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The Improvement Collaborative: An Approach to Rapidly Improve Health Care and Scale Up Quality Services

JUNE 2008

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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

AIDS	Acquired immunodeficiency syndrome
AMTSL	Active management of the third stage of labor
BTS	Breakthrough Series
COPE	Client-oriented, provider-efficient
CQI	Continuous quality improvement
EONC	Essential obstetric and newborn care
HCI	Health Care Improvement
HIV/AIDS	Human immunodeficiency virus/acquired immunodeficiency syndrome
IHI	Institute for Healthcare Improvement
NGO	Nongovernmental organization
PDSA	Plan, do, study, act
QAP	Quality Assurance Project
QI	Quality improvement
TQM	Total quality management
URC	University Research Co., LLC
US	United States
USAID	United States Agency for International Development

The Improvement Collaborative: An Approach to Rapidly Improve Quality and Scale Up Best Practices

1 Introduction

1.1 The Case for Quality and Quality Improvement in Health Care

Quality health care can be defined as accessible care that is delivered in compliance with evidence-based standards and that addresses clients' needs. High quality care is a function of the health system's ability to assure a continuum of care that addresses clients' needs in an effective, responsive, and respectful manner. Underlying most definitions of health care quality are standards: explicit statements of how a health care activity should be performed in order to produce the desired outcomes (Ashton 2001). Standards are based on formal evidence that links specific care content or processes to a desired outcome. Performance according to standards is crucial for quality care because it is associated with improved health outcomes (Walker, Ashley, and Hayes 1988; Grimshaw and Russell 1993). Standards thus define for both health workers and clients alike what constitutes quality care.

Evidence-based standards and guidelines already exist or are rapidly emerging for most of the world's health priorities, particularly those embodied in the Millennium Development Goals. Yet, evidence from countries around the world suggests that the health care provided for much of the world's population is of very poor quality and does not meet evidence-based standards. Studies show that providers routinely comply with only a small proportion of guidelines, even after standards-based training (Nicholas, Heiby, and Hatzell 1991; Rowe at el. 2000; Rowe et al. 2001; Nolan et al. 2001; Harvey et al. 2004; Boonstra, Lindbaek, and Ngome 2005, Burkhalter et al. 2006; Osterholt et al. 2006; Edson, Burkhalter, and McCaw-Binns 2007).

For example, a low-cost evidence-based package of three simple steps known as active management of the third stage of labor (AMTSL) has been shown to reduce postpartum hemorrhage, the leading cause of maternal mortality worldwide, by over 50% (Prendiville et al. 1988). Yet AMTSL is unavailable in many settings, and where it is "available," quality problems limit its effectiveness. Improving quality for more complex health care problems, such as acquired immunodeficiency syndrome (AIDS), poses much greater challenges.

Many factors contribute to poor quality care: lack of necessary supplies or equipment, lack of awareness of standards, low provider competence, poor organization of care, and lack of motivation or rewards for quality (Marquez 2001). Inefficient organization of care is common in many settings, resulting in poor health care quality and waste. Culturally inappropriate care or poor interpersonal treatment also contributes to poor quality care and negatively affects acceptance and utilization of health services, especially by disadvantaged and underserved groups.

Modern quality improvement (QI) approaches offer methods for overcoming common barriers to quality care, even in the context of weak health systems facing severe material and human resource constraints (Zeitz et al. 1993; Loevinsohn, Guerrero, and Gregorio 1995; Heiby 1998; Massoud et al. 2001; Kelley et al. 2001; Hermida and Robalino 2002; Berwick 2004; Rowe et al. 2005; Rennie et al. 2007; Dickson, Ashton, and Smith 2007). QI methods improve processes of care and are based on four principles: 1) understanding and focusing on client needs; 2) understanding how processes of care function within the system; 3) using data to measure results; and 4) engaging teams of managers, service providers, and community stakeholders in improvement.

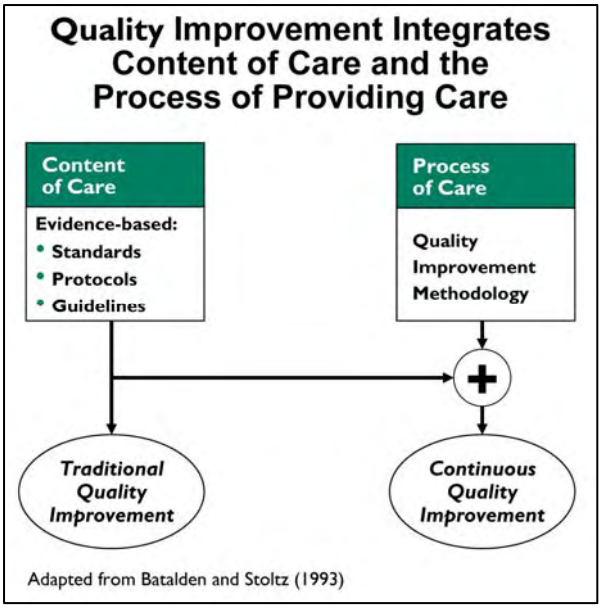
The focus on client satisfaction is central to the quality improvement framework, which views the primary purpose of health services as being to meet the needs and improve the health and well-being of the clients who use them. The emphasis on systems and processes of care is also central, since poorly designed systems generate inefficiency and waste, poor health care quality, and negative health

outcomes. A maxim of QI work, "Every system is perfectly designed to achieve the results it achieves," (Berwick 1996) captures this concept well: To change the results that a system produces, we must first change the system.

In quality improvement work, teams analyze their own systems and processes of care, identify and test changes in the organization of care that may result in improved quality and efficiency, and measure the effect of changes through data. A central tenet of QI is that local health system participants have the profound knowledge of their systems and are best positioned to identify, test, and implement improvements to achieve the highest quality of care possible in their setting. Engaging teams of providers in regular analysis of locally collected data and in continuous quality improvement helps foster a culture of quality that contributes to health worker motivation.

