The use of modern quality improvement approaches to strengthen African health systems: a 5-year agenda

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Abstract

There is a growing international consensus that African health systems need to improve, but no agreement on how to accomplish this. From the perspective of modern quality improvement (QI), a central issue for low performance in these health systems is the relative neglect of health-care processes. Both health system leaders and international donors have focused their efforts elsewhere, producing noteworthy health gains. But these gains are at risk if health systems do not develop the capacity to study and improve care processes. Substantial experience with QI in Africa shows impressive potential for broad-based process improvement. But this experience also highlights the need for modifying these growing programs to incorporate a more rigorous learning component to address challenges that have emerged recently. The addition of a region-wide knowledge management program could increase the efficiency of each country’s QI program by learning from the experiences of other programs. With a coordinated donor initiative, it is reasonable to project that within 5 years, evidence-based improvement will become a norm in health services, and African health systems will approach the model of a learning organization.

Keywords: Africa, health systems strengthening, quality improvement

Introduction

In 2000, the United Nations established Millennium Development Goals (MDGs) to be achieved by 2015 [1]. For health outcomes, the MDGs provide a widely accepted benchmark for progress, and by these measures, sub-Saharan Africa lags behind other regions [2]. Some of the difficult issues facing Africa are obvious, such as a large burden of AIDS, stubborn poverty and political instability. But increasingly, public health experts are pointing to a more subtle factor in Africa’s health problems: the performance of its health systems [3]. International donor assistance for health in Africa is at historical levels, but its focus has been on controlling specific diseases, primarily through providing resources like drugs, training and expert advisors. The health impact of these efforts is well established, but many are concerned that these benefits are designed to be short term. A growing consensus calls for building the capacity of African health systems for the long term, a goal World Health Organization terms ‘health systems strengthening’ (HSS).

While the objective of HSS is clear, there is no agreement among African health leaders and international organizations on how to accomplish it [4]. Published reviews on HSS have focused attention on health system components such as financing and information, suggesting that these functions have been relatively neglected by disease control assistance [5]. Whatever the merits of this argument, however, it overlooks many of the processes used to implement health services. Over the past 30 years, high-income countries have invested in technologies to improve their own health-care processes, drawing on a number of disciplines. This field is generally known as quality improvement (QI) and it is currently expanding rapidly in African health systems. Much of this expansion is focused on organizing teams of providers to test changes in health-care processes [6]. This approach to improvement will be the focus of this paper.

Major donors do not report support for these improvement programs as part of their health assistance [7–10]. How can African health systems get the most from these technologies and how can international health organizations support them?

Quality of care and QI in African health systems

The disease burden in Africa is dominated by a small number of basic health problems, such as malaria, AIDS, pneumonia, diarrhea and obstetrical complications. In response, health systems emphasize a limited number of low cost, but potentially high-impact, health services. These basic health services are well
suited to evidence-based clinical guidelines, which define the diagnostic and therapeutic processes which the health provider should follow. Such clinical guidelines have been widely adopted by national authorities throughout Africa. Evaluations of quality of care in the region commonly focus on the level of provider compliance with clinical guidelines as the central measure of quality of care. Until recently, virtually all published evaluations have been conducted by external groups, with direct observation of care as the most common methodology. Although issues of cost and the observer effect are associated with observational assessments, medical records at most facilities were considered inadequate for quality assessments.

No systematic reviews of quality assessments in Africa have been published, but a scan of assessments shows consistently low levels of compliance with guidelines [11–15]. While assessments are typically at a national or sub-national level, a recent review of 1338 facilities, based on enhanced local records, includes five African countries which contributed 60% of the observations [16]. At average, baseline provider compliance with national guidelines in seven basic services was 38%. While these studies do not have predictive value, they do suggest that serious quality deficiencies are widespread in the region’s health systems.

In many African countries, the response to quality issues was long dominated by clinical training and supervision systems, but these approaches have shown limited impact on quality in recent reviews [17–19]. A review of other traditional QI methodologies, such as audit and feedback, also found limited evidence of impact [20]. But in the multi-country study cited previously [16], tests of change produced a more impressive improvement: an overall doubling of provider compliance with guidelines within an average period of 9.2 months. Further, most facilities sustained this level of performance >13 months. It is noteworthy that the analysis found that the greatest gains in the quality were observed in facilities with the lowest baseline level. A number of single country QI reports show similar findings [21].

These are encouraging results, and they help explain the rapid expansion in Africa of policies, strategies and organizational units focused on improving quality, particularly with modern approaches based on evidence from testing changes. The remaining challenges, however, are formidable.

