Catalyzing Change
Molecular strengthening of the health system in the Tanzanian Lake Zone

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Executive Summary

In 2000, the United Nations established the Millennium Development Goals (MDGs), a set of aggressive poverty-reduction and healthcare targets to be met by 2015. International donors and sub-Saharan governments have made unprecedented investments in healthcare in the past decade and reached millions with life-saving interventions. Nine years later, however, fundamental improvements in healthcare delivery remain elusive.

Sub-Saharan Africa (SSA) seems unlikely to meet any of the healthcare MDGs: reducing child mortality (MDG 4),\(^1\) reducing maternal mortality (MDG 5), and reversing the spread of infectious diseases (MDG 6). Health areas beyond the scope of the MDGs, such as chronic disease and injuries, are also insufficiently addressed.

Training is not enough...

The severe shortage of health workers is closely linked to reduced performance of the health system. This issue has received significant attention in the public health community in the past few years. Trained health workers are essential for ensuring good healthcare and are in extraordinarily short supply. Tanzania, for example, would need to add at least 89,000 health personnel to meet minimum international standards for health worker coverage, one of the worst shortages in SSA.

But the problem of inadequate healthcare will not be solved by training health workers alone. Once trained, health workers in SSA face a myriad of health system challenges including the shortage of basic supplies, diagnostic skills, and equipment. Further, many are not absorbed into the system, and rates of attrition are high.

...though you have to start somewhere

Since 2004, the Touch Foundation has been addressing one of the major health system challenges – the lack of health workers – by working with Tanzania to develop its capacity to expand the health workforce. Through grassroots initiatives, we have supported the development of a new university at Weill Bugando in Mwanza, which has become one of the largest universities in the country in just five years. We did so following our initial analysis, documented in our 2006 report *Investing in Human Resources for Health*,\(^2\) which suggested that severe training lag times (the ‘pipeline effect’) meant that investments in training capacity were immediately necessary.

Weill Bugando is a multidisciplinary teaching hospital in Tanzania’s Lake Zone, and consists of Bugando University College of Health Sciences (BUCHS) and the Bugando Medical Centre (BMC). By investing in infrastructure such as student dormitories and laboratories, providing management capacity, and funding over 80 percent of the university’s annual budget, we have increased student enrollment from ten medical students to more than 800 students across eight disciplines at BUCHS. When the university reaches its full capacity, over a thousand students will be in training at any given time.

In 2007, the Tanzanian Minister for Health and Social Welfare, Professor David Mwakyusa, requested assistance from the Touch Foundation in developing an actionable plan to dramatically expand health worker training throughout the country, building on

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1 Child mortality in this context refers to deaths of children under the age of five years.
our experiences from Bugando. Through the resulting Twiga Initiative, our team developed a detailed action plan for doubling health worker training capacity in Tanzania. The results, methodologies, and recommendations from this study are captured in the Touch Foundation report, *Action now on the Tanzanian health workforce crisis*, published in tandem with this report.³

**Vertical, horizontal, or multidimensional?**

Systemic problems require system-wide solutions, and thus a more strategic approach to investing in health.⁴ In the 1970s and 1980s, donor activities centered on what they called ‘horizontal’ initiatives, such as improving primary healthcare and training community health workers. Since the 1990s, donors have turned to ‘vertical’ approaches that concentrate on single high-burden diseases.

Over time, however, an accretion of health system challenges can jeopardize the impact of vertical initiatives. Efforts to expand the student body at BUCHS, for example, have been limited by the lack of clinical teaching capacity at facilities throughout the Lake Zone, which (in turn) results from limited capacity to deliver healthcare. A severe shortage of physicians and other potential trainers, in combination with the major health crises afflicting the Tanzanian population, exacerbated the problem.

As such, the impact of vertical initiatives has been mixed. To make substantial and sustainable improvements in health, governments and their investors are recognizing that they need to take a more robust approach – one principally focused on the complete healthcare system, rather than discrete issues and challenges. Such a broader approach implemented around child health, for example, has probably put Tanzania on the path to meet MDG 4.

*Action now* lays out a number of practical ways in which health worker training capacity in Tanzania can double health worker production within seven years. The action plans generated during that research can be implemented immediately, therefore meeting key global demands such as the *Kampala Declaration* made at the Global Health Workforce Alliance (GHWA) conference in Uganda in March, 2008. The plans have been documented and are part of government policy, but at the time of publishing await the sufficiently flexible resources required to carry them out.

However, as we recognized in that report, training is only the first in a series of stages of human resource management. Hiring, deployment, retention, and professional development of health workers are all essential to maximize the impact of expanded training on the overall size and strength of the workforce.

Further, while health workers are the key input without which health systems cannot function, when the systems themselves are dysfunctional, health workers are severely hampered in their ability to treat – and save – their patients.

In short, we concluded that a strategy of scaling health worker training in the absence of comprehensive health system reform will not deliver a *sustained* improvement in health outcomes.

Health worker training may therefore be seen as another vertical initiative, requiring other mechanisms to be developed simultaneously – instruments such as health system management, finance, procurement, supply chain logistics, staff retention, infrastructure planning and development, etc.; indeed, all the other elements of a robust health system. Changing procurement practices for drugs and supplies, for instance, or addressing retention issues, requires that a multitude of other areas be simultaneously addressed. And while the

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beneficial effects of many vertical initiatives (such as infant vaccinations or disease-specific programs) are compelling, the long-term sustainability of the existing health system (or the impact of such programs outside their field of concentration) is not always addressed.

So what is the right model? We tackled this problem by working closely with our Tanzanian partners to develop an analytical approach which would lead toward strengthening essential health system components – in tandem with health workforce creation and vertical initiatives already underway – such that investments in either are not lost over the long term.

The Lake Zone Initiative
The result was the first stage of a 15-year health system strengthening program called the Lake Zone Initiative. The goal of the effort was to identify key system bottlenecks that prevent the Tanzanian government from meeting its healthcare access, outcomes, and financing targets. The Lake Zone was chosen primarily because it is neither too large to be assessed effectively at the right level of detail, nor too small for results to be skewed inappropriately toward local conditions. Being a third of Tanzania, the zone contains almost all components of the challenge across SSA, including rural, urban, lake, and inland conditions. And it is large enough for solutions to be directly scalable across the rest of the country and transferable across the continent as a whole.