1.2 The Evolution of Quality Improvement in Health Care

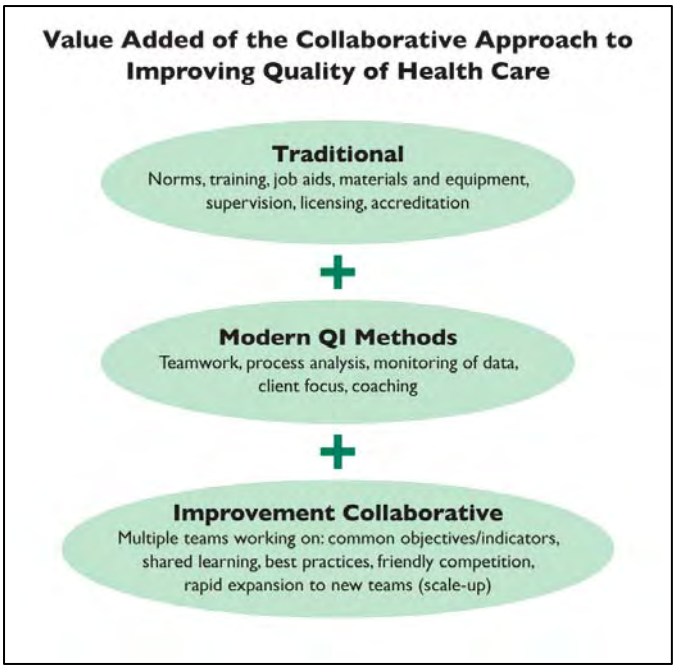
Quality improvement methods were first applied in health care in the U.S. in the early 20th Century in the form of professional licensing and standards-based external evaluations of hospitals and medical schools. The latter part of the 20th Century witnessed a dramatic shift in QI methods when approaches such as Continuous Quality Improvement (CQI) and Total Quality Management (TQM) were adopted from industry and applied to health care. CQI was considered radical at the time of its introduction in its emphasis on improving the *processes* of care rather than focusing simply on health system inputs.



As public health and modern medicine ushered in the era of evidence-based medicine in the last two decades of the 20th Century, QI experts in the U.S. and abroad moved quickly to marry QI to the exploding body of evidence-based standards, protocols, and guidelines. Because evidence-based standards are by definition empirically proven to improve health outcomes (often by randomized clinical trials), modern QI methods seek to improve processes of care for optimum compliance with evidence-based standards as the ultimate goal for clinical and preventive care quality improvement.

A range of QI methods has been applied extensively in USAID-assisted countries during the past 20 years to improve health and reproductive health services. Traditional improvement strategies like training, supervision, and accreditation have increasingly been supplemented by modern QI methods such as team-based problem-solving, performance improvement, COPE (client-oriented, provider-efficient), and partnership-defined quality. Most of these methods have demonstrated impact beyond that seen with isolated training and supervision approaches.

The last decade has seen a further adaptation of established QI methods to apply evidence-based standards for rapid change and large-scale impact: the Improvement Collaborative. As will be discussed in the next section, the Improvement Collaborative approach 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), resulting in a dynamic learning system where teams from different sites collaborate to share and rapidly scale up strategies for improving quality and efficiency of health services in a targeted technical area. The central innovation of the Improvement Collaborative is the structured shared learning among many teams working on the same problem area: this feature promotes rapid dissemination of successful practices. In its emphasis on



spread and scale-up of improvements, the Improvement Collaborative model offers a powerful new tool in the arsenal of proven QI methods.

In the past five years, USAID's Quality Assurance Project (QAP) and now its successor, the Health Care Improvement Project (HCI), have adapted the Improvement Collaborative approach in countries at vastly different levels of development to improve the quality of care in many technical areas, including HIV/AIDS, tuberculosis, malaria, and maternal, newborn and child health care. This paper describes the approach as adapted by QAP and HCI, drawing on the lessons learned in implementing over 30 improvement collaboratives in 15 countries and on the findings of evaluations of some of these collaboratives (Catsambas et al. 2008).

Origins and Adaptation of the Improvement Collaborative Approach

The Institute for Healthcare Improvement (IHI) pioneered the improvement collaborative approach in 1995 to address a common problem in the health care system in the United States: evidence existed for a standard of care, but it was not routinely practiced. Since then, IHI has supported over 1000 teams applying this methodology, calling it the "Breakthrough Series" or "BTS Improvement Collaborative." It addresses diverse care processes and clinical content areas, with excellent results. Health care organizations in many other countries have since implemented collaboratives in hospital and clinical practice settings (see IHI 2003, available at www.ihi.org, for more on IHI-supported collaboratives).

QAP began to work with the Improvement Collaborative approach in two regions in the Russian Federation in 1998 to develop and then scale up improved models of care for the management of hypertension and neonatal respiratory distress syndrome. In 2003, QAP began to adapt the approach to the more resource-constrained conditions in less developed countries where government-funded health systems predominate and to apply it to other clinical areas, such as essential obstetric care and HIV/AIDS care.

QAP made a number of adaptations to the BTS Improvement Collaborative model to develop organizational structures to accommodate government health system structures, introduce more content on QI methods and measurement in learning sessions, emphasize the role of coaches in guiding and motivating site teams, decentralize learning sessions in national scale collaboratives, and find low-cost alternatives to web sites and telephone conferences to share results and learning among teams (Catsambas et al. 2008 offers the findings of a multi-country evaluation of QAP's collaboratives).

2 Introduction to the Improvement Collaborative Approach

An "improvement collaborative" is a shared learning system that brings together a large number of teams to work together to rapidly achieve significant improvements in processes, quality, and efficiency of a specific area of care, with intention of spreading these methods to other sites.[1]

Improvement collaboratives seek to adapt and spread existing knowledge to multiple sites. This existing knowledge may consist of clinical practices based on scientific evidence, proven practices that are widely

[1] A glossary of terms used is provided at the end of this paper.