**Evidence-based process improvement in Africa**

In high-income countries, process improvement is widely accepted as the basic QI strategy for achieving improved outcomes [22]. This perspective is still new for most African health leaders and for many of their counterparts in donor organizations. It is understandable that resource-poor countries would first focus on the inputs needed to provide health care, such as an expanded workforce—and additional resources remain a critical need. In providing these inputs, it is also understandable that donor agencies would focus on a limited number of health outcomes to measure the impact of their assistance. But many would regard health-care processes as a major blind spot in most African health systems—rarely examined and often poorly defined.

The relative neglect of care processes may be due in part to the large number of distinct processes in health care that may need improvement. This complexity can be intimidating, and poorly suited to analysis by a limited number of expert advisors or researchers. In contrast, providers are available in much larger numbers, and are potentially capable of applying tests of change to all of the processes of health care.

While health-care processes are complex, they are the product of design. The interrelationships of processes in Donabedian’s systems model [23] are orderly—inputs are used in a series of processes that lead to an outcome, which in turn may become an input to another series of processes. This perspective has proved to have practical applications for improving health care in high-income countries [24]. A similar systems approach should be applied routinely to health care in Africa, such as for improving the design of programs that test pregnant women for HIV, but do not have processes that reliably provide the test results to the units that will deliver the baby or conduct the follow-up visit [25].

The widespread application of process improvement would move an African health system closer to the model of the learning organization—one that uses evidence from its own tests of change, and from the experience of other organizations, to continually improve the way it performs [26]. This widely accepted management model focuses on broadening the functional leadership of the organization—reducing hierarchical arrangements, while expanding the role of mid-level managers, and empowering workers to develop evidence for better ways of working.

Although many African health systems are achieving impressive results with circumscribed QI efforts, none of them appear to be on the path to making tests of change an organization-wide strategy. Accelerating the pace of change in this direction will probably require better use of the major resources that are potentially available: (i) expanded learning from a country’s QI experiences; (ii) systematic sharing of such experiences among countries; (iii) formal evaluations of QI programs; (iv) research specifically directed at improving QI and (v) broad-based, coordinated donor support. With the expansion of organizational learning, health systems will be better prepared to address the major medium-term challenges that have emerged from recent QI experience in Africa.

**Issues for the near-term expansion of QI programs in Africa**

**QI documentation**

QI is not usually considered research, and it does not produce generalizable knowledge, but it can produce insights into health-care processes that are useful for other programs facing similar issues [27]. Health workers commonly require additional training in quantitative skills in order to carry out well-documented tests of change, and this training needs
to be embedded in QI methodologies. Available reports from current QI programs in Africa describe the extensive use of time-series charts to monitor quality indicators, indicating widespread progress in measuring the results of QI interventions.

In contrast, the documentation of the activities of facility level teams appears to be much less systematic. As a result, current understanding of how QI actually works at this level is extremely limited. Even in high-income countries with substantial experience in QI, authorities urge more attention to the details of implementing interventions, an area often termed a ‘black box’. Evaluations examining how QI programs actually work rely more on interviews and questionnaires than on reviews of program documentation. In Africa, there are additional constraints related to the time burden of reporting and limited provider skills.

No published papers address this issue in African QI programs, but a 2010 report summarizes a multi-country trial of a standardized information system that included six African countries. More work along these lines is needed. A documentation framework has been developed for publishing QI studies, but a similar framework is needed for routine program records. Increased management attention to the documentation of QI activities is also needed. At present, we have a remarkably limited understanding of how specific tests of change were developed and carried out. Since this is the kind of information that other programs would use to design similar improvement activities, the field needs a more effective approach to documenting what these teams do.

Knowledge management
The current experience with QI in Africa is largely inaccessible, and it is likely that growing volumes of improvement knowledge are being lost. But where improvement interventions from one country have been tested in additional countries, the results have been encouraging, suggesting that the knowledge generated by these programs may have wider applicability. A system for sharing such knowledge is technically feasible on a global scale, but there is no institution with such a mandate. A regional program of information sharing in Africa could be a first step toward a global system.

Since knowledge management across countries is a new strategy for QI programs, research and evaluation should be used to refine such a system. African research institutions, with international technical and financial support, could help define the type of QI knowledge that is most useful. If these studies confirm that information sharing is cost-effective, donors, African regional organizations and countries could support the establishment of a clearinghouse with adequate resources to facilitate Africa-wide access to knowledge generated by QI activities.