In early 2008, a joint Touch Foundation and McKinsey & Company team conducted the diagnostic phase of the Lake Zone Initiative. During the diagnostic, we identified the key bottlenecks in the health system and developed a portfolio of practical initiatives designed to address them. Our field work included over 200 interviews, 50 site visits to all levels of health facilities in the Lake Zone, and several workshops and focus group sessions with patients and health workers. Tanzanian healthcare leaders guided us in our work and in assessing the possible outcomes. A Steering Committee consisting of Tanzanian health system and Touch Foundation leadership directed the diagnostic phase.

The resulting data and analysis underpins the three key recommendations of this report.

Clinical pathways: Aisha’s personal experience
The Tanzanian health system has the potential to provide comprehensive care. There are 5,340 public and private health facilities across the country, about 1,600 of which are located in the Lake Zone. They are organized into five levels of care, intended to accommodate logical referral from primary care to
tertiary facilities such as BMC. Additionally, village health workers and other outreach personnel provide community-level services.

Over the past 15 years, the government and international donors have made significant efforts to improve health services. The main objectives of these reforms have been to better plan, align, and integrate activities; decentralize services; and achieve universal health coverage. Although these reforms have made a positive impact and show some promise, access to quality healthcare today is limited due to entrenched health system weaknesses.

A good indicator of health system capacity is maternal healthcare, which requires health services to be adequately and efficiently organized. Tanzania currently has among the worst maternal health outcomes in the world. Out of every 100,000 births, 950 Tanzanian women die in labor or within 40 days after delivery, 5 times as many as in the United States. Adequate provision of service to an expecting mother should include health promotion and prevention, a timely response to the onset of symptoms, adequate diagnosis and treatment, and effective follow-up. In Tanzania, pregnant mothers fail to receive satisfactory care along almost all points on this continuum.

In this report, we trace such a clinical pathway for an expecting mother we call Aisha to illustrate the challenge. A clinical pathway refers to the guidelines for care for a specific ailment or health condition, including health promotion, prevention, treatment, and follow-up. For instance, changes to the health system over the past decade have ensured that Aisha is 78 percent likely to have at least one antenatal visit over the course of her pregnancy. The World Health Organization (WHO), however, recommends four.

Aisha’s child will, most likely, not be delivered in a health facility. But if he or she is, the shortage of skilled health workers means that there is only a 46 percent chance that Aisha’s caregiver will be a healthcare professional, trained in delivering babies. Complications during the birth will be handled without adequate supplies. Since few facilities have emergency transport, if she needs to reach a higher level of care, Aisha will be on her own. In one region in Tanzania of nearly three million people, there is only one ambulance.

Aisha’s experience is symptomatic of other areas of health care. So it highlights a series of health system gaps – shortage of health workers, their levels of knowledge and training, or the lack of an adequately functioning emergency care infrastructure – which directly jeopardize her health and the health of millions of Tanzanians.

**Root causes**

Health system challenges within sub-Saharan Africa are increasingly well known and acknowledged as a major cause of lost economic development and human suffering. However, their root causes are often less clear, while the impact on MDG targets is severe. Wider issues such as poor economic conditions, lack of education, and weak national infrastructure affect the health sector poorly. But there are also a number of more immediate drivers.

Over the course of the Lake Zone diagnostic, we isolated three core problems in the health system in Tanzania. These problems have a deleterious effect on every single area within the health system.

1. **Fundamental resources**

The health workforce is simply insufficient to serve the existing population, and is the largest limiting factor for delivering adequate health services. Only 30 to 50 percent of health posts are filled. At last count, there were 1,336 physicians at work across the entire

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5 Adjusted, World Bank figures in 2005. The national reported figure in Tanzania is 578. Throughout this report we have used the World Bank’s adjusted figures.

6 See ibid.
country – a ratio of about one doctor per 30,000 people.\(^6\)

Such statistics are misleadingly positive, however, if you apply them to the country as a whole. In Kahama, a district in south west Shinyanga, the district hospital was designed to serve a population of 150,000 people. The district medical officer and sole physician in Kahama, Dr. Leonard Subi, estimates that the district’s population is closer to 700,000, all of whom are under his care. Low health worker productivity and skill level further decrease the effective size of the workforce.

The supply of essential drugs and equipment is also insufficient, causing interruptions in healthcare delivery and creating poor quality of care. And lack of adequate primary healthcare creates significant inefficiencies and limits timely access to simple healthcare interventions. High-burden health issues, such as maternal care for Aisha, could easily be dealt with at the primary care level, yet capacity at that point is particularly low.

### 2. Management capacity

Inefficient management of the supply chain is a major culprit for the high frequency of medicine and equipment stock-outs reported in public facilities in Tanzania. At any given time, non-tertiary facilities have less than 60 percent of their essential supplies.

For several months, for example, emergency obstetric care items were out of stock across the country, significantly increasing Aisha’s risk of maternal death.\(^7\) Hypertension is one of the top five pregnancy-related complications, but assuming she was diagnosed correctly, Aisha would only find the appropriate methyldopa treatment available at six percent of dispensaries. But if she were close to a regional hospital, most have stock on hand more than 84 percent of the time,\(^8\) explaining why the preference for many Tanzanians is to enter the health system at the highest possible point in the referral network.

Limited performance-management practices for staff and non-clinical operations further lower the productivity and the quality of care that the system may be able to offer, and the absence of communication systems makes critical functions like referral or access to up-to-date practices and disease information challenging to impossible.

### 3. Enabling repair: financing & mindsets

An environment that enables and rewards growth is necessary to ensure health system quality. Critical components include a solid and multi-tiered funding base, a motivated workforce, and effective leadership.

Low health expenditure (currently at $18 per person annually) is a major root cause of inadequate healthcare delivery. The lack of a pre-payment system, such as an effective national insurance scheme, also limits expansion of healthcare financing, which is needed to support further health system improvements.

