RETURN ON INVESTMENT

The Long-Term Impact of Building Healthcare Capacity in Africa





ACCORDIA
GLOBAL HEALTH FOUNDATION
Alliances to Fight Infectious Disease in Africa

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July 2010

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ABOUT ACCORDIA GLOBAL HEALTH FOUNDATION

Accordia Global Health Foundation builds Africa's capacity to fight HIV/AIDS, malaria, tuberculosis, and other infectious diseases through training, research, care, and prevention. Accordia works in partnership with individuals, corporations, foundations, nongovernmental organizations (NGOs), and governments from Africa, Europe, and North America to achieve its vision of a healthier Africa.

Accordia's approach is to invest in African healthcare systems, not only to address today's need to fight HIV/AIDS and other infectious diseases, but also to prepare a new generation of African healthcare leaders for tomorrow's challenges. Accordia's programs build healthcare capacity to promote consistent quality of care and strengthen academic medical institutions to train healthcare professionals and nurture young African researchers. The organization is dedicated to the transfer of knowledge and tools, and to the building of infrastructure, that will lead to an Africa that can move forward independently toward a healthier future.

A partnership among leading academic physician-researchers from Uganda and North America who were committed to pursuing a more collaborative, African-based and African-led approach to overcome the burden of HIV/AIDS in sub-Saharan Africa led to the creation of Accordia Global Health Foundation in 2003. In 2004, in partnership with Pfizer Inc, the Academic Alliance, and Makerere University, Accordia established the Infectious Diseases Institute (IDI) within Makerere University as the preeminent center in sub-Saharan Africa for infectious disease training, treatment, and research.

What started as a goal to improve the treatment of AIDS patients in Africa has now expanded to a mandate to develop and sustain the continent's ability to counter the spread of multiple infectious diseases, including malaria and tuberculosis. Today, Accordia maintains its partnership with IDI, while simultaneously building new partnerships and expanding the impact of its work throughout Africa.

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Accordia is grateful to the sponsors of the 2010 Infectious Diseases Summit, whose contributions made the Summit and this publication possible:

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ABOUT THE AUTHORS

Accordia Global Health Foundation is grateful to the individuals who shared their expertise and provided thoughtful analysis on the challenging but vital topic of more effectively capturing the impact of long-term training, research, leadership, and institutional capacity-building programs in order to improve accountability and inform future strategies.

Niles Friedman is currently the director of global programs for BroadReach Healthcare's for-profit business aligned with the pharmaceutical and medical device industries. He leads business development, project management/implementation, and overall operations for the team. He also leads the evaluation of new strategic business partnerships and ventures across the company. Mr. Friedman brings over twelve years of experience in healthcare management consulting and healthcare service delivery, with years of experience living and working in emerging markets.

Mr. Friedman recently served as a member of the executive leadership team for a large-scale ARV capacity-building/treatment program in South Africa. Areas of his involvement across health systems strengthening priorities included patient throughput, pharmacy and lab logistics and distribution, procurement and distribution approaches, and overall integration across the multidisciplinary program. He has developed partnerships and built sustainable relationships with national to district government leadership, private-sector firms, development firms, and research/surveillance entities that supported programmatic priorities. Before BroadReach, Mr. Friedman was a national partnership director at the Advisory Board Company, a U.S.-based healthcare consulting and research firm. Prior to this role, he served as a manager with Deloitte Consulting. Mr. Friedman has a master's in public health (focused in management and policy) from Emory University's Rollins School of Public Health and a bachelor's in zoology/pre-med from Ohio Wesleyan University.

Michael Johnson is the deputy director of the Fogarty International Center. Before joining Fogarty, Dr. Johnson was at the Office of Global Health Affairs at the U.S. Department of Health and Human Services, where he served as HHS liaison to the President's Emergency Plan for AIDS Relief. During that time, he was responsible for policy, technical, and budgetary aspects of HHS involvement in PEPFAR. As the chief of party for the Centers for Disease Control and Prevention's Caribbean Regional Office, he played an instrumental role in the establishment of CDC offices for PEPFAR in Haiti and Guiana. Dr. Johnson was the chief medical officer and the director of the Division of Training and Technical Assistance for the Ryan White CARE Act in the HIV/AIDS Bureau of the Health Resources and Services Administration. His work at HRSA included oversight of the national AIDS Education and Training Centers, initiation of the first clinical quality improvement initiative in a national, publicly-funded clinical care program, and the development of a variety of technical assistance interventions. He also provided agency representation and leadership in the Congressional Black Caucus Initiative on AIDS.

Maarten Kok is a PhD candidate at the VU University of Amsterdam and teaches health policy and diplomacy at the Amsterdam Institute for Global Health and Development. His main research interest is the contribution of research to action for health, with a specific focus on complex health issues and low-income and postconflict countries. Mr. Kok holds both a master's in biomedical science and a master's in public administration. In 2007, the National Institute for Public Health and the Environment provided him with the opportunity to conduct a PhD at the VU University at the Department of Health Sciences with a focus on knowledge systems and processes. This led to multiple studies on the functioning of health research systems, assessing the impact of health research, and research priority setting. His research led to consultancies for the Dutch Ministry of Foreign Affairs, the ETC Foundation, the Council on Health Research for Development, and the Ghanaian-Dutch Health Research Programme. In 2007, he was selected as one of the Young Voices by *The Lancet* and the Global Forum and participated in the Global Ministerial Summit on Research for Health. He is currently coleading an initiative of young researchers from around the world that aims to set health research goals.

Linda Kupfer received her bachelor's in psychology from Cornell University and her MS and PhD in pharmacology from Columbia University before commencing an AAAS Science Diplomacy Fellowship. Since receiving her doctorate, Dr. Kupfer has held a number of different posts in international science affairs, ranging from program officer at the State Department to director of marine biotechnology at the National Oceanic and Atmospheric Administration. In 2002, Dr. Kupfer joined the Fogarty International Center at the National Institutes of

Health as the deputy director of the Division of International Science Policy, Planning and Evaluation. She is currently the acting director of this group.

Dr. Kupfer's global research interests include implementation science and evaluation, and she is particularly interested in the role of capacity building in international research.

Bjorg Palsdottir is the cofounder and director for program development at the Training for Health Equity Network: THEnet, a network of outcome-oriented health professions schools serving rural and marginalized communities. She is responsible for organizational and collaborative project development and manages all operational activities. Previously she worked as a consultant on health workforce and organizational development for global health. Ms. Palsdottir has consulted with organizations, governments, and institutions such as the National Academy of Sciences, the World Bank, and the Bill & Melinda Gates Foundation on issues related to human resources for health. Her research has also focused on examining what organizational models and capacities are needed to effectively respond to disasters and infectious disease outbreaks. She was the cofounder and associate director of the Center for Global Health at New York University's School of Medicine, established in 1998. Prior to this, Ms. Palsdottir worked for the International Rescue Committee, an emergency relief and development organization, first at their headquarters in New York, then as a regional coordinator for East and Central Africa.

Ms. Palsdottir holds a BA in economic journalism, a master's in public administration and nonprofit management, a certificate in training and organizational development from New York University, and is a graduate of the Coaches Training Institute in San Rafael, California.

Theresa M. Riddle is managing director and founder of the Crossland Group, with primary responsibility for co-creating innovative business opportunities through the firm's strategic business partners. With a strong focus on translating the critical linkages between strategy and execution, she brokers teams of experts to design integrated solutions that help clients define and accelerate business impact. Ms. Riddle applies her vast international public- and private-sector business experience—working in Africa, Asia, Europe, and the Americas—to support clients from a diverse and cross-cultural market base. Working extensively in the areas of organizational design, change management, and leadership development, Ms. Riddle is committed to helping organizations deliberately build their capability.

Ms. Riddle received her MBA from Boston University and holds a BA in business management and human services from the University of New Hampshire.

Rachel Sturke is currently the evaluation officer for the Fogarty International Center at the U.S. National Institutes of Health. In this capacity, she leads several projects, including piloting case study methodology to demonstrate the impact of investments in training as well as overseeing the evaluation of Fogarty's scientific programs. Dr. Sturke obtained her PhD in reproductive and women's health from Johns Hopkins University's Bloomberg School of Public Health. She received a master's in public health and a master's in international affairs from Columbia University. Prior to her doctoral training, Dr. Sturke spent two years as a research analyst with Fogarty's Division of International Epidemiology and Population Health.

Kelly S. Willis is the senior vice president for global health programs at Accordia Global Health Foundation, responsible for shaping and expanding Accordia's capacity-building programs in Africa. Ms. Willis works with Accordia's corporate and foundation partners to develop, implement, and evaluate innovative programs that improve the quality of life in Africa by strengthening the health workforce. Among many other projects, Ms. Willis currently leads Accordia's Integrated Infectious Disease Capacity-Building Evaluation, a $12.6 million program designed and launched with the goal of evaluating a cost-effective method to build capacity among mid-level health practitioners in sub-Saharan Africa for the treatment and prevention of infectious diseases. Ms. Willis holds an MBA with fifteen years of international healthcare and development experience, much of that in the developing world and sub-Saharan Africa. Her industry and nonprofit experience in the areas of supply chain management, finance, and economic policy brings diverse insight to the role of developing and funding Accordia's programs.

FOREWORD

Return on investment. As the risk of a prolonged economic recession lurks, this is one of the most critical issues for the global health community. Over the past twenty years, tens of billions of dollars have poured into improving health in the developing world. In the last decade in particular, infectious diseases, including HIV/AIDS, malaria, and tuberculosis, have been a major focus of attention for governments, multilateral organizations, foundations, the private sector, and individual philanthropists determined to respond to a crisis of unprecedented magnitude.

There are myriad reasons for this global outpouring of generosity. Some funders reacted on a humanitarian basis. In the 1990s, developed countries were beginning to overcome the automatic death sentence of AIDS with effective drugs that could reduce symptoms and prolong life. In 1991, the NBA star Magic Johnson retired from basketball because he had become HIV-positive, yet he remained healthy and productive. In an interview, Johnson's doctor summed up the reason Magic was doing so well: "There's nothing experimental, nothing high-tech. *Anyone who can afford health care can afford what he's doing.* He's as healthy as he looks." At the same time, however, millions of Africans were dying because they had neither access to the new medications nor the money to pay for them.

Another reason was economic. Africa had a huge population and the potential to offer trade opportunities to the rest of the world. But without a healthy population, Africa's economic stability was uncertain at best. In the 1990s, as African democracies began to emerge following decades of unrest and started to rebuild their middle classes, economies, and political systems, they were confronted with rates of HIV infection that reached as high as 20 to 25 percent in some countries.

Finally, an Africa that remained unhealthy and poor posed a global security threat. In 2003, then Secretary of State Colin Powell noted that the countries and regions that were affected disproportionately by HIV infections were not alone in dealing with the consequences. "It's a foreign policy issue not just because of this statistic dealing with loss of life. It's loss of hope, it's the destruction ... of whole families where you have generations wiped out ... [W]ealth is lost to the country, hope is lost, families are broken, and orphans are created. It is every bit as much a crisis as Iraq or any other crisis that you might choose to point out."

These factors, coupled with strong Western economies, combined to stimulate both the desire and the means to send emergency aid to Africa and other developing nations at unprecedented levels, symbolized by the establishment of the Global Fund to Fight AIDS, Tuberculosis and Malaria in 2002 and the U.S. President's Emergency Plan for AIDS Relief in 2003. These and other investments have yielded positive results: better prevention and diagnostic tools created, new treatments developed and made widely available, and more than a million lives saved.

But circumstances have changed. The global economic crisis of the past two years has drained treasuries and made governments look at their foreign investments with new and more skeptical eyes. Other priorities are beginning to compete for increasingly scarce funds. Funders of all types have started to ask questions about the cost-effectiveness of their investments and the impact they have had. They are asking hard questions about where limited resources should be invested in the future, as we move from an emergency response to a longer-term approach that recognizes the chronic nature of the AIDS crisis. Bill Gates, who through the Bill & Melinda Gates Foundation has invested more than any other private entity in trying to improve global health outcomes, remarked recently, "[W]e need better measurement systems in health ... [We need] to determine what works."

This year, many organizations—including Accordia Global Health Foundation at its Infectious Diseases Summit held in Dar es Salaam, Tanzania, in April and the Global Health Council at its annual international conference in Washington, D.C., in June—have made it a priority to stimulate discussion and actions around how to improve evaluations of the impact of investments in global health. This will become increasingly challenging as the global health community shifts focus from short-term interventions to longer-term system strengthening and capacity building, which by its very nature involves complex systems and shared accountabilities.

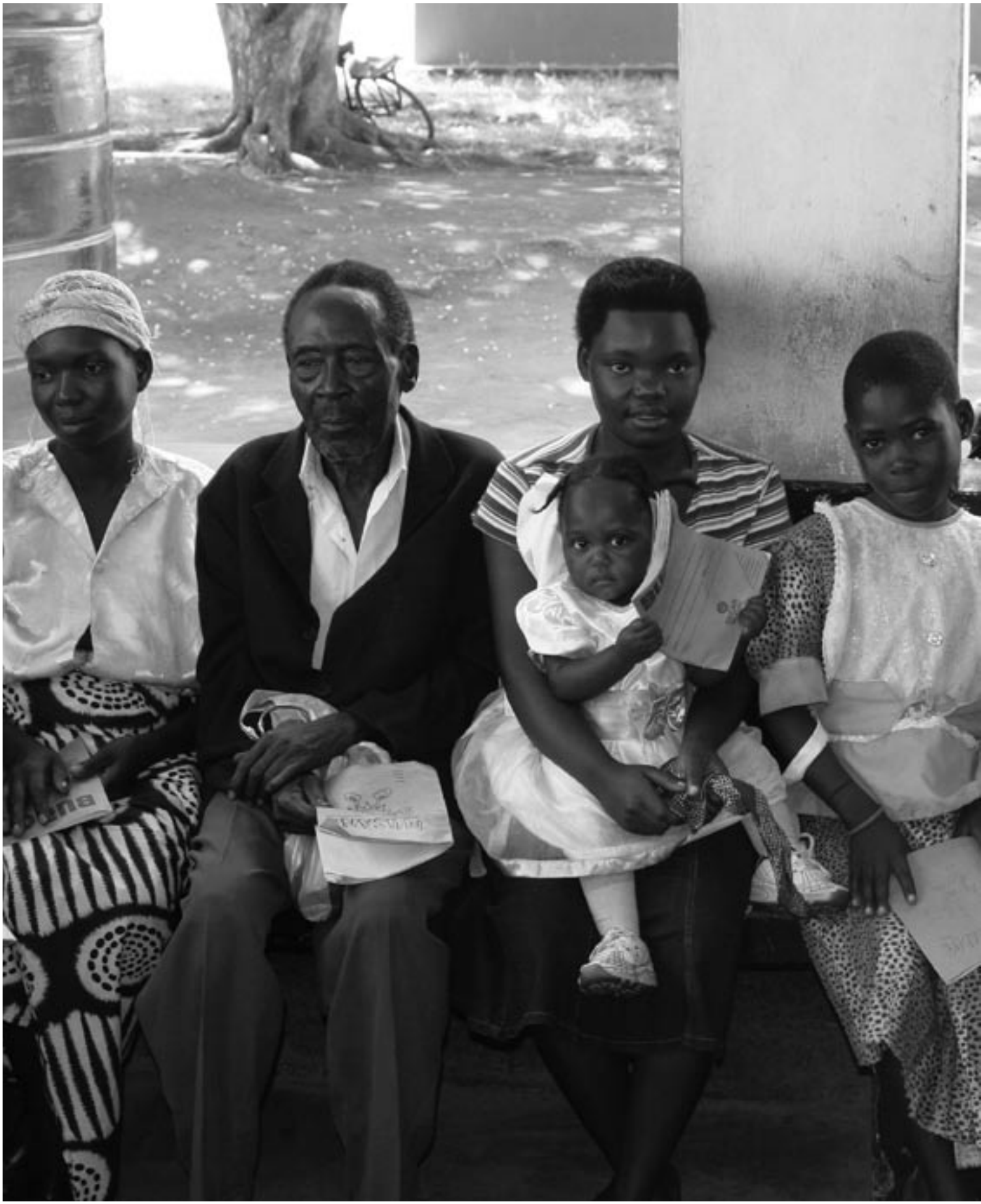
Beyond these challenges, the development of effective measurements is sometimes hindered by the way that many objectives have been conceived and programs developed. As Linda Fried and Lynn Freedman note in a recent article in *Global Health Magazine* entitled "Chasing Goals Rather Than Solving Problems?"

> *Too often, global goals and targets that were meant primarily to refocus political attention are mistakenly assumed to dictate appropriate first steps in a plan of action for effective implementation ... Clearly, [an] evidence-based approach to implementation would argue for a different relationship between aspirational global goals and the metrics that govern action on the ground.*

The viewpoints presented in this report discuss some of the opportunities and the early work being done to move from process measures to impact measures in key areas of building long-term research and institutional capacity in African health systems, including leadership development, health services delivery training, and bridging the transition from research to improvements in policy and practice. If we approach our work with a long-term lens, and then evaluate the impact and cost-effectiveness of our investments with the same lens, perhaps we can begin to solve problems more systematically and sustainably, as opposed to merely chasing goals. I hope that by working together in this way, we will be able to achieve not only our aspirational global goals but, more importantly, lasting improvements in the lives of men, women, and children throughout the developing world.

Jeffrey L. Sturchio
July 2010

Dr. Sturchio is president and CEO of the Global Health Council. Before joining the Council, Dr. Sturchio was vice president of corporate responsibility at Merck & Co. Inc., president of the Merck Company Foundation, and chairman of the U.S. Corporate Council on Africa, whose 150 member companies represent some 85 percent of total U.S. private-sector investment in Africa. He is also currently a visiting scholar at the Institute for Applied Economics and the Study of Business Enterprise at Johns Hopkins University and a member of the Global Agenda Council on the Healthy Next Generation of the World Economic Forum. Dr. Sturchio received a BA in history from Princeton University and a PhD in the history and sociology of science from the University of Pennsylvania.



INTRODUCTION

The impact of the infectious disease crisis in Africa is well understood. HIV/AIDS and the corresponding resurgence of malaria and tuberculosis has exacerbated the cycle of poverty, bred political instability, disrupted workforce productivity, strained weak health systems, deteriorated family structures, and created long-term social and health problems on an unprecedented scale.

Since the beginning of the HIV/AIDS epidemic, more than 15 million Africans have died. In many countries of sub-Saharan Africa, average life expectancy has fallen by twenty years due to AIDS. Because the vast majority of people living with AIDS are between the ages of fifteen and forty-nine–in the prime of their working lives–absenteeism is a major threat to businesses. It is estimated that the economic impact on gross domestic product is around 1.5 percent per year for the most affected countries. At an individual level, it is estimated that HIV care can absorb one-third of a household's monthly income. These expenditures mean that money is not available for school fees for children, and in some African countries school enrollment is down 25 to 30 percent as a result. More than 11 million children in sub-Saharan Africa have been orphaned, and in many cases, traditional kinship structures are no longer able to cope with the additional burden of providing care to sick family members. Numerous studies outlining these and other devastating impacts of HIV/AIDS have been published.