More rigor in QI implementation
Out of necessity, QI programs rely on self-reported information from improvement teams. A small number of studies to validate this information have been conducted, generally confirming provider self-reports. But more extensive validation efforts are indicated in Africa, particularly at the early phases of QI expansion. Similarly, the wider use of control groups, which do not receive a QI intervention, is justified at this stage for management and policy purposes, when rigorous research is not feasible. Only a small number of QI programs have carried out cost-effectiveness analyses on their interventions, and these, too, merit greater investments. Internal efforts to promote rigor in implementation should demonstrate the program’s commitment to objective measurement.

They would also serve to complement studies conducted by independent professional researchers.

QI program evaluations
Experiences with evaluating QI interventions in high-income countries have included rigorous impact studies. But these evaluations make only a limited contribution to our understanding of how to improve these programs, the central evaluation issue for QI in Africa. A small number of process evaluations, which address questions of how the program worked, have recently been published. But for Africa, we do not have an accepted model for such evaluations. Well-designed process evaluations of QI programs are needed to guide the expansion of these programs that is already beginning. Donors have traditionally initiated formal evaluations in health programs, but if evaluations are to contribute to an Africa-wide learning agenda, the initiative needs to move to health system leaders. The initial evaluations present an important opportunity to compare different approaches and to inform future evaluations, with the objective of making QI programs accountable to all of their stakeholders.

QI program research
The level of global investment in health systems research remains extremely low, but research designed to refine QI approaches in Africa is so limited that it is not even mentioned in research reviews. Nevertheless, an analysis found that research directed toward improving the application of existing child health interventions would have three times the impact on mortality of current research priorities. The expansion of QI in African health systems raises important practical issues that urgently require well-designed studies.

Spread of improved practices. Successful QI interventions that remain on a small scale have little impact. Such interventions focus on changes in health-care processes that are typically designed to work without external resources. It is therefore financially feasible to extend proven improvements through the health system, and several models for doing this are available. But since these models were developed in high-income countries, they may benefit from both quantitative and qualitative research in an African setting. Descriptive research is needed to understand how the spread process actually works. Cost-effectiveness studies are also needed, since spreading improvements is the central strategy for making QI programs more efficient.
Sustainability of improvements. The basic objective of QI is to make improvements in health care that endure. Few studies in Africa have examined the factors that affect the sustainability of successful changes in health-care processes [41]. A critical issue for Africa is the limited information available on the role of external advisors in sustaining such improvements.

Institutionalization of QI. While theoretical frameworks address the factors deemed favorable for making QI a permanent, integral part of health services [42], a direct study of this central issue is rare for African settings. But an evaluation in Zambia documented a rapid decline in a large-scale program after the withdrawal of external support [43]. The clearest issue is the turnover of health facility staff and the need to train new arrivals in QI practices. But institutionalization is likely to be influenced by a number of other factors that remain poorly understood. As a consequence, current strategies to influence institutionalization are only weakly based on evidence.

Alternative QI approaches. QI programs are complex social interventions, with multiple components [28]. The most effective models are the products of insightful experts. But even in high-income countries, few design features are based on data from research comparing alternatives. The potential value of such research is illustrated by a 2011 study from Uganda, which compared the cost-effectiveness of two different designs for coaching QI teams, both considered plausible models [44]. Upon analysis, the models provided equally effective support to facility teams, but the costs of one model were five times those of the other.

General qualitative and descriptive studies. While improved documentation by QI teams and coaches is an important long-term goal, in the short term, qualitative research studies can provide valuable insights into how QI programs actually work in the field [45]. These studies may generate hypotheses for quantitative studies to follow. Descriptive studies are also needed to develop detailed case studies that present QI an as understandable narrative of simple, practical actions [46, 47]. Throughout Africa, and particularly for those with English or French as a second language, the technical jargon of QI, and the abstract models used to describe it, is a serious impediment to learning. Case studies from African settings promise to demystify the field at a critical time in its expansion.

Issues for the medium-term expansion of QI in Africa

The proliferation of proprietary QI approaches

QI methodologies should be continually evolving based on evidence, as more cost-effective approaches are developed. However, health systems leaders are frequently bewildered by the range of ostensibly unique QI methodologies, often with copyrighted names, that are in use in their country [48]. The marketing of various approaches may distract policy-makers and donors from the primary goal of maximizing the cost-effectiveness of their QI efforts [49]. Instead, they see their policy decision framed as one of choosing a specific methodology, even though reviews show that QI methodologies with the same name often produce different results [50]. Policy-makers and their technical advisors need understandable, objective information on the evidence behind various QI approaches, and how the approaches they have selected are working in their programs.