Further, poor health worker mindsets exacerbate conditions in the health system, alienate patients, and further unravel the fabric of health services. Greater clinical leadership within the system is immediately necessary to enact and sustain long-term health system improvements.

These root causes cannot easily be remedied, but they have close links and interdependencies. Positively effecting change in one portion of the system will set in motion ancillary positive effects. It is important to begin practical action on the ground, soon, and equally important to design such action with full cognizance of the surrounding environment, both enabling and otherwise.

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\(^7\) Denmark, Evaluation Department, Ministry of Foreign Affairs of Denmark, Joint External Evaluation of the Health Sector in Tanzania 1999-2006 (Oct. 2007) 70.

Molecular thinking

In the structure of a molecule, removing, weakening, or strengthening a single component or bond between two components will dramatically alter the properties and create instability across the entire molecule. We believe the same to be true of a health system.

The three root causes of dysfunction are systemic, and follow the growing recognition that we need a more integrated, systemic – what we call ‘molecular’ – approach to global health. Popular commentary began to encourage donors and implementers alike to question a strictly vertical approach. Massive expansions of HIV/AIDS programs has led to net benefits for the health system (e.g., an increased number of people on antiretroviral therapy means a reduced demand for hospital beds and a healthier workforce – including health workers). But discussions at the 2008 International AIDS Conference reveal a growing acceptance that the global response to HIV/AIDS and other diseases must be addressed in a broader health systems context in order for targets to be met. Dr. Peter Piot, the Executive Director of UNAIDS, noted that there is now an ‘understanding that AIDS is really a long-wave phenomenon, and so we need to work on the structure and systematic issues that will guarantee a solid and sustainable response’.

So for vertical programs to be successful over the long term, the health systems need rebuilding. A molecular approach means exactly that: taking on the full range of health services and healthcare needs in any effort, no matter what size. The approach tackles the entire

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system, not just priority health conditions highlighted by the MDGs, and acknowledges the interconnected and symbiotic nature of the entire problem.

This task is too great to be immediately addressed at the continental or even country level. But by defining and then supporting the components, bonds, and weightings necessary to create a molecule able to stand alone and bind with replicas in such a way that the entire systemic balance is broadened rather than weakened (Exhibit 1), we believe we can catalyze change and sustain organic growth over time.

As such, we decided that our recommendations should combine vertical and horizontal approaches and ensure that they include the crucial fundamentals of the health system molecule. Addressing the root causes of healthcare system dysfunction is critical. Health system gaps create direct bottlenecks for healthcare delivery and for the implementation of initiatives aimed at developing the health sector.¹¹ To adequately and consistently address any health condition, basic resources such as skilled health workers, decent facilities, and drugs and equipment are needed, and the operating system that manages and supports them needs to be fixed.

When any components are missing in significant measure, as is the case throughout SSA, all health outcomes suffer. Aisha’s support system in Tanzania, for example, therefore becomes interrupted, inconsistent and incoherent.¹²

**Recommendations**

The healthcare system needs comprehensive change, using molecular thinking to ensure sustainability. After identifying the root cause issues, we developed a set of 32 initiatives that would each address an issue, most of which have some value as stand-alone efforts. But applying molecular logic, implementation of these initiatives will not lead towards wholesale systemic repair. Each can be conducted with beneficial impact, and practically speaking, can serve as the basis for several programs being developed.

Applying molecular thinking, however, means combining complementary efforts within an appropriately sized geography to cover each component of the molecule – supplies, workers, infrastructure, and so forth. Only this approach will catalyze sustainable growth.

So we prioritized and then used the 32 initiatives as the basis of our three recommendations, which will become the first horizon of a very long-term strategy to improve health outcomes in the Lake Zone region and in Tanzania as a whole. Our primary objective was to address basic resource and management challenges: the shortage of skilled workers, poor drug availability, the lack of adequate primary care, and improving performance management at different levels of the system.

Our three key recommendations do not map directly to the root causes of health system dysfunction, as our analysis is based on the potential to catalyze change. The recommendations of this report take into consideration a range of problems – those relating to individual diseases, like maternal care or HIV/AIDS, and systemic challenges. The point is to step away from ‘vertical’ or ‘horizontal’ thinking and offer a complete molecular response to directly address limited healthcare. The recommendations are as follows:

- Rebuild primary care capacity.
- Rebuild the health workforce using hospitals as development centers.
- Invigorate leadership, planning, and management.

The first two incorporate all knowledge gained from the Lake Zone and Twiga initiatives and use the

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¹¹ See Jaap Koot and Rik Peeperkorn, “The Health Sector in the 21st Century; putting health systems strengthening in perspective” (forthcoming).

molecule as a guiding framework, creating a holistic but practical, grassroots-based approach to fixing the system both from the top down and the bottom up. Our approach would increase the likelihood of reducing maternal mortality and improving maternal health along with all other patient needs, but almost as a by-product of health system repair. Aisha, for instance, would encounter more, better trained health workers who would have access to adequate supplies. Further, she would be more efficiently referred for specialist services in case of complications, and given that she knows this in advance, she would be less likely to privately find a tertiary facility like BMC as her first point of contact with the medical system.

The third addresses the crucial gap in the system’s capacity for renewal – business and entrepreneurial leadership creating clear, fact-based, locally derived, grassroots business or action plans around which local populations can organize and which they can invest in and own.

Each of our recommendations are designed to help strengthen the enabling environment, and their potential impact is significant. We believe adopting our recommendations would, at a minimum, increase system capacity by 3.4 million additional patients per year – nearly half of what is required to fully meet the three healthcare MDGs.13

Acknowledgements

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Further, we are extremely grateful for the ongoing assistance of the regional health management teams of Shinyanga, Mara, Kagera, Mwanza, Kigoma and Tabora, and their regional medical officers, Dr. Costa Muniko, Dr. Stephen Kebwe, Dr. Pius Tubeti, Dr. William Wayalla (acting), and Dr. Valentino Bangi, respectively.