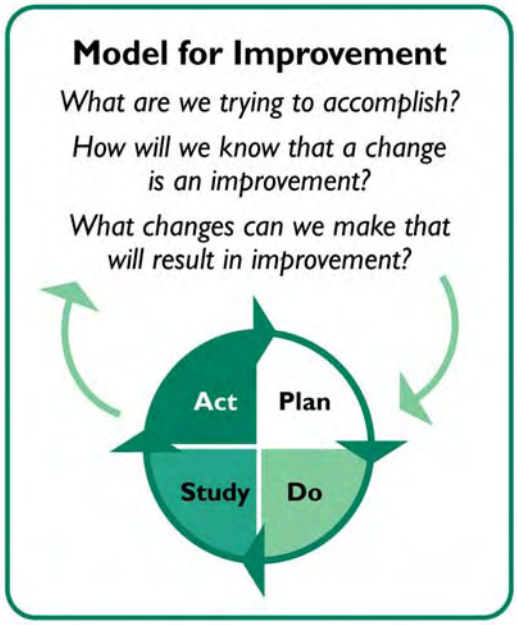
considered as "good" or even "best" or any other changes to the existing way of doing things that have been shown to result in better health care. Such knowledge is the collaborative's "implementation package"[2]: the changes in processes and organization of care that the collaborative seeks to introduce, refine, and spread.

In a collaborative, site teams work out and test ways to operationalize or put in practice the concepts included in the implementation package and to overcome barriers to making them work in their local settings. Collaboratives are intended as a time-limited improvement strategy, typically achieving significant results in 9–18 months, although improvements are often seem earlier. However, in cases of redesigns of complex systems (for example, involving multiple chronic diseases), collaboratives have continued beyond this timeframe, usually in a phased approach.

Teams within a collaborative use a common set of core indicators—ideally the smallest number of indicators that can inform the improvement and tell the story of the collaborative's efforts and achievements—to measure the quality of the care processes the teams are trying to improve and, where possible, the desired health outcomes. Each team collects data on the indicators to measure whether the changes it is making are resulting in improvement. Local health care providers are the improvement "experts" who develop action plans to test and implement changes at their local level to achieve collaborative goals.

Teams test changes by applying an improvement or change model. Many improvement models exist, and several have been used to test and implement changes through collaboratives. The common feature underlying all improvement models is that an intervention is introduced, and one or more indicators are monitored to see the intervention's effect on the desired outcome or output. If the intervention yields the desired improvement, it is then instituted as part of the new work process and ramped up to other providers in the organization. If it does not, it is either modified or discarded.

The improvement model used most commonly in HCI-supported collaboratives is described in *The Improvement Guide* (Langley et al. 1996). Depicted in the graphic below, this model incorporates the Shewhart Cycle for Learning and Improvement, otherwise known as the Plan-Do-Study-Act (PDSA) Cycle. In this model, a change believed likely to yield improvement is proposed. However, whether it will yield an improvement or not is a hypothesis that needs to be proved or disproved. A plan is developed for testing the change, the plan is implemented, and the effect of that test is studied to see whether the change did in fact yield the improvement expected. What action is taken next is based on the result of the test.



What differentiates improvement collaboratives from other improvement methods is shared learning. In a collaborative, multiple (10, 20, 50, or more) teams all try to make improvements in the same topic area. They simultaneously test and implement process redesigns and changes and share their experiences while doing so. Through this shared-learning mechanism, facilitated by the collaborative, teams communicate the results of their tests and their solutions, and all teams can benefit from the knowledge of both successful and unsuccessful changes implemented by any team. In this way, teams learn from other teams' experiences and can avoid "re-inventing the wheel" in discovering successful changes.

[2] The implementation package is also referred to as a "change package."

Frequent (usually, monthly) monitoring of results (i.e., process and outcome indicators) and regular sharing of successful changes help to spur the pace of improvement, creating a sense of friendly competition among teams to see which one can achieve the best results. The network of shared learning results in rapid development and testing of innovations to solve problems, rapid dissemination of effective changes, and rapid development of effective models of care, enhancing the original implementation package of evidence-based standards with operational learning.

When is an improvement collaborative the right approach to improving health care delivery? 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, etc.);
- Evidence exists for standards, care models, or organizational models that have been shown to improve outcomes: i.e., what works to address the quality gap is known;
- It is possible, with available resources, for health workers to put the implementation package into practice; and
- Organizational leadership support exists for introducing changes and spreading them beyond the initial sites.