Understanding the massive scale and vast impact of the crisis, the international community has responded to this unfolding tragedy over the past two decades with historic investments intended to provide affordable medications to the developing world, improve diagnostics and discovery of new treatment options, rapidly train health workers, and, ultimately, increase access to quality medical care. As a result of these efforts, more than a million lives have been saved, HIV prevalence has declined in many countries, and AIDS is no longer an automatic death sentence. However, there is still much work to do.

> *The resources for AIDS are a topic of considerable interest and debate internationally, yet little is understood about how these resources are actually being spent, and whether they are being made available as efficiently and effectively as possible for the fight against AIDS.*
>
> **"Following the Funding for HIV/AIDS," Center for Global Development, 2007**

Unfortunately, we are living in a time in which the magnitude of the problem remaining to be solved is now matched by the magnitude of global economic challenges. Economic volatility and uncertainty has threatened global health spending as nations around the world struggle to meet domestic needs.

Given this reality, there is increasing urgency to more effectively gauge the return on investments in global health to help guide difficult choices about how to invest scarce resources to improve health and reduce dependencies.

Funders, including governments, foundations, the private sector, and individuals, are demanding more compelling evidence and insisting that the organizations they support create tangible health outcomes and social value that raise the bar–and that they do so in real time to enable agility in decision making. This includes a strong and resounding call for increased focus on impact rather than process measures, indications of quality as well as quantity, and creative approaches to understanding contribution and shared impact in addition to attribution. There is also increasing recognition that we are dealing with complex systems, diverse stakeholders, and multidimensional problems and therefore must work more efficiently and effectively to maximize our combined impact.

In other words, we must understand as much about the impact of investments in global health as we do about the impact of the crisis itself.

Data That Drives Decision Making

The challenge–at all levels–is to translate this call to action into meaningful data that can drive decision making.

At the health system level, there are several efforts underway to improve the depth and quality of data that is available to policy makers to drive decision making in health. The World Health Organization, the World Bank, the Bill & Melinda Gates Foundation, and others are investing in the development of health information systems, metrics, and strategies that will detect changes and show progress in the six

core building blocks of a health system: finances, health workforce, information, governance, medical products and technologies, and service delivery. These efforts are critical in understanding the functioning of country-level systems and in allowing comparison between countries.

At the programmatic level, there is increasing emphasis being placed not only on evaluation and evidence-based approaches but also on cost-effectiveness and value for money. Evaluation, which has at times been viewed as a diversion of scarce resources and personnel from the "real work" of serving clients and communities, is now gaining in stature. A 2009 report from the Urban Institute and the World Bank, *Evaluation Matters*, sums up the belief of a growing number of funders, policy makers, and practitioners:

> *[E]valuation can be a valuable tool to help nonprofits learn about achieving their goals effectively and to make strategic decisions about the best use of limited resources. Viewed from this perspective, evaluation can help agencies improve performance, serve larger numbers of clients, and justify requests for expansion of their programs …*
>
> *[E]valuation can no longer be viewed as optional or discretionary. [The] ability to report on program performance is becoming essential to organizational legitimacy and survival. Evaluation needs to be seen as "mission critical" and, as such, serve to create a feedback loop integrated with all essential agency functions: decision making, resource allocation, day-to-day management, communications, and advocacy. With the growing trend toward accountability, nonprofits must become more adept at effectively demonstrating and communicating their value to donors, clients, and the public.*

> *Especially in the face of new funding constraints, HIV/AIDS donors should seriously consider putting in place or improving the structures and procedures that are necessary for a system that successfully ties funding decisions to programmatic results.*
>
> **"Are Funding Decisions Based on Performance?"**
> **Center for Global Development, 2010**

The Bill & Melinda Gates Foundation added to this message with its publication, *A Guide to Actionable Measurement*, which stated, "Our philosophy and approach emphasize measurement done for a specific purpose or action. We recognize that the most elegant evaluation is only meaningful if its findings are used to inform decisions and strengthen our work to improve people's lives."

Capacity Building

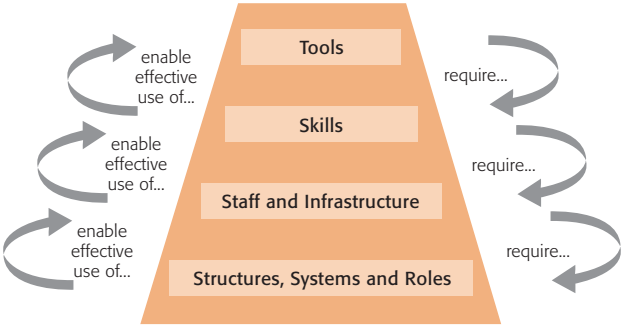
> *Are we still measuring circles, spirals, atoms, and clouds with a tape measure?*
>
> **Comment by John Grove, CDC-Tanzania, at the 2010 Infectious Diseases Summit**

As more people are accessing care and the hunt for a vaccine continues, there is an increasing realization that HIV/AIDS is a chronic issue that cannot be resolved through an emergency response. As such, the focus of many donors and governments has shifted toward health systems strengthening, institutional development, and longer-term capacity building that will enable Africa to move forward systematically toward a stronger and more sustainable healthcare system.

In the development sector today, the term "capacity building" is an elusive one, a phrase that has taken on so many meanings that it has lately become relegated to the broad scope of jargon known as "consultant-speak." While almost everyone recognizes the importance of building capacity and reducing dependency while executing development programs, there are different interpretations of what "capacity building" actually means, and, more importantly, what effect it has on the overall outcome of a program.

Researchers Christopher Potter and Richard Brough, in *Systemic Capacity Building: A Hierarchy of Needs* (2004), argue that instead of thinking about capacity building as mere training, or the creation of new infrastructures, it is more helpful to look at it through a systems perspective. In short, they state that capacity building "should enable program execution independent of changes of personalities, technologies, social structures and resource crises, i.e., it implies developing sustainable, *and robust*, systems." To build systems capacity, the authors believe that it is useful to consider a hierarchy of capacity-building needs—with each need requiring a specific strategic response. The hierarchy comprises four categories of need, which are illustrated in the pyramid below.

Figure 1. Capacity Pyramid



Nine Component Elements of Systemic Capacity Building

Performance capacity: Are the tools, money, equipment, consumables, etc., available to do the job? However well trained, a doctor without diagnostic instruments, drugs, or therapeutic consumables is of very limited use.

Personal capacity: Are the staff sufficiently knowledgeable, skilled, and confident to perform properly? Do they need training, experience, or motivation? Are they deficient in technical skills, managerial skills, interpersonal skills, gender-sensitivity skills, or specific role-related skills?

Workload capacity: Are there enough staff with broad enough skills to cope with the workload? Are job descriptions practicable? Is the skill mix appropriate?

Supervisory capacity: Are there reporting and monitoring systems in place? Are there clear lines of accountability? Can supervisors physically monitor the staff under them? Are there effective incentives and sanctions available?

Facility capacity: Are training centers big enough, with the right staff in sufficient numbers? Are clinics and hospitals of a size to cope with the patient workload? Are staff residences sufficiently large? Are there enough offices, workshops, and warehouses to support the workload?

Support service capacity: Are there laboratories, training institutions, biomedical engineering services, supply organizations, building services, administrative staff, laundries, research facilities, and quality-control services? They may be provided by the private sector, but they are required.

Systems capacity: Do the flows of information, money, and managerial decisions function in a timely and effective manner? Can purchases be made without lengthy delays for authorization? Are proper filing and information systems in use? Are staff transferred without reference to local managers' wishes? Can private-sector services be contracted as required? Is there good communication with the community? Are there sufficient links with NGOs?

Structural capacity: Are there decision-making forums where intersectoral discussion may occur and corporate decisions made, records kept, and individuals called to account for nonperformance?

Role capacity: This applies to individuals, to teams, and to structure such as committees. Have they been given the authority and responsibility to make the decisions essential to effective performance, whether regarding schedules, money, staff appointments, and so on?

Source: Brough and Potter, 2004.

Long-Term Outlook

Within this broad systems context and moving toward capacity-building approaches that are specifically designed, implemented, and evaluated against long-term impact objectives, understanding and clearly articulating the return on investment can be extremely difficult. Inherently, there are complex challenges to be overcome—some methodological, others logistical, many a combination of the two.

From a funding cycle and management perspective, there are persistent difficulties in establishing metrics that meet short-term requirements for decision making while fully capturing and clearly articulating the long-term impact of the investment, which may evolve over decades. Leadership training and mentorship may take place as part of a two-year program, with results that span a lifetime. Research capacity development may yield scientific breakthroughs decades after the initial investment was made, and institutional development may have transformative system effects that only become apparent years after reforms take place.

> *A smart, strategic, long-term global health policy will advance America's core interests, building on remarkable recent successes, making better use of the influence and special capabilities of the United States, motivating others to do more, and creating lasting collaborations that could save and lift the lives of millions worldwide. It will usher in a new era in which partner countries take ownership of goals and programs, in which evaluation, cost effectiveness, and accountability assume vital roles … And it will enhance America's influence, credibility, and reservoir of global goodwill.*
>
> **"Report of the CSIS Commission on Smart Global Health Policy," Center for Strategic and International Studies, 2010**

We are also working within complex systems in which multiple actors and environmental factors are contributing to both our combined successes and failures. Over time, this complexity increases exponentially to the point at which attribution to a single program or change in policy is simply not possible.

These issues have confounded practitioners and evaluators alike for some time. However, as conventional wisdom teaches, what gets measured gets done. As such, given the magnitude of the challenges in the fight against infectious diseases in Africa and the very real financial constraints, methodological challenges are no longer an acceptable excuse.

In response, individuals, organizations, and networks are beginning to experiment with innovative and creative approaches that attempt to understand quality, take cost-effectiveness into consideration, and look at health outcomes as the ultimate measure of impact. Some take the classic 1946 movie, *It's a Wonderful Life*, approach, asking the question: What would have happened if a program had never come along? Others build a contribution story that makes sense—even in the absence of direct program attribution. Case studies and other qualitative data are being integrated with quantitative data to provide a compelling and more complete picture. New methods are being developed to assess changes in clinical behaviors and to understand complex processes that lead to changes in policy and practice. Networks are coming together to look at shared metrics and to develop joint frameworks.

New approaches to measuring and articulating return on investment are essential. Without them, it will be difficult to sustain the long-term outlook and funding streams that are heralded as the critical next step in preparing Africa to fight this epidemic and future health crises.

Pushing Boundaries: Long-Term Capacity Building

In this report, five different approaches to long-term capacity development and systems strengthening are viewed through the lens of long-term impact evaluation. The authors are all experts in the areas they address and bring considerable theoretical *and* real-world knowledge to the subjects they discuss in their viewpoints.

In "Measuring the Impact of Developing Africa's Leaders," Theresa M. Riddle (The Crossland Group) and Niles Friedman (BroadReach Healthcare) look at the importance of building leadership among all levels of healthcare professionals and workers in Africa to "scale up effective interventions, discontinue those that are not working, align global funding streams for sustainable impact, and motivate a health workforce that is faced each day with major challenges and resource shortages." They describe several evaluation models that are being used to assess the creation of value related to leadership development programs, note that "there is an art *and* a science to measuring leadership development," and suggest the importance of "using a balanced mix of qualitative and quantitative methods to analyze data, assessing the value to those directly served that is added by leadership development activities."

Kelly Willis (Accordia Global Health Foundation) discusses ways to more effectively measure the impact of training programs for healthcare workers in "Capacity Building for Health." She notes that "the impact of any global health intervention, no matter how effective in the laboratory, is bound by the ability of the recipient's health workforce to use it." If the world is going to invest more in programs that go beyond classroom training, we must know how to better evaluate their impact. Willis describes the Infectious Disease Capacity-Building Evaluation, which is examining the cost-effectiveness and incremental benefit of a method to build capacity among mid-level health practitioners that uses on-site instruction and follow-up activities; the project is measuring the impact of this kind of training on meaningful outcome indicators such as patient health.

> *The systemic bottlenecks in the health systems of low- and middle-income countries (such as poor surveillance systems, bottlenecks in drug supply pipelines, and chronic deficits in the health workforce) prevent the full benefits of existing public health knowledge and technologies from being realized … Currently, few programs that deliver specific health interventions undergo rigorous evaluation. If U.S. efforts are to achieve sustainable and far-reaching outcomes, the importance of knowing what works is critical.*
>
> **"The U.S. Commitment to Global Health: Recommendations for the Public and Private Sectors," Institute of Medicine, 2009**

Rachael Sturke, Michael Johnson, and Linda Kupfer (National Institutes of Health's Fogarty International Center) provide a thoughtful look at the importance of research as an essential component of a strong health system, in "Capturing the Long-Term Impacts of Research Capacity Building." They point out that investments in research require a long-term lens: "investments in scientific research training and capacity that began in the 1970s are now bearing fruit as scientists from Africa, Asia, and Latin America play a key role in conducting research to improve global health."

"Institutional Development for Africa: Toward Greater Accountability for Results," authored by Bjorg Palsdottir (Training for Health Equity Network), discusses the critical role played by medical institutions in the development of strong health systems and the development of capacity. Palsdottir reports that while the funding for global health has quadrupled over the past two decades, little investment has been made in the "institutions that produce the healthcare providers, scientists, policymakers, and managers and that perform the research and interventions that health systems need," even while it was obvious that the bottleneck in many regions of Africa to effective delivery of care were those very healthcare workers. She recommends that the design and evaluation of health education institutions should use "a system lens and [employ] a more diverse toolkit that includes different methodologies and approaches."

Finally, Maarten Kok (Amsterdam Institute for Global Health and Development) considers the progression of research to policy to

practice in "Assessing the Contribution of Research to Enhance Its Impact." He provides examples of how research that is planned with the goal of impact evaluation can indeed change policy and lead to improved practice and health outcomes and notes that "over the past few years the impact of a large number of research projects in various African countries has been assessed. A recurring finding is that engaging relevant constituencies in setting research priorities and involving potential end users in the formulation, conduct, and translation of applied health research are strategies that increase the likelihood that research will be used to inform policy and affect practice."

Measuring Success—An Imperative for the Global Health Community

There are many frameworks and models that have been or are being developed to help us better understand the impact of investments in global health. Whatever the model used, it is imperative that—in a time in which the magnitude of the problem to be solved is matched by the magnitude of global economic challenges—we take a hard look at return on investment and make difficult choices about how to invest scarce resources. This requires information and evidence about what works.

The future of Africa's healthcare system and the health of the continent's population depend on our combined effectiveness and impact now and in the coming years.

In April 2010, Accordia Global Health Foundation, in partnership with the National Institutes of Health's Fogarty International Center and the Infectious Diseases Institute in Kampala, Uganda, held its third annual Infectious Diseases Summit in Dar es Salaam, Tanzania, to discuss the long-term impact of building healthcare capacity, and how organizations working in the field could better measure and evaluate the impact of their work and programs. The invitation-only Summit brought together nearly 100 researchers, policymakers, practitioners, and public and private funders from twenty African, North American, and European countries, who discussed many of the challenges and opportunities in moving the field toward a better understanding of what is and isn't working in the effort to build Africa's healthcare capacity. This report is informed by the presentations, panel discussions, and interactions between participants that took place during the two days of the Summit.

MEASURING THE IMPACT OF DEVELOPING AFRICA'S LEADERS

Theresa M. Riddle and Niles Friedman

Introduction: The Call to Action

In an effort to strengthen Africa's health systems and improve the continent's overall well-being, a significant paradigm shift to more effectively build leadership and management capacity among Africa's global health leaders is underway. This shift is demanding a change in mind-set by institutions, governments, and health organizations across Africa about the value of developing leadership in an *intentional* way. It is also changing the way people are recruited, assessed, developed, and incented in progressively more responsible leadership and management positions. Clearly, these shifts are requiring more real human and financial investment, not only to prepare individuals and institutions for leadership roles in healthcare policy, education, research, and service, but also to create an enabling environment in which the current cadre of leaders is retained and emerging leaders can thrive.

Research shows that health leadership and management skills are desperately required at all levels of the health system to scale up effective interventions, discontinue those that are not working, align global funding streams for sustainable impact, and motivate a health workforce that is faced each day with major challenges and resource shortages. Doctors, nurses, researchers, and health workers do more than practice medicine—they lead change within increasingly complex environments; build teams; manage intricate budgets and projects; develop new business; and motivate, develop, and manage a diverse array of staff—all in service of improving global public health.

> *At the country level, the ministries of health in Kenya recognize that effective leaders and managers are the foundation to achieve both Kenya's National Vision 2030 and the MDGs for health. This has led to a systematic, intensified reform process and new policies requiring leadership and management development for those entering the health sector.*
>
> **"Leadership and Management,"**
> **Joseph Dwyer and Sara Wilhelmsen,**
> **Global Health Magazine, 2010**

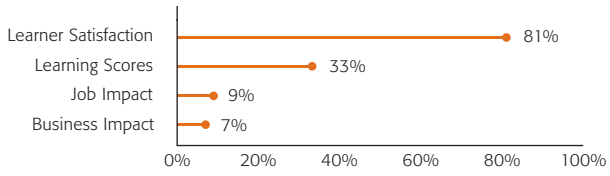
In the 2009 Infectious Diseases Summit report, *Building Healthcare Leadership in Africa*, Accordia Global Health Foundation offered a framework for how to approach this paradigm shift. A number of immediate opportunities for long-term impact were cited, including expanding leadership training opportunities, mandating mentorship programs, investing in leading institutions, utilizing information technology, and improving impact measurement. Building on the consistent component of the 2009 Summit dialogue around the challenge of rethinking the way in which individuals, institutions, and networks articulate and deliver impact that responds to the greatest needs of society, Accordia's 2010 Infectious Diseases Summit in Tanzania took on the question, "How can the long-term impact of building Africa's healthcare capacity in training, research, leadership, and institutions be better defined and measured to inform future strategies?" This viewpoint article focuses on ideas to better define the evidence that demonstrates the impact of building health leadership capacity in Africa.

The Evidence: Understanding What Is Measured

Leadership—or lack of it—has the potential to greatly influence an organization's ability to achieve its mission and deliver tangible results. Developing effective leaders is important in any environment, but the need is magnified during times of uncertainty. The shaky donor market is dramatically changing the global public health landscape, increasingly emphasizing more direct funding of *local* leadership and implementation capacity on projects where large gains in health can be achieved. Therefore, there is a greater urgency to define and measure the hierarchy of evidence that establishes a direct correlation between capable leadership at all levels and a better, healthier future for all Africans.

What is notable from research reviews on leadership development is how little specific evidence there is about whether better leadership training actually leads to enhanced individual performance or has any direct impact on organizational performance. According to the online management publisher BNET, organizations spend an average of 36 percent of their budgets on human capital expenses but fewer than one out of five organizations report more than a moderate understanding of the return on that investment. The literature suggests that this is because there is a lack of agreement about what measure

of success to use, as well as the difficulties and costs of undertaking longitudinal studies. The graph below cites what organizations are typically measuring with respect to leadership development and shows that too few are measuring impact beyond rudimentary utilization and satisfaction metrics.