Much of the fieldwork on the ground, analysis, diagnostics, and thinking were heavily influenced by specialist consultants with McKinsey & Company’s health systems and global health practices. We greatly appreciate their extraordinary contributions, assistance, and support. We also gratefully acknowledge the assistance of the United States Agency for International Development (USAID), the Bristol-Myers Squibb Foundation, Abbott Fund, and staff of the Bill & Melinda Gates Foundation for financial support and/or direct encouragement.

Finally, we would not have been able to undertake this work without the openness, transparency and energy of all the Tanzanian health system users and healthcare workers who we interviewed and who participated in clinical and patient workshops.

The lead authors who also directed the work were Angus O’Shea, Executive Director of the Touch Foundation, and Lowell Bryan, serving in his dual capacity as a director of McKinsey & Company and President of the Touch Foundation. Both were supported by Aida Causevic, senior associate with the Touch Foundation, with team management, drafting and expertise. Rachel Cecil, Liz Pavlovich, and Amanda Rawls are particularly commended for their considerable efforts at various stages of production.

The opinions expressed in the report are those of the authors and may not necessarily represent the opinions of McKinsey & Company, the United States government, Bristol-Myers Squibb Foundation, or the directors or employees of, or donors to, the Touch Foundation.

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13 McKinsey & Company / Touch Foundation team analysis.
Context

Healthcare in Africa is in a precarious state and, according to many, has reached crisis proportions. HIV/AIDS is, perhaps, the best-known healthcare challenge and is taking a great toll on the health, survival, and livelihoods of millions of people. But much more basic problems are ailing SSA populations as well – maternal and child survival, malaria, tuberculosis, and cases of trauma.

The past 15 years in particular have seen a more dramatic global response to these issues, resulting in some promising results. But despite these there is a rising need to recalibrate various approaches to make them more comprehensive, or molecular; less ideological; and more effective. We are still missing targets and duplicating effort.

Transformed international approaches

The recent push on the MDGs is a culmination of many years of efforts by the international community and local governments. In the 1970s and 1980s, donors gravitated toward ‘horizontal’ initiatives, such as improving primary healthcare and training community health workers, but many of the initiatives did not always produce intended results. They often required enormous financial resources and greater capacity than existed for implementation, let alone sustainable maintenance.

From the 1990s until very recently, donors turned to ‘vertical’ approaches that concentrated on single, high-burden diseases such as HIV/AIDS, malaria and tuberculosis, in an attempt to increase the expediency of activities in the field and produce results on a few high-impact fronts. While maternal health, for instance, does not fall into these categories, efforts to address it have been developed as stand-alone initiatives. So, in theory at least, programs to assist Aisha to ensure a healthy pregnancy and birth do actually exist.

Originally intended as a temporary strategy, vertical programs proliferated due to their attractiveness: they exacted greater focus from both implementers and recipients, and were more conducive to measurement and evaluation, therefore receiving greater political support in donor countries. Further, they received significant support on the demand side from countries desperate to reverse the decline in life expectancies resulting from a handful of diseases.

Focusing energy directly on maternal health initially seems to provide a more expedient way to support Aisha. Yet mixed results even from HIV/AIDS programs, where most resources are concentrated, suggests that vertical approaches alone might be insufficient.¹⁴

Three sources of increased funding

Along with this shift in approach (and in part, because of it) we have seen a dramatic increase in resources designated for global health.

First, multilateral and bilateral agencies have played a significant role. At the Abuja summit of African leaders in 2001, then-U.N. Secretary-General Kofi Annan called for the creation of a global fund to channel additional resources into public health. This call coincided with others, such as the WHO’s Commission on Macroeconomics and Health, chaired by Professor Jeffrey Sachs, which argued for a new

global partnership between developing and developed countries to improve global health.

The net result was the Global Fund to Fight AIDS, Tuberculosis and Malaria, a multilateral funding mechanism established in 2002 that has committed $11.3 billion to date. The Global Fund also helped to raise the profile of the ‘stepchildren’ to HIV/AIDS: tuberculosis and malaria, which collectively kill almost three million people each year. Further, under the recent Bush administration, U.S. government spending for global health reached new highs, channeled largely through the President’s Emergency Plan for AIDS Relief (PEPFAR), initially a five-year, $15 billion strategy for reducing HIV/AIDS prevalence in 20 countries and recently re-authorized for another $48 billion over the next five years.15

Other countries in the Organization for Economic Cooperation and Development (OECD) have followed suit through substantial increases in their international development assistance, with the health sector being the largest recipient of increased funding.16

Second, over the past decade, funding for global health from private foundations has reached unprecedented levels. The Bill & Melinda Gates Foundation helped to catalyze this dramatic shift in funding by drawing more attention to global health issues and contributing almost $11.6 billion17 in global health funding since 1994. Their giving power was considerably amplified with Warren Buffett’s decision in 2006 to donate approximately $37 billion over time to the Gates Foundation, making it the world’s largest charitable institution. The Global Health Program remains the largest of the Gates Foundation’s four core divisions.

Finally, developing country governments have, despite adverse economic situations, increased their health sector budgets. In the 1990s, most countries in sub-Saharan Africa spent less than three percent of their budgets on health; by 2003, Tanzania (for example) spent almost 13 percent of its national budget on health-related goods and services, though this has since dropped to 11 percent.18

The bulk of the increase has been disease-specific, although HIV/AIDS may have helped to raise the profile of wider, cross-cutting global health priorities such as reproductive health, maternal health, and nutrition, since the disease is interconnected with such a wide range of issues.

**Missing targets in Africa**

The MDGs, launched by the U.N. in 2000, were designed as a global blueprint for alleviating poverty, improving health, and protecting the environment. The MDGs consist of eight specific development targets to be met by 2015. Progress is measured against each country’s status in 1990, generally in terms of percentage reduction.