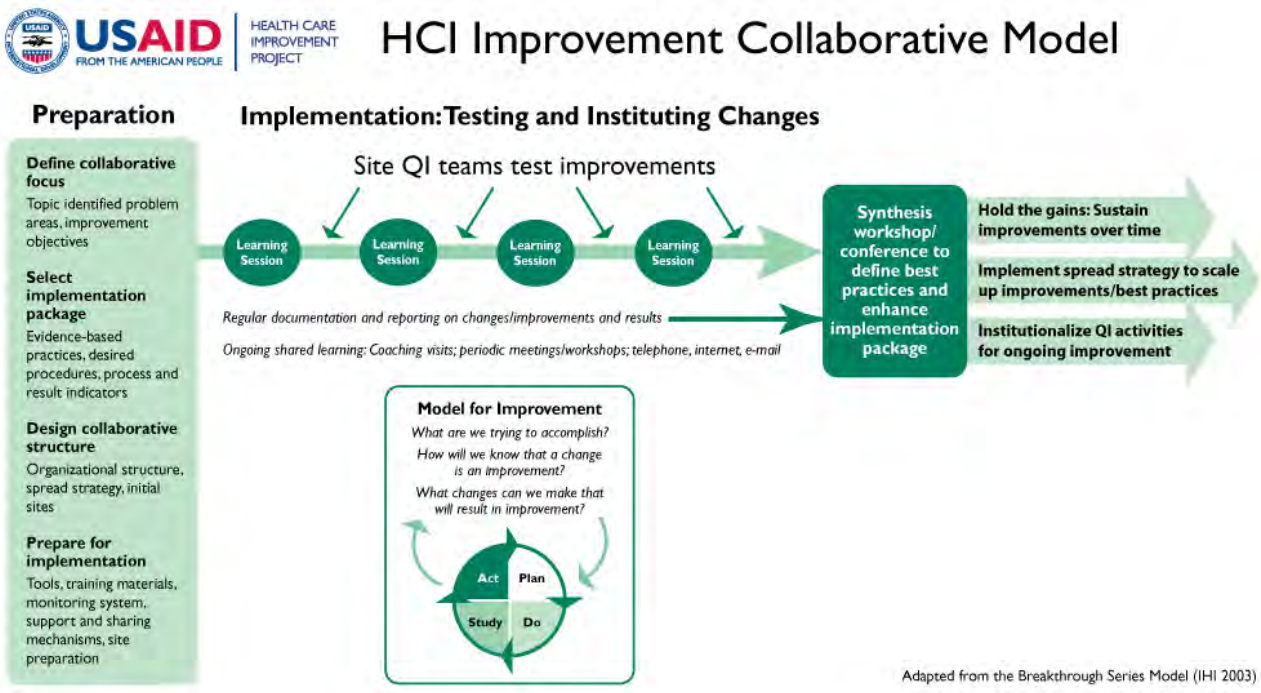
A distinguishing feature of the Improvement Collaborative approach compared with traditional QI methods is that it seeks to spread improvements beyond the initial teams, to be applied throughout the organization(s) participating in the collaborative. Typically, a collaborative will conclude with the definition of a final package of interventions that have been field-tested and proven to yield results in a particular setting complemented by a set of organizational learning that facilitates achieving those results. This package, which may be thought of as a refinement of the implementation package, is then ready for spread to other sites. This emphasis on intentional spread of the improvements not only distinguishes collaboratives from other QI methods but also makes the approach an attractive scale-up strategy.

The duration of an improvement collaborative varies. While IHI's BTS Improvement Collaboratives (see box on Origins and Adaptations of the Improvement Collaborative Approach) in the U.S. typically have lasted 12–24 months, HCI's experience is that they can advantageously continue for several years, especially as new sites join in the spread of improvements or the collaborative's technical content evolves and expands.

As depicted in the graphic on the following page, an Improvement Collaborative begins with a preparatory period when the collaborative's objectives and technical interventions are refined and a structure developed to support the collaborative's implementation. The "implementation period," when site teams develop and test changes to put in practice the technical interventions that make up the implementation package promoted by the collaborative, is generally divided by three to six learning sessions that are separated by periods of one to four months when teams test changes. These intervening periods are sometime referred to as "action periods." Once teams know how to operationalize the interventions and have achieved the collaborative's objectives, a workshop or conference may be held to review the teams' collective experience to decide which changes were the most effective and to share results with stakeholders outside the collaborative.

Once a collaborative has been completed and an enhanced implementation package developed, several different strategies may be used to spread that operational knowledge to new sites. The initial collaborative—sometimes called a "demonstration" collaborative—may then be followed by a second, or "spread" collaborative whose purpose is to spread the enhanced implementation package from the demonstration sites to the rest of the parent health system. Members of the original collaborative often serve as change agents and advisors during a spread phase.

Other strategies for the spread of improvements (such as campaigns, change agents, and natural diffusion over time) may also be leveraged, depending on the scope of spread objectives and the resources available.



The remainder of this paper describes the essential features of the collaborative model as applied in developing and middle-income countries and the key activities involved in planning and implementing a collaborative. A glossary of terms and a list of further resources on improvement and collaboratives are at the end of this paper.

3 Essential Features of a Successful Improvement Collaborative

Based on experience implementing collaboratives since 1998, HCI has identified seven essential features for the successful implementation of improvement collaboratives in developing and middle-income countries. These features are key to a collaborative's success in achieving significant improvements rapidly and at scale.

3.1 Shared Improvement Objectives or Aims

Improvement objectives or aims 1) are statements of the desired outcomes that a collaborative seeks to achieve through the application of improvement principles in a specific content area, 2) define a collaborative's over-arching objectives and guide its planning and implementation, and 3) generally identify the evidence-based practices to be implemented, the processes to be improved, and the targeted results (or outcomes).

Well-constructed improvement objectives support a collaborative's effective planning and implementation. They define the scope of the collaborative work and the breadth of the health care area the collaborative addresses (e.g., a "broad" area might be pediatric hospital care, involving many systems; a "narrow" one might be the improvement of emergency triage for treatment of ill children or the use of bednets at the community level). An improvement objective should define a targeted outcome in a priority health area where a significant, documented gap exists between actual and best practice and/or actual and desired outcomes. Improvement objectives may target high impact, evidence-based interventions known to positively affect health outcomes (e.g., AMTSL for prevention of postpartum hemorrhage), improved access to care, or improved efficiency and organization of care.

3.2 Adequately Supported Quality Improvement Teams Who Are Testing Changes

Essential Features of a Successful Improvement Collaborative

1. Shared improvement objectives or aims
2. Adequately supported QI teams testing changes
3. Implementation package
4. Regular analysis of measured results to guide quality improvement
5. Shared learning for accelerated improvement at greater scale
6. Spread strategy
7. Organizational structures

QI teams, working at the service delivery level, are the pillar of all collaborative work. Without them, there would be no collaborative, because it is they who plan, test, and study the quality improvement in their own processes and contribute their learning to the collaborative effort. Quality improvement can be defined as the process of intentionally making care/services better in some way (e.g., effectiveness, efficiency, etc.), with the ultimate goal of improving the outcomes for health care clients. Team members work together to understand their clients, analyze their processes, test and implement changes and redesigns to improve performance, and monitor results.

In a collaborative, a network of teams is created to share results, innovations, and challenges and to learn from one another. To ensure that QI teams can function optimally, the collaborative needs to ensure their knowledge and skills in both technical content related to the improvement objectives and quality improvement methods, as well as assure access to supplies and equipment needed to achieve the improvement objectives.

Experience in developing countries has shown that site teams need ongoing support to carry out their QI tasks. This assistance is provided through "coaching," a process whereby someone with additional knowledge and skills in quality improvement and/or the technical content of the collaborative provides support and encouragement to teams in order to improve team performance. A coach helps a team carry out its work effectively and move towards self-sufficiency over time in using QI tools. Coaching provides a structure to enhance team functioning; coaches provide on-the-job training in content and QI, verify monitoring data, provide support to the monitoring process, and help teams see other opportunities to improve how they do things.

3.3 Implementation Package

The implementation package defines the critical changes to current practice that all QI teams in a collaborative will implement. The initial implementation package lays out a set of practices and desired procedures built on the best existing evidence that both local and international stakeholders and experts agree, if implemented systematically, will lead to the desired outcomes articulated in the collaborative's improvement objectives. The content of the implementation package will depend on what already exists in the setting and the current level of problems with quality. The implementation package might include changes to the technical content or changes in the way services are organized and delivered, as described in the following table.

In all cases, the implementation package should be based on evidence of what works. This evidence can come from the international literature or from well-documented local experiences. In some collaboratives that address broad topic areas, the content of the implementation package may be divided into smaller units and be implemented sequentially.[3] Collaboratives may also be built around improvement objectives for which a solid body of evidence does not yet exist, in which case the role of the collaborative is to build the evidence, in effect working to design new systems or models of care.

[3] For example, a collaborative addressing the broad area of essential obstetric and newborn care (EONC) may decide to start with AMTSL and immediate newborn care and then move on to surveillance of the newborn, birth preparedness, neonatal and obstetrical complications, etc. in a phased way. Such was the approach of the EONC Collaborative QAP initiated in Niger.

Current situation	Implementation package may be one or more of the following
No standards[4] or consensus on "proper practice"	A new or updated set of "essential standards" that focuses on the most important tasks needed to achieve improvement objectives
Standards exist but are out-of-date	
Standards exist and are up-to-date but are unrealistic or too complicated for providers to follow	
Standards exist but are not well implemented	A "service delivery model" or "model of care" that would more effectively ensure that standards are implemented and patients receive what they need
Standards and a model of care exist, but neither is well implemented	A series of organizational changes that can facilitate their implementation

Over the collaborative's life, this initial implementation package will be improved and enhanced through the work of the QI teams that create evidence for improved standards, models of care, and/or best practices for carrying out the standards that can be rapidly spread to other sites in their organization. A collaborative's capacity to achieve rapid results and rapid scale-up of best practices is based on its capacity to synthesize and spread the lessons from the work of the QI teams. In many cases, the learning generated by the QI teams focuses on resolving operational issues around implementing a set of standards.

Depending on the initial situation and the type of implementation package, it may take a collaborative more than one phase to achieve the learning needed for full scale-up. Some collaboratives have introduced a complex implementation package in stages; others have expanded the number of teams or sites involved while implementing the initial implementation package (see section 3.6, "Spread Strategy," below); and still others have simultaneously expanded the content and number of sites. The first phase may be considered a demonstration collaborative, which includes the development of improvement objectives and the implementation package and the selection of indicators. These steps are followed by the implementation, testing, and refinement of the implementation package. In this phase, an initial set of teams works together to test improvements, and through these efforts team members devise the first set of "improvements" on the implementation package. This "tested and refined" package may then be rolled out through a subsequent phase when additional sites are added, and continued refinements may be made to the implementation package.

Ultimately, the tested implementation package will have the following elements:

- An updated set of standards or consensus on "proper practice," with a sense of the "essential standards" that focus on the most important tasks needed to achieve health care improvement objectives;
- A "service delivery model" or "model of care" that would more effectively ensure that standards are implemented and patients receive what they need; and
- A series of organizational changes that facilitate the implementation of standards and the service delivery model.

[4] "Standards" here refers to "an explicit statement of expected quality" (Ashton 2001). Other terms, such as norms, are often used, but we consider them synonymous with standards.

3.4 Regular Analysis of Measured Results to Guide Quality Improvement

A collaborative bases both its original implementation package and any refinements on evidence, just as any quality improvement team bases its continued implementation of changes on evidence that these result in improvement. Thus, monitoring is an essential feature of a collaborative. Monitoring involves:

- Developing a limited set of key indicators that will reflect progress toward improvement objectives that individual teams and the collaborative as a whole use to judge their progress;
- Developing systems for collecting and compiling data on indicators and on changes or improved practices implemented at the individual team level and for the collaborative as a whole; and
- Setting up mechanisms for validation, analysis, and interpretation of those data, both at the quality improvement team level and aggregated at the collaborative level.

Where possible, indicators should include measures of *process* (e.g., compliance with standards related to quality of care, QI team functioning). *outcome/impact* (e.g., effects on case fatality rates), and, if appropriate, *input* (e.g., availability of key supplies or equipment). Teams need to document the improvements implemented and regularly (often monthly) measure their indicators to determine how their improvements are contributing to achieving the improvement objective(s). In addition to the common set of indicators that all teams are measuring, individual teams may also use additional measures to test how well a specific change they are implementing is achieving its desired results.

Teams will share their changes and results with other teams during learning sessions or other opportunities for sharing information (such as Web sites, etc.). Generally, data on common and individual team indicators are collected and compiled by teams themselves (self-monitoring). Thus, it is crucial to ensure that systems to check the validity of these data are in place since the results of the collaborative will be used to identify best practices and an improved implementation package that can be spread to other sites. Wherever possible, data should come from existing sources and not a separate data collection system.

3.5 Shared Learning for Accelerated Improvement at Greater Scale

Another essential collaborative feature is structured opportunities for sharing experiences, results, and promising practices across teams. This feature distinguishes collaboratives from other QI methods and is critical for rapidly achieving results, because teams learn from each other. These shared learning opportunities are often organized as "learning sessions," but may also involve communication of results by coaches who visit multiple teams, use of a Web site where data and experiences are posted, telephone calls, smaller meetings, and other mechanisms. Learning sessions generally bring representatives from all QI teams together (or all sites in a region if the learning sessions are decentralized) on a regular basis to engage in three main activities:

- Share changes and results (both good and bad),
- Identify innovations and promising practices, and
- Strengthen their skills in the content areas and in QI (as needed).