Source: "High Impact Leadership Development" Bersin and Associates Industry Report, 2007

Leadership expert Dan McCarthy's "Six Ways to Measure the Impact of Leadership Development" (http://www.greatleadershipbydan.com/2007/11/six-ways-to-measure-impact-of.html) provides a practical approach to understanding the potential spectrum of value created through improved leadership, and includes the following measures:

1. **Institution/company performance**–indicators include financial measures, client/partner satisfaction, growth, human resource systems and development, and internal operations (e.g., efficiency, speed, reducing non-value-added work, minimizing quality problems).

2. **External perception of leadership**–measure through leadership awards, national and international publications, surveys, results of intentional meetings with the institution's stakeholders.

3. **Internal perception of leadership**–aggregate scores from 360 leadership assessments (a multiple-input approach to performance feedback), analyzing leadership questions on annual employee surveys, benchmarking through a Leadership Practices Inventory (a thirty-item questionnaire based on the Five Practices of Exemplary Leadership) or third-party vendor (such as Gallop).

4. **Succession planning measures**–track "bench strength" by the number of key positions filled by internal and/or "ready now" candidates for each key position, monitoring individual development plans to measure relevant development activity for key leaders and succession candidate pools.

5. **Leadership development training**–apply basic Kirkpatrick Model, using four measures of learning evaluation: satisfaction, knowledge, behavior change, and business results/health outcomes; or the EvaluLEAD framework (see page 19), which offers an open-systems perspective to measure episodic, developmental, and transformative change.

6. **Meetings with key stakeholders**–engage in regular meetings with key stakeholders (clients/end users, governments, funders, partners, staff) to ensure that individual and institutional efforts are making an impact and that current and future needs are continuously assessed, accomplishments are communicated, and overall satisfaction is validated.

While there is much that could be written about each of these areas from practices of both the private and public sector, there is still relatively little evidence that links leadership development to longer-term value creation. In exploring where new definitions of value exist to measure the social and economic benefits of developing leadership in Africa, a few interesting points of view emerge.

Leveraged Leadership Networks

Leadership development practitioners are increasingly interested in networks as a way to strengthen relationships and build capability among leaders in the field, communities, and organizations. One challenge for the field of leadership development has been how to evaluate leadership networks and understand the impact they have on societal challenges. Social Network Analysis (SNA) is a promising evaluation approach that uses mathematics and visualization to map and measure the structure of relationships between people, organizations, computers, URLs, goals, interests, and other information/knowledge entities within a larger system.

Common evaluation categories are **connectivity** (does the structure enable efficient sharing of information, ideas, and resources?), **overall network health** (what is the level of trust among members, and are people exercising leadership?), and **network outcomes and impact** (is there evidence of greater coordination or collaboration among leaders, higher levels of civic engagement, improved citizenship, resource optimization, innovative products, and positive influence on policy decision making?).

Improved Work Climate

Work climate is an indication of a team's health and growth. According to a Management Sciences for Health paper published in 2008 ("Leadership Can Be Learned, but How Is It Measured?"), climate is defined as the "prevailing workplace atmosphere that is experienced by members of a given work group." More organizations are using climate metrics to determine how work climate influences the achievement of long-term outcomes. Research from the education sector shows that teams with a positive climate tend to perform well and achieve their

desired results. Better-performing teams lead to better organizational performance, which translates into improved health service delivery.

Expanded Local Leadership

Home-grown companies like Nakumatt Holdings, MTN Group, and Spur Corporation are expanding aggressively across the African continent, according to the *Wall Street Journal*. This growing investment and trade *from* African companies *in* African countries has not only helped the continent hedge against the global economic crisis but has infused a new wave of investment in building leadership capacity to manage this expansion.

Many African companies are working to overcome significant barriers to doing business, including weak infrastructure, trade tariffs, and the fact that the majority of people in Africa live below the poverty line. The companies need employees who are capable of building partnerships with governments, motivating and developing teams, and managing businesses amid significant social challenges. An innovative way to assess the longer-term impact of building capable healthcare leaders in Africa also may include measuring the benefit of developing leaders to create new or expand existing businesses, both in economic terms (jobs created) and societal value (policy shifts in trade barriers).

> *The best measure of leadership development is its contribution to the bottom line. We say an effective approach to leadership development has people produce unprecedented results in their current roles while being exposed to new tools that will elevate their performance for the future."*
>
> **"High Potential ROI: Leadership Development Programs Produce Exponential Returns," JMW Consultants**

Evaluation Models: Approaches to Assessing the Value Creation

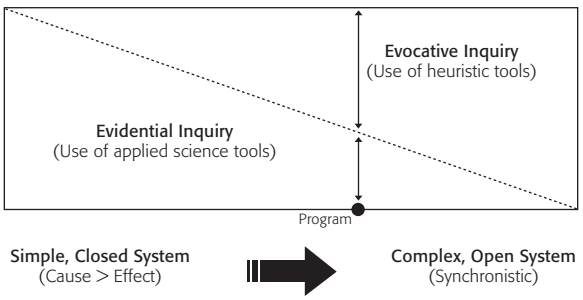
There is both an art and a science to measuring leadership development, and not all results are easily quantified. Today, more organizations are using a balanced mix of qualitative and quantitative methods to analyze data, assessing the value to those directly served that is added by leadership development activities.

EvaluLEAD Framework

The EvaluLEAD framework (Figure 1) uses an open-systems perspective to evaluate links between program actions and organizational or systems-level results. The method outlines the lines of inquiry necessary to capture outcomes at the individual, organizational, and societal levels. It also assumes that exploring the results of leadership development programs will lead to findings that could not have been foreseen with clarity. The purpose of this approach is threefold, and seeks to

- better understand associations between results observed in the individual, organizational, and societal domains;
- recognize observed patterns and examples of how a program works to accomplish its short-term objectives and broader mission; and
- share findings with key program stakeholders and use as a basis for program enhancements.

Figure 1



Source: *EVALULEAD: A guide for shaping and evaluating leadership development programs* (Grove, Kibel, and Haas, 2005).

EvaluLEAD focuses attention on three fundamentally different, yet interrelated, forms of change that leadership development programs seek, and the results associated with each form. A program objective, such as enhancing organizational performance, might involve all three types of results.

Episodic changes are typically cause-and-effect, well-defined, time-bound results stimulated by actions of the program or its participants and graduates. Examples might include knowledge gained, a proposal written, a conference held, or an ordinance enacted.

Developmental changes occur across time; results are represented as sequences of steps taken by an individual, team, organization, or community that reach toward and may achieve challenging outcomes. Examples include a sustained change in individual behavior, a new organizational strategy that is used to guide operations, or implementation of an economic development program.

Transformative changes represent fundamental shifts in individual, organizational, or community values and perspectives that seed the emergence of shifts in behavior or performance. Transformative results represent a crossroads, whereas episodic and developmental results are not nearly so unexpected or so potentially profound in their consequences. Examples of transformative results include substantial changes in viewpoint, vision, or paradigms; career shifts; new organizational directions; or fundamental sociopolitical reforms.

The EvaluLEAD framework is applied through a series of steps and associated questions as a guide to building the hierarchy of evidence. The first step is to clarify the vision of the leadership development activity and articulate the leadership and evaluation context. The next step is to define the types of results and the various domains (individual, organizational, and community) of impact. Creating a results map, prioritizing those results, and developing data-collection strategies are key to building a method matrix and an evaluation plan. (More information about the EvaluLEAD framework is available online at http://www.phi.org/pdf-library/EvaluLEAD.pdf.)

Leading and Managing for Results Model

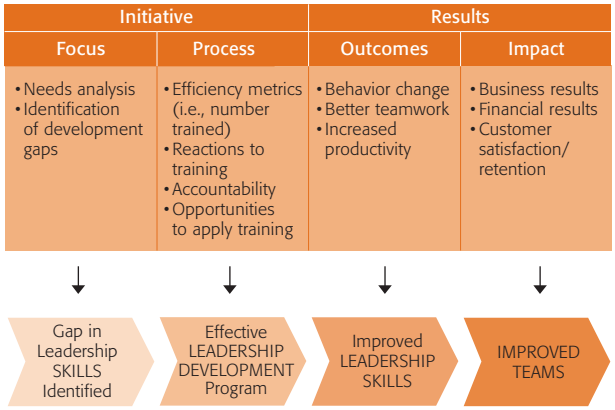
Management Sciences for Health (MSH) uses proven and practical approaches to engage people and organizations around the world in making improvements to address priority health concerns. They believe that strengthening healthcare leadership and management is the cornerstone of global and national efforts to save lives.

The results model in Figure 2 illustrates MSH's strong view that measurement of leadership and management capacity is not an end in itself; rather, working on leadership and management is a means of improving work climate and management systems–and, eventually, strengthening health services.

Development Dimensions International Approach

According to Development Dimensions International's (DDI) recent Global Leadership Forecast, which surveyed more than 12,000 leaders around the world, leadership development is the top priority for organizations. DDI's approach for measuring the impact of managing and developing talent is designed to focus on four distinct areas: focus, process, outcomes, and impact (see Figure 3). And there is clearly an advantage for measuring across these four areas as a continuum, according to DDI.

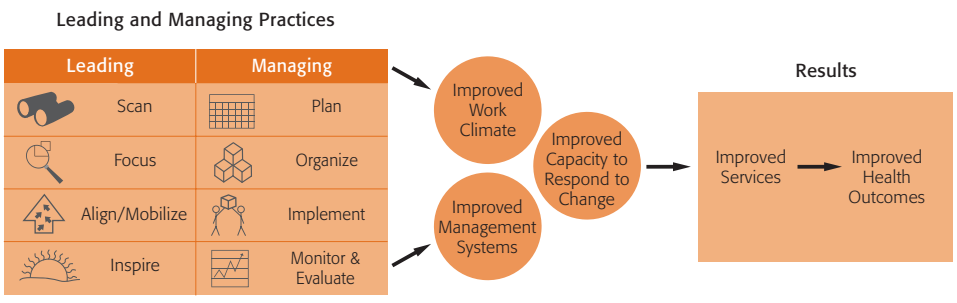
Figure 3



Source: "What has Leadership Development Done for you Lately?" Development Dimensions International, Inc. (DDI)

Results from several DDI studies show that there is significant improvement in teamwork, communication, and employee engagement when institutions/organizations invest in the whole spectrum of approaches to leadership development. They further show that capable leaders who influence work groups' performance (better quality of work, higher employee productivity, and greater efficiency of operations) provide the pathway to business impact.

Figure 2



Source: *Managers Who Lead: A Handbook for Improving Health Services* (Management Sciences for Health, 2005).

BroadReach Healthcare

Together with its partners and donors, BroadReach Healthcare is dedicated to improving health outcomes in developing countries. In pursuing this goal, the organization considers it critical to broadly and rapidly instill pragmatic management and leadership practices across the local health workforce. Management and leadership training initiatives aimed at immediately increasing the effectiveness of the existing workforce focus on simple, highly applicable, cross-discipline tools and approaches that seamlessly integrate into existing efforts, catalyze implementation, and drive change in real time.

The Management and Leadership Academy for Healthcare Professionals

Based on this conviction, BroadReach Healthcare and its nonprofit affiliate, the BroadReach Institute for Training and Education (BRITE), have developed and implemented the Management and Leadership Academy (MLA) as a unique program to equip, in a sustainable manner, healthcare workers with the knowledge and skills to lead, manage, own, and transform the delivery of healthcare in their own countries. By using modular training materials and localized program content, the program has the flexibility to target the most urgent healthcare delivery challenges of each country in which it operates. Notwithstanding localization, MLA builds on five key principles that have proven effective in training delivery for healthcare professionals in the developing world:

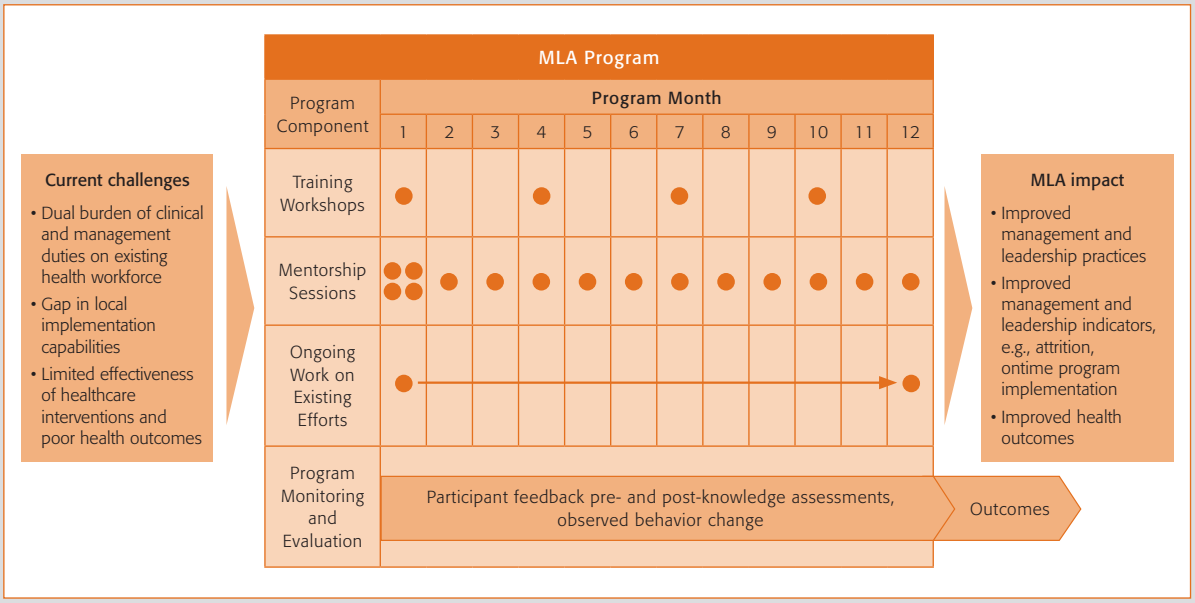
1. **Exclusive focus on management and leadership skills.** MLA focuses on the management and leadership skills needed in healthcare delivery—skills in which, almost universally, healthcare professionals are not trained during their pre-service years, and which they have limited opportunities to learn while in practice. By explicitly addressing the critical gap in local implementation capabilities, the program can serve as a powerful enabler to myriad other healthcare interventions taking place in the country.

2. **Short, on-site workshops, combined with comprehensive mentoring and follow-up.** To minimize absence from posts, workshops in classroom settings are limited to two to four days at a time. They occur approximately once a quarter and are conducted as close to participants' posts as possible. Dedicated mentors follow up with workshop participants to reinforce the application of skills acquired in workshops during day-to-day operations.

3. **Cross-functional cohorts that include decision makers.** The program supports all healthcare professionals who play a management and leadership role across multiple cadres and levels of the system, including professionals at facilities, at district or provincial health offices, and at the national level. Both training and mentoring components of the program are delivered to cross-functional cohorts. Whenever possible, the cohorts include key decision makers at each level of the healthcare system; they are expected to make actual decisions during the exercise and thereby formalize the framework that will enable immediate and sustainable change in management, leadership, and general staff behavior.

4. **Actual health system challenges as focal points.** In collaboration with local stakeholders, the MLA team selects a set of pressing real-life challenges with which health officials are currently grappling to work on as part of the program. MLA thereby achieves and demonstrates an immediate and concrete impact on health system performance and encourages the stakeholders to demand even more improvement and to promulgate the methodology more widely.

5. **Local implementation partners.** Local partners are used at all stages of program development and implementation, including localization of curriculum, workshop delivery, mentoring support, and program evaluation. These local partners represent a cross-section of stakeholders in the health and educational systems of the partner country.



Using MLA to Support Large-Scale ART Rollouts in Botswana and Ethiopia

As outlined above, the MLA program is used to boost the local implementation capabilities that are critical to healthcare interventions in developing countries. With this objective in mind, MLA has been implemented in Botswana and Ethiopia to support large-scale rollouts of antiretroviral therapy (ART). In Botswana, the MLA methodology spearheaded the rollout of the national ARV program by helping prepare more than 500 multidisciplinary professionals from the National Ministry of Health, the Ministry of Local Government, and key stakeholder agencies spanning the entire country. Similarly, in Ethiopia, MLA was delivered to cross-functional teams of 200 health facility leaders, health administrators, and government officials in the regions of Amhara and Tigray. While rolling out ART was the most urgent healthcare delivery challenge in both of these country contexts, MLA also supports a wide range of other disease prevention and treatment efforts, as well as addressing other health system needs. For instance, elements of the program have been delivered to healthcare professionals in KwaZulu-Natal Province in South Africa as one component of a broad health systems strengthening effort.

Assessing the Impact of the MLA Program

MLA is fundamentally a results-based training and development program that targets local management and leadership skills to improve the outcomes of both specific healthcare interventions and the health system as a whole. **Feedback** on the MLA program from participants, ministry officials, and implementing partners has been overwhelmingly positive. Participants noted that skills highlighted during workshops were broadly and immediately applicable to the challenges they faced in day-to-day operations at their posts. On-site follow-ups to workshop sessions also proved particularly useful. Moreover, **pre- and post-knowledge assessments** conducted during workshop sessions in Ethiopia showed, on average, an improvement in test scores of 49 percent.

By nature of broadly influencing the delivery of healthcare in each implementation context, isolating the impact of the program on health outcomes is challenging. To date, BroadReach has received anecdotal evidence of positive **behavior change** (e.g., in the form of increased teamwork across functions of healthcare professionals). MLA is ultimately intended and expected to contribute to improvements in health outcomes such as prevalence rates, morbidity, and mortality. However, due to the multicausal nature of these indicators, measurement of **program outcomes** should focus on those metrics through which MLA can be expected to have the most immediate impact, such as attrition and on-time program implementation. BRITE is currently planning to pilot a countrywide rollout of the MLA program; tracking these measurements to inform future program decisions will be an integral part of pilot design.

Changing the Game: Invitation to Join the Dialogue

Effective management and leadership are critical aspects of well-performing health organizations and programs. In most developing countries, the sustainability of healthcare interventions depends on strong local leadership and implementation capabilities. In their day-to-day work, healthcare professionals often have to take on management and leadership responsibilities, in addition to a wide range of clinical duties. As donors are promoting country ownership of program implementation, the need for sound leadership and management capabilities among both senior and mid-level healthcare professionals is increasing even further.

In exploring the vast body of work on the value of improved leadership, we know that good leadership and management practices are harder to assess than other health system components. But the ability to understand how leadership development contributes to the measurable changes in organizational performance—and ultimately creates social and economic value—not only builds the case for more investment in this critical aspect of strengthening global public health systems. It is also a key component of any institution's overall performance scorecard. It is simply a good business practice to measure the return on investments, and to use that information to drive decisions, provoke action, and shape future strategies.

Much of the reported results regarding the impact of leadership development falls short of getting to these more transformative changes that demonstrate tangible impact on global public health challenges. Whether it is bottom-line business results, better-performing work teams that deliver impeccable healthcare services, or new businesses that enable a more stable economy, we must broaden our line of sight beyond the immediate outcomes of a leadership development training program as a primary indicator of value creation.