Despite increasing effort, impact on health outcomes has been mixed. The year 2008 marked the mid point in the timeline to meet the MDGs. Sub-Saharan Africa has been at the forefront of the MDG effort; indeed, the toll of disease in the region is discouraging and vastly disproportional. The region carries 20 to 40 percent more of the disease burden for MDG priority health conditions than its 24 percent portion of the world’s population suggests it should (Exhibit 2).19

Despite the challenge, there have been some impressive outcome-related achievements. Measles...
deaths decreased 91 percent between 2000 and 2006. 20 Uganda reversed the spread of HIV/AIDS, from a prevalence of 18 percent in 1992 to a remarkable 6.4 percent now. 21

As it stands, however, SSA will struggle to meet the health MDGs. 22 Indeed, MDG 4 (relating to children’s health) is the closest of all the health goals to being attained, but SSA would need to achieve a rate of reduction ten times better than that recorded between 1990 and 2006 to realize that goal. 23

Parallel systems

While there has been an unprecedented growth in funding for global health, the vertical disease approach and the response to the HIV/AIDS pandemic have not come without considerable costs. According to a recent WHO report on primary health care, ‘short-term advances have been short-lived and have fragmented health services’. 24

It is certainly arguable that the narrow focus on disease control has led to great inefficiencies, creating parallel chains of command, duplicating supervision and training schemes, and multiplying transaction costs, while underlying structural and systemic issues have gone largely unaddressed. For example, a vertical approach can be counterproductive when additional, disease-specific resources do not contribute to other health objectives. This is the case when a laboratory is equipped to perform viral load counts and other HIV-related tests, but is not equipped to focus on other diagnoses, which may collectively lead to greater

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losses given that other areas account for 82 percent of disability-adjusted life years (DALY) loss in Tanzania (Exhibit 3).25

Yet a major part of the impetus behind the PEPFAR program was to find ways to strengthen health systems such that the HIV/AIDS scourge could be addressed, reduced, and eliminated. In its reauthorization of the PEPFAR budget in 2008, for example, the U.S. Congress inserted the requirement for PEPFAR funds to create 140,000 new healthcare workers – a direct endorsement of the concept that without health workers to treat patients, HIV/AIDS targets will never be met.

Obstacles to health workforce expansion

Our first hand experiences in Tanzania revealed the negative impact of health system gaps on healthcare delivery and system development across the continent. These gaps created obstacles to our efforts to increase the health worker training capacity of Weill Bugando’s university, for example.

One of the significant barriers to expansion of student training is the lack of a decent system within which they can train. Experienced and skilled health workers to provide and supervise training are few; facilities lack adequate conditions in which to treat, and therefore to teach. Along with uncertainty about where trained health workers would be placed and how well they would be retained within the system, efforts to expand training capacity quickly became dependent on efforts designed to fix the health system itself.

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Methodology

The Lake Zone is representative of SSA – a geographical third of an east African country, with a population of 15 million people. In line with the Touch Foundation’s general approach, the first phase of our approach was to undertake careful analysis of the health system issues – a diagnostic assessment – to be certain we genuinely understood the vectors and dynamics at play, as well as to ensure we had listened to Tanzanians with direct experience of the system in operation.

A regional molecule

Located in the northwest third of the country, the Lake Zone includes six regions of varied geography and development status. Mwanza, Mara, and Kagera are on Lake Victoria. Shinyanga, Kigoma, and Tabora are to the south, with Kigoma also concomitant with Lake Tanganyika. The zone has a fully self-contained healthcare system, consisting of five levels of health facilities and community-level care, as in the rest of Tanzania, making it a suitable geography for an analysis of the Tanzanian health system.

Further, given its disease-state profile, population and skill mix, and that it is about one-eighthieth the size of SSA, it effectively becomes an appropriate geography for a molecular analysis and a suitable proxy for the continent as a whole (Exhibit 4).26

Diagnostic assessment

In early 2008, a joint team from the Touch Foundation and McKinsey & Company conducted an intensive assessment of the health system through research, more than 200 interviews, 50 field visits (several multiple times), and a number of workshops with clinicians and health system users – i.e., the general population. Working closely with Weill Bugando’s teaching hospital and university, we began by determining how the Tanzanian government can meet their healthcare access, outcomes, and financing targets.

The focus of the diagnostic phase was to identify the root causes of health service dysfunction and develop recommendations that could respond to these challenges in a practical and impactful way. The diagnostic was guided by a steering committee composed of local health system leaders and public health experts from the London School of Hygiene and Tropical Medicine, the Tanzanian National

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Institute for Medical Research, and Weill Cornell Medical College in New York.

The challenge for the steering committee was to ensure that the findings were intellectually robust, locally relevant, and grounded in an understanding of local conditions. Any ideas had to work, on the ground, within existing constraints. The committee met formally four times over the course of the diagnostic and provided insight in a less formal fashion throughout.

A useful starting point for the team was a framework developed by McKinsey’s health systems practice through its work in the United Kingdom and other countries. The framework allowed us to conduct the analysis in five distinct steps, combining an understanding of health system objectives and local issues with a thorough review of the healthcare system itself toward developing the key recommendations that might begin to address these challenges (Exhibit 5).

**Attitudes and experiences**

To understand how patient and provider attitudes in the healthcare system affects health services, we conducted a series of focus group discussions with both users (i.e., prospective patients) and providers. With encouragement and technical assistance from Bristol-Myers Squibb Foundation’s Secure the Future program staff, we conducted seven user focus groups in Shinyanga and Mwanza to better understand patient attitudes toward different types of healthcare (covering both public and private services), patient behaviors, and their coping mechanisms.

Most groups were composed of eight to 11 people of the same gender (except for youth groups, which were mixed). This was thought to be the most comfortable setting to conduct frank discussion. In each of the groups, a tool with 14 questions was used to facilitate the discussion. Since most participants were not conversant in English, we conducted the sessions in Kiswahili. Each discussion lasted 1.5-2 hours, and all were conducted within a hospital setting.

The questions focused on three areas. First, we tried to identify the range of resources and service providers health users rely on to address their healthcare concerns, amongst informal, community-based and formal health system providers. Second, we tried to understand how users make decisions about healthcare, especially when selecting between private and public services. Third, we wanted to understand the experience of these users in both the private and public sector.