Learning sessions are attended by selected team members and technical and quality improvement experts. Team members attending the learning session bring knowledge and materials from these meetings back to the other team members at the home organization/facility and develop action plans to start making changes. Generally, any phase of a collaborative may involve three to six learning sessions followed by a synthesis workshop/conference where best practices and final modifications to the implementation package are identified.

The powerful effect of spreading learning from one group of practitioners to another underscores the critical importance of knowledge management during a collaborative to obtain, analyze, select, organize,

and make available to large numbers of facilities and practitioners, clinical and organizational knowledge related to improving processes of care, as well as practical experiences in implementation.

3.6 Spread Strategy

Because a collaborative is by definition a mechanism for developing service delivery models, organizational changes, and best practices to implement a set of standards and then share this knowledge beyond individual sites, a spread strategy is a crucial collaborative feature. The spread strategy should first define the ultimate target group that should eventually be implementing the content of the improved implementation package and then determine the steps for reaching them.

One way to spread the learning and improvements to new sites is through a spread collaborative. A spread collaborative uses the collaborative structure of a network of sites, a common (enhanced) implementation package and indicators, and learning sessions and other mechanisms for shared learning to spread proven improvements to a significantly larger number of facilities and/or practitioners. Spread collaboratives rely on QI-experienced staff and "quality champions" from the demonstration collaborative to provide support based on their own experiences and who can motivate new facilities as living proof that improvement can happen. The spread phase can be a series of waves that increasingly scale up activities and include new regions until the whole intended area (e.g., whole country) is covered.

We have found that a spread collaborative often achieves expansion at a much more accelerated pace than the original collaborative by leveraging the wealth of knowledge—not only clinical, but also important operational and organizational knowledge—on how to improve processes of care, most of which had been tested and developed during the preceding initial collaborative.

Depending on the spread objectives and resources available in a particular situation, other spread strategies are possible and may be more appropriate. Dissemination of improvements in the form of guidelines or policy decrees, cascade training, extension agents, campaigns, and endorsement by prestigious institutions or individuals have been used, alone and in combination, to spread improvements. These approaches focus on one or several factors necessary to achieve spread: Dissemination focuses on raising awareness among practitioners about the benefits of best practices; training and supervision focus on developing technical competency; campaigns focus on building commitment and political will; policy development and endorsement focus on increasing the perceived legitimacy of the improved intervention and alignment with accepted institutional values.

The ultimate desired coverage for improvements developed in a collaborative and the strategy for reaching this level of coverage affects both initial site selection and the organizational structure needed to support spread. Roles and responsibilities during a spread phase may be quite different than those in a demonstration collaborative to ensure adequate support to an increasing number of sites and to foster institutionalization[5] of improvements.

3.7 Organizational Structures

Organizational structures provide the framework for managing the collaborative. Several key roles are critical to the collaborative; they can be distributed to different actors within a variety of structures:

1) Leadership/strategic direction: This role ensures that the collaborative continues to work toward its improvement objectives, provides moral and political support and resources that enable and motivate participating teams and stakeholders to stay engaged and active, and facilitates the leap from changes in the way work is carried out to changes in policy that will enable improvements to be sustained and spread.

[5] "Institutionalization of improvements" means that they have become an integral and sustained part of the health care system's regular operations. For an in-depth discussion on QI institutionalization, see Franco et al. 2002.

2) Ongoing management: This critical role provides careful monitoring of teams and results to adjust collaborative activities to the reality on the ground. The role entails ongoing planning and management of the implementation of activities; management of collaborative data collection, validation, storage, and analysis; organizing coaching and learning sessions, etc.

3) Content and QI expertise: Built on an evidence-based "implementation package," collaboratives depend on strong quality improvement teams. "Content expertise" (knowledge within a discipline, such as in maternal health, HIV/AIDS, etc.) is critical in a collaborative's preparation for developing the implementation package and the indicators for monitoring improvement, but also during implementation, providing technical support to teams and content at learning sessions. "QI expertise" (knowledge of systems, data, group process) is critical for building the capacity of QI teams and providing the support they need in the beginning as they learn how to work as a team, how to implement new standards or best practices, how to use quality improvement tools and methods, and how to collect and interpret their monitoring data. These two types of expertise may be provided by the same or different actors in the collaborative who may contribute as members of technical experts' groups, trainers, and/or coaches for teams.

4) QI teams: These critical actors implement improvements and create new knowledge on improved practices and an improved implementation package. The other roles described above are primarily in support of what the QI teams do on the ground. QI teams must generate and implement changes in how they carry out their daily work and then measure the effects to determine whether these changes really improve the quality of their services and thus achieve the collaborative's improvement objectives.

Although a collaborative itself is not a permanent entity, sustainability of results achieved during the collaborative will depend on ongoing political, physical, and technical support for the "implementation package" and institutionalization of QI methods. Thus, conceptualization of an organizational structure should include the institutionalization and sustainability of key collaborative features, such as quality improvement teams, coaching of teams, monitoring of results, and opportunities for shared learning. This is best achieved by grafting the collaborative roles onto existing structures at national and decentralized levels when possible. Often, these organizational structures include a small managerial group, an "expert" group, and a "director" or "coordinator" in the Ministry of Health, along with focal persons within management structures at decentralized levels.

4 Key Activities for Developing and Implementing Improvement Collaboratives

The following list of activities for developing and implementing improvement collaboratives also emerges from HCI's experience and is illustrative rather than prescriptive. Within a phase, there is not a single order to these activities, and many are iterative. One can conceive of an improvement collaborative as having three main phases: a preparatory phase that ensures adequate planning, engagement of key stakeholders, and existence of key tools and systems; an implementation or demonstration phase when quality improvement teams test and document changes to overcome obstacles and implement evidence-based practices and proven procedures and share and synthesize learning; and a spread phase in which learning is spread to other sites or organizations.

4.1 Preparatory Phase

- Engage key actors and stakeholders in outlining and defining the collaborative topic.
- Identify improvement objectives or aims that target key desired outcomes and general processes to achieve those outcomes.
- Consider conducting a focused baseline assessment targeting specific improvement objectives.

- Establish an organizational structure for the collaborative, including specific roles and responsibilities.
- Provide training as needed to collaborative directors, coordinators, and coaches so they can fulfill their roles.
- Engage local experts[6] in the review of current national standards in light of the local and international evidence base for best practices; determine the potential need for adaptation of national standards; and identify other potential best practices related to the service models or organization.
- Identify simple indicators to measure progress toward improvement objectives.
- Draft content of the initial implementation package to promote evidence-based standards for desired outcomes.
- Determine capacity-building and resource needs to enable teams to put the implementation package into practice.
- Develop integrated (QI/technical) training and supportive supervision strategies to achieve collaborative goals.
- Develop a spread and institutionalization strategy, including determination of ultimate targets, as well as institutionalization of interventions and ongoing quality improvement activities. Develop a strategy to monitor sustainability after the conclusion of the formal collaborative.
- Choose initial sites in light of spread strategy.
- Develop a collaborative implementation plan and timeline.
- Develop and test a monitoring system, including a monitoring plan, indicators, tools, and mechanisms for routinely validating data.
- Design a mechanism and standardized approach to capturing and documenting improvements tested and their outcomes.
- Define communication and sharing mechanisms that will facilitate rapid learning, and organize the content, methods, and roll-out of learning sessions.
- Identify potential coaches; determine their QI and technical capacity building needs; and develop a plan for regular coaching of the QI teams.
- Develop or adapt tools for QI team support: content training, CQI training, monitoring (data collection forms, forms for compilation and analysis, monitoring manual, data storage), coaching, job aids, etc.

4.2 Implementation (Demonstration) Phase

- Form and prepare QI teams to carry out improvement work to achieve collaborative improvement objectives, including capacity building in technical areas of the implementation package and QI (including use of data by teams).
- Build capacity for coaches in QI skills, team dynamics, monitoring, mentoring, and ensure adequate technical skills to assist teams.
- Ensure understanding of both the process of self-assessment and the validity of process and outcome monitoring data.
- Ensure availability at sites of the basic resources needed to implement the implementation package.
- Ensure adequate QI and technical content coaching support to teams.
- Implement regular learning sessions or other mechanisms for sharing changes and results.
- Work with health managers and QI teams to develop mechanisms for institutionalization and sustainability, including their monitoring.

[6] These experts are generally from the Ministries of Health, academia, and/or other organizations and can be at national or more decentralized levels.

- Prepare for the scale up/spread phase by ensuring that key stakeholders/decision makers are regularly informed of progress.
- Determine the appropriate moment to synthesize teams' interventions to overcome obstacles, implement evidence-based practices and proven procedures, and move from demonstration to the spread phase.

4.3 Spread Phase (Using the Spread Collaborative Approach)

- Review learning from demonstration phase and develop an "enhanced" implementation package to promote during the spread phase.
- Review the initial spread or scale-up strategy in light of experiences during the demonstration phase, deciding on the level of coaching, training, and sharing of experiences that will be necessary for sustainability and institutionalization.
- Organize a synthesis workshop/conference involving all key stakeholders (including those who will be targeted for spread) to present and discuss the results of the demonstration phase.
- Develop an operational plan for spread, including selection of new sites.
- Review the organizational structures of the collaborative to find increasingly more sustainable mechanisms for supporting an increasing number of QI teams, including coaching support; identify champions from the demonstration collaborative QI teams who can serve as peer coaches in the spread sites.
- Establish and prepare new QI teams.
- Build competencies needed for collaborative work in new teams: clinical competencies for all providers, QI for team members and coaches, etc.
- Ensure availability of basic resources needed to put the implementation package into practice at new sites.
- Organize the content, methods, and roll-out of learning sessions or other mechanisms for routine sharing. Determine whether there is a need to decentralize learning sessions and, if so, when to bring all sites together for shared learning.
- Ensure adequate QI and technical content coaching support to teams, including the possibility of using internal coaches. Build coaching capacity where needed in QI skills, team dynamics, monitoring, mentoring; ensure adequate technical skills to assist teams.
- Develop a process for validating monitoring data during the spread phase.
- If full scale-up is not yet achieved, determine the appropriate moment to synthesize additional learning in the spread phase, and move on to full scale-up (full coverage).

5 After the Collaborative

The ultimate goal of an improvement collaborative is to achieve significant and lasting gains in the quality of care. But once results have been achieved in the participating sites (including spread sites), the challenge for the health system is how to sustain those achievements once the collaborative structures and support end. The HCI Project has found that the full impact of an improvement collaborative is realized only when both the gains in the quality of care are maintained and the health system has incorporated an ongoing process to continually improve quality of care.

Sustaining both health care improvements and modern QI practice is a challenge that should not be assumed to occur naturally after a collaborative ends. Rather, deliberate strategies are needed to both maintain the gains achieved by a collaborative and institutionalize QI processes (Silimperi et al. 2002).

Some of the strategies that have proven effective to sustain the gains of collaboratives include incorporating aspects of the collaborative's refined implementation package into national service delivery policies and standards and building them into pre-service training of health workers through changes in curriculum and bringing faculty up-to-date. Incorporating quality indicators into routine monitoring and reporting systems and performance-based management agreements has also helped to sustain a high

level of quality in service delivery by creating mechanisms that make health facilities accountable for quality. Adding quality monitoring to supervisory functions is another strategy that can help maintain an impetus for quality care.