At Accordia's 2010 Summit, John Grove, health scientist for the Centers for Disease Control (CDC) in Tanzania, talked about the complex nature of the development of healthcare systems and human capacity. Multiple contexts, actors, variables, resources, incentives, skill levels, and aspirations are all at play—and not in a straight line, in many cases. A new approach is emerging with respect to systems-based evaluation, which Grove believes requires

- the facilitation of a rich description of the system of interest;
- the open establishment of values and beliefs about, and hopes for, the current system;
- the use of multidirectional logic and recognition of feedbacks and blockages, as well as why they exist;
- an exhaustive review and analysis of implementation factors (context, actions, resources); and
- an adaptive mix of research methods.

Experience tells us that the development of effective leaders is a strategic and ongoing process based on a systematic spectrum of activities that focuses on practical priorities and reflects the cultural and institutional environment. Preparing the next generation of healthcare leaders, especially given the requirements of donors, the political sensitivities of governments, and the needs and imperatives of the local communities, warrants more intentional long-term impact-tracking models that demystify the inherent complexities of the global public health system.

BUILDING A STRONGER CASE: CAPACITY BUILDING FOR HEALTH

Kelly S. Willis

Those who have long appreciated the value of capacity building as a strategy to address Africa's health challenges have been heartened in recent years to see many of the world's largest funders of global health programs begin to agree. The importance of capacity-building activities to Africa's long-term ability to address its own health crises is now conceptually agreed upon: any viable, long-term strategy to alleviate Africa's dependence on global health intervention must include transfer and dissemination of the technology, skills, and knowledge that are currently lacking in much of the developing world. As a result, we have seen many major donors increase funding to support a shift toward that longer-term focus: equipping local individuals and institutions to deliver healthcare services, combat existing challenges, and anticipate the next health crisis.

Building long-term capacity may lack the immediate gratification of emergency aid—its impact cannot easily be counted in terms of mouths fed and drugs delivered, and the true effect may not be felt until years after the initial work is complete. To avoid jeopardizing the progress made in establishing capacity building for health as a strategy with greater potential impact than the immediate delivery of goods and services, the informed global health community must improve the ways in which success is quantified and communicated. Compelling evidence in support of capacity building must be developed, which will require a rethinking of what is measured and how. Those working with a capacity-building philosophy must find ways to better illustrate progress over the long term, with meaningful milestones along the way.

The best ways to measure the progress of capacity-building interventions are not always evident. One of the greatest challenges lies in the unique reality that the success of any capacity-building enterprise is inversely related to its demand. That is, *the ultimate measure of success for any capacity-building enterprise should be the extent to which it is no longer needed.* To be successful, we must all acknowledge that we are in the business of putting ourselves out of business.

Training and Human Resources for Health: An Essential Vector

Within global health, professional training may be the most fundamental form of capacity building: the transfer of knowledge, skills, and experience to individuals and institutions who can use it to independently impact the health of their communities. The impact of any global health intervention, no matter how effective in the laboratory, is bound by the ability of the recipient's health workforce to use it. With that in mind, training becomes an essential vector in disseminating improvements to the delivery of care and preventative services. Training needs begin with the initial pre-service education of the health workforce (in medical, nursing, or other technical schools) and continue to evolve over an individual's career—particularly in light of the rapid pace of change in this field. Thanks to evolving diseases, emerging technologies, and increasing standards of care, there will always be a demand for ongoing professional training of the health workforce.

The training of healthcare providers is also one of the most tangible aspects of capacity building—it is certainly easier to conceptualize and visualize than the development of strong and permanent institutions, for example. And yet, the outcome of professional training in health is still significantly under measured within global health development. Surprisingly little evidence exists to support its impact or to inform the nature of its delivery. Like capacity building more broadly, training has the conceptual support of most, but the evaluation of its effect has, with a few exceptions, been sporadic and undisciplined.

Still less has been done to test the effectiveness of disparate approaches to improving healthcare service delivery through human resource development: training efforts vary in course content, duration, target recipient, and educational methodology. Even where some evidence does exist, it is not always used to direct policy and practice. For example, despite preliminary evidence suggesting that knowledge gained through intensive classroom training courses is not fully applied when the trainee returns to his or her real-world clinical setting, and that on-site training and supervision can favorably impact clinical practice, investment in human capacity building continues to be concentrated on classroom training with little or no follow-up reinforcement.

In fact, there is often little beyond anecdote to support one form of training over another. This is of particular concern in a discipline that is so essential to the success of all global health interventions. It is critical that every effort be made to guide informed decision making, and that we move beyond the most common, inappropriate, and intermediate indicators of effectiveness and impact, such as when

- the "success" of training initiatives is measured by the number of people trained, as if all training programs were created equal and all trainees benefited at the same level;
- innovations in training are judged by their novelty or technology appeal, with no evidence to support an incremental impact; and
- cost *savings* are interpreted as cost-*effectiveness*, without data to support the cost per outcome.

The rapid rise in popularity of "distance-learning" training solutions is a pressing example of the need to reform such superficial evaluation. Web-based or electronic applications that deliver training to individuals on an asynchronous and independent basis certainly offer an immediate cost advantage over traditional classroom training. They also appeal to our desire to use technology in new and exciting ways. They do not require dedicated lecturers and administrators, nor do they require participants to incur travel and lodging expense or spend valuable time away from their jobs. But what evidence exists to demonstrate whether these educational programs are as effective *at changing behavior* as real-time classroom training with peer interaction and clinical rotation? Could there be negative consequences of a complete shift to "virtual" training, even if that shift facilitated a large increase in the number of healthcare workers who received it?

The Intersection Between Research and Professional Training

Training, like other areas of international development, is driven by intelligent and altruistic individuals who believe that theory, precedent, and insight are sufficient to build meaningful and effective training programs that will save lives. But increasingly, that point of view is being challenged by those who believe that the distribution of severely limited resources should be guided by science.

What is the ultimate impact of providing training to healthcare professionals? Evidence to support the improved skill and knowledge base of those trained is a necessary first step in establishing cause and effect, but it is not sufficient. Demonstration that those improved skills and knowledge lead to improved clinical decisions and better healthcare service delivery is a step closer, but it's still not enough. What we really want to know is: What is the ultimate impact on the long-term health of a community? Building a knowledgeable and skilled health workforce is only valuable if it translates to improved healthcare service delivery—which only really makes a difference if it translates to better health outcomes for the general population. Creating that chain of evidence is the greatest challenge to proving the value of training healthcare workers.

Accordia Global Health Foundation and Operational Research

Accordia Global Health Foundation was founded on academic principles and is dedicated to the development and implementation of evidence-based strategies to improve health in sub-Saharan Africa. When it cofounded the Infectious Diseases Institute (IDI) at Makerere University in 2004, Accordia recognized the importance of measuring the impact of IDI's programs and introduced a monitoring and evaluation component in all the joint training courses that were developed. In the early years, evaluation was limited to pre- and post-tests of trainees. This information was meaningful, but lacked the essential link to downstream impact indicators. What difference were we really making?

Accordia began designing training courses that incorporated increasing levels of evaluation and accountability. A program launched in 2006 with the Ugandan Malaria Surveillance Program and supported by ExxonMobil measured the impact of a five-day fever case management course on the prescribing patterns of clinicians at eight Ugandan health facilities. Using surveillance data collected from the sites, we were able to demonstrate that after the training, correct diagnosis of malaria increased and unnecessary use of antimalarial drugs declined. In a related study, we showed that the decreased use of antimalarials had no negative consequences on health among the population—while achieving substantial savings in unused drugs and avoiding the likelihood of emerging resistance to those lifesaving medicines. This seminal work introduced a new era of scientific training evaluation for Accordia and IDI.

In 2008, on the basis of that promising evidence and Accordia's proposal to build on its success, the Bill & Melinda Gates Foundation awarded Accordia a multiyear grant to undertake the Integrated Infectious Disease Capacity-Building Evaluation. This initiative intends to help establish the evaluation of training as a legitimate and essential field of research.

The Integrated Infectious Disease Capacity-Building Evaluation

The Integrated Infectious Disease Capacity-Building Evaluation (IDCAP) is a three-year program with the goal of estimating the cost-effectiveness of a method to build capacity among mid-level health practitioners in sub-Saharan Africa for the treatment and prevention of infectious diseases. A comprehensive surveillance system of thirty-six health facilities and their patients will measure the impact of a novel package of classroom training, distance learning, and on-site support services on individual competence, facility performance, and health outcomes in the surrounding communities.

IDCAP is creating a real-world laboratory to enable the deliberate measurement of the impact of training on meaningful outcome indicators such as patient health. To our knowledge, it is the first program of its size that is using a randomized control trial to illustrate the impact and incremental effectiveness of on-site training for the health workforce in sub-Saharan Africa. IDCAP has established a surveillance network that can be used for other evaluations after our evaluation, and will offer a model for similar work to be undertaken elsewhere. We also believe that many of the findings from our evaluation will be transferable to other disciplines and settings.

Above all, IDCAP hopes to set a new standard for the evidence required in support of key policy decisions involving human resources for health. Africa cannot afford to allow intuition and anecdote to guide limited funds in such a critical area. Scientific rigor is desperately needed to validate the impact of training and other capacity-building activities, to inform the types of training used, and to direct limited development dollars to their most effective use.

Accordia's Partners on IDCAP

To ensure excellence in IDCAP's implementation and evaluation, Accordia Global Health Foundation assembled a strong and experienced team of implementing partners:

- **The Infectious Diseases Institute (IDI)**, a center of excellence at Makerere University in Uganda, leads the team in the development and delivery of IDCAP's innovative capacity-building program.
- **University Research Co., LLC's Center for Human Services** provides critical expertise in their approach to continuous quality improvement activities for IDCAP's on-site support intervention.
- **I-TECH**, based at the University of Washington, provides scientific leadership on IDCAP's evaluation, and contributed to the development of the IDCAP curriculum.

IDCAP's Innovations in Training

While an important emphasis of IDCAP is to advance the field of science and introduce tools to enable the evaluation of training more broadly, we needed a candidate to test and develop that capacity. For this candidate intervention, we elected to develop a new approach to training that responded to widely acknowledged needs in the field of human resources for health. The backbone of any successful intervention must always be based on theory, expertise, evidence, and insight. Accordia Global Health Foundation, its Academic Alliance for AIDS Care and Prevention, and the Infectious Diseases Institute have been developing innovative training programs for healthcare providers in Africa for nearly ten years. With our combined expertise and that of our partners, we developed the Integrated Management of Infectious Disease Training Course, which incorporates three much-needed innovations in training: focus on mid-level practitioners, integration across infectious disease, and on-site follow-up and support (see box on this page). The resulting course, the design of which was completed in early 2010, will itself make a tangible contribution to the field of professional training in Africa. It incorporates best principles in medical education, responds to environmental factors in sub-Saharan Africa, and incorporates a novel approach that early evidence suggests is effective at changing clinical behavior.

But IDCAP's real innovation is its capacity for measurement and its potential to transform the field of training evaluation, by establishing a new precedent for future evaluations that will guide development, policy, and funding decisions.

Training Human Resources for Health

- **Focus on mid-level practitioners**—In response to the widely understood shortage of doctors in sub-Saharan Africa, the World Health Organization and others have recently endorsed "task shifting" as a viable strategy to increase access to healthcare services. Nurses and other mid-level practitioners need incremental training to facilitate their performance of tasks normally associated with doctors, and limited training opportunities for this segment of the health workforce currently exist. Governments also lack evidence in support of the policy changes needed to legally empower such mid-level practitioners. IDCAP's new course aimed at these practitioners will add value to the field of training, provide evidence about the ability of nurses to perform task-shifted activities adequately, and support policy decisions.

- **Integration across infectious disease**—There is general consensus that the compartmentalization of disease content in different training programs causes detrimental inefficiencies. IDCAP's new program integrates proven content from several disease-specific training programs in infectious disease to achieve efficiencies in the course duration and greatly improved impact on clinical reasoning skills among trainees. The new course addresses HIV/AIDS, malaria, tuberculosis, and other childhood diseases, from a syndromic perspective—with a unique focus on the patient as the center of all learning exercises.

- **On-Site Support (OSS) component**—Training programs are widely believed to have more lasting effect when they are performed at the trainee's place of work, and some limited evidence does exist to support this theory. Adoption of this approach has been slow to catch on due to the cost and complexity of implementation. IDCAP builds on the success seen in Accordia's multidisciplinary approach to fever case management training, carried out by mobile teams that perform training and other on-site support activities at the health facility level, and seek to build new evidence in support of the cost-effectiveness of an OSS approach.

Randomization takes the guesswork, the wizardry, the technical prowess, the intuition, out of finding out whether something makes a difference.

Esther Duflo, Economist, MIT

IDCAP's Innovations in Evaluation

The relative impact of the elements of IDCAP's capacity-building program is being assessed through a randomized control trial with the staggered introduction of its training components. One of the advantages of a randomized control trial is its ability to control for the everyday "noise" associated with real-world settings. With sufficient sample size, such disruptions should happen in equal measure in both arms of the study, and therefore, any change seen in one arm over the other can legitimately be attributed to that study arm's intervention. Nevertheless, in selecting IDCAP sites, we went to great length to avoid health facilities where numerous other programs designed to improve performance were underway. As a result, IDCAP's thirty-six midsize health facilities are among the most rural and difficult to access in Uganda.

The simple and robust tool of a randomized facility-based trial has rarely been used in large-scale training evaluations in resource-limited settings. One of the principal barriers to conducting this type of evaluation is the cost of setting up a surveillance system capable of collecting meaningful and reliable data for the evaluation.

Individual Knowledge and Competency

The training courses at the Infectious Diseases Institute, Makerere University, have always incorporated tools to evaluate their impact on trainees' skills and knowledge. Multiple-choice examinations are given before and after training for all trainees. Clinical observation and assessment is also undertaken in IDI's HIV clinic. Additionally, follow-up questionnaires are periodically collected from alumni of IDI's training courses, to estimate the ongoing impact on their clinical practice. While substantial insights have been generated from those data, limitations persisted in the evaluations' utility.

IDCAP aims first to heighten the accuracy and utility of such existing evaluation methods. IDCAP's innovation in evaluating the impact of the training course on individual skills, knowledge, and clinical practice is focused on two primary new evaluation tools: Classroom Case Scenarios and Clinical Assessment Tools (see box below).

Assessment Tools for Individual Knowledge and Competency

- **IDCAP Classroom Case Scenarios** are written examinations that overcome some of the limitations of multiple-choice exams while preserving the logistical advantages. The Case Scenarios have the ability to evaluate each trainee's competency in areas not possible with clinical observation, and with accuracy comparable to standardized patients. They allow assessment of the trainee's management of less prevalent and more complex cases. Similarly, it is possible to observe the trainee's management of patients over time, an impossibility during clinical observation. Tools like IDCAP's Classroom Case Scenarios have been demonstrated to be more accurate than medical records, are standardized across trainees, and require no adjustment for case complexity in their scoring.

IDCAP's Classroom Case Scenarios use various patient encounters to test the trainee's knowledge of the infectious disease case management content included in the three-week training course, and their ability to apply clinical reasoning to make important decisions with the information they have at hand. The scenarios follow the same patients over time, while more is revealed about their history and condition.

Clinician performance is scored by comparison to explicit quality criteria derived from evidence-based literature, and Ugandan and international clinical guidelines. Cases are based on the curriculum, and correct answers to all questions are included in the curriculum. The tools were piloted and refined numerous times, with correct answers vetted among a panel of experts. To account for the effect of increasing test familiarity, IDCAP uses an innovative research design, randomly assigning case scenarios to participants to gain an accurate pre- and post-training score comparison.

- The **IDCAP Clinical Assessment Tools** were designed to evaluate the clinical performance of the participants of the Integrated Management in Infectious Disease training course. They offer an advantage over other such tools, because they contain fields for specific information about the patient history and symptoms, require detailed diagnosis and treatment data, and are much more objectively scored than their predecessors. IDCAP trainees are observed in their own place of work by an IDCAP team member. The trainee sees patients as usual, identifying and recording the patient's symptoms and his/her diagnosis on a specially designed one-page assessment form. Then, the IDCAP team member examines the same patient and records his or her own judgment about the patient's symptoms and diagnosis to provide accurate and complete information about the patient. To ensure quality care, the IDCAP team member and practitioner discuss and reconcile the information prior to ordering any tests, sharing the diagnosis with the patient, or beginning treatment. The trainee's assessment is scored by the IDCAP team member and subject to subsequent expert review for quality assurance.

  Because the Clinical Assessments must be completed in the trainee's place of work, and several observations must be recorded to make meaningful observations about the trainee's proficiency, conducting these evaluations is a time-consuming process. But it offers tremendously valuable insight into training's impact on real-world clinical behavior.

Both assessments are being performed at three points of time for each of the program's Core Trainees: prior to IDCAP's three-week Integrated Management of Infectious Disease course; immediately following completion of the three-week course; and approximately nine months after completion of the course, when half the trainees will have been working in health facilities that received monthly support visits from IDCAP's mobile teams. The evaluations will therefore enable IDCAP to assess the improvement in skills and clinical practice attributable to the course itself, as well as any impact the OSS may have on trainees' clinical reasoning skills.

These improvements in individual assessment of skills and clinical practice are important as a primary indicator of the training program's effectiveness. The demonstration of an impact on individual competence should certainly be a prerequisite for any new training program, but is rarely assessed in legitimate ways. However, as discussed, this is just one piece of the chain of evidence required to support and inform training approaches: to be meaningful, individual competence and ability need to demonstrate an impact on quality of care and overall facility performance.

Facility-Level Performance and Quality of Care

IDCAP's evaluation of facility-level performance is enabled by a comprehensive surveillance system at all thirty-six health facilities in the study. The surveillance system collects data in support of *key performance indicators* that have been identified for the purpose of the evaluation. These indicators will measure quality of care related to HIV/AIDS, malaria, and tuberculosis, as well as the facility's performance in supporting functions like emergency triage, inventory management, and laboratory services.

The surveillance system allows observation beyond the individual performance of the site-based clinicians; IDCAP will gauge the performance of each health facility *as a whole.* This is important as we measure the greater impact of the training beyond what the two site clinicians will receive. For this aspect of IDCAP's evaluation, the unit of measure is the health facility itself.

The **IDCAP Facility Surveillance System** is a comprehensive system for collecting routine information about the daily performance of a health facility's clinical and laboratory staff. The system incorporates tools that were already in place as a result of Ministry of Health systems (patient registers for tuberculosis and ART, for example), improved tools to replace others that already existed (patient-specific clinical forms requiring more detail about patient history, symptoms, and test results), and some new reporting tools (laboratory and other inventory records).

To ensure that these data-collection tools were properly implemented at IDCAP sites, orientation was required for each site's clinical staff. Because implementation necessarily preceded the collection of baseline data, it is expected that the gains associated with that orientation and the mere introduction of the tools will not be captured by the evaluation design. However, any resulting bias will only tend to understate IDCAP's impact.

Data is collected and entered by a dedicated research assistant at each health facility. Ensuring adequate power supply for computerized storage of site data was a significant undertaking, requiring the introduction and maintenance of primary or backup power sources at many facilities. The site-based research assistants are supported by a team of centralized data technologists who make monthly site visits to ensure the progress and quality of data entry. Data sets are transferred electronically to IDCAP headquarters each week.

Research Questions

- How do individual trainee skills, knowledge, and clinical practice improve over time as a result of the core Integrated Management of Infectious Disease course?
- After training, are trainees able to perform key tasks at a minimum acceptable standard?
- How do monthly on-site support visits impact the continued or sustained improvement of individual trainees?
- How do monthly on-site support visits impact facility-level performance and quality of care?
- How does improvement in facility performance impact the health of the surrounding population?
- What is the cost-effectiveness of on-site support in producing quality of care at public health facilities, and in improving health among the surrounding population?

The data collected from each site will allow an analysis of the impact of two aspects of IDCAP's intervention: the core three-week Integrated Management of Infectious Disease training course and the monthly on-site support visits. Two clinicians from each IDCAP site received the core training during the first half of 2010. The eighteen sites randomized to Study Arm A began receiving monthly OSS visits in April 2010, while the other eighteen will receive OSS beginning in January 2011. This simple study design will enable many comparisons and research questions to test the incremental cost and impact of IDCAP's training components.

IDCAP's Facility Surveillance System will be one of the lasting contributions IDCAP makes to the emerging field of impact evaluation around training. As new interventions, training programs, or prevention strategies emerge, this network can be used to evaluate their impact on the quality of health services. It can also be used as a model for other similar efforts. As discussed, however, such observations about IDCAP's impact on quality of care and facility-level performance is most meaningful if it can be effectively linked to evidence demonstrating the resulting impact on the health of surrounding communities.

Patient Outcomes and Population Health

Ultimately, IDCAP aims to improve health and reduce mortality in the communities surrounding its evaluation sites. Two efforts designed to produce scientifically valid observations about IDCAP's impact on the health of the population are its patient cohorts and a large-scale mortality survey.

Some of the facility performance indicators will be measured with data from cohorts of tuberculosis and HIV patients. The purpose of the **IDCAP patient cohorts** is to ensure complete information about long-term and chronic care among patients known for their failure to follow up. Existing Ministry of Health systems include data health outcomes such as functional status and mortality. The cohorts will be selected from patients who visit the facilities during the first three months of on-site support and followed throughout the duration of the evaluation. Information about the cohort will be tracked monthly, and any patient who misses a monthly visit will be contacted immediately by the research assistant at the site to ask if the patient has moved, discontinued treatment, or had a change in health status.

The final step in evaluating IDCAP's impact on health outcomes is to measure mortality rates among the population surrounding each IDCAP facility. Such an undertaking is labor intensive and costly, but no effective proxy is available in settings where available government statistics are insufficient to capture even substantial changes in death rates. IDCAP is therefore partnering with the Uganda Bureau of Statistics to undertake extensive household surveys among the communities surrounding each of the thirty-six IDCAP sites. Our mortality survey will be based on state-of-the-art demographic and health survey questionnaires and focus on the deaths of children under the age of five, the demographic in which we expect to see the most significant impact. Challenges include a large sample of about 2,000 households per site, geographic distribution of the population, mobility of members of the community, and a scheduled election in Uganda in 2011. Still, a significant reduction in childhood mortality is expected to be recorded as a result of IDCAP's program; the hypothesis is that IDCAP will save at least one child's life in the sample at every site, every month.

Summary

Funding for training has increased with recognition of the need for longer-term capacity-building strategies around health in the developing world; it now makes up a healthy share of every donor dollar. Understanding its impact and guiding its use has never been more important. With IDCAP, Accordia Global Health Foundation hopes to set a new standard for the evidence required in support of key policy decisions involving human resources for health. Africa cannot afford to allow intuition and anecdote to guide limited funds in such a critical area. Scientific rigor is desperately needed to validate the impact of training and other capacity-building activities, to inform the types of training used, and to direct limited development dollars to their most effective use.

All IDCAP training and evaluation materials will be widely disseminated for public use. In advance of their final publication at www.accordiafoundation.org, please contact the author at kwillis@accordiafoundation.org.

CAPTURING THE LONG-TERM IMPACTS OF RESEARCH CAPACITY BUILDING

Rachel Sturke, Michael Johnson, and Linda Kupfer

Research Capacity as an Essential Component of a Strong Health System

Strengthening health systems is crucial for the attainment of global health goals and improving the health status of those in low- and middle-income countries. Indeed, at the May 2009 launch of the Obama administration's Global Health Initiative (GHI), the U.S. president emphasized the fact that efforts to combat major disease turn on our ability to do more to improve health systems around the world. There is longstanding recognition that research capacity is an essential component of a strong health system; in fact, as early as 1990, the World Health Organization Global Forum for Health Research declared that "strengthening research capacity in developing countries is one of the most effective and sustainable ways of advancing health and development in these countries." In addition to the direct benefit derived from the results of locally driven research, training, and capacity, scientific inquiry enhances the use of evidence-based approaches to health policy development.

The Fogarty International Center advances the mission of the National Institutes of Health by supporting and facilitating global health research conducted by U.S. and international investigators, building partnerships between health research institutions in the U.S. and abroad, and, importantly, training the next generation of scientists to address global health needs. Putting research training and resulting activities into practice and policy is an important goal of the center's programs.

In Nigeria, Drs. Daniel Perlman and Malcolm Potts and their colleagues at the University of California, Berkeley, have engaged in research and research training on maternal health in partnership with Nigerian counterparts at Ahmadu Bello University. Their project, which is supported by the Fogarty International Center, addresses the high rate of maternal deaths due to postpartum hemorrhage in Nigeria. The scientific team has studied and introduced new postpartum drugs that helped stop bleeding, addressed infrastructure limitations, and promoted education for girls. Administered by a Nigerian advisory group made up of researchers, medical practitioners, and other experts, the initiative's goal is to enhance the ability of Nigerian researchers to conduct additional research-into-practice studies that will further improve maternal health.

Other examples of the success of research training on enhancing global health governance and health policy include stories of individual research trainees who bring their scientific training and experience to leadership positions from which they influence health policies and programs. In Indonesia, a proponent for human rights for the mentally ill, former Fogarty trainee Dr. Irmansyah, was recently appointed Indonesia's director of mental health. In this new role he aims to strengthen laws, increase awareness, and build up the country's mental health services using evidence-based approaches to formulate policy.

Role of Academic Institutions in Global Health

Academic institutions, as centers for scientific discovery, excellence in service delivery, and training of future health leaders, are an integral part of the health system. They have a unique and powerful ability to convene leading researchers, practitioners, and policy makers across disciplines and borders to address pressing and complex health problems. Despite many challenges faced by academic institutions in resource-poor settings, such establishments are capable of substantial contributions to improve the health of their citizens (and thus, from a U.S. perspective, of improving global health).

The Sub-Saharan Medical School Study (SAMMS) has compiled data on 150 sub-Saharan medical training institutions. SAMMS has documented a number of resource constraints, which include high rates of faculty vacancy, limited physical infrastructure, and the absence of research capacity (deemed essential for faculty recruitment and retention and for effective medical education). However, the study also describes several innovative models of community-based training and research, creative financing, multidisciplinary research and training, and other approaches to the development of capable and sustainable academic institutions. Of note, some of these innovative models include productive partnerships with other academic institutions in high-income countries, which are timely, given the unprecedented interest in global health on U.S. university campuses.

Strong global health programs at U.S. universities have the potential to contribute robust solutions to urgent global health issues. Specifically, as U.S. institutions build their own capacity in global health, they are bolstering opportunities for global health training and scientist-to-scientist interactions, and widening the pipeline for U.S. global health

professionals. The Association of Schools of Public Health has launched its Global Health Core Competency Development Project to facilitate a national process to create a global health competency model for global health education. The Consortium of Universities for Global Health (CUGH) was established to build collaborations and exchange of knowledge and experience among university interdisciplinary global health programs working across education, research, and service. CUGH also promotes mutually beneficial, long-term partnerships among universities in resource-rich and resource-poor countries, developing human capital and strengthening institutions.

In addition to individual academic institutions, national academies of science provide an important framework in which the individual institutions can function and collaborate. Moreover, national science academies have a unique ability to draw upon the scientific research enterprise to stimulate and support the use of scientific evidence and principles in decision and policymaking. The African Science Academy Development Initiative (ASADI) was initiated in 2004 to foster a more evidence-based approach to health and development initiatives in African countries. The objective of ASADI is to mobilize a nation's scientific expertise to provide advice on matters of science and technology. Outcomes from this effort will undoubtedly have an important influence on scientific policy in Africa and may provide a model for bolstering the research-to-policy pipeline in other low-income settings.

Resources for Research

In 2008, the Global Ministerial Forum on Research for Health—a joint initiative of the Council on Health Research for Development, the Global Forum for Health Research, UNESCO, the World Health Organization, the World Bank, and the government of Mali—met in Bamako, Mali, bringing together participants from seventy-five countries and including official national delegations from fifty-six countries representing ministries of development, health, education, science and technology, and social development. In light of the vital role of health research in a strong health system, and as a driver of evidence-based health interventions and related health improvements, the forum recommended that 5 percent of overseas health development assistance and 2 percent of in-country ministry of health budgets be allocated to support the enhancement of research. These research commitments have yet to be realized.

Over the last twenty years, global funding for health has increased dramatically. According to a 2007 report issued by the World Bank, development assistance for health grew from $2.5 billion in 1990 to almost $14 billion in 2005. Recent research published in *The Lancet* found that development assistance for improving health in low- and middle-income countries has expanded substantially, quadrupling between 1990 and 2007. Harvard Professor David E. Bloom, writing for the International Monetary Fund's magazine *Finance & Development* in December 2007, reported that, in addition to the increase in development assistance, private funding for global health has also risen significantly, now accounting for about a quarter of all development aid for health. It is essential that investments in research for global health keep pace with this unprecedented increase in funding for global health from donor governments, foundations, and corporations. But an increased investment in research and research capacity in low-income settings is more likely if the resulting positive health impacts of research and research training can be better documented.

Need for New and Innovative Metric/Measurement Approaches

Investments in scientific research training and capacity that began in the 1970s are now bearing fruit as scientists from Africa, Asia, and Latin America play a key role in conducting research to improve global health. Identifying new and innovative ways to measure the long-term impacts of investments in research has always been challenging. Indeed, there are concerns about the limitations of existing measurement frameworks, the ability to attribute outcomes to a single funder, and the lack of data and information systems to measure impact.

However, we are currently undergoing a paradigm shift with respect to measurement, from focusing on measuring inputs and process to placing a higher priority on ensuring that investments lead to the greatest health impacts possible. Improved measures of return on investment for research capacity strengthening are fundamental to building a long-term strategic approach to global health, achieving higher efficiencies and more cost-effective returns on investments, and developing an evidence base for gaining and sustaining the support of funders. Accordingly, one of the core principles of the Obama administration's Global Health Initiative is to improve metrics and enhance monitoring and evaluation of global health interventions from process to outcomes and to be "results-oriented rather than input-based." Robust metrics will enable sustained investment in the scientific research enterprise, as well as ensure more efficient and effective models for strengthening scientific research capacity in low- and middle-income countries.

The Fogarty International Center

The Fogarty International Center (Fogarty) plays an important role in promoting better global health by funding academic institutions to enhance scientific research capacity. Indeed, an important element of Fogarty's global mission is to *train the next generation of scientists to address global health needs*. For Fogarty, enhanced "research capacity" is characterized by the development of a local scientific research workforce, able to carry out biomedical studies to address

locally relevant health challenges. Moreover, to effectively confront complex health issues that transcend national boundaries, Fogarty also aims to promote and enhance scientist-to-scientist interactions through the support of scientific research collaborations.

Fogarty supports sixteen research training programs, each designed to enhance research capacity in an area of critical importance to the health of people who live in resource-poor settings. Recognizing that it takes many years to build sustainable and robust capacity to conduct global health research, these programs are designed to support long-term training and capacity-building activities. The first and largest of Fogarty's programs, the AIDS International Training and Research Program, has been supporting the training of scientists in low- and middle-income countries (LMICs) for more than twenty years and has trained close to 2,200 individuals across the globe. Key principles that guide Fogarty extramural programs include:

- training local scientists to enable a lasting research community in low- and middle-income countries;
- linking training to a base of competitively funded scientific research;
- creating programs that encourage full partnership and collaboration between U.S. and LMIC institutions;
- supporting research training that is responsive to local and national needs and priorities; and
- investing over the long term (at least five years).

The recent Medical Education Partnership Initiative (MEPI) embodies many of these principles. MEPI is a joint effort of the Office of the U.S. Global AIDS Coordinator, the Health Resources and Services Administration, the Centers for Disease Control and Prevention, the United States Agency for International Development, the Department of Defense, and the National Institutes of Health that invites foreign institutions and their partners in sub-Saharan African countries that are supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) to develop or expand models of medical education. The awards aim to build the capacity of local scientists and healthcare workers to conduct multidisciplinary research so that discoveries can be adapted and implemented in individual countries.

Recognizing the need to evaluate and improve its programs, Fogarty employs an evaluation framework (available online at http://www.fic.nih.gov/about/plan/eval_framework.htm) to create a transparent process for program assessment, provide information for strategic planning efforts, generate data on program accomplishments, and identify lessons learned and best-management practices. The framework uses widely recognized measures of scientific progress, both qualitative and quantitative in nature (publications, degrees earned, return home, and career development) to measure program outputs and outcomes. These metrics are tracked through an innovative, Web-based trainee tracking system, CareerTrac. To date, there are more than 5,000 long-term (greater than six months) trainees whose metrics are being tracked within the system. Examples of the types of data collected in CareerTrac are summarized in Tables 1 and 2. Specifically, Table 1 summarizes Fogarty trainees' return-home rate by region. Table 2 summarizes the education trainees achieved to date as a result of Fogarty funding.

Table 1. Trainee Return-Home Rate

Region	Return
East Asia	89%
Europe & Central Asia	95%
High Income	94%
Latin America	94%
South Asia	89%
Sub-Saharan Africa	92%

Table 2. Trainee Education

Degree	Trainees
Bachelor's	2%
Master's	26%
Other non-degree training	43%
Postdoctoral position	7%
Doctorate	11%
Short-term training	12%

Although these metrics provide important information about program successes, there is a growing demand to provide more direct evidence of the health gains achieved through scientific research capacity building. This paradigm shift from a focus on inputs and process to a higher priority on ensuring that investments are leading to the greatest health impacts possible requires additional and innovative

evaluation approaches and methodologies. In response, Fogarty is piloting a qualitative case study methodology to measure the impacts associated with its long-term capacity-building investment in two institutions in sub-Saharan Africa. This initiative seeks to develop a more comprehensive understanding, not only of outcomes of the investment in terms of the professional development and career paths of individual trainees, but of broader effects upon institutional capacity, knowledge production, policy development, and, ultimately, improved health in-country. It is anticipated that this exploratory study will inform our understanding of the potential long-term impacts of investment in scientific human capital and the mechanisms through which these impacts occur.

The return on investment from research capacity building is likely to include effective formulation of locally relevant research questions, and the conduct of research studies that provide benefits to local populations, in addition to the use of research evidence to formulate health policy. In addition, important returns on investment are likely to occur at the institutional level and may include, for example, the development of an institutional culture of research and the creation of a career pipeline for scientific research. The case study approach and other newer methodologies are needed to measure the longer-term impacts of research capacity building and to complement the conventional short-term metrics of success. Innovative measures that capture the interplay between research, research capacity, delivery of health care, and population health improvements will help determine future investment in this area and provide a deeper understanding of the relationship between the research capacity (at the individual, institution, and network levels), a strengthened health system, and improved health outcomes.

Piloting the Case Study Methodology to Assess the Long-term Impacts Associated with Fogarty International Center–Supported Research Training Program

Background

The Fogarty International Center (Fogarty) at the National Institutes for Health (NIH) is dedicated to supporting and facilitating global health research conducted by U.S. and international investigators, building partnerships between health research organizations in the U.S. and abroad, and training the next generation of scientists to address global health needs. Fogarty currently administers twenty-three programs, seventeen of which are research training programs structured to build research capacity at institutions worldwide.

With more than twenty years of investment in research capacity building in low- and middle-income countries (LMICs), the institutions that have collaborated on Fogarty-sponsored grants may now have a critical mass of Fogarty-supported trainees. This critical mass is essential to strong scientific research capacity and may be enabling a broad range of long-term impacts, affecting, for example, the nature of in-country research networks, the types of research training conducted, institutional culture with respect to research, and policy influence. In November 2009, Fogarty began a collaboration with Johns Hopkins University's Bloomberg School of Public Health (JHSPH) to design a pilot study for assessing the long-term impacts of Fogarty research training programs through case study methodology.

Objectives and Research Questions

This study aims to:

1. Document the impact and mechanisms through which long-term impacts of Fogarty-sponsored training programs occurred, on:
    a. individual performance and behavior;
    b. institutional capacity and performance;

c. network capacity and performance; and
d. changes in health policy, practice, and (potentially) health status.

2. Develop and pilot case study methods for assessing long-term impacts of research training programs.

Furthermore, this study seeks to answer the following research questions:

1. What have Fogarty-funded research training programs contributed to the
   a. achievement of a critical mass of researchers in LMIC countries;
   b. institutional development of LMIC universities, such as development of postgraduate teaching programs, strengthening of research management systems, etc.;
   c. institutional culture in those universities with respect to research;
   d. intensity and spread of research and policy networks in-country;
   e. development of research institutions in-country, such as ethical review committees and research funding mechanisms;
   f. the type of research, particularly the policy relevance, of research conducted; and
   g. health policy development in country, and potential health impacts?

2. What are the mechanisms through which these impacts have occurred?

3. How do Fogarty investments in research capacity relate to investments made by other funders of research capacity?

4. What are the tools and methods that can be used to capture the long-term impacts of investments in research capacity (e.g., institutional strengthening, the growth of networks, policy influence) and track trainees' career paths and accomplishments?

5. What are the lessons learned from this pilot that can be used by other Fogarty-funded programs and, more broadly, by other research training programs?

Methods

Two institutions (Makarere University and the University of Nairobi) were selected to pilot the case methodology. Selection of cases was based on the following criteria, among others:

- institutions with a long history of Fogarty support (based upon a minimum of ten years of engagement with the AIDS International Training and Research Program—the longest-standing of all Fogarty programs);
- institutions in environments with relatively low scientific research capacity;
- institutions operating in contexts where there is not a high a degree of complexity in the environment (e.g., large numbers of organizations involved in operational research and policy influence); and
- level of total NIH direct funding.

Two historical case profiles will be developed using secondary data from NIH databases and records. These case profiles will summarize Fogarty investment and activities at each case institution to date.

Building on these historical profiles, the study will utilize qualitative research methods to conduct two case studies of capacity building at each of the case institutions. The case study approach will provide a holistic and in-depth

investigation of Fogarty-supported grants in different and complex contexts, as well as insights into the causal relationship between the funding of individual research capacity building and associated longer-term institutional, network, and policy impacts.

Literature review: The study team reviewed the literature to gain an understanding of the principal actors and concepts in programs focused on health research capacity development, to learn from similar studies conducted in the past, and to identify previously tested tools and methodologies for capturing and measuring the effects of research capacity-building efforts, with a focus on LMICs. The literature review identified very few studies that have sought to understand and conceptualize the links between investment in and development of individual capacity and how this affects broader organizational capacity. Additionally, it revealed a lack of rigorous empirical studies that assess the effectiveness and longer-term impacts of capacity development strategies for research, particularly in LMICs.

Conceptual framework: The literature informed the development of a conceptual framework that illustrates principal constructs in this study and the linkages between these constructs. The framework (see page 41) describes the pathways along which Fogarty investments in training may ultimately percolate through research organizations and networks to influence health policy, decision making, and, ultimately, health status, and was subsequently utilized to guide the development of the data-collection tools and overall study methods.

Data collection: Data collection will consist of a review of Fogarty program documents, a preparatory data-collection phase with semistructured interviews with principal investigators (PIs), and field-based data collection. For the field-based data collection, the study team will travel to the two case countries and will gather data through further document reviews, in-depth semistructured interviews, focus groups, and a short, structured survey. The study tools were developed based on the reviewed literature and include measures of individual learning, job satisfaction, motivation, social networks, and policy dialogue. With few exceptions, these tools have not yet been applied to global health or LMICs.

In the field, the study team will employ purposive sampling to select key informants and other participants in each country from the following categories:

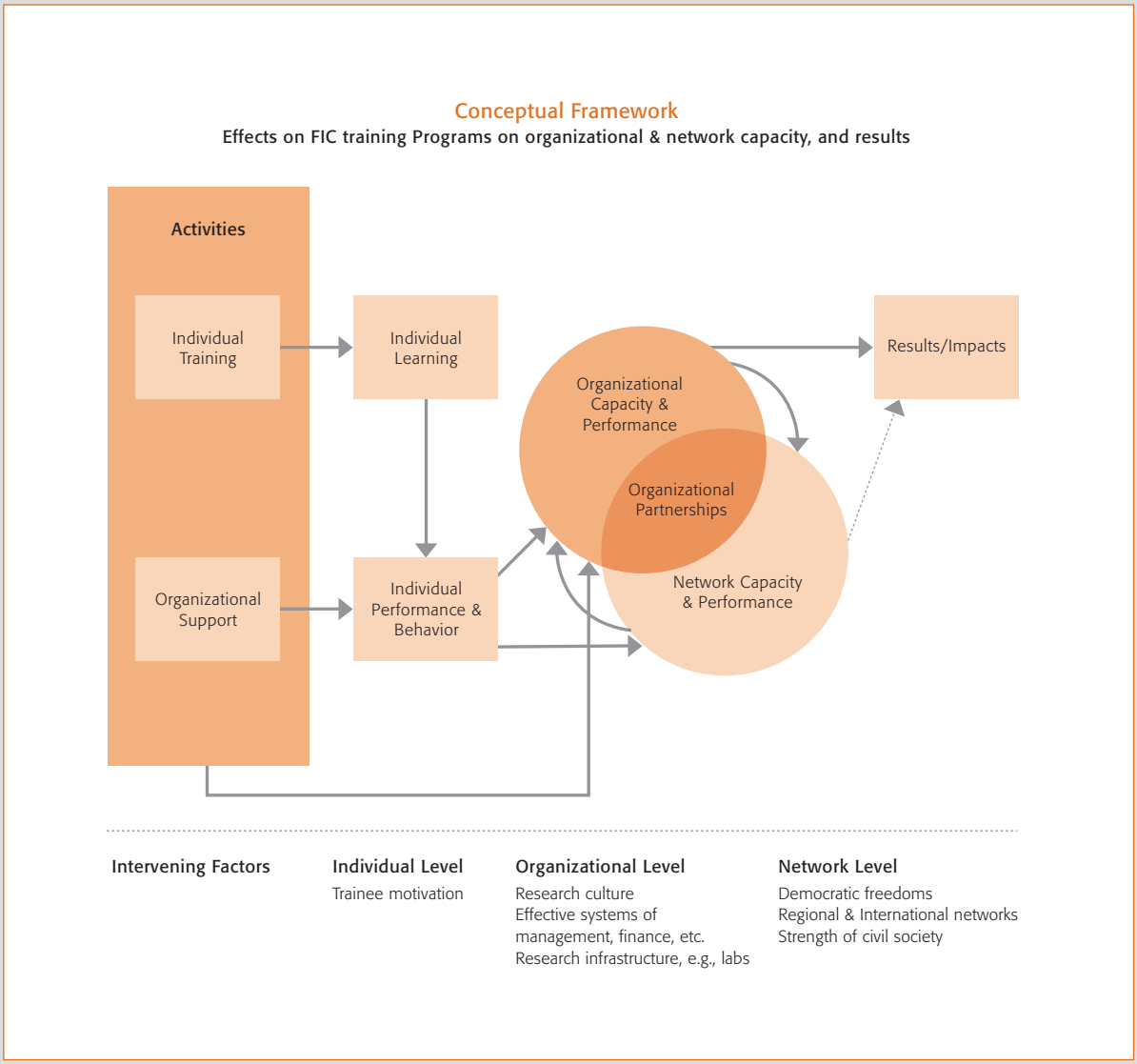
1. Fogarty trainees who have completed a long-term Fogarty training program and are either employed in a research position at the study organization or have transitioned to positions outside of the study organization;
2. university leadership (e.g., the head of a department where Fogarty programs are housed or the dean of the school); and
3. policy makers, program managers, or other types of research users who potentially benefit from evidence produced by Fogarty trainees.

The mix of participants will be determined based on participant availability at the time of the field visits.

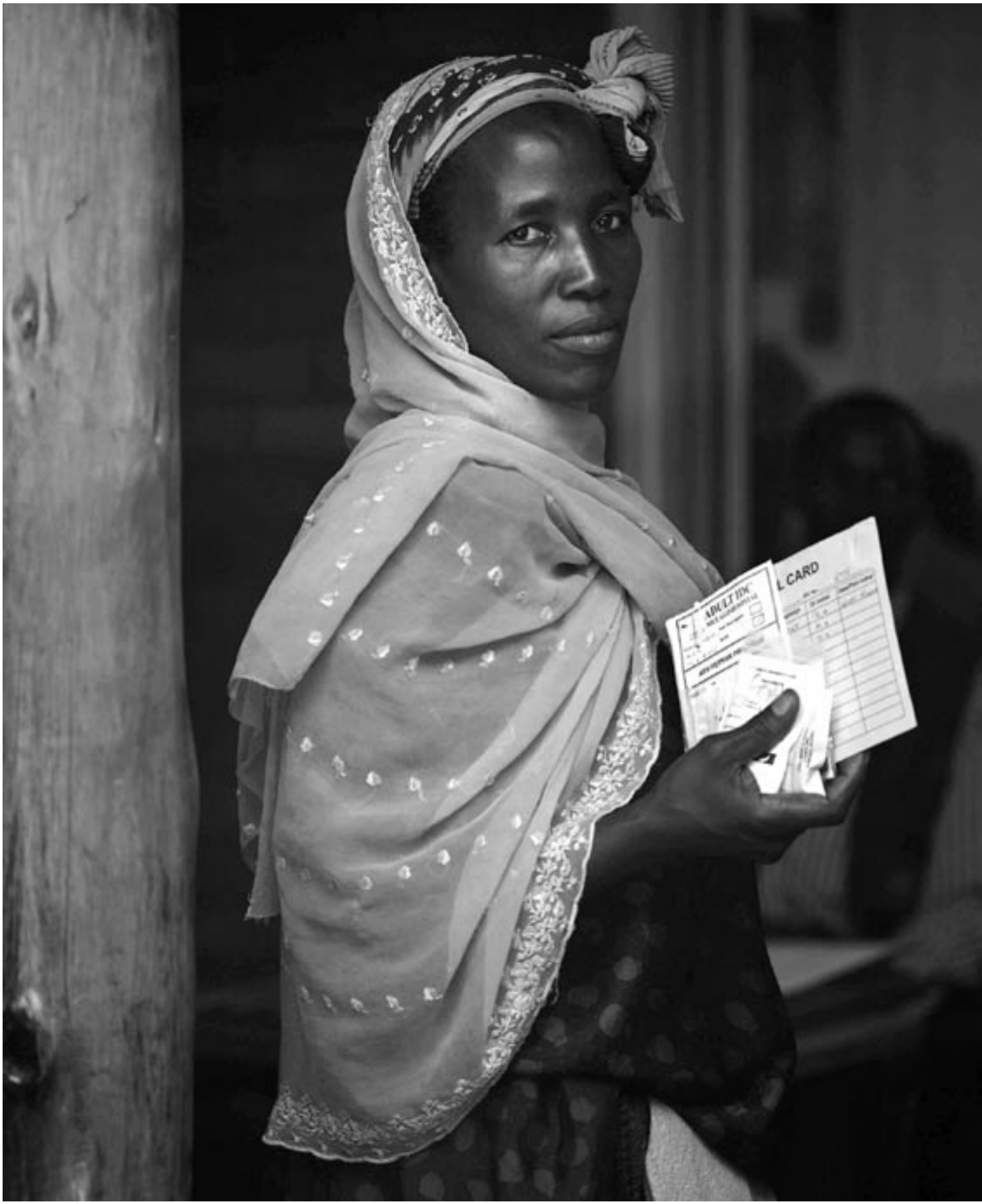
Data analysis: The data analysis will be centered on the constructs identified in the conceptual framework shown below. The study team will use direct interpretation to reorganize the data gathered around the constructs in the conceptual framework. Internal validity checks will be carried out through collecting input from the in-country research collaborator, debriefing with university leadership, and key informant interviews. Discussions with U.S.-based PIs and review of Fogarty evaluations of study-country programs will also be used to validate the findings. External validity checks will be carried out through discussions with the Fogarty-convened expert panel.

Expected deliverables: Deliverables will include case study reports on each of the organizations studied; a final report on the methods employed and recommendation for applying them in the future; an article for publication; and several debriefing sessions in the case countries with Fogarty colleagues, PIs, and expert panel members.

Time frame: The study team expects to obtain the necessary approvals from the Institutional Review Board and the Office of Management and Budget by August 2010, to conduct field visits during September 2010, and to complete the analysis and prepare final reports and publications (which will be disseminated to key stakeholders and available to the public) by the end of November 2010.



Source: "Case study protocol: Assessing the long-term impacts of research training programs supported by the John E. Fogarty International Center." Unpublished paper, Johns Hopkins Bloomberg School of Public Health (Bennett S. and Paina L., 2010).



INSTITUTIONAL DEVELOPMENT FOR AFRICA—TOWARD GREATER ACCOUNTABILITY FOR RESULTS

Bjorg Palsdottir

From Inputs to Sustainable Impact—Why Investing in Interventions Isn't Enough

In the last two decades, funding for global health quadrupled. According to the Institute for Health Metrics and Evaluation, development assistance for health increased from $5.6 billion in 1990 to $21.8 billion in 2007. The bulk of initial funding increases were driven by the urgent need to respond to the global HIV/AIDS epidemic and later toward meeting the Millennium Development Goals. In the rush to deliver quick, measurable results, donors and implementing agencies frequently supported separate structures and interventions to meet specific health outcomes, missing the opportunity to strengthen weak local health systems.

Initial focus was on research and interventions, but the health workforce rapidly emerged as a bottleneck in many regions of Africa. Yet few resources were put into the institutions that produce the healthcare providers, scientists, policy makers, and managers and perform the research and interventions that health systems need. The U.S. Institute of Medicine's Committee on the U.S. Commitment to Global Health 2009 report points out that institutions in low- and middle-income countries (universities, scientific academies, health professions schools, and research centers) did not see increases in their funding proportionate to the growth in global health funding. Millions of dollars were spent on training researchers and practitioners, but many institutions in Africa did not have the resources to hire and retain them.

These institutions are much more than producers of skilled health professionals and research for the health system. They are cornerstones of and potentially key contributors to enduring health system development—or, alternatively, they can serve as bottlenecks and inhibit innovation and growth. They encompass values, rules, norms, worldview, and behaviors accepted by a group of people. These factors not only affect the quality and performance of the institution, but influence its graduates with potentially wide-ranging effects throughout the health system. Although institutions grow out of the capacity of individuals, disregarding institutional behavior and development can undermine the creation of effective policies, programs, and systems.

Effective academic institutions operate as integral parts of the health system with clearly defined aspirations and roles within it. Yet they retain enough independence to act as focal points for critical reflection and analysis; collective knowledge creation and dissemination; and active engagement in policy making and health system development. Simultaneously, they need to be firmly grounded in the messy reality of getting things done in a complex and resource-limited world where politics and competing interests complicate efforts to respond to changing needs of patients, communities, labor markets, and health systems.

While institutional development is important, having well-resourced institutions does not necessarily translate into better outcomes for the societies they serve. Most health education institutions have missions and goals related to improving health in their communities. However, few—in the North or the South—hold themselves accountable for producing outcomes aligned with health workforce, priority health, and health system needs. The accountability of academic institutions usually ends at graduation or the publication of a paper. Outcomes—such as the placement, practices, and retention of medical graduates in areas of greatest need and the policy or practice impact of a research project—are seldom tracked.

Which institutions are most likely to produce desired long-term health and health system outcomes? In *Good to Great and the Social Sectors*, Jim Collins suggests the greatness of an institution should be measured by whether it does the following:

- **Delivers superior performance:** Performance is defined by "results and efficiency in delivering on the mission."
- **Makes a distinctive impact:** "The organization makes such a unique contribution to the communities it touches and does its work with such unadulterated excellence that if it were to disappear it would leave a hole that could not easily [be] filled by any other institution."
- **Achieves lasting endurance:** "The organization can deliver exceptional results over a long period of time, beyond any single leader, great idea, market cycle or well-funded program. When hit with setbacks, it bounces back even stronger than before."

Institutions as Catalysts

So what does success in resource-constrained settings look like?

There is still much to learn about how to develop sustainably high-performing, impactful institutions. However, below the radar screen of multilateral agencies, global health donors, and world-renowned universities, several innovative institutions in Africa and around the world offer inspiring leadership and invaluable lessons of the potential for institutional impact. Some of them belong to the Training for Health Equity Network (THEnet). THEnet is a collaborative of health professional schools in underserved, rural, and remote regions of the globe, created in 2008 to help build evidence to support effective and credible change toward greater impact and accountability of academic institutions.

There are several schools in Africa and elsewhere that, like THEnet schools, strive toward increasing their social accountability. Many of them are members of The Network: Towards Unity for Health, a pioneering organization that has been encouraging institutional innovation and collaboration to improve communities' health since the 1970s. Below are a few examples of what THEnet and other socially accountable or impact-oriented institutions have achieved, most with limited resources.

> *Social accountability is the obligation to orient education, research and service activities towards priority health concerns of the communities and the regions schools have a mandate to serve. These priorities are jointly defined by government, health service organizations and the public.*
>
> **"Measuring the Social Responsiveness of Medical Schools," Education for Health, 1998**

Producing Health Professionals Able and Willing to Remain in Underserved Communities

A 2005 paper in the University of the Philippines Forum ("Where Health Workers Are Trained to Stay and Serve") authored by J. L. J. Siega-Sur reports that, in 1976, the University of the Philippines School of Health Sciences in Leyte, a poor and underserved region, developed a socially accountable health workforce educational program. The program was designed to improve health services, reduce the brain drain, increase retention, and address the dire need for health workers in Leyte's poor and isolated communities. A stepladder curriculum was developed in close collaboration with communities and health system stakeholders. The community in need of health workers enters into a partnership with the school by participating in the selection, employment, and evaluation of the health students and providing support during their training and service. In return, the graduates sign a binding contract with a commitment to serve the community. The community- and competency-based program integrates training for a certificate in midwifery, Bachelor of Science in nursing, Bachelor of Science in community health, and Doctor of Medicine into a single, sequential, and continuous curriculum. Before completing each step of their education, students must provide services in the community for double the length of time that they receive training. The nurses, midwives, and doctors must also complete national licensure exams. Not only are they providing health services where there were none before, their retention rates are impressive; over a period of more than twenty years, 80 to 90 percent, depending on health worker category, have stayed in their communities.

Initially, the Faculty of Health Sciences at the University of Transkei in South Africa (UNITRA)—now known as Walter Sisulu University (WSU)—adopted a traditional hospital-based, technologically driven, Western-style tertiary curriculum. However, that curriculum didn't develop the core competencies and professional attitudes required for doctors to stay and provide quality care in Transkei's rural and impoverished communities. In the face of skepticism and resistance, UNITRA launched a new curriculum, educational methods, and innovative admission criteria in 1992 that focused on community and patient needs and fused community-based education and small-group, problem-based learning approaches. By using clinics, hospitals, hospices, and schools as integrated clinical teaching sites, WSU is also able to directly improve service delivery. The program also reflected emerging evidence that early and extended exposure through service learning in rural communities increases the likelihood that graduates will return to work in rural or underserved areas. As of 2009, WSU has graduated 851 doctors. While 5 percent work abroad, 90 percent of those who are not in postgraduate or specialty training are working in South Africa. Of those, 80 percent work in rural areas. WSU graduates are more likely to choose to remain in South Africa than graduates of any other South African medical school.

Learning While Improving Health and Health Systems

Socially accountable schools are commonly embedded in the health system. The Faculty of Medicine at the University of Gezira (FMUG) was established in 1975 to serve rural communities in Sudan's Gezira region. It developed a community-oriented, community-based, problem-solving, and integrated curriculum that undergoes continuous evaluation to ensure that it is meeting changing needs. In close collaboration with the Ministry of Health, which contributes to curriculum development, provides training sites, and coordinates with FMUG at all levels, FMUG's Primary Health Care and Health Education

Centre improves primary healthcare through policy development, implementation, and in-service training of healthcare teams.

FMUG has developed a Field Training Research and Rural Development Program through which students train and work with more than 1,500 families in over 300 villages. Students are involved in such diverse activities as establishing and developing water resources and sanitation facilities as well as health and TB units; introducing electricity in villages; and conducting health education and environmental health outreach programs. These interventions are evaluated to measure the outcomes of each using typical indicators based on project objectives. These might include increased use of insecticides in homes, decreased incidence rate of malaria or other disease, increased use of antenatal care services, and increased use of latrines.

The College of Public Health and Medical Sciences at Jimma University in Ethiopia has been implementing community-based education for many years. It uses the community setting as a learning environment. It engages communities and other sectors in the educational experiences, and provides students with opportunities to help communities or districts, known as "woredas," improve their own health. Activities in the urban and rural woredas include the Community Based Training Program, the interdisciplinary Team Based Training, and Student Research Projects. A 2004 evaluation of health outcomes in woredas where Jimma's students and faculty were involved compared favorably to woredas without community programs, in terms of indicators including lower infant mortality rates, higher immunization coverage, and women giving birth in clinics.

Needs-Oriented Research and Knowledge Generation

Ultimately, schools are trying to improve health outcomes. To reach that goal the health system requires an appropriately trained health workforce to provide needed outreach and services. Hence, operational research and studies related to how to select and train health professionals that will stay in underserved areas are also of vital importance. Australia, like most countries, struggles with a lack of health workers in rural areas. South Australia's Flinders University Parallel Rural Community Curriculum (PRCC) and the ten-year-old James Cook University (JCU) in Northern Queensland were established to help address the rural doctor workforce shortage. With a clearly defined mission to serve rural, indigenous, and tropical Australia, JCU, in addition to more traditional biomedical and basic science investigations, centers its research on rural health, medical education, and primary health care. This work includes graduate tracking and retention research; health workforce modeling; and collaborative health services research with indigenous, rural, and remote populations. The research not only informs strategy and policy making, but feeds directly back into the education process.