We also conducted three focus groups with health service providers, mostly physicians, nurses, and assistant medical officers in Kagera, Shinyanga, and

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Mara, to compare views and understand the role that providers play in the system, beyond delivering services. These workshops were highly interactive in nature, modeled after workshops conducted by McKinsey health system practice in Canada, the U.K., and other health systems. Participants were asked to create collages of their experience providing care and their perceptions of the Tanzanian healthcare system. They worked in groups, and each group presented their collages, which usually stimulated lively discussion.

The combination of patient focus groups and provider workshops gave us an insight into some of the issues within the system that cannot be determined by a data analysis (Exhibit 6).

<table>
<thead>
<tr>
<th>Users</th>
<th>Public providers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>...of public healthcare...</strong></td>
<td><strong>...of private healthcare...</strong></td>
</tr>
<tr>
<td>Are disenchanted because primary care facilities lack workers and basic resources – result: users self-medicate</td>
<td>Healthcare acceptable at higher levels, but not at primary care facilities</td>
</tr>
<tr>
<td>Are disappointed that providers at hospitals often have poor attitudes: not responsive to patients’ needs, pervasive lack of accountability</td>
<td>Colleagues often not motivated for good reason – demands in system too high and compensation and incentives quite low</td>
</tr>
<tr>
<td>View public hospitals as the preferred site of care – best health workers, most equipment, safest</td>
<td>Patient dissatisfaction major cause for concern</td>
</tr>
</tbody>
</table>

Exhibit 6

What they think...

- Value that they get compassionate and friendly service, reasonable wait times
- Worth paying for but quality an issue – over-prescription, under-treatment, usually to increase profits
- Should be faster in seeking services
- Recognize that herbal medicines provide little real medical benefit, but feel powerful placebo effect
- Sometimes feel left out of the system and feel their concerns are not redressed
- Healthcare acceptable at higher levels, but not at primary care facilities
- Colleagues often not motivated for good reason – demands in system too high and compensation and incentives quite low
- Patient dissatisfaction major cause for concern
- Wish they had what colleagues in the private sector receive: efficient and supportive administration, manageable workload, less complicated cases, incentives
- Feel concerned with quality of private care that some patients receive
- Doing OK given circumstances and proud of profession
- Disenchanted with lack of resources and support, especially funds, staff, drugs, and supervision
- Feel ill equipped for management duties
- Wish for more mentorship from senior clinicians

[28] Source: User workshops conducted March 31 and April 1, 2008 with technical assistance from Bristol-Myers Squibb Foundation (7 gender-specific groups with 64 total participants); clinical workshops conducted April 8-9, 2008 in 4 regions with medical officers and nurses (27 total participants).

**Modeling outcomes**

To determine the impact of the base initiatives at least at a directional level, we created an analytical model, defining impact as the benefits that are associated with increased patient coverage (measured in terms of patient visits to health facilities). That output is then translated to the number of patients visiting the system. The model calculates impact in four steps as follows:

- It establishes a baseline level of healthcare activity in the Lake Zone by taking resource utilization (facilities, beds, and workers), and patient treatments both now and in 2015, assuming...
current projections. In these estimates, the resource in least supply was used as a rate-limiting step in the calculations so that the impact of each resource is not overstated.

- It determines impact of individual initiatives on patient coverage, and therefore the capacity increase, assuming that demand far exceeds supply. For instance, one workforce initiative may add as many as 900,000 additional patient visits or an estimated 500,000 additional patients into the system.

- It then evaluates the level of need to meet the health MDGs in terms of patient coverage, using baseline data on numbers of patients.

- And finally it evaluates how added treatment capacity resulting from the initiatives impacts on Tanzania’s ability to meet MDG targets.

We arrived at the number of patients from patient visits by using a ratio of 1.7 visits per patient per year. This ratio was based on the team’s observations from several health facilities in the Lake Zone, in the absence of other data. As a result, any impact shown in Exhibit 24 on page 47 could be overstated if health visits prove to become more frequent.

Meeting the personal challenge

We were acutely aware that Aisha doesn’t care so much about clinical pathways, disease end-states, policy imperatives, supply chain management weaknesses, strategies, enablers, or initiatives. What she cares about is whether or not she can access appropriate healthcare.

So we approached the Lake Zone’s health system from a molecular perspective, looking for cross-cutting opportunities and levers within the delivery model that would enable complete molecular, rather than component-level, health system-strengthened results.

The object of the exercise wasn’t academic; rather, we sought to see the system from Aisha’s point of view and create clear and present health outcomes for the people, like her, who need it.
Findings: Existing health services

In SSA, a number of key factors contribute to the country’s slow progress against the MDGs. These include under investment by the donor community and African governments, civil instability, poor governance, rising food prices and a decelerating world economy. Within this context, Tanzania is somewhat unique. It is politically stable with a committed, democratically elected government headed by President Jakaya M. Kikwete. Although it is the world’s fifth poorest nation in terms of GDP per capita, Tanzania has had sustained economic growth of close to seven percent since 2005, though the IMF now expects this to reduce to 4-5 percent given current circumstances. In 2006, official development assistance (ODA) amounted to 13 percent of GDP, compared with five percent on average for the rest of SSA.

These factors may have contributed to greater progress on healthcare MDGs in Tanzania than in the rest of SSA. According to the World Bank, UNICEF, and the WHO, Tanzania is closer to meeting its health MDG targets than SSA as a whole (Exhibits 7a-7d, over). There is now a positive outlook on MDG 4 (children’s health), and substantive gains have been made in infant mortality, HIV/AIDS, and tuberculosis. The glaring exception is maternal health – the maternal mortality rate is extremely high and has not changed substantially over the past two decades.

Aisha’s prospects are, therefore, no better than those which faced her mother.

Maternal mortality is an interesting metric: while many of the others might seem approachable through targeted reduction programs (a wholesale vaccination program, for instance, will have clear and positive impact on infant mortality without necessarily addressing systemic problems), it is extremely difficult to design a program to directly support Aisha throughout her pregnancy and post-natal care without addressing systemic issues along the way.

Thus we believe maternal mortality to be a strong indicator as to the health of the health system itself. Aisha’s risk of death during childbirth is significantly reduced with access to basic primary care. In other words, while the MDG targets are vertical outcomes, and while system strengthening requires molecular thinking, maternal mortality is a clear area of overlap between the two approaches. Improving Aisha’s prospects means improving the entire health system, which in turn will create better outcomes against the full range of health indicators.

30 The GDP estimates here are derived from Purchasing Power Parity calculations.
32 According to the World Bank, Tanzania’s GDP in 2006 was 14.18 billion USD; official development assistance (ODA) and official aid was 1.825 billion USD. For sub-Saharan Africa, ODA was 40.49 million USD and GDP was 842.91 billion USD in 2006.
EXHIBIT 7a
On target for children...

EXHIBIT 7b
...no movement on maternal mortality...

EXHIBIT 7c
...on track toward HIV reduction...

EXHIBIT 7d
...and in the right direction on TB
Fundamentals of Tanzania’s health system

The existing healthcare system is severely weakened: although its structural blueprint makes sense, for the most part the key foundational elements are not in place. The system does consist of a large network of facilities, provides a range of services, and is supported by a wide variety of stakeholders, both institutional and individual, who are deeply committed to reforming and strengthening healthcare. But at each level of the system, critical deficiencies exist.

It therefore needs to be rebuilt from within – strengthen existing activities and services, work with established government and non-government bodies, and avoid duplication or the creation of parallel systems which tend only to create a net weakening of service delivery.

The network exists, to a point

As in the rest of Tanzania, the health pyramid in the Lake Zone consists of five levels of facilities built on a foundation of community healthcare, including services offered by village health workers and maternal, child, and health aides.

Nearly 1,600, or 30 percent of Tanzania’s total health facilities, are in the Lake Zone (Exhibit 8), slightly less than the Lake Zone’s share of the country’s total population. The network accommodates logical referral from one level to the next, based on the assumption that medical training and basic infrastructure are available at each level. However, given that resources are limited and scattered, patients and providers are forced to follow suboptimal referral patterns.

Bugando Medical Centre lies at the top of this pyramid. It is one of four tertiary hospitals in the country and the only one in the Lake Zone. With approximately 900 beds, BMC treats from 250,000 to 600,000 patient cases annually and has a catchment area of 15 million people across the region. It provides a limited range of services and has some capabilities, including radiology and laboratory testing, an intensive care unit, and some specialty wards.

The hospital should primarily receive patients referred from regional and district hospitals. However, in 2006, 15 percent of patients being admitted through the casualty ward (about half of BMC’s overall volume) involved non-emergency conditions. If patients can physically reach the hospital, in other words, they will utilize it for primary care, creating unnecessary pressure on the facility. Self-referrals continue

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37 According to the Bugando Medical Centre’s 2006 Hospital Report, 226,793 outpatient cases, and 16,245 admissions. The 2007 Hospital Report shows that this amount increased to 584,086 outpatient cases, and 56,785 admissions.

38 Interview with Dr. Steve Justus, visiting emergency medicine specialist at the Bugando Medical Centre, 3 Nov. 2008.
despite the hospital having instituted a ‘bypass’ fee to discourage patients from avoiding facilities lower down in the system.

The next level of care consists of six regional hospitals, one in each region, used for secondary care. They serve from 70 to 100,000 patient cases annually. Supporting them are district hospitals, usually smaller in size, less specialized, and marginally equipped. District hospitals also play a role in primary care by distributing drugs and supplies to publicly owned primary care facilities in their districts. Council Health Management Teams (CHMTs) based in each district implement national health policies and supervise the work of health centers and dispensaries.

Basic primary health services are supposed to be delivered in dispensaries and health centers. Health centers provide mostly ambulatory services but also have up to 15 inpatient beds. These centers are designed for minor surgery and some laboratory tests such as blood, urine, and stool testing, but their ability to provide these services depends heavily on the availability of skilled staff.

Dispensaries are the lowest facility-based form of care in the pyramid. They are, essentially, small health clinics that provide basic consultation, diagnosis and treatment, or referral if treatment is beyond their capacity. They are critical in providing ante-natal and infant care, including immunizations, first aid in cases of trauma, and maternal support. As the starting point for referral to other facilities, health centers and dispensaries play an incredibly important role in the system. Yet they don’t exist in at least two-thirds of the country’s villages, are too disconnected from the system where they do exist, and are too poorly supplied to match demand anyway.

The challenge, therefore, is to find a way to make the infrastructure work where it is, as well as to develop innovative methods of projecting it into under-served areas where it does not exist.

**Multisector service provision**

The private sector provides about one-third of health services, owns 36-44 percent of all facilities, and is a significant component of the Tanzanian health system. Private services in Tanzania consist of both for-profit and non-profit entities. The latter includes both NGOs and faith-based facilities, some of which charge user fees. For the most part, the focus of these institutions is curative services.

For-profit facilities account for 15 percent of health facilities, and mostly include private hospitals. Nearly 60 percent of all hospitals in Tanzania are privately owned (two-thirds of which are owned by faith-based organizations). Further down the ladder, more than 32 percent of health centers and 35 percent of dispensaries are privately owned, of which around 17 percent of both are classed in the for-profit sector.

The net result is that 39 hospitals and 733 dispensaries in Tanzania are classified as for-profit facilities.

Finally, nearly 60 percent of laboratories and 90 percent of X-ray units are privately owned, partly due to the fact that diagnostic and radiography equipment is in such short supply in public facilities.

**But large gaps also exist...**

Despite the infrastructure, healthcare availability in Tanzania is limited. With one health worker per 1,923
people, Tanzania has barely one-fifth of the WHO’s target density of health workers. High-skilled cadres are heavily concentrated in urban areas; close to 50 percent of doctors live and work in the economic capital of Tanzania, Dar es Salaam.

The lack of skilled workers is therefore among the greatest challenges for the health sector in Tanzania. A combination of economic contraction, the war with Uganda that resulted in the overthrow of Idi Amin Dada in 1979, and structural adjustment policies in the 1980s, contributed significantly to the depletion of health care professionals from the Tanzanian health system. At the end of the war, for instance, there was one specialist left for the entire Lake Zone region, Dr Samuel Kalluvya, who is still working at Bugando today. Further, as discussed in Action now, a civil service hiring freeze was in place until as recently as 1998, exacerbating the current shortages.

During this period, health facilities also deteriorated. Many current facilities are now dilapidated, un-equipped, and understaffed. Another particularly prominent challenge within the health system is frequent stock-outs within the centrally managed drug distribution system headed by the Medical Stores Department (MSD), which results in low and inconsistent drug supply in public facilities.

...despite strong government commitment

In the past decade and a half, there has been significant momentum around reform of the healthcare system in Tanzania. The government is committed to reducing poverty and improving healthcare in the country. It has developed comprehensive strategies since 2000 to meet the health MDGs and to improve access to and the quality and equity of the health system. Thirty percent of the health budget is devoted to development activities.

In 1998, the government and development partners, a group of bilateral and multilateral donors, adopted a Sector-Wide Approach (SWAp) for health development in order to harmonize and align activities. There has been significant effort to integrate vertical programs into the rest of the health system. Several health system strengthening components are also included in the SWAp, such as developing the Health Management and Information System (HMIS) for aggregating and disseminating key health statistics in the country.

Decentralizing services to increase funding and autonomy at the local level has been another key objective of reforms. Since 2001, district health services are part of the Local Government Authority rather than part of the Ministry of Health and Social Welfare (the Ministry). In 2006-07, the districts received around a third of the funds distributed by the Ministry, whereas the regional level received barely seven percent. More recently, cost-sharing (i.e., patient fees) and insurance schemes (i.e. the Community Health Funds and national health insurance) have been introduced.

In 2007, the government renewed its policy of universal health coverage as stated in the Primary Health Services Development Programme (Mpango wa Maendeleo wa Afya ya Msingi, or MMAM). The MMAM calls for the construction of 5,853 new health facilities and rehabilitation of another 2,254 across

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44 O’Shea et al. 13. In other words, Tanzania’s ratio is a little over five clinical health workers per ten thousand people.
45 Ibid.
48 HSSP III 11.
49 Tsh 154 bn at district level, Tsh 31 bn at regional level, Tsh 471 bn distributed by MOHSW. Source: Ismat Dewji Sheriff, “All About the Health Budget!,” Final report organized by the Health Equity Group and supported by Women’s Dignity Project, (31 Aug, 2006).
Tanzania over a ten-year period to fulfill the policy of ‘one dispensary per village, one health centre per ward, one hospital per district, and one regional hospital per region’, more than doubling the number of facilities in the Lake Zone (Exhibit 9).

Under the plan, many current facilities would be renovated as well. However, the level of resources required to adequately implement the MMAM has called the policy into question in many circles: it calls for $5.9 billion of funding for infrastructure alone, and a six-fold increase in the health workforce to staff the new facilities.

Action now offers a practical and fact-based plan for both expanding the health workforce and keeping its expansion on track with facility development under the MMAM.

Private sector partnerships

Reaching the government’s targets is beyond the capacity and resources of the public sector alone. To achieve the goals set out in the MMAM, some degree of private sector participation is clearly necessary. As a result, involvement of the private sector has been a critical objective for the Tanzanian government. The sector, including the faith-based sector, is being sought to fill service gaps and increase the level of expertise and creativity in the system.

There are some powerful examples of such partnerships that can increase access to services for the poor and suggest that a private-sector-oriented solution might have potential. For instance, in 2002, a donor-supported program was implemented, led by the Tanzanian Food and Drug Authority in collaboration with Management Sciences for Health and supported by both the Gates Foundation and USAID. It created a new business model called Accredited Drug Dispensing Outlets (ADDOs) which were designed to provide quality and affordable basic medicines, supplies, and select prescription drugs in rural areas.

The ADDOs are private pharmacies that have been accredited and have uplifted their standards of service. Pharmacists are trained to educate consumers about drug usage and health concerns, improve documentation and standards, and provide proper

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50 Source: Tanzania guideline standards for health facilities; MMAM; HSSP III.
51 Infrastructure cost conversion used the exchange rate of 1150 Tanzanian shillings per US dollar. Tsh 6.8 trillion. Staffing requirement based on Tanzanian government norms cited in MMAM.
52 O’Shea et al. 15.
55 ADDOs were first piloted in Ruvuma District from 2002-2005 with the support of Bill and Melinda Gates Foundation; USAID also provides support.
referrals to patients. Currently, nearly 475 ADDOs are licensed to operate in Tanzania.

The ADDO chain is one of the better examples of a public-private partnership that utilizes the best of each sector to increase access to services for poor and rural communities in Tanzania. The chief constraint to the natural expansion of the program is apparently a lack of consistent capacity to train ADDO operators in managing their shops. But in retail circles this was also true, giving rise to the existence of franchise networks that are designed to solve exactly that problem – taking small operators without experience and enabling them to run their own businesses.

Further, the success of ADDO in Tanzania, the Child and Family Wellness (CFW) shops in Kenya, and small initiatives like Clinic Africa in Uganda suggests that there is a clear demand and a willingness by patients to pay for health services. It also seems clear that, while the economic model is yet to be determined, such business models could indeed be economically viable. This in turn suggests that constraints on healthcare supply are the key impediments to health system growth despite, not because of, the budgetary limitations of each East African country. In other words, the likely demand for private healthcare suggests that national health schemes might only need be part of the answer, not the entire solution.

Thus the right model may well create the potential to unleash organic growth and expand the reach of the health system.

Despite these examples, however, on-the-ground cross-sector collaboration tends to be limited to faith-based and government partnerships in rural areas. Public investment tends to favor the public sector, leaving the private sector to function outside the system. Regulatory standards, worker compensation, data management, and other practices tend to differ, resulting in duplication and unnecessary competition between sectors.

As a result, and despite the existence of a small but interested class of investors in Tanzania, no model has yet emerged that has enabled serious private investment in the health sector, particularly in rural areas.

**Strengthening from within**

In-country efforts often result in the creation of parallel systems, lessening potential impact. In developing the Lake Zone Initiative, one of our key objectives was to build on the existing health system governance structures, ongoing activities, and health system goