outcome and/or process indicators that will be measured to monitor progress in achieving the overall collaborative improvement aim.
- 3. What changes can we make that will result in an improvement?** To discuss and identify the specific interventions that will be introduced and the change to the process or system to achieve better outcomes.

All improvements are the result of making change; however not all changes result in improvement. Therefore, changes and innovations generated by teams are tested using a change model. One change model that is commonly use is the Plan-Do-Study-Act cycle (PDSA) that includes four steps:

- **Plan:** Teams plan for a change or a test, and plan to collect baseline data.
- **Do:** Teams test the change (on a small scale first), and continue to collect data to measure the effect of the change.
- **Study:** Teams observe the results by comparing results with the baseline data and compare results with the desired targets. Analyze experience and lessons learned.
- **Act:** The teams act on what they learn from testing the changes:
 - If the change does not yield the desired results; modify the change and run other PDSA cycles, or abandon it.
 - If the change achieved the desired result, monitor the change over time and consider implementing the change at larger scale or throughout the system.

The collaborative improvement consists of three phases:

1. **Preparation phase:** Establish aim, indicators, change package to be tested, improvement collaborative structure, steering committee/technical advisory group, coaches, sites, quality improvement (QI) teams, and define roles and responsibilities.
2. **Implementation phase:** Conduct learning sessions and action periods to test changes and whether they yield improvement.
3. **Synthesis and spread planning phase:** Summarize results, synthesize lessons learned, prepare and plan for spread.

Collaborative improvement is usually managed by a few key people such as, a director, a coordinator, a quality improvement advisor, and content faculty of experts who are knowledgeable about the content of the technical area targeted for improvement. Coaches are selected and then trained to support and enhance the performance of quality improvement teams in participating collaborative sites (e.g. health facilities). The quality improvement teams lead the improvement process in their respective sites. However, in different locations the collaborative improvement management has been modified to fit the local situation.

Some collaboratives are supported by a steering committee or a technical advisory group that assures the involvement of the national stakeholder and the compliance with the overall national health policies and guidelines. In other instances, a technical advisory group or “expert committee” oversees the technical content. Involving a steering committee or a technical advisory group from the beginning assures that the results of the improvement will be endorsed by stakeholders at the national level and enhances the chances of obtaining approvals for spread.

Implementing collaborative improvement offers several great opportunities for capacity building of counterparts at national, regional, district, and sub-district levels on quality improvement and on the technical content of maternal, newborn, child health, and family planning programs. A successful quality improvement project should leave behind not only an improved service, but also a capable cadre who absorb the quality improvement concepts so that they can apply them on their own to address whatever health problem they may chose to address.

Steps to sustain the gains and institutionalize the successful changes tested by a collaborative improvement can include:

- Incorporate parts of the collaborative’s tested change package into national service delivery policies

and standards; build those aspects into pre-service training of health workers and in-service training of current staff.

- Incorporate quality indicators into routine monitoring and reporting systems; add quality monitoring to supervisory functions; build local capacity for quality improvement at the facility level, including developing permanent quality improvement function; strengthen facility and district capacity for coaching and monitoring of quality improvement activities.
- Use incentives to motivate health care providers apply quality improvement projects in their health facility.
- Foster the development of a permanent community of quality practice that may include the Ministry of Health, professional bodies, pre-service training institutions, regional and district health authorities, non-governmental organizations, facility managers, and practitioners.

I. INTRODUCTION

A new paradigm for improving quality of health care

The Institute of Medicine in the United States has proposed six principles for health care improvement (Institute of Medicine 2001):

- **Safety:** Health care should not harm patients.
- **Effectiveness:** Services should be based on scientific evidence and be shown to benefit those who receive them.
- **Patient-centered:** Care should be respectful of and responsive to individual patient preferences, needs, and values.
- **Timeliness:** Health care delivery should minimize patient waits and avoid harmful delays.
- **Efficiency:** Care should avoid waste.
- **Equity:** Care provided should not vary in quality because of patient gender, ethnicity, age, geographic location or socio-economic status.

While many different methodologies and approaches can be applied to improve health care, these six principles provide a useful focus to gauge how well any particular approach achieves real improvement in health care quality and outcomes.

The traditional approach to improving the quality of health care has been to develop and disseminate standards, conduct training, and introduce job aids, materials, equipment, supervision, and regulation, such as licensing and accreditation. Modern quality improvement methods added process analysis and change, monitoring of results data, and a focus on clients. Taken a step farther, collaborative improvement adds the features of team work and multiple improvement teams working on common objectives and peer-to-peer learning and support.

The fundamental concept of improvement is that improvement requires change. If a system is not changed, it can only be expected that the system will continue to achieve the same results. In the words of Paul Batalden, *“Every system is perfectly designed to achieve exactly the results that it achieves.”* Within this phrase is embedded the central idea underlying modern health care improvement: performance is a characteristic of a system. Therefore, in order to achieve a different level of performance, it is essential to make changes to that system in ways that permit it to produce better results. Poorly designed systems lend themselves to inefficiency and poor quality. Quality improvement approaches identify unnecessary, redundant, or missing parts of processes and attempt to improve results by clarifying, simplifying, modifying, or changing the procedures.

Quality improvement has been adopted and adapted by health care systems in many developed and developing countries. Improving quality entails examining processes in order to improve them. Modern quality improvement approaches are guided by principles of **teamwork, a focus on the client, changing systems and processes to yield improvement, and measurement of results.**

The focus on **teamwork** recognizes that team members bring valuable insights regarding the process to be improved because of their knowledge of and experience in it, and are more likely to come up with innovative ideas and solutions to improve the process and hence the service outcome.

Focus on the client emphasizes that services should be designed so as to meet the needs and expectations of clients and the community.

Changing systems and processes to yield improvement entails that providers must understand the service system and its key processes in order to improve them; resolving the problem of unclear,

redundant, or incomplete processes or systems is more practical than placing blame on individuals or lack of resources.

Measurement of results is important to monitor the effect of the introduced changes in the service processes. This is conducted by collecting data to analyze processes, identify problems, and measure outcome. Focusing on data collection and analysis promotes taking action based on facts rather than on assumptions. It is good to remember that one of the simplest definitions of quality, “Doing the right thing, right,” illustrates two major components of care: content (doing the right thing) and process (doing it right). Quality improvement uses various means to close the gap between the current and expected levels of quality; using management tools and principles to understand and address system deficiencies. Approaches to conducting quality improvement activities are numerous and vary from simple to complex. These approaches include individual problem solving, rapid team problem solving, systematic team problem solving, process improvement, and shared learning through collaborative improvement.

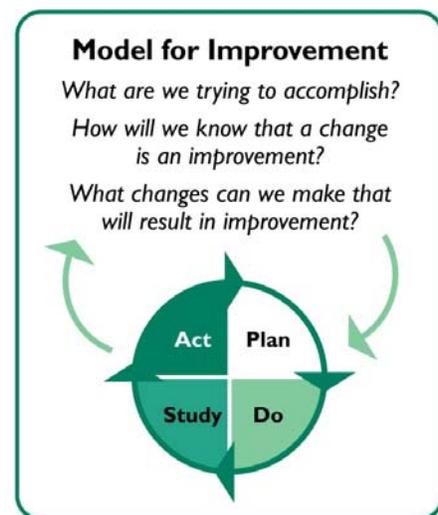
A change model is used to introduce modifications in health care processes. The *Model for Improvement*, shown in Figure 1, is one such change model (Langley et al. 2009). The model asks, “What are we trying to accomplish?” “How will we know that a change is an improvement?” and “What changes can we make that will result in improvement?” This is demonstrated by the Plan-Do-Study-Act cycle (PDSA) in which the change is tested to see whether it yields an improvement; the results are then used to decide whether to implement, modify, or abandon the proposed solution. If the tested solution does not achieve desired results, the solution can be modified and the PDSA cycle is repeated. If the results are achieved, the solution is implemented on a larger scale and monitored over time for continuous improvement. Quality improvement does not end with the last step; it is a continuous process.

Until recently, health systems in low and middle income countries did not have a robust approach to improving health care processes. Traditionally, the lack of resources is usually the first explanation offered for most performance deficiencies and the attention is usually put on how to increase resources to obtain better results. Unfortunately, this thinking path leads to missing important opportunities to improve performance by examining and changing the existing process of service delivery. Providing resources may lead to temporary improvement of outcome. However, changing the processes and systems of service delivery are likely to result in lasting improvements.

II. THE VALUE OF COLLABORATIVE IMPROVEMENT AS A QUALITY IMPROVEMENT APPROACH

Collaborative improvement is one of several quality improvement approaches. It empowers the health workers themselves to identify performance gaps, suggest and test ideas to improve results in a specific period of time, and share their experience and learn from other health workers. It integrates many of the basic elements of **traditional health programming** (standards, training, job aids, equipment, and supplies) **with modern QI elements** (teamwork, a focus on the client, changing systems and processes to yield improvement, and measurement of results) to create a dynamic learning system where teams from different sites collaborate to share and rapidly scale up changes for improving the quality and efficiency of health services in a **targeted health services area** (e.g., maternal and child health). 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. It was

Figure 1: Model for Improvement



first developed by the Institute for Healthcare Improvement (IHI) in 1995. Their new idea, called The Breakthrough Series, was to facilitate structured learning and sharing among the representatives of many organizations, alternating with periods of action when they would engage in implementing changes leading to dramatic improvements in care (IHI 2003). They enlisted experts in specific clinical areas and experts in quality improvement who could help organizations select, test, and implement changes in processes of care. The organizations committed to working over a period of months, alternating between “Learning Sessions” in which representatives from the participating organizations would meet to learn from experts and from each other and plan changes. Then they would return to their home organizations for an “Action Period” where they would test those changes in clinical settings.

Since the Breakthrough Series’ inception, IHI has supported thousands of teams in applying this methodology in the U.S and abroad. The USAID Health Care Improvement Project (HCI) is expanding the use of collaborative improvement and learning in low- and middle-income countries worldwide. University Research Co., LLC (URC) has pioneered the use of the approach in developing countries, having implemented over 80 collaboratives in 16 countries since 1998 (Franco et al. 2009).

Box 1 summarizes the conditions under which collaborative improvement may be a suitable strategy for organizing an improvement project. Collaborative improvement supports teams and provides them with a structure to communicate with and learn from each other with the goal that good ideas generated by one team can be rapidly spread to other teams. While the collaborative improvement approach also uses established quality improvement tools, it adds a new dimension – it harnesses the power of several teams, located in different health facilities, working to achieve the same improvement aim and sharing their results. When all the participating teams share their innovative solutions to improve quality of health services, each individual team does not have to rely only on itself to find possible solutions; instead all the teams share what they learn during their improvement efforts. This environment of collective learning creates a great opportunity for the spread of innovation among teams. The lessons learned by teams in initial improvement efforts can then be passed on to new teams working on the same health topic. Engaging QI teams in multiple sites, all working to achieve a common aim, and enabling them to share what they learned was found to raise health care quality across many sites and even at national scale (Catsambas et al. 2008).

Box 1: When is collaborative improvement a suitable approach to improving health care?

When...

- A significant gap exists between the current status and desired health outcomes and such gap is common to a large number of groups (facilities, communities, organizations);
- Evidence exists that certain organizations have achieved the improved outcome: i.e., what works to address the quality gap is known;
- It is possible, within available resources, for health workers to put the implementation package into practice, or when resources can be made available.

Recent examples of the value of collaborative improvement in maternal, newborn, child health, and family planning

HCI has applied modern QI approaches, particularly collaborative improvement, in maternal, newborn, child health, and family planning (MNCH/FP) programs across Africa, Asia, and Latin America. Illustrative cases of significant improvement achieved in a short period of time across the continuum of MNCH/FP care include:

- **Antenatal care (ANC):** In rural Kenya the approach led to increasing the early use of ANC services as well as the quality of services provided. In Afghanistan, the proportion of pregnant women who received two doses of the tetanus toxoid vaccine in the target provinces leaped from a baseline of zero to 53%.

- **Essential Obstetric Care:** The use of partograph increased substantially in Afghanistan and Guatemala and the application of active management of third stage of labor (**AMTSL**) in several countries including Niger, Mali, Afghanistan, and Ecuador increased substantially.
- **Essential Newborn Care:** In Uganda, the ability of the health facility staff to detect neonatal asphyxia and immediately apply resuscitation increased dramatically.
- **Infant and child care:** In Senegal and Honduras, applying the collaborative improvement led to substantial increase in the early detection and treatment of childhood illness.
- **Post-partum Family Planning:** In Mali, the approach applied to integrate family planning with postpartum care resulted in increasing the proportion of postpartum women who receive FP counseling from zero to 81%.

III. PURPOSE OF THE ORIENTATION GUIDE

This guide provides an orientation to health professionals in developing countries who select to use collaborative improvement to increase the effectiveness of health services such as MNCH/FP. The guide explains in a simple and practical way the structure, organization, steps and processes for designing, implementing, and measuring the impact of collaborative improvement. It uses experiences and lessons learned from applying the approach in several countries to improve the quality of MNCH/FP services.

Several publications are available online to give the reader more detail on collaborative improvement. Such resources include documents that describe its history, its application in developed and developing countries, quality improvement tools, and training on specific skills such as working in teams—such documents or websites are listed in the reference section. This guide is not meant to summarize that literature or assemble a collection of implementation tools. It is meant to provide practical guidance to potential users of collaborative improvement, particularly in MNCH/FP programs in developing countries.

A. Audience

The guide is intended for health professionals in developing countries who select to apply collaborative improvement to address a performance gap in any aspect of their MNCH/FP programs but have little or no experience in applying the approach. Its potential users may include:

- National health program managers
- Regional and district-level health teams
- Health facility staff
- Managers and staff of non-governmental organizations (NGO)
- Quality improvement individuals and organizations

B. How to use this orientation guide

This document is meant to orient the reader about what collaborative improvement is and what are its main structure and implementation steps. The guide is not meant to give prescriptive detailed step-by-step instructions for implementation. Users are encouraged to modify the approach to suit their specific needs. Most of the documents in the reference section are also available online with links from the online version of this document so that the reader can find more details on tools and examples of improvement collaborative implementation. The electronic version of this document is available on the HCI Project website at: <http://www.hciproject.org/node/3552>.

Although the examples used here are primarily focused on maternal, newborn, child health, and family planning topics, the guide can be used to orient health workers interested in applying collaborative improvement and learning in any area.

IV. WHAT IS COLLABORATIVE IMPROVEMENT?

Collaborative improvement is an organized network of a large number of sites (e.g., districts, facilities or communities) that work together for a specified period of time to rapidly achieve significant improvements in a focused topic through shared learning (USAID Health Care Improvement Project 2008). Since several sites participate together in collaborative improvement, the results achieved in any of them are spread to the remainder in the same learning community. The participating sites re-organize their delivery systems to allow the effective implementation of interventions that have been shown to be efficacious in order to improve a specific health service or outcome. Individual teams at different facilities rapidly test how to operationalize the interventions and share results to come up with the best changes and interventions to achieve the desired improvement. Each team may adapt the changes to its local context for institutionalizing their implementation in its health facility or site to achieve lasting improvement. During the collaborative, teams from different health facilities or sites come together in “Learning Sessions” to share their improvement ideas (interventions and changes to achieve the desired improvement) and results they have achieved. The intervals between Learning Sessions are known as “Action Periods” and are periods of intense activity as each team implements changes and measures results.

Collaborative improvement starts with a **desire to improve a specific result or solve a specific problem**. In the area of MNCH/FP, the collaborative improvement can be employed to increase the effectiveness of any service within the continuum of care. Table 1 summarizes the evidence-based interventions in the continuum of care for maternal, neonatal, and child health at the district level. This bird’s-eye view can assist in narrowing the focus when selecting a topic or aim for an improvement project. It is more effective to focus the improvement project on one set of aims or problems and complete the collaborative in a shorter period, before moving on to other problems.

Table 1: Summary of evidence-based interventions to reduce maternal, newborn, and child mortality by continuum of care and level of service

Community Level	Primary Health Care	District/Referral Hospital Care
<p>Antenatal Care:</p> <ul style="list-style-type: none"> • Birth preparedness • Tetanus toxoid vaccination • Intermittent prophylaxis for malaria <p>Safe Birth:</p> <ul style="list-style-type: none"> • Clean delivery • Referral <p>Post Partum/Post Natal Care:</p> <ul style="list-style-type: none"> • Umbilical cord care • Essential newborn care (thermal care, immediate breast feeding) • Referral • Family planning counseling <p>Infant and Child Care:</p> <ul style="list-style-type: none"> • Outreach vaccination • Integrated community case management of child illness (malaria, pneumonia, and diarrhea) • Insecticide-treated net distribution • Zinc supplementation 	<p>All community services plus:</p> <p>Antenatal Care:</p> <ul style="list-style-type: none"> • Detection and management of hypertensive disorders • Prevention of mother-to-child transmission of HIV <p>Safe Birth with Skilled Attendance:</p> <ul style="list-style-type: none"> • Partograph use • Infection prevention • Active management of the third Stage of labor • Newborn resuscitation for asphyxia • Referral <p>Post partum/Past Natal Care:</p> <ul style="list-style-type: none"> • Infection treatment • Family Planning services <p>Infant and Child Care:</p> <ul style="list-style-type: none"> • Vaccination • Integrated management of childhood illness 	<p>All primary health care plus:</p> <ul style="list-style-type: none"> • Emergency obstetric care including cesarean section • Managing newborn infection • Special care for low birth weight newborns • Management of severe child illness • Family planning services

Source: Adapted from World Health Organization (2005, 2011); Partnership for Maternal, Newborn & Child Health, 2011.

V. COMPONENTS OF COLLABORATIVE IMPROVEMENT

While the design of each collaborative improvement may vary depending on the unique aspects of the setting or the specific condition addressed, implementing the approach shares some common essential components. The collaborative improvement based on shared learning often uses the Model for Improvement which is the driving force that guides the development of the improvement project through answering three fundamental questions:

1. **What are we trying to accomplish?** This is to specify the aim (objective) of the improvement effort.
2. **How will we know that a change results in an improvement?** To identify the outcome and process indicators that will be measured to monitor overtime progress in achieving the overall improvement collaborative aim.
3. **What changes can we make that will result in an improvement?** This leads to discussion and identifications of the specific interventions that will be undertaken to change the system or services to the better.

A. What are we trying to accomplish?

The answer to this question will stimulate those who are developing the collaborative improvement intervention to describe the aim of the effort in specific terms. A description of the aim needs to include a **measurable, time-specific description** of the accomplishments expected to be made from improvement efforts and the specific target population that will benefit from the improvement (i.e., post-partum mothers, neonates, etc.) (Dick and Hildebeitel 2009). Boxes 2 and 3 provide examples of actual aim statements developed in Yemen and show the criteria used to make the statements specific.

Box 2: Yemen field example

Example from Yemen: Aim (Neonatal Care)

We will improve our neonatal care system by improving immediate care for neonates in selected maternities through teamwork and introduction of new practices such that within 12 months:

- 80% of newborns will have immediate breastfeeding
- Neonatal infection rate will be reduced to 5%
- 95% of low birth-weight (LBW) infants will receive Kangaroo Mother Care in the hospital nursery
- 100% of new mothers will receive Vitamin A before discharge
- 100% of post-partum mothers will be offered a family planning method before they leave the hospital

If baseline values are known, it is helpful to include them, e.g., reduce neonatal infection rate from 30% to 5%.

Box 3: Illustration of criteria to include in an aim

Accomplishments: Immediate breastfeeding, reduced infection rate, etc.

Measurable: 80%, 5%, 95%, etc.

Time-specific: 12 months

Specific population: Selected maternities

One would choose to launch an improvement effort when there is a significant gap between the current health system performance and the desired performance. The focus of a collaborative, and thus, its aim, may be to close a gap between providing services according to well established standards and the current practices. Usually the focus of a collaborative is selected by the persons who initiated the improvement work, such as policy makers, high level decision makers, health providers in a health facility.

B. How will we know that a change results in an improvement?

The answer to this fundamental question should lead to the development of **specific indicators** directly related to the overall collaborative aim that will reflect the progress of the program in achieving the specified aim. Another way of asking this question is, **What will we measure over time to let us know that we are progressing in achieving our aim?** This means that the sites participating in the collaborative will use **quantitative measures** to determine if a specific change is an improvement.

The indicators can be divided into three categories:

- **Outcome indicators:** Indicators that are related directly to the aim of the collaborative.
- **Process indicators:** Indicators that monitor change in the process of delivering services that will affect the service outcome.
- **Balancing indicators:** Indicators that will measure any possible unintended negative effect of the changes introduced to achieve the collaborative aim.

Box 4 provides an example of specific indicators developed in Kenya to measure achievement of an aim related to increasing antenatal care coverage.

Usually, the same set of indicators is measured across all participating collaborative improvement sites to help each site judge whether the changes they are testing are rendering the desired improvement. Each site gets a chance, during the Learning Sessions, to share their results with other sites. This shared learning among all participating sites helps to identify robust and effective changes that lead to the greatest improvement in outcome indicators.

Box 4: Kenya field example

Indicators Related to the Aim of Increasing Coverage of Antenatal Care in Rural Kenya

Improvement Aim: In 18 months, increase the coverage of four antenatal care (ANC) visits from 30% to 70% for all pregnant women in Kwale District, Kenya.

Example of Outcome Indicators:

% of pregnant women who receive four visits of ANC in Kwale District.

Example of Process Indicators:

% of pregnant women who are registered at the health facility before 16 weeks of pregnancy.

Number of ANC community outreach visits conducted by each health facility.

Number of community meetings held to advocate for the importance of ANC.

% of pregnant women who were satisfied with the services they received during their last ANC visit.

Example of Balancing Indicators:

Number of days where there was no curative health services at the health facility due to staff's involvement in ANC community outreach activities.

C. Who will measure the indicators and use the data?

The improvement process in each health facility (site) is managed by a QI team that is selected according to the nature of the improvement topic. The team might include representatives of the different professional functions who work in the processes that need to be improved in addition to patient representatives: midwives, nurses, doctors, and clients. Each QI team usually assigns a team member the task of collecting data needed to measure the selected indicators. The measured indicators will be examined and discussed by the QI team in each health facility to interpret the effect of the adopted changes in achieving, or not achieving, the desired improvement. The data are checked for accuracy by the QI coach, who provides overall technical support to the QI team.

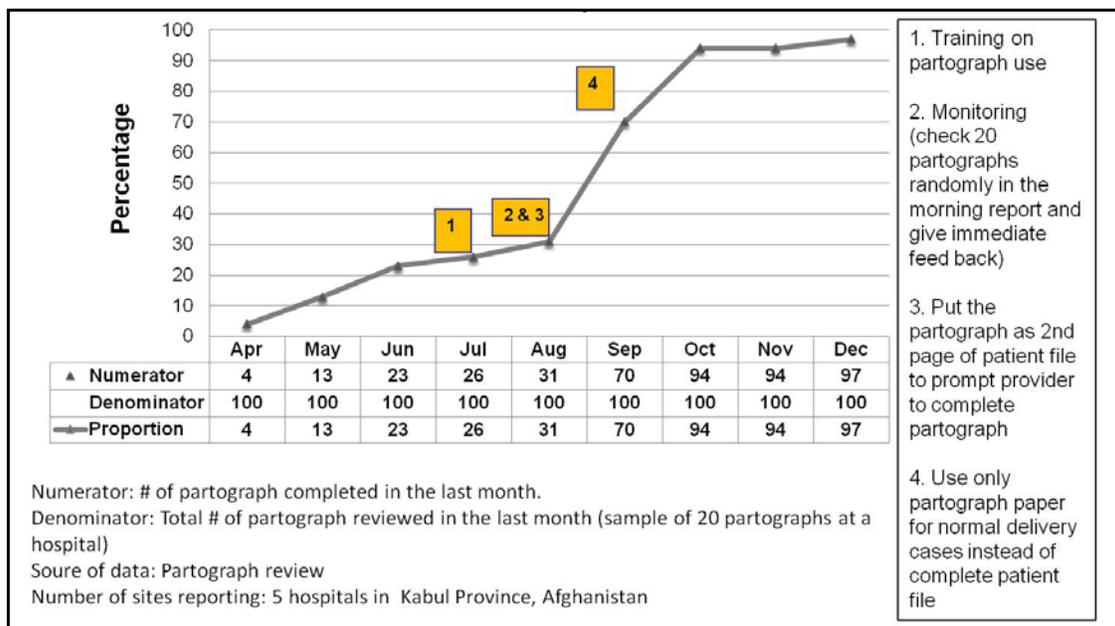
Coaches facilitate the aggregation of the measured indicators for all participating health facilities to assess the collective progress of all participating health facilities combined. Such aggregation is usually conducted by a Coordinator/ QI Advisor (see section VII). The aggregated data for all participating health sites provide an average. Such an average, if plotted on the same chart with results from individual sites, can allow each site to compare their performance against the rest of participating sites. This provides motivation to improve and creates opportunities for discussion and experience-sharing among high-performing and low-performing teams. It also provides valuable information for coaches so that they can determine where to intervene if an individual team in the collaborative is not showing progress.

Displaying results in time series charts

In order to be able to monitor progress, or lack of progress, over time, indicators are best displayed over time as **time series** or “**run charts**,” which is a display of the indicator level over time, usually every month. To tell the complete story, the time series should not only depict the graph showing whether the indicator went up or down. It should also include **annotations** pointing the time of main interventions that lead to the increase, or decrease, of the value of the indicator (Zeribi and Franco 2010).

Figure 2 shows the run chart used to monitor progress in institutionalizing the use of partograph in selected health facilities in Afghanistan. It includes the proportion of completed partographs over time as well as annotations indicating the timing of introducing main interventions.

Figure 2: Proportion of partographs completed, Kabul Maternity Hospitals, 2012 (vital signs at admission; cervical dilation, and fetal heart rate with a minimum of two plots recorded)

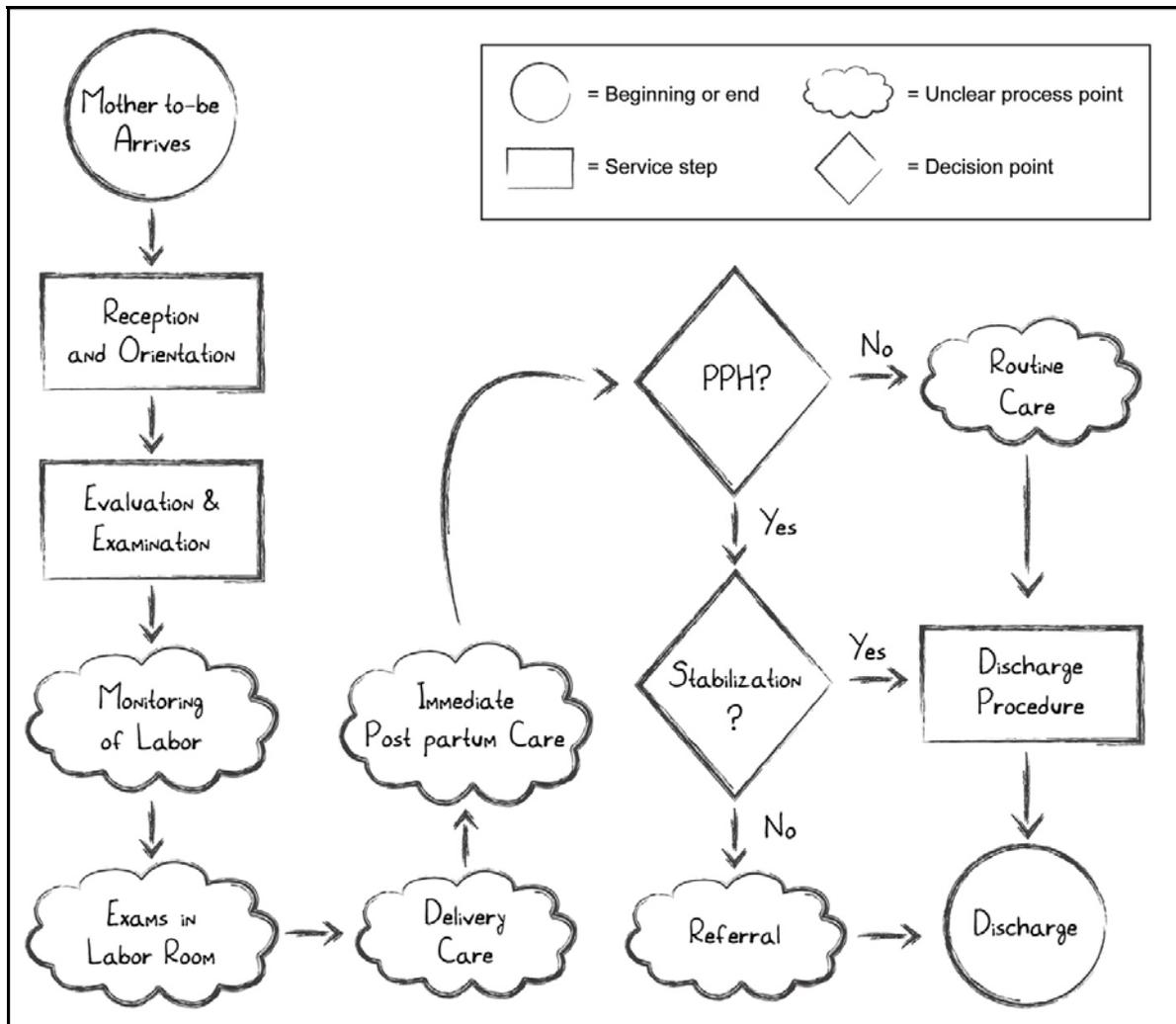


D. What changes can we make that will result in an improvement?

Answering this question will result in identifying the specific interventions or changes that will be tested to improve the selected indicators. These interventions are identified based on understanding and analysis of the **current service delivery process**. Based on analysis of the current process of providing services and gaps in service quality, the QI teams, with help of coaches, come up with a list of changes. This is where the creativity of the teams is crucial. For originating ideas to generate changes that result in improvement, teams use a variety of methods and tools to encourage creative thinking, such as “process mapping”, which includes a detailed description of the current steps of delivering a certain service, for example, from the point of patient’s entry in the clinic to the point the patient leaves

(see Figure 3). Brainstorming is another method of stimulating creativity, by exploring all possible solutions to a problem. Cause-and-effect analysis, sometimes displayed in the form of a “fishbone diagram,” helps QI teams identify possible causes and effects for the identified problem within a process by asking participants to list all of the possible causes and effects for the identified problem (Langley et al. 2009). Sometimes teams are exposed to ideas by attending Learning Sessions and other meetings; they may hear of them during visits from their coaches who learned about them from other teams. Often teams request the participation of patients and other providers who generate additional changes to be tested (Massoud et al. 2001).

Figure 3: Flowchart of delivery care at a health facility before improvement



E. Testing and modifying the changes: Plan-Do-Study-Act (PDSA) cycle

All improvements are the result of making change; **however not all changes result in improvement.** Therefore, changes and innovations generated by teams are tested using a method called the Plan-Do-Study-Act (PDSA) cycle, which includes four steps, described below and illustrated in Figure 4:

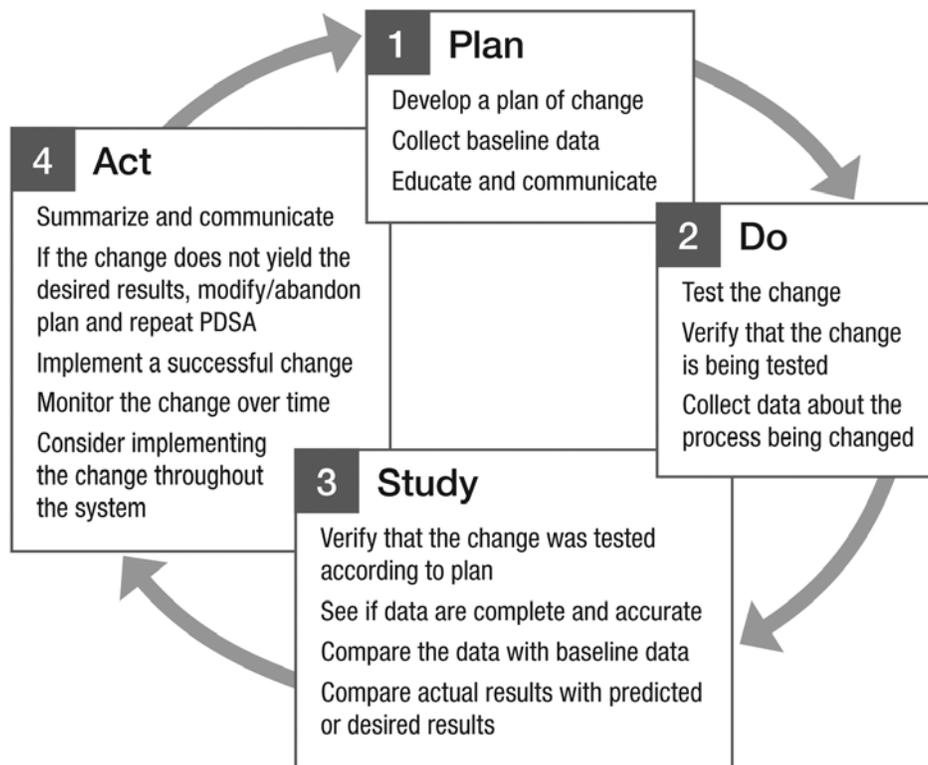
- **Plan:** Teams plan for a change or a test, and plan to collect baseline data.
- **Do:** Teams test the change (on a small scale first), and continue to collect data.
- **Study:** Teams observe the results by comparing results with the baseline data and compare results

with the desired targets. Analyze experience and lessons learned.

- **Act:** The teams act on what they learn from testing the changes:
 - If the change does not yield the desired results; modify it and run other PDSA cycles, or abandon it.
 - If the change achieved the desired result, monitor the change over time and consider implementing the change at larger scale or throughout the system.

After experiencing success with a small scale, and perhaps refining the change to get a better result, the team can implement it on a larger scale and share it with the other teams. Later, the useful changes generated by the collaborative teams are spread to other sites, or even throughout the system.

Figure 4: Detailed Plan-Do-Study-Act cycle



VI. WHAT ARE THE PHASES IN CONDUCTING COLLABORATIVE IMPROVEMENT?

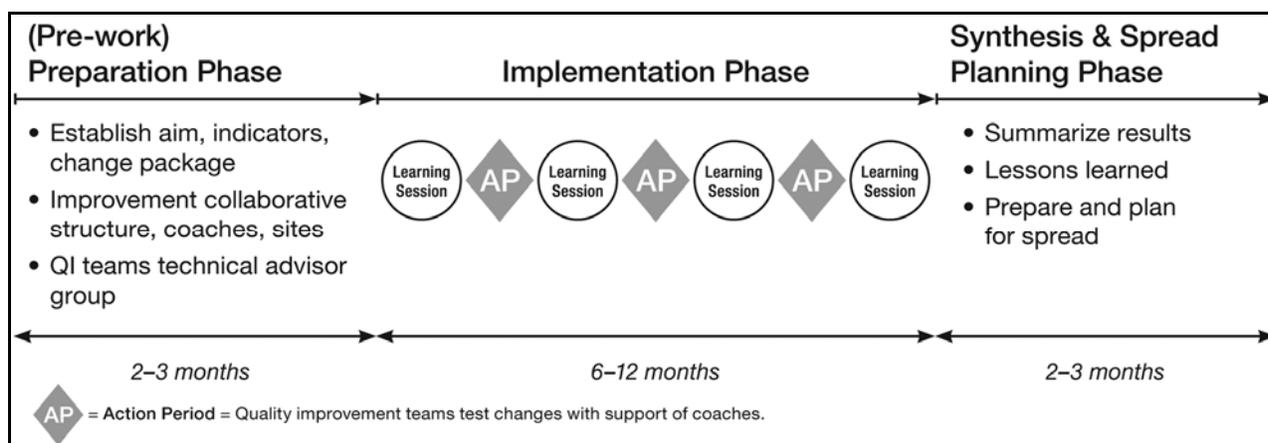
An improvement collaborative has three phases (see Figure 5):

I. Preparation Phase

The preparation phase, or pre-work phase, may last for 2-3 months. It includes:

- Engaging key stakeholders in outlining and defining the collaborative focus and develop the specific aim and general processes to achieve outcomes; develop indicators and initial change package; establish a steering committee and/or a technical advisory group to support the overall development and progress of the collaborative and to provide input in the selected technical content.
- Identification of potential coaches and building their quality improvement and technical skills, team dynamics, and monitoring skills. Assigning each coach to specific QI teams to adequately and effectively support them.

Figure 5: Collaborative improvement process



Preparation phase: Establish aim, indicators, change package to be tested, improvement collaborative structure, steering committee/technical advisory group, coaches, sites, QI teams, and define roles and responsibilities.

Implementation phase: Conduct learning sessions and action periods to test the change package.

Synthesis and initiating spread phase: Summarize results, lessons learned, prepare and plan for spread.

- Selecting and orienting collaborative improvement sites and QI teams.
- Developing or adapting tools for QI teams and coaches, such as training plans and materials for quality improvement training, monitoring (data collection forms, forms for data compilation and analysis, monitoring manual, data storage, mechanisms for routinely validating data, and job aids).
- Planning for the implementation phase including the logistics, the content, and roles and responsibilities for conducting learning sessions.

2. Implementation Phase

The implementation phase usually takes 6-12 months. It includes:

- Conducting of supportive coaching visits to each QI team
- QI teams working with other members within their site (e.g., health facility) and outside their site (e.g., community, district health team) to test elements of the change package.
- Conducting learning sessions, usually three to five in all, to give opportunities to each team to share their experience and results of testing the change package, learn from other teams, and reinforce or refresh its technical, clinical, or quality improvement skills.
- Conducting action periods between the learning sessions during which teams at each site test changes, collect data, measure indicators, and interpret results.

3. Synthesis and Spread Planning Phase

This phase usually takes 2–3 months and it includes:

- Conducting a synthesis “harvest” meeting to summarize the content and the results of the change package. Dissemination of the results and lessons learned to wider audiences. As a result, an improved change package may be produced.
- Organizing a conference involving key stakeholders, including new sites that will be targeted for spread, to present and discuss results of the demonstration collaborative.
- Preparation for spreading (scaling up) the improvement to other sites.
- Developing a work plan for spreading the changes demonstrated by the collaborative to other sites, or throughout the system.

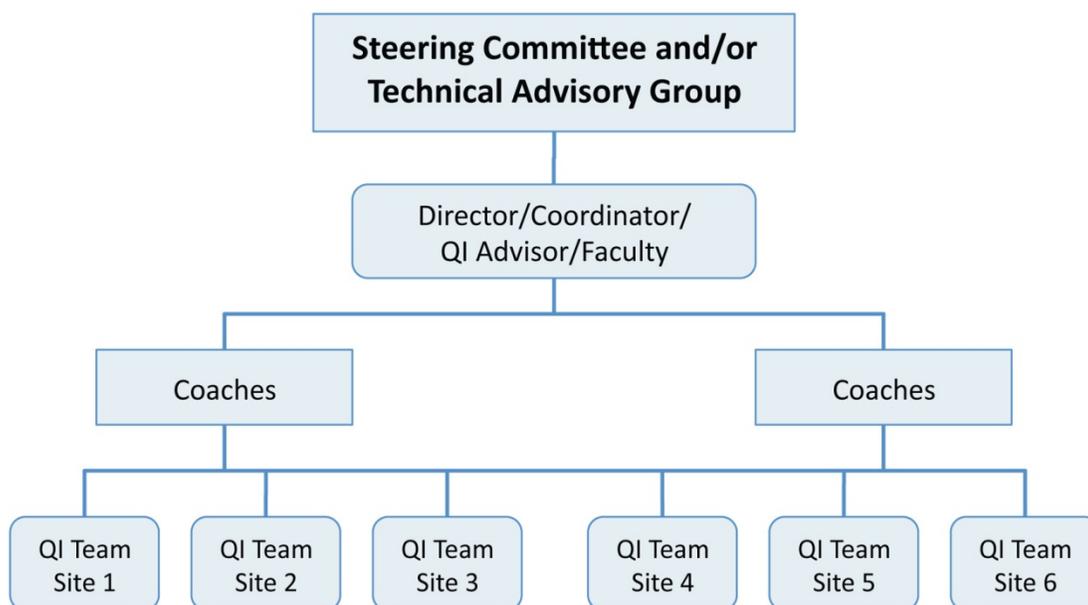
VII. HOW IS COLLABORATIVE IMPROVEMENT MANAGED AND SUPPORTED?

The collaborative is usually managed by a few key people such as, **a director, a coordinator, and/or a QI advisor/content faculty** who support the process of quality improvement. **Coaches** are selected and then trained in QI and skills that will enable them to support and enhance the performance of QI teams. The QI teams lead the quality improvement process in their respective sites.

Some collaboratives are supported by a Steering Committee (SC) or Technical Advisory Group (TAG) that can assist in a variety of ways. In improvement programs that address MNCH, the SC or TAG provides approval to the content of the MNCH best practices or standards that guide the development of the collaborative's aim and indicators. They assure that the collaborative is implemented with full support of national stakeholders and in compliance with national health policies and guidelines. In addition, involving a Steering Committee or a TAG from the beginning assures that the results of the collaborative will be endorsed by stakeholders at the national level and enhances the chances of obtaining approval for spread.

Figure 6 gives an illustrative example of an improvement collaborative management structure.

Figure 6: Steering committee flowchart



A. Summary of key structures and roles

Steering Committee

Provides overall political support to the collaborative improvement; assures that the collaborative is implemented within the national health policies and guidelines; reviews and approves overall collaborative design (aim, indicators, change package, sites); and review results, lessons learned, and plan for scaling up.

Technical Advisory Group (Expert Committee)

Provides overall technical guidance on the content of the collaborative improvement; provides technical expertise, as needed, to train health staff in implementing standards/best practices related to the

collaborative's selected topics; and reviews results of the improvement collaborative and review plans for scaling up successful interventions.

Director/Coordinator/ Quality Improvement Advisor

Provides day-to-day management of the collaborative activities; coordinates activities with Ministry of Health at national, regional, district, and sub-district levels; leads operational planning of the collaborative, oversight, and implementation; and coordinates the task of selecting and preparing coaches, selecting and orienting sites, the selection of QI teams, and the implementation of the collaborative.

Coaches

In the context of QI, a coach is a mentor who supports QI teams. A coach may be someone from a district or regional health management team, such as a district health officer, senior district level health staff, an active and interested health staff member in a health facility, or an NGO staff member. Persons selected to be coaches should be “champions” for quality improvement and knowledgeable (or trained) in quality improvement and coaching skills.

Coaches support the QI teams in the technical content of the collaborative and in the quality improvement process to assure adequate testing of selected interventions/changes. For example, coaches provide access to an expert who can train health staff on the implementation best practices related to the selected topic of the collaborative (e.g., essential newborn care, AMTSL), data collection and analysis skills, and how to work in teams. They help the QI teams use appropriate tools and procedures to solve problems by themselves (e.g., process mapping or cause-and-effect analysis).

Coaches help QI teams conduct effective meetings, include other staff members as needed, and communicate results to other health staff within their site or communicate results to other QI teams. In addition, coaches check teams' data for accuracy.

B. What is a site?

A site is the individual unit that is testing the improvement intervention/change. Most frequently these are **health care facilities** at any level of an organization where the improvement efforts are focused—primary, first referral, and secondary or tertiary levels.

A community can also be a “site” in collaborative improvement. Usually QI teams working at the community level include a staff member from the nearest health facility.

C. What are the considerations for selecting sites?

Collaborative improvement sites, e.g., health facilities, are selected depending on the chosen scope of the collaborative and the specific health services to be improved. For example, primary health care facilities can be the sites for a collaborative addressing the integrated management of child illness, while district hospitals can be the sites of a collaborative aiming to improve the outcome of cesarean section. A collaborative improvement effort may include public, private, or NGO facilities.

Other considerations for selecting sites include health statistics (facilities with the most cases or highest need); or, where senior and local managers are supportive. If working at the community level, choose places where community leadership is strong.

D. What is a QI team and what does it do?

A QI team is comprised of individuals within each site who lead the quality improvement process and collect data to monitor results. In the MNCH context, QI teams include health workers and staff from the health facility included in the collaborative. The team meets on a regular basis to plan and implement the testing of the particular change in the process of delivering services that is hoped to achieve a

desired improvement. The QI team can involve other staff members of the health facility, patients or district level officials, as needed, to get ideas about the causes for a particular problem and possible solutions. QI teams collect data to measure the previously selected indicators. Each QI team tracks the same indicators regularly to show how effective their improvements are. QI teams run PDSA cycles and keep track of all innovations tested and the results of such testing.

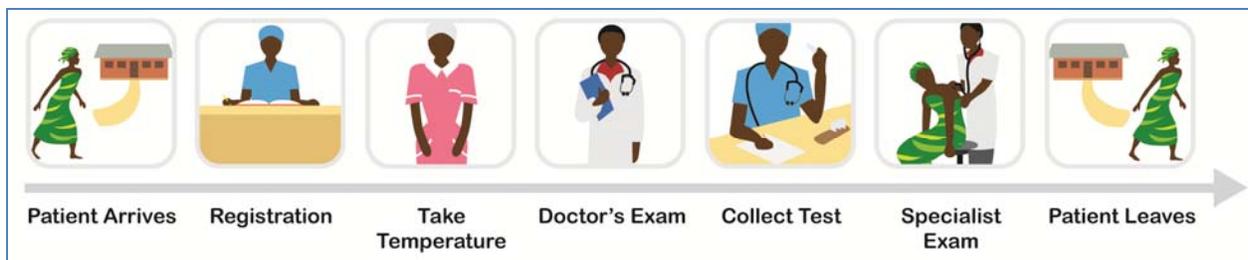
A guide developed by HCI’s predecessor, the Quality Assurance Project, provides more information on training teams in collaborative improvement (Quality Assurance Project 2008).

E. Who should be a member of the QI team? Who selects the QI team?

The QI team is usually selected by the **director of the site** with input from the coaches. The QI team is composed of representatives of staff or other persons involved in, and knowledgeable about, whatever process is being improved, such as a simple process as depicted in Figure 7. For example, when the topic is maternal care, the team may include a doctor, a midwife, a nurse, a receptionist, perhaps a traditional birth attendant, and any other staff that are involved in maternity care at that site. Teams often include a patient or client as they offer a unique perspective. Teams that have included patients have generally made better improvement than those who did not. The patient may attend only selected meetings where their input is required.

In some places, there are QI teams whose members are drawn from community groups such as health committees, women’s groups, religious groups, etc., and may include one or more community health workers and a health worker representative from a nearby facility. In other countries, such as those in Latin America, “parish teams” have included professionals from the health center as well as community health workers from the surrounding communities. Box 5 provides an example of QI team composition from Nicaragua.

Figure 7: Identifying who is involved in service process steps



Box 5: Nicaragua field example

Team Composition in an Improvement Collaborative in Nicaragua Addressing Essential Obstetric Care (EOC)	
<p>At a district hospital level: QI teams were composed of one OB/GYN, a general practitioner, and a nurse. The hospitals used a preexisting hospital quality committee, composed of the hospital director, the OB/GYN and nursing in-charge, to review the progress of its QI team and support them.</p>	<p>At health centers: QI teams were composed of physicians and nurses working in EOC, usually including the health center director, a health educator, an epidemiologist, a community volunteer, and the municipal “Integrated Women’s Health” coordinator.</p>

F. What is a “change”?

A change is the innovation to modify the current steps or processes of providing specific health services to assure that the evidence-based interventions are offered for every patient/client. For example, in Mali, to assure that the active management of the third stage of labor (AMTSL) is offered to every woman having vaginal delivery, a change package was introduced including: assuring the availability of

uterotonic at the delivery room, training health center midwives/nurses, and introducing a stamp with a checklist of all three steps of applying effective AMTSL so none is forgotten.

The change package may consist of changes to the system, changes to processes, or new skills for service providers. The changes can include policy and process changes. For example, in Yemen, to promote both breast feeding and kangaroo mother care (KMC) for low birth weight babies, in addition to training staff in the new skills, the team came up with adding a quiet, private room near the nursery with comfortable rocking chairs. Table 2 provides examples of change concept and specific changes tested in MNCH collaboratives supported by HCI.

The idea for a change may come from different sources such as: Discussions with health staff who are experienced in the targeted service to be improved; analysis of the services to be improved through “process mapping”; analysis of barriers to delivering an effective service through “cause-and-effect analysis”; or brainstorming ideas generated by QI teams.

Table 2: Examples of change concepts tested in MNCH

MNCH Area	Change concept	Specific Change	Setting
Antenatal Care (ANC)	<ul style="list-style-type: none"> Utilization of ANC will increase if ANC is provided in outreach services. 	<ul style="list-style-type: none"> Provide local transportation for health facility nurse to conduct monthly ANC outreach visits. 	Rural Kenya
Childbirth	<ul style="list-style-type: none"> The uptake of AMTSL will increase if oxytocin is made available and ready to use at the delivery room. 	<ul style="list-style-type: none"> Assure the availability of a small cooler including ready to inject oxytocin at the delivery room. A stamp at every delivery room including a reminder/checklist of the three steps of performing AMTSL. 	Mali, Uganda, Niger, Ecuador and Afghanistan
Essential Newborn Care	<ul style="list-style-type: none"> Improving the availability of essential resuscitation materials at the delivery room combined with increasing resuscitation skills of maternity staff will lead to increasing resuscitation of asphyxiated newborns. 	<ul style="list-style-type: none"> Provide a locally made resuscitation table in every delivery room Provide an aspirator and a resuscitation bag and mask to every delivery room Provide every facility with a locally made training model for practicing immediate newborn care steps 	Benin, Mali, Uganda, Guatemala, Nicaragua, Honduras, El Salvador
Child Survival	<ul style="list-style-type: none"> Engaging communities in child health will lead to detecting and initiating treatment of sick children. 	<ul style="list-style-type: none"> Organize community teams to provide community case management of child illness Provide community teams with essential drugs for the treatment of childhood malaria, pneumonia and diarrhea 	Rural Senegal
Family Planning	<ul style="list-style-type: none"> Increase competency in FP counseling in addition to assuring privacy of counseling at maternities will lead to increase in the use of post partum FP. 	<ul style="list-style-type: none"> Arrange a private room for family planning counseling at post partum care units Train maternal health staff on effective family planning counseling and provide them with job aids. 	Afghanistan and Mali with high unmet demand for postpartum family planning

G. What is a learning session?

A learning session is a meeting, usually lasting two to three days, that brings together representatives of the QI teams, along with their coaches and other stakeholders, to learn new clinical and improvement

skills, share the results of testing the changes with one another, and plan for their upcoming Action Period.

The sessions are usually organized by the collaborative director, coordinator, or QI advisor. The agenda revolves around sharing experiences in testing changes and learning from each other in the process. The collaborative director/coordinator/QI advisor facilitates the discussion, provides additional knowledge needed, and assures the participation of all QI teams to enhance the sharing and learning taking place. Teams have the opportunity to ask questions and learn about how they can apply the best practices presented by any of the other QI teams in their own site. Box 6 provides an example of a learning session agenda.

Box 6: Illustrative learning session agenda

The agenda is prepared by the coordinator with input from the coaches. It usually includes the following;

1. A technical component—either new skills and knowledge, an update, or a review if teams are having trouble with the topic;
2. QI skills such as measuring indicators and plotting them on a run chart.
3. An interpersonal skill session such as decision-making or how to conduct an effective meeting;
4. time for teams to present results and share problems and successes with each other; and
5. Time for teams to write their action plan for the coming action period.

The agenda allows enough time for representatives of different teams to interact with each other, which contributes to exchanging ideas and spread of best practices.

The first learning session is usually different from the ones that follow. Typically the first learning session seeks to orient site teams to the overall aims of the improvement project and teach them how to analyze the current system and collect baseline data to carry out during the first action period. For **subsequent learning sessions**, the emphasis is on discussing changes to test and sharing experiences and learning across teams. The collaborative director may include some training on topics that the QI teams may require or need or include refresher training on clinical skills but only as needed.

Content experts or “faculty” may also be available to provide specific expertise. They can be drawn from the Steering Committee, Technical Advisory Group, specialists, etc.

Usually two to three representatives from each QI team attend the learning sessions, although this can vary. Some teams send one person to attend two sessions in a row for continuity and then allow someone else to attend the next time, thus giving the opportunity for everyone to attend at least one learning session.

H. What are action periods?

Action periods are space of time, usually one-to three-month periods, between learning sessions when the QI teams prepare for and test the change in their health facility and document results. QI teams generally meet one or more times per month, as needed, to track their progress and review data quality and results. During each action period, the QI teams should get at least one visit from their coach.

I. When do learning sessions and action periods end?

Learning sessions and action periods end when the management team determines that the aim of the improvement has been achieved. It usually takes three to five learning sessions to achieve the collaborative improvement aim.

VIII. SUSTAINING THE GAINS ACHIEVED THROUGH COLLABORATIVE IMPROVEMENT

A. Building capacity to continue to improve care

Implementing collaborative improvement offers several great opportunities to sensitize, orient, and train counterparts at national, regional, district, and sub-district levels on quality improvement. A successful quality improvement project should leave behind not only an **improved service, but also a capable cadre who absorb the quality improvement concepts and the processes** so that they can apply them on their own to address whatever health problem they may chose to address. Opportunities for capacity building offered by collaborative improvement include:

- **National level:** Orientation and sensitization on general concepts of quality improvement through interaction with the Steering Committee or the Technical Advisory Group.
- **Regional/district level:** Orientation and sensitization on general concepts of quality improvements, how to design a quality improvement program, measure results, and prepare for spread. This is achieved through numerous interactions with regional and district health teams during the preparation and the implementation of collaborative improvement.
- **Health facility level:** Orientation to general concepts of quality improvement, setting specific objectives, selecting and measuring indicators, data analysis and interpretation, running effective meetings, involving the community, involving district level and national staff as needed, and addressing health system issues to improve service quality. This is achieved through several interaction opportunities with the sites and QI teams during the preparation, learning sessions, action periods, and synthesis steps of any collaborative improvement project.
- **Community level:** Several collaborative improvement efforts implemented in the context of MNCH in developing countries include the participation of communities to increase the effectiveness and coverage of a particular health service (e.g., antenatal care, child immunization). Interaction with community offers the opportunity to transfer some of the quality improvement concepts and skills to community health groups, such as women groups, NGOs, or faith-based organizations.

B. Coordinating with national policy makers and programs

Involving national policy makers and managers from the beginning of the improvement effort is essential to prepare for scaling up and adoption at a large scale. This is an important step toward sustaining the gains and institutionalizing the successful changes tested by collaborative improvement. Such involvement of policy makers can facilitate the following:

- Incorporating parts of the tested change package into national service delivery policies and standards; build those aspects into pre-service training of health workers and in-service training of current staff.
- Incorporating quality indicators into routine monitoring and reporting systems; add quality monitoring to supervisory functions; build local capacity for quality improvement at the facility level, including developing permanent quality improvement function; strengthen facility and district capacity for coaching and monitoring of quality improvement activities. .
- Fostering the development of a permanent community of quality practice that may include the Ministry of Health, professional bodies, pre-service training institutions, regional and district health authorities, NGOs, facility managers, and practitioners.
- Establishing a mechanism for motivating health care providers or facilities that achieve significant quality improvement of services.

IX. OPTIONS FOR SPREAD OF HIGH-IMPACT CHANGES AND INTERVENTIONS

The spread of successful changes/interventions tested during a collaborative may take place through different approaches that include (Massoud et al. 2010):

1. **Natural diffusion:** the adoption of the change package by other health facilities in the absence of a formal dissemination effort. Simply, staff in other facilities see the impressive results obtained by the adopted changes so they decide to implement the changes in their own health facility;
2. **Executive mandate:** instructions from high management to other health facilities/sites to endorse the changes tested in the collaborative.
3. **Extension agents:** health care providers, managers, or community leaders decide to spread the tested best practices to other sites.
4. **Conference or meetings:** to disseminate the successful results to representatives of a larger group of health facilities
5. **Spread in “Slices” or “Wave Sequence”:** demonstrate success in one “slice” or “wave” of a district/region and spread to other slices within the district/region or to new districts/regions. Often a collaborative addresses the continuity of a particular health services from primary care, health centers, and district/regional hospitals. Hence, the collaborative starts in a “slice” or a “wave” of the system e.g., several primary care sites, some health centers, and the district/regional hospital. When spread phase begins, new “slices”/“waves” including new health facilities in the district are included.

A. Costing of an improvement effort

When planning for a collaborative the following items or factors should be considered in budgeting for the improvement effort:

- Training cost for coaches and other staff training
- Planning and management meetings
- Transport for coaching visits
- Learning Sessions: transport, venue, accommodation, refreshments, stationery and photocopying

Costs will vary based upon country or region, but Table 3 provides an illustrative budget for a demonstration collaborative implemented in one health district.

Table 3: Illustrative list of main inputs by collaborative improvement phase

Main Input by Collaborative Phase	Considerations in estimating cost
Preparation Phase	
<ul style="list-style-type: none"> • Orientation meeting with stakeholders 	Usually lasts for one day. Cost will depend on the number of participants and the cost of their transportation
<ul style="list-style-type: none"> • Orientation/training of coaches 	Cost will depend on the number of days and number of participants. Lodging for participants may be needed.
<ul style="list-style-type: none"> • Coaches visits to sites 	Cost is calculated based on the number of sites and cost of transportation
<ul style="list-style-type: none"> • Planning meeting 	Cost will depend on number of participants and cost of transportation for participants coming from locations far from the meeting site.
<ul style="list-style-type: none"> • Steering Committee/TAG meeting 	Usually held at the capital city. Cost will depend on number of participants and cost of transportation, if any, to some participants coming from outside the meeting's location.
Implementation Phase	
<ul style="list-style-type: none"> • Learning sessions 	Cost will depend on the number of learning sessions and the number of participants in each session. Lodging could be needed if the learning session is more than one day or if participants coming from a distant location.
<ul style="list-style-type: none"> • Coaches visits to QI teams 	Cost will depend on number of visits and number of QI teams (sites)
<ul style="list-style-type: none"> • Support to testing change package 	Sometimes minor cost is needed to introduce a change such as: curtains to create a private space, plastic cooler to put medicine, locally made resuscitation table, etc.
Synthesis and Spread Planning Phase	
<ul style="list-style-type: none"> • Meeting to plan spread 	Cost will depend on location and number of participants. The meeting is usually conducted in one day.

X. GLOSSARY OF TERMS

Action period	The time between learning sessions when teams prepare for and test change in their health facility/site and document results, with support from coaches.
Best practices	A clinical or operational way of doing things (e.g., models of care, organizational arrangements, practices, use of tools or materials,) for which there is proven evidence of good results.
Change concept	The innovation or the idea that is introduced to the process of service provision to increase health outcome
Change package	This usually refers to the change concept, the specific changes to the service delivery process, and the system for measuring the results.
Coach	A person who is trained and equipped to mentor quality improvement teams.
Collaborative improvement	A short- to medium-term (12- to 24-month) initiative that organizes teams of providers or community members to work together to achieve shared aims to communicate with each other on a regular basis.
Learning session	A meeting that brings together representative of QI teams to learn new clinical and improvement skills, share results and experience with one another, and plan for the coming action period
PDSA Cycle	A method used to test changes to see if they have the desired effect.
Quality improvement	A continuous process of measuring a performance gap, understanding the causes of the gap, testing, planning, and implementing changes to close the gap.
Quality improvement teams	Individuals within each health facility/site who lead the process of quality improvement.
Quality indicators	Agreed-upon process or outcome measures that are used to determine the level of improvement; a measurable variable (or characteristic), usually expressed as numbers (counts), averages, and ratios (proportion or rate). (Numerator /denominator)
Slice of the system	A section of a District or a Region that includes a community, a number of health facilities, and the District and/or Regional hospital
Spread (or scale-up)	The intentional and methodical expansion of the number and type of people, facilities, or organizations who use the improvements and change package.
Stakeholder	One who has a share or an interest in the improvement process or outcome
Site	The individual unit that is testing the improvement change/ intervention, e.g. a health facility or a hospital.
Time series chart/ run chart	A method to display a measure or an indicator over time including annotations to explain timing of introducing a change.
Wave	A different cohort of teams in a collaborative that started at a different time from other teams and may have joined, but not necessarily, during a spread or scale up phase.

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