Socially accountable schools tend to focus and evaluate the outcomes and impact that their research has on a broader set of indicators than more traditional biomedically oriented schools. For example, a recent study at Flinders examined the applicability of the Buxton and Hanney Payback Framework (a conceptual categorization of the benefits arising from health services research) to assess the impact of its primary care research on practice and policy. Categories of indicators included knowledge production; research targeting, capacity building, and absorption; informing policy and product development; health and health sectors benefits; and broader economic benefits.

There is evidence that researchers and institutions can increase the likelihood that their research activities have the desired impact. An evaluation of the Ghana-Netherlands Health Research for Development Programme identified three factors that increased the likelihood that research projects had an impact on the health system:

1. Research projects were aligned with national research priorities.
2. The research was linked with decision-making processes.
3. Decision makers were involved or consulted throughout the processes.

Empowering Communities—Fostering Innovation and Local Action

At socially accountable schools the target populations are more than beneficiaries; they are partners in the education and institutional development process. Educational programs that are community oriented, embedded in the health system, and based in low-resource areas are more likely to reflect the challenges health professionals and communities see on a daily basis—and therefore more prone to be involved in seeking innovative and cost-effective solutions to those challenges.

In conflict-ridden Mindanao, the Ateneo de Zamboanga University School of Medicine (ADZU-SOM) works to reform health services planning and delivery in one of the poorest regions of the Philippines. Medical students, in collaboration with local volunteers, first undertake a participatory survey to assess the health situation of a target community. The findings are shared with the community and together a diagnosis is made to agree on problems identified. Next, the community develops a Comprehensive Health Plan (CHP) to solve these problems using an intersectoral approach. Students then develop and execute a relevant interventional health research project aligned with the CHP. They have, for example, created mechanisms to collect community funding to pay for transportation for pregnant woman to give birth at clinics. They have helped initiate cottage industries that generate income in impoverished villages; proper garbage disposal through a zero waste management program; and the creation of home vegetable gardens. Not only have infant and maternal mortality rates

fallen significantly in the region since their program was established (from 75–80 per 1,000 live births to 8.20 per 1,000 live births), but ADZU-SOM faculty and students have worked with their communities to help them take charge of their own health, and, as a result, have seen health practices change.

The mental health program of the Faculty of Medicine at the University of Gezira worked with the government of Sudan and target communities to change concepts, attitudes, and practices around mental health issues. The project involved community engagement, outreach, training across sectors and disciplines, research, and program evaluation. The program transformed the delivery of mental health services first in the state of Gezira and then nationally, from central hospital settings toward outpatient primary care settings. It also spurred further research and interventions.

Catalysts for Transformative Change

A health professional school can influence more than health. It can be a true catalyst for social and economic development. Before ADZU-SOM was established in the Philippines in 1996 and initiated cross-sectoral collaborations, the key stakeholders in health, economic development, and education had never been brought together. Today, these stakeholders regularly partner on initiatives to benefit the communities in urban and rural communities in Mindanao.

In Australia, to respond to the need for educating students in rural areas, James Cook University worked with practitioners, key stakeholder organizations, communities, and small rural hospitals to transform them into health service teaching sites. Early indications suggest that as clinical and teaching capacity develops, quality of care and long-term recruitment and retention are likely to improve. Recognizing that many physicians in rural regions are lost because junior doctors must migrate to major metropolitan centers to complete postgraduate specialty training, where they may form relationships and settle down, JCU is also developing a postgraduate program, the Northern Clinical Training Network.

Opened in 2005, the socially accountable Northern Ontario School of Medicine (NOSM) established in rural Canada has already had significant economic and social impact. Its innovative e-curriculum and distributed, community-engaged education program allows its activities to be spread across thousands of miles. The students' and residents' clinical learning takes place in more than seventy indigenous and remote communities of northern Canada. A recent socioeconomic impact study estimates that for every dollar NOSM receives, it contributes two dollars to the local economy. For every job NOSM provides, another job in the region is created. Physicians involved or interested in teaching and research are now attracted to the underserved communities in which NOSM operates. Community hospitals have been converted to teaching hospitals, and clinics in remote communities have been upgraded. The fact that such an innovative, high-technology-based school is located in the region has resulted in enormous pride and hopes to expand the region's knowledge-based economy. Involvement in the school's development is a great source of satisfaction to the community and has engendered a conviction that northern Ontario's future is bright when all stakeholders work together.

Return on Investment—Holding Institutions Accountable

As shown above, the actions, interactions, and activities of health professions schools can have a broad range of outcomes. But what should institutions be held accountable for? What can and should be measured, and how? Since most health and health system outcomes require multiple actors and actions, how do we deal with issues of attribution versus contribution? These were some of the questions raised during Accordia's 2010 Infectious Diseases Summit.

As these issues were discussed, it became clear that to measure "success," we must be able to judge what success would look like in the context of each institution. We also need to clarify the purpose of evaluation. In *Getting Health Reform Right: A Guide to Improving Performance and Equity* (2003), Marc J. Roberts and his coauthors write that effective health system reform requires viewing the health sector and all its components–including health education institutions–as a means to an end.

Hence, before evaluating outcomes and impact, institutions must, in collaboration with their stakeholders, clearly define the following:

1. The ultimate outcomes they are striving toward, in terms of
    a. their own institutions;
    b. practice and placement of graduates and effect of research and services;
    c. other stakeholders in the health system, including ministries of health and education, health service providers, NGOs, professional training institutions, policy makers, professional associations; and
    d. the ultimate beneficiaries–patients and communities.
2. What changes in behavior, action, and relationships are needed to have the desired effect.
3. What is within their direct and indirect sphere of influence and what is beyond any institution's control.
4. What underlying assumptions in their "theories of change" are driving their efforts.
5. What is known, and what the current and future uncertainties are.

Few institutions regularly go through such a thorough planning or review process. Fewer evaluate their academic performance based on outcome measures or systems thinking, as is promoted in the 2009 WHO report "Systems Thinking for Health System Strengthening." Today's typical institutional performance indicators focus on input indicators (such as number and quality of faculty and facilities) or output indicators (number of graduates, skills and knowledge learned, research published, and grants received). As a result, evidence about the outcome and impact of health worker education on population health and health systems is limited. M. van Zanten and fellow authors note, in "Overview of Accreditation of Undergraduate Medical Education Programmes Worldwide," an article published in the September 2008 issue of *Medical Education*, that there is scant comparable international data on relationships between accreditation processes and outcomes, including the graduation of competent professionals and improved health. Additionally, medical schools in particular rarely integrate research from socioeconomic and political sciences into their work. This lack of collaboration between researchers, educators, policy makers, practitioners, and communities results in fragmentation. And, with academic institutions frequently evaluating interventions or efforts using linear models to assess complex systems, the limited evidence on outcomes and impact remains weak.

The calls for academic performance standards to be more outcome oriented are growing louder. However, measuring the impact of education programs on the health system and its beneficiaries and vice versa is challenging, not least because "impacts" are usually the result of a multitude of factors, relationships, and events that in turn trigger a cascade of other effects in the health system and its subsystems. Consequently, a specific impact can rarely be attributed to only one intervention, program, or institution. This does not mean that outcomes or impact cannot be measured; it just calls for designing and evaluating health education institutions using a system lens and employing a more diverse toolkit that includes different methodologies and approaches. Evaluations need to be scientifically rigorous yet include both linear and nonlinear qualitative and quantitative methods to convincingly build evidence for attribution, contribution, and accountability.

In the last two decades the private, global health, and international development sectors have each evolved better ways of understanding change and measuring the outcomes and performance of complex systems. There are several useful tools available on a wide range of topics that can guide the review and evaluation processes. However, frameworks that reflect and consider the health system perspective and use systems thinking approaches to measure institutional performance need to be evolved. One such framework is being developed by THEnet (see case study beginning on page 48).

A note of caution regarding the quest for evidence and measurement: while scientific rigor and systematic evaluation are crucial, innovation comes from thinking outside the box. So frameworks and funding must be flexible enough to provide adequate space for challenging orthodoxies and experimenting with new ideas.

Scan Globally—Reinvent Locally

Billions of dollars, great ideas, and grand-scale thinking followed by inconsistent results show that while there are emerging principles, there are no blueprints for success. We need to learn more from the many successful and unsuccessful efforts and institutions to build evidence and knowledge about what works, how, why, and in what context. There is an urgent need to develop evidence to demonstrate that institutional development can provide a solid and sustainable return on investment. In this way, current political support for primary care and health system development will not as easily be undermined by the cheaper and easier-to-measure interventions.

Most national governments and international frameworks, such as the International Health Partnership, the Health 8, and the Paris Declaration on Aid Effectiveness, now acknowledge that effective health development must be locally led and tailored to the specific context. Yet, too frequently, national authorities and international donors seek external scientific advice rather than call on their own indigenous institutions to help them develop policies and interventions. Perceptions are slowly changing, but many governments and institutions continue to assume that programs in high-income countries are by definition of higher quality, and that programs deviating from "international standards" produce lower-quality results. Yet, as discussed earlier, it is international quality standards and evaluations that need to change.

Certainly, many African institutions need more resources to grow a critical mass of effective leaders, faculty, researchers, and managers to tackle their countries' tremendous health workforce, policy, and practice challenges. But frequently the programs in Africa that most closely resemble the Western model of health professional education are not producing health workers willing and able to meet national health and health workforce needs. In some instances, it is institutions with fewer resources and nontraditional programs—such as Walter Sisulu, Gezira, and Jimma—that are producing the health workers and research that most benefit underserved regions of Africa.

Institutions that diverge from traditional models and are community oriented are frequently met with skepticism. They are told they have sacrificed academic standards by recruiting students from rural and underserved areas or that they are producing second-rate doctors. Indeed, graduates of all of THEnet schools perform at or above average on national exams. Gezira's medical education program has been replicated throughout Sudan and in the Middle East, and after thirty

years the University of the Philippines is finally replicating its results-driven Leyte model in other regions.

That doesn't mean rigorous ongoing evaluation is not needed to ensure that such programs continue to produce high-quality products that are relevant to changing needs. For socially accountable schools, evaluation is not only about judgment or meeting donor requirements. It is about building accountability into the design of the programs. Therefore, instead of copying health education systems in the North, African institutions can learn from the innovators on the continent and elsewhere and take the lead in making academic institutions more responsive to community and health system needs.

When education institutions are well resourced, outcome oriented, and socially accountable, they produce the health workers the system needs and serve as hubs of innovation, research, and analysis. Institutions should be partners in health system development, yet independent enough to be watchdogs to ensure that international and local initiatives and interventions are indeed strengthening their health systems. Given adequate support they can become the catalysts for change that Africa desperately needs.

THEnet Collaborative: Measuring the Effects of Social Accountability

THEnet is a collaborative of health professional schools in underserved, rural, and remote regions of the globe, created in 2008 to help build evidence to support effective and credible change toward greater impact and accountability of academic institutions. Social accountability is the obligation to orient education, research, and service activities toward priority health concerns of the communities and the regions that schools have a mandate to serve. These priorities are jointly defined by government, health service organizations, and the public. THEnet collaborative and other efforts are helping to fill this evidence gap.

Together THEnet schools are using a systems perspective to better understand and evaluate how health professional schools contribute to the performance of their health systems and the health of the communities they serve. The goal of the framework is to address the needs of underserved communities through creating and testing an agreed process, set of tools, measures, and, ultimately, standards for assessing the progress of medical and other health professions schools toward social accountability. It seeks to highlight the research and data gaps and the interconnections among the myriad of actors; social, health and education factors; policies; and strategies that affect medical and health workforce education and its impact on health and health services. It is an organic tool that will continuously evolve as causes, effects, and relationships are examined in greater detail.

Currently THEnet members are the Latin American School of Medicine in Cuba; the National Training Program for Comprehensive Community Physicians, Venezuela; the Northern Ontario School of Medicine in Canada; the Faculty of Health Sciences at Walter Sisulu University in South Africa; Flinders University School of Medicine and James Cook Faculty of Medicine, Health and Molecular Sciences, in Australia; the Ateneo de Zamboanga University School of Medicine and the School of Health Sciences in Leyte in the Philippines.

THEnet's Key Questions for Health Education Institutions

The first version of THEnet's evolving evaluation framework is currently being tested and reviewed. The key questions illustrate the core questions it seeks to highlight and answer.

Conceptualization: How Does Our School Work?

1. What are our values, and how do we operationalize them?
2. Who are the populations and the health system we are serving?
3. What are our priority needs, and how will we hold ourselves accountable to meet those needs?
4. Who do we need to collaborate with to have the impact we are seeking, and how do we engage with them?
5. Are we including patients, students, faculty, communities, health service providers, and health system actors when we plan, manage, and evaluate our programs?

6. Are our strategies and policies developed through collaboration with our stakeholders, and does decision making involve meaningful participation from all stakeholders?

Production: What Do We Do?

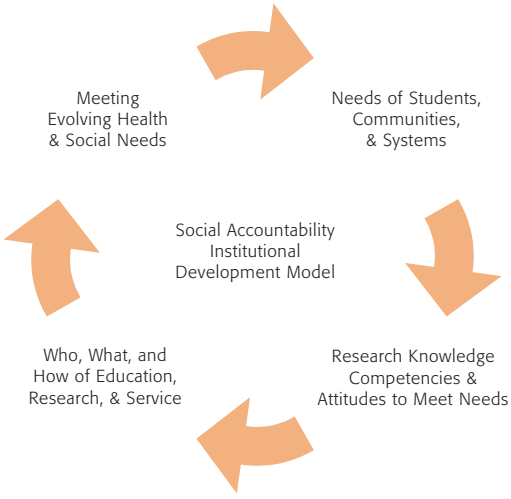
1. Do our education programs reflect the priority health and social needs of the communities we serve, as defined by community partnerships, and is this is evident in our programs and the services we provide?
2. Do our students learn in the context in which they are expected to work, and do the placements provide adequate exposure to priority health needs and interprofessional exposure?
3. Do our students reflect the demographics of our reference population, and do they have the background that will make them most likely to work and stay in areas where they are needed?
4. Is our research agenda based on the priority health needs of our reference populations and the context we operate in, and are they developed and undertaken in partnership with key stakeholders?

Outcomes and Impact: What Difference Do We Make?

1. Are our research projects building knowledge that helps meet priority health and health system needs? Are they contributing to decision making and informing or changing policies and practice?
2. What contributions are we making to improve the quality, quantity, and equity of care in the populations we serve?
3. Where our alumni working, and what are they doing?
4. Are our education interventions having the desired effect on the behavior and practice of our graduates?
5. Are our strategies and decision-making processes having the desired long-term effect?
6. What difference have we made to our reference population and health system?
7. How have we shared our ideas and influenced others?
8. How do we engage in a continuous process of critical reflection and analysis with others?
9. Do we influence policy makers, education providers, and other stakeholders to transform the health system to increase performance and health equity?
10. What impact have we made on other schools?

Source: Drawn from unpublished work of THEnet schools that was built on R. Wollard and C. Boelen, "Social Accountability and Accreditation: A New Frontier for Educational Institutions," *Medical Education* 43, no. 9 (2009): 887–94.

Social Accountability Institutional Development Model



How Can We Do Better for Capacity Development?

Authors Thomas Theisohn and Carlos Lopez draw ten principles from decades of international development that can help guide institutional development capacity:

1. **Don't rush!** Capacity development is a long-term process. It eludes delivery pressures, quick fixes, and the search for short-term results.

2. **Respect the value system and foster self-esteem!** The imposition of alien values can undermine confidence. Capacity development builds on respect and self-esteem.

3. **Scan locally and globally; reinvent locally!** There are no blueprints. Capacity development draws on voluntary learning, with genuine commitment and interest. Knowledge cannot be transferred; it needs to be acquired.

4. **Challenge mind-sets and power differentials!** Capacity development is not power neutral, and challenging mind-sets and vested interests is difficult. Frank dialogue and a collective culture of transparency are essential steps.

5. **Think and act in terms of sustainable capacity outcomes!** Capacity is at the core of development; any course of action needs to promote this end. Responsible leaders will inspire their institutions and societies to work accordingly.

6. **Establish positive incentives!** Motives and incentives need to be aligned with the objective of capacity development, including through governance systems that respect fundamental rights. Public-sector employment is one particular area where distortions throw up major obstacles.

7. **Integrate external inputs into national priorities, processes, and systems!** External inputs need to correspond to real demand and be flexible enough to respond to national needs and agendas. Where national systems are not strong enough, they should be reformed and strengthened, not bypassed.

8. **Build on existing capacities rather than creating new ones!** This implies the primary use of national expertise, resuscitation, and strengthening of national institutions, as well as protection of social and cultural capital.

9. **Stay engaged under difficult circumstances!** The weaker the capacity, the greater the need. Low capacities are not an argument for withdrawal or for driving external agendas. People should not be held hostage to irresponsible governance.

10. **Remain accountable to ultimate beneficiaries!** Any responsible government is answerable to its people, and should foster transparency as the foremost instrument of public accountability. Where governance is unsatisfactory it is even more important to anchor development firmly in stakeholder participation and to maintain pressure points for an inclusive accountability system.

Source: Carlos Lopes and Thomas Theisohn, *Ownership, Leadership and Transformation: Can We Do Better for Capacity Development?* (New York: UNDP, 2003).

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ASSESSING THE CONTRIBUTION OF RESEARCH TO ENHANCE ITS IMPACT

Maarten Kok

Introduction

The growing investment in research for health in low-income countries will result in better health outcomes for individuals, families, communities, and countries only if the knowledge that is generated somehow contributes to the policy and practice decision-making process. Although research is financed and conducted with the expectation that it will ultimately contribute to improving health, it is currently difficult, for a variety of reasons explored below, to gauge the true impact that most health research is having. This is particularly unfortunate because assessing the contribution that is made through research is not only important for accountability purposes, but is crucial for learning how to better employ the tremendous investments in research for health (Hanney, Gonzalez-Block, Buxton, and Bogan 2003).

> *The current situation is that a talented young researcher with excellent ideas, from countries such as Ghana, Haiti or Guinea Bissau, has no opportunities to submit a research proposal and faces a bleak and uncertain future in health research. Current funding systems orient them to the interest of external donors instead of to the health needs of their countries, and force them to publish in journals that they often cannot access. If they are lucky they are approached by someone from the rich world who needs a collaborating partner in a poorer country. In most cases, the research priorities are fixed and the research questions have already been formulated, assigning the talented young researcher to a role as mere data collector.*
>
> Young Voices in ***The Lancet***

If the impact of research is assessed with the purpose of enhancing the probability that it will contribute to positive practice and/or policy, the assessment should not just describe *whether* a contribution was made, but provide an answer to the question, "What should be done differently, and by whom?" The assessment method must reveal inside-the-black-box relationships that connect changes in how the process is organized to changes in research output and the contribution that is made.

The term "linkage efforts" is used by researchers to describe the overarching concept that refers to all the activities that connect research to action in the health system. Such linkage efforts can be undertaken during a specific research process and also in the broader research and health system. A widely promoted system-level linkage effort is the setting of national research priorities. At the project level, such efforts aim to engage potential users in the formulation and conduct of research and during the translation of the produced knowledge in the utilization phase. Recently, there has been renewed support for the idea of engaging end users and the wider constituency in health research. There are various arguments that support such an approach; it could help to increase the quality and usefulness of the research, empower stakeholders, create networks, foster democratic representation, and enhance the social robustness and the legitimacy of subsequent decision making. Engaging the wider constituency in research is especially important if the research is designed to contribute to equity and development.

Assessing the contribution of health research to action has long been recognized as difficult. The lack of shared definitions, the wide variety of knowledge production and ways to use knowledge, and the complex relation of research to health policy and practice make it conceptually challenging. In addition, it is difficult to identify who the users of research are, to have them report or explain their behavior accurately, and to separate the contribution of the research process from other ongoing processes in the health system and wider society. Over the past decade, various frameworks to assess and describe the impact of health research have been developed, and they have proved useful to various degrees. However, these frameworks provide limited information about *how* research has contributed to action in the health system and do not provide a structure to analyze the relationship between this contribution and linkage efforts such as setting research priorities. Neither do the roles played by potential end users, beneficiaries, and the wider constituency in research become clear in these frameworks.

A team of Dutch and Ghanaian researchers therefore developed a method to assess both the contribution of a health research process to action and the relation of this contribution to linkage efforts at the system and project levels. This resulted in the Embedded Process Framework, which is described below. A case study can be found

on page 56 that provides a detailed example of how research in the prevalence of infectious diseases in a prison in Ghana had various impacts and contributed to decision making for health.

It is, as is shown in the case study, important to develop a method to

- assess the impact of a wide range of health research projects in the health system, and
- relate this impact to linkage efforts at the system and project levels, with a specific focus on engaging stakeholders in health research.

The discussion centers on the feasibility of the assessment method, on what it can reveal about research funding programs, and on how it can be used to improve health research systems.

The Impact of Research

The concept of "impact" is used in various sectors for many purposes. In the evaluation literature, it is often used with the aim of capturing two aspects of the effects of an activity that are beyond the "output" and "outcome":

1. the entire breadth of effects (positive and negative, primary and secondary, direct or indirect, intentional or unintentional), and
2. the long-term sustainability of the effects.

It is less clear what is meant by "impact of research." This confusion seems to be related to the various meanings of the word "research," which can be used to refer to a process (collecting and analyzing data, reviewing literature), the output of that process (a publication, new knowledge, a recommendation), or both. Therefore, the way that "research" is defined has implications for an assessment of its impact. If the meaning is confined to the formal knowledge output, for example, then the impact assessment will exclude all the activities that took place during the research processes, such as interactions with policy makers, health workers, and patients during the formulation of the research proposal and the collection of data.

In the impact assessment method discussed here, research is considered to be both a process and the outcome of a process, implying that research can have various sorts of impact. This theory is recognized in existing multidimensional impact frameworks such as the Payback Framework, developed by researchers Martin Buxton and Steve Hanney and widely accepted by the evaluation research community. The focus of our framework has been the contribution of research to decision making in the health system and the people it serves.

The true impact of a health system research project should be measured by how the state of the system would be different if the research had not been carried out. Assessing the true impact of a research project involves making a comparison between a measurable reality and a hypothetical situation. A strict application of the impact concept as an outcome measure for the activity "research" is therefore problematic.

An alternative approach is to try to open the black box of the underlying processes and reconstruct the impact by structurally analyzing how the processes of research formulation, conduct, and use have occurred. It is crucial to not assess impact as if it were a natural phenomenon, but to unravel how the social processes have evolved; based on that understanding, the contribution can be described. An important advantage of this method is that it not only provides an indication of the realized contribution, but also allows for insights into the role of the linkage efforts. These insights could be used to improve the functioning of the health research system.

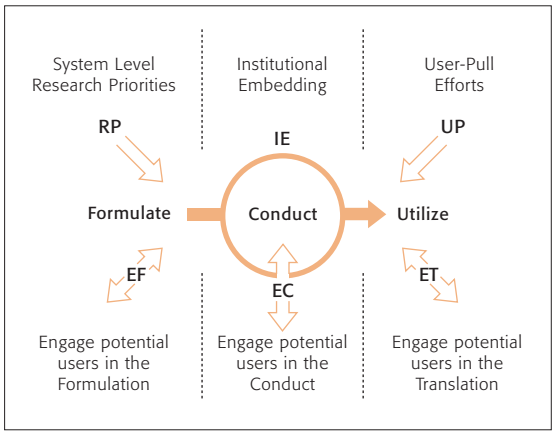
The Embedded Process Framework

The main idea that underpins the Embedded Process Framework is that research is not conducted in a vacuum. Rather, it takes place in a context at both the process and the system levels, and systematically unraveling the various links within this context is crucial to determine *if* and *how* the research contributed to decision making in the health system.

The framework structures the assessment in three phases:

1. the research formulation phase;
2. the phase in which the research was conducted; and
3. the translation of the generated knowledge in the utilization phase.

Embedded Process Framework



The links between the research process and the context are determined by analyzing six linkage efforts. These were selected based on an extensive literature review and a pilot study. For this pilot study sixteen research projects on various health-related subjects in Ghana were followed over time (Lavis, Lomas, Hamid, and Sewankambo 2006). The six selected linkage efforts are

1. setting a research agenda;
2. institutional embedding of research;
3. engaging potential users during the formulation phase;
4. engaging potential users in the conduct of research;
5. engaging potential users in researcher-initiated, knowledge-use, producer-push translation efforts; and
6. engaging potential users in end-user-initiated, knowledge-use, user-pull efforts.

In case studies, the Embedded Process Framework has been useful in unraveling if and how a research project contributed to action in the health system. The structured approach and the framework help to illuminate the underlying processes by determining the linkage efforts before establishing the impact. This creates an open and transparent process in which the impact can be determined through a shared understanding of what really happened. The interaction during the initial interview and the triangulation help the interviewer to understand the processes involved and separate the contribution of the research project from ongoing processes in the health system. This contributes to the reliability and validity of the method.

Over the past few years the impact of a large number of research projects in various African countries has been assessed. A recurring finding is that engaging relevant constituencies in setting research priorities and involving potential end users in the formulation, conduct, and translation of applied health research are strategies that increase the likelihood that research will be used to inform policy and affect practice.

The Need to Improve the Performance of Health Research Systems

If impact assessments are to be used as an effective tool for improvement, they should be part of a clear vision about how knowledge production can contribute to improving the health system and, ultimately, the health of the population. In such a vision, the objectives and function of the various streams of knowledge production should be made explicit. If research is funded and conducted to provide fundamental insights, it should be evaluated to determine whether that goal is met. If research is funded to contribute to health, development, and equity, the assessment methods should focus on revealing whether those objectives are achieved.

Steps in Research Impact Assessment

Step 1. Review documents
Review research proposal, reports and publication(s)

Step 2. Interview investigators
Interview the principal investigator and others involved

2.A Determine linkage efforts

Characterize project & linkage
Determine the characteristics of the investigators, the research project, and *linkage efforts* for the formulation, conduct and utilization phase

2.B Determine impact

Explain impact concept
Explain the impact concept to the investigators (and others involved)

Encourage to describe
Encourage the investigators and others involved to describe the impact

Relate impact
Relate the described impacts to the *linkage efforts* in the formulation, conduct and utilization phase

Separate impact
Separate the research impact from ongoing processes

Step 3. Triangulate findings
Triangulate the findings with others involved in the utilization (and other ongoing) processes

Step 4. Describe and confirm
Describe the impact and score the *linkage efforts*, and confirm them with the investigators and others involved

Stratifying research processes to their specific purposes is crucial for employing the research effectively to contribute to improvement. Making explicit how a research stream will have to contribute to improving the health system is critical for organizing and evaluating the research. Depending on its aims, each research stream will have its own rules with respect to independence, the role of stakeholders, and the social robustness and generalizability of the produced knowledge, as well as its own expectations about how improvements will follow and spread throughout health systems. With explicit aims for research, a structural use of impact assessments can guide this promising endeavor to truly lead to more effective and efficient health systems and, above all, equity in health.

Further research into the impact of research and the functioning of health research systems should focus on studying impact in various countries, contexts, and health research systems, thus allowing comparisons to be made. In addition, research should focus on successful ways to structurally ensure the involvement of all groups in society, especially the most vulnerable, in research and innovation processes.

Infectious Diseases in a Ghana Prison

Setting

For years, the relationship between incarceration and higher prevalence of HIV, hepatitis B virus (HBV), hepatitis C virus (HCV), and syphilis has been known in prisons around the world (Adjei et al. 2006). However, data about prevalence of these viruses in Africa is scanty, and no such study had been done in Ghana. The principal investigator (PI) on this study, Professor A. A. Adjei, was working at the pathology department of the Korle Bu Hospital in Accra; there, he came in contact with a very distressed prison officer who informed him of the unbearable circumstances in Ghana's prisons and the need for prisons to get hospitals of their own to ease the situation and suffering. After a visit to one of the prisons Adjei decided to initiate a study that would examine the health status of prisoners. The study was conducted at the three largest prisons in Ghana: Nsawam Medium Security, James Camp, and James Fort.

Objectives

By conducting this study, the PI and the rest of the research team aimed to map the prevalence of HIV, HBV, HCV, and syphilis among prisoners in Ghana. They expected to be able to use the results to convince the government to take action to improve the situation in Ghana's prisons; poor nutrition, lack of medication, and insufficient sanitation were pressing problems.

Activities

Blood samples were taken from inmates and prison officers to test for HIV, HBV, HCV, syphilis, and tuberculosis (TB) infections. Simultaneously, a questionnaire assessing sociodemographic characteristics, sexual and drug histories, and a risk profile for the infections under investigation was administered to the inmates and prison officers. The infection rates of these diseases were then compared to previous data from healthy blood donors, pregnant women, and the general population of Ghana.

Results and Recommendations

The results suggested a real outbreak of HIV and HCV within the prison centers. However, HBV and syphilis prevalence did not seem to differ from those in the general population. The high prevalence of HIV and HCV were sometimes even higher among officers than among prisoners, suggesting intraprison transmission. The assumption that prisoners represent a high-risk group for blood-borne diseases and sexually transmitted diseases (STDs) was supported by this study's results. In addition to these findings, the questionnaire responses showed more engagement in high-risk behaviors within the prison walls than outside of them, including homosexuality, illicit drug use, and tattooing with shared needles and ink. Also, the prisoners appeared to be more sexually active than the general population. The problem with overcrowding in the prisons was also held partly responsible for the seemingly easy transmission of these diseases; this was supported by the finding that the prison with the largest overcrowding, Nsawam Medium Security, had the highest percentage of positive seroprevalence (the number of persons in a population who test positive for a specific disease based on blood-serum specimens). The lower rate of TB found in the prison environment was ascribed to the policy of quarantining suspected TB cases, thereby reinforcing the continuation of this regulation. As hepatitis C was found to have a surprisingly high prevalence, it was recommended that HCV be moved higher up the educational agenda in Ghana. It was not clear from this study whether the inmates and prison officers had been infected in the prison environment; therefore, the study also recommended that all inmates and officers should be screened for these diseases before they enter or start working in the prison.

Dissemination

The report of this study was completed in 2005. Two publications followed, both in the *Journal of Medical Microbiology*, and two more articles about this research are planned. The PI actively disseminated the results by sending them, in 2005, to the general director of prisons in Ghana, and to Ghana's Ministry of Interior and Ministry of Health; discussions were also held with policy makers at the Health Ministry. Adjei also initiated a meeting with the prison council in 2006 and presented his results at scientific community workshops. Unknown to the PI, the study was picked up by the Ghana AIDS Commission, which notified everyone involved in HIV/AIDS prevention and management in Ghana of the study's findings. The study was described in the 2007 UNAIDS report (the primary reference detailing the current status of the global HIV/AIDS pandemic).

Project's Characteristics

Professor Adjei is a well-known researcher who is highly regarded by his colleagues and others. He initiated the study personally, as it complemented similar work that he had done previously in the United States. His study proposal was accepted and funded by the Ghana-Netherlands Health Research for Development Programme collaboration. During Adjei's discussions with the Ghana Prison Service (GPS) to get clearance, the GPS recognized that additional funding would be needed, and they helped Adjei secure a grant from the Ministry of Interior. A third stream of funding came from the Ghana AIDS Commission. Thus, by the time the study started, quite a number of policy makers and people working on issues related to HIV/AIDS in Ghana were aware of it. At the time of the study's launch, the PI was forty-seven years old and already had an extensive research background. He was chairman of a number of research-related commissions/organs and technical adviser to ministries and the Ghana Health Commission; he also taught research methodology at the medical school. One of the coinvestigators was a minister in the prisons and was able to use his connections to link Adjei to the GPS.

The Ghana Prison Service reacted enthusiastically to the proposed research, which was the first study ever to be conducted in Ghana's prisons. The GPS's leadership already recognized that they had a huge overcrowding problem but, with little money to solve that problem, the prisons were becoming a major breeding ground for all kinds of diseases; they hoped that the study would highlight the problem and encourage a greater allocation of resources to address it.

Impact

The impact of this study can be found in various places. At the research site itself, the study was responsible for positive changes for the prisoners who were involved; in an interview with three inmates it became clear that the inmates have become much more aware of the possible transmission routes of HIV, and are therefore now much more careful in their actions. The prisoners who were infected with one of the tested diseases were informed about their health status and received counselling. Another important contribution has been the closing of the Ussher Fort (James Fort) prison. Originally constructed as a slave fort, the living situation of the prisoners there was very poor; 900 inmates were being housed in a building suitable for only 300. The study revealed that situation, and the Ghana Bar Association worked with the ministries to develop a solution; consequently, the prison was closed down.

Another form of impact is the awareness raised at the national policy-making level about the problem of increased infectious disease rates in prison facilities. Although no policy on screening of or drug administration to prisoners has been formulated yet, the need for a change is recognized and the attitudes regarding working to solve the problem at different levels (Ministry of Interior, Ghana Prison Service) are positive. The director of welfare and the director of economy in the GPS have said that there is a plan to divide the prisoners. One maximum-security prison is being set up by the government for high-risk, longer-sentence stays, as well as an open working camp

for those convicted of petty crimes. This plan is also expected to help reduce the currently high rates of infectious transmission in the prisons, because committers of petty crimes will be separated from longer-stay prisoners. Transmission during prison stays will become less likely, decreasing the chance of sending an ex-convict back into society after having been infected with any of these diseases in prison.

The study findings also contributed to a decision by the government to include prisoners in the national health insurance scheme, which was new at the time. (However, expanding the coverage of the health insurance scheme was a political goal for the upcoming elections, and this might have played a role as well.)

Finally, the research had an impact on the research world. Since the results were disseminated by the Ghana AIDS Commission, a large group of researchers as well as others involved in HIV/AIDS prevention are now informed about the health status of prisoners. The U.S. Agency for International Development (USAID) has also begun to make attempts to improve the situation; specifically, the agency has supplied the Nsawam clinic (external to the prison) with antiretroviral drugs and is interested in doing more research that will allow them to eventually put preventive measures into place.

Below, the impact as reported by the interviewees is presented in the form of domains of change and levels of impact.

- Changed health behavior and subsequent improved health:
  - Sharing of blades and needles stopped.
  - There is less homosexual activity.
- Changed perceptions/attitudes:
  - There is increased awareness about the diseases and the ways they are transmitted among prisoners.
  - There is increased awareness by the research world, the prison services, the prisoners, and the prison officers within the project of the problem of the level of infection and the way that diseases are transmitted in Ghana's prisons.
  - USAID recognizes the need to take a role to improve the situation in Ghana's prisons and is willing to do more research and eventually set up a prevention program.
  - Research is seen as a valuable contribution by policy makers responsible for developing and implementing regulations at prison services.
  - There is reinforcement of the TB quarantining program.
- Changed skills:
  - Prisoners felt reinforced to behave in a healthy, protective manner.
- Changed policies/regulations:
  - Ussher Fort (James Fort) has been closed down.
  - USAID decided to provide Nsawam clinic with antiretrovirals.
  - Plans are in development to separate inmates for longer incarceration from those for short stays in order to prevent further spread of infections.
- Impact on policy makers:
  - Prison services have become aware of the problems.
  - The ministries of interior and finance are familiar with the research.
- Impact on health practitioners/experts:
  - UNAIDS/USAID is aware of the research and is planning to put effort into bringing down the number of infected people in prisons.
- Impact on the research world:
  - The findings were published in the *Journal of Medical Microbiology.*
  - The study was named in the annual UNAIDS report, thereby gaining widespread awareness, and the study's results were mailed to every person working on AIDS in Ghana by the Ghana AIDS Commission.

- Impact on the public:
  - It may take a long time for the public impact to be felt, but prisoners who return to society will be more aware and careful. The ones who were told that they were infected hopefully will be aware of their potential to infect others and will act responsibly.

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CONCLUSION

"Not everything that counts can be counted, and not everything that can be counted, counts."

Attributed to Albert Einstein

There is a clear call to action for better measurement of the return on investment in health and for a deeper understanding not only of *what* works but also *why* it works. The entire global health community is being challenged to ask new questions and seek new answers. Are we leveraging our combined investments to achieve the greatest long-term health impact? Are we oriented towards meeting the greatest needs of society? Who is leading local efforts? Are we measuring what counts?

This call to action presents a strategic opportunity to test and refine new approaches, produce relevant and timely information, and contribute to the overall field of capacity building in ways that can provide lasting benefits. There is also a strategic challenge – to maintain long-term focus in a time of economic crisis when the political climate tends to favor quick fixes.

The ultimate goal of any development enterprise, as Kelly Willis says earlier in this report, is to put ourselves out of business. We can no longer afford to approach the infectious diseases crisis in Africa as one that can be resolved through an emergency response. A healthy populace is a cornerstone in achieving other development goals; long-term healthcare capacity-building efforts will put in place the skills, mechanisms, tools, support structures, and institutions necessary to ensure a healthy Africa for generations to come.

As U.S. Assistant Secretary of State for African Affairs Johnnie Carson recently noted, "From HIV/AIDS to malaria, Africans endure and suffer a multitude of health pandemics that weaken countries on many fronts. Sick men and women cannot work, and they cannot contribute to the growth of their nation's economies or well-being."

Rebuilding and strengthening health systems in Africa that were weak even prior to the HIV/AIDS crisis is a long-term process that must be recognized as such. It will require thoughtful and deliberative planning, action, and impact analysis. There has been a great deal of rhetoric about the need to develop long-term solutions to difficult problems; now is the time for the international community, in true partnership with African nations, to move from dialogue to action, and to commit to approaches that are specifically designed, implemented, and evaluated against long-term impact objectives.

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Accordia Global Health Foundation
1101 14th Street, NW, Suite 801
Washington, DC 20005
phone 202.534.1200
fax 202.534.1220
www.accordiafoundation.org