Application of QI approaches to non-clinical processes

Understandably, the current focus of QI in Africa is on increasing the degree to which providers follow evidence-based clinical guidelines. In high-income settings, QI is commonly applied to a broad range of administrative operations that support patient care, but which are far removed from the patient–provider interaction, such as the process for admitting a patient to the hospital [51]. In large African health systems, non-clinical processes often cross-organizational levels.

Adapting improvement methods to work across organizational levels presents new challenges, but early experiences have been encouraging. A major administrative issue for African health systems is the weakness of human resources (HR) management, particularly in the public sector. A recent QI application in Niger improved HR practices and documented rapid and substantial increases in worker productivity, competency and self-efficacy [52]. Applications of QI to community level health services have also shown promising results, and in Uganda, the initial introduction of the chronic care model for HIV/AIDS patients [53] is based on QI methodologies. These are all early, circumscribed trials of improvement methodologies. Other pressing issues for African health systems that have not yet been addressed in this way include the widespread task shifting that is underway in Africa, as health systems shift more patient care responsibilities to more numerous cadres with less training [54]. Similarly, largely dysfunctional referral systems remain commonplace [55]. Adapting improvement approaches to these new areas will require research and evaluation, but the potential impact on long-neglected processes is large.

Pre-service QI training for health workers

African medical and nursing schools have not kept pace with ministries of health by developing practical QI training. As a consequence, QI initiatives depend on ad hoc in-service training, and staff rotations steadily dilute the capacity of improvement teams. An October 2011 workshop hosted by the Regional Center for Quality of Healthcare in Uganda attracted participants from 13 African countries to discuss a model curriculum for pre-service training in QI, potentially the first step in addressing this deficiency [56].

Making QI attractive to providers

Much like high-income countries, QI programs in Africa do not usually provide a material incentive to the providers who participate in improvement activities. The fact that providers carry out this work over long periods without compensation suggests that non-material incentives are at play, but qualitative
studies in this area are just beginning. We need to better understand what factors motivate providers to do this work, and design these factors into QI programs [57].

Support for QI by policy-makers

QI programs in the region have produced evidence of impressive improvements in health care. While these programs are clearly expanding in many African countries, the pace of this expansion suggests lingering skepticism on the part of both health system leaders and major donors. Management experts caution that the management culture tends to view such evidence differently from health professionals [58, 59]. The nature of management decision-making includes political and other considerations that compete with evidence.

There have been only limited efforts to address the implicit skepticism of policy-makers regarding improvement approaches in Africa. This suggests the need for presenting the evidence of the impact of QI to decision-makers in a form that meets their needs. More attention is also needed to providing non-technical descriptions of how tests of change are carried out and used to improve health care—it is critical that decision-makers understand the nature of improvement efforts. And to the extent that decision-makers are not convinced by current evidence, it is important to develop research and evaluation studies that address their concerns. The expansion of QI in Africa presents an opportunity to study directly how improvement should be presented to health system leaders and their counterparts in donor agencies.

QI in the private sector

In the USA, private sector providers have widely adopted and financed QI practices. Initial QI programs in Africa have been led by large government health programs. A detailed discussion of private sector QI is beyond the scope of this paper. However, large networks of non-governmental organizations are well suited for the same QI approaches that ministries of health are now introducing. Private providers present a much different challenge. A recent review suggests that we have much to learn about improving quality in the private sector [60]. The public sector initiative that is beginning in Africa may provide a useful model for improvements in the private sector.

Conclusions

African health systems have already demonstrated their ability to use modern QI methodologies to produce a wide range of documented improvements. But we still have much to learn about making improvement an integral, permanent part of health care. As they expand, these new programs need to incorporate a more robust learning component. This learning process would be far more efficient if every health system contributes its experience to a shared information base, and in turn, draws from experiences in the region.

In his work on the diffusion of innovations, Rogers [61] describes a ‘tipping point’ at which, after spreading slowly, an innovation abruptly begins to expand exponentially. The evidence that process improvements can produce health impact with available resources adds urgency to this agenda. The feasibility of completing the agenda in the near term is reinforced by evidence that improvements can be scaled up rapidly after the initial pilot phase [62], that one country can learn from the experience of others and that major health donors have not yet focused on improvement approaches. With investments that appear feasible, Africa could reach the tipping point for QI within the next 5 years.

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