Independently of the specific strategies employed, sustaining quality of care requires:

- Building local capacity to do QI at the facility level, including developing permanent QI structures as appropriate;
- Strengthening facility and district capacity for supervision and monitoring of quality and QI activities;
- Increasing government and civil society participation in quality initiatives to create a broad base of stakeholders and advocates for high quality health care;
- Raising motivation and providing incentives for health care providers to do quality improvement, improve compliance with standards, and achieve improved outcomes;
- Fostering the development of a permanent community of quality practice for the collaborative's technical area (including the Ministry of Health, professional bodies, pre-service training institutions, regional and district health authorities, NGOs, facility managers, and practitioners).

The HCI Project will continue to learn and adapt the Improvement Collaborative approach to address issues related to spread, institutionalization, and sustainability of results and to find ways to more efficiently harness the power of the Improvement Collaborative and other QI methods to achieve even greater gains and faster, more efficient spread of improvements.

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Glossary

Action period	The time between learning sessions when teams work on improvement at their facility, supported by visits (and sometimes calls) from coaches.
Best practice	A way or method of accomplishing a function or process that is considered to be superior to all other known methods. In health care, it is often used to refer to tools, materials, models of care, organizational arrangements, and other practices that have been shown in multiple settings to facilitate compliance with evidence-based standards of care.
Coaching	Providing guidance, feedback, and direction to ensure successful performance.
Continuous quality improvement	A management approach to improving and maintaining quality that emphasizes internally driven and relatively continuous assessments of potential causes of quality defects, followed by action aimed either at avoiding decrease in quality or correcting it at an early stage.
Demonstration collaborative	An improvement collaborative that aims to test/implement the intervention package and ends with a clearer, better-defined package; it is frequently followed by a planned spread phase.
Evidence-based medicine	The practice of medicine or the use of health care interventions guided by or based on supportive scientific evidence. Also, the avoidance of those interventions shown by scientific evidence to be less efficacious or harmful.
Evidence-based practices	Practices derived from the best available external clinical evidence from systematic research.
Impact	A change in the status (e.g., health status) of individuals, families, or communities as a result of a program, project, or activity. For example, the impact of an immunization program might be the reduction in infant mortality by 15 percent.
Implementation package	A collection of changes that when implemented will improve quality. All sites in a collaborative use the same intervention package. The changes can be an evidence-based best practices, guidelines, or redesign of a process. It is also sometimes referred to as a "change package."
Improvement collaborative	A time-limited strategy for quality improvement based on shared learning that brings together a large number of teams to work together to rapidly achieve significant improvements in processes, quality, and efficiency of a specific area of care, with intentions of spreading the intervention package resulting in these improvements to other sites.
Improvement objectives	Statements of the improvements that the collaborative seeks to achieve; often quantified as specific targets that the collaborative seeks to reach.
Indicator	A measurable variable (or characteristic) that can be used to determine the degree of adherence to a standard or the level of quality achieved.
Innovations	Quality improvement teams generate, discover, and test solutions (innovations) that help them overcome barriers to implementing guidelines and norms. These innovations do not yet have substantial evidence but are backed by results at least a single site and can be shared and then tested until they cannot be improved substantially by other teams.

Inputs	The resources needed to carry out a process or provide a service. Inputs required in health care are usually financial, physical structures such as buildings, supplies and equipment, personnel, and clients.
Institutionalization	The process through which a set of activities, structures, and values becomes an integral and sustainable part of an organization. Institutionalization of quality improvement means that people know what needs to happen to provide quality care, they have the skills to make it happen, and they are committed to making it happen over time within available resources.
Learning session	A meeting for selected team members and technical and quality improvement experts to learn key changes in the topic area and quality improvement techniques, and share their successful experiences implementing changes and overcoming obstacles. Teams bring knowledge and materials from these meetings back to their other team members to start making changes.
Measurement strategy	The plan for the collection and management of data that will be used to measure progress and achievements of improvement in selected areas. This strategy usually includes agreement on a few common indicators related to the desirable outcomes of the intervention package, a format for collecting data, a plan for data analysis, and an agreement on reporting this data (e.g., run charts).
Outcomes	Results of a process, including outputs, effects, and impacts.
Plan-do-study-act (PDSA) cycle	A method used in quality improvement to test changes to see if they have the desired effect.
Process	A series of actions (or activities) that transforms inputs (or resources) into a desired product, service, or outcome.
Promising practices	Innovations or solutions that have been tried in several sites, but have not yet been tested sufficiently or need some tweaking before being incorporated into a modified or improved intervention package.
Quality	In health care, performance according to evidence-based standards that is accessible to clients and delivered in a responsive and respectful manner.
Quality improvement	In health care, the process of intentionally making care better in some way (e.g., effectiveness, efficiency, etc.), with the ultimate goal of improving the health outcomes of clients.
Quality indicator	An agreed-upon process or outcome measure that is used to determine the degree of adherence to a standard or the level of quality achieved; a measurable variable (or characteristic), usually expressed as numbers (counts), averages, and ratios (proportion or rate).
Refined (or improved) implementation package	The result of work done in a demonstration collaborative in which best practices and possibly modifications in essential norms have been added to the initial implementation package before its extension to other sites.
Scope of a collaborative	The breadth or narrowness of the defined area for improvement; for example, an individual care process (such as prenatal care) versus a larger system (essential obstetric care).

Spread (or scale-up)	The range of activities aimed at scaling up successful improvements from initial sites that serve as small proportion of the population to a much larger number of facilities and practitioners, a significant portion of the health system, and a significantly larger population, such as an entire region or country. Much of the theory and application of spread comes from the literature on diffusion of innovation.
Spread collaborative	A collaborative that expands ("spreads") the number of facilities, organizations, or other units applying the improvements.
Stakeholder	One who has a share or an interest in the collaborative or other improvement activity.
Standard	An explicit statement of expected quality in the performance of a health care activity. Also referred to as a "norm."
Topic	The area of health care improvement.
Total quality management	An approach to quality assurance that emphasizes a thorough understanding by all members of a production unit of the needs and desires of the ultimate service recipients; a viewpoint of wishing to provide service to internal, intermediate service recipients in the chain of service; and a knowledge of how to use specific data-related techniques to assess and improve the quality of their own and the team's outputs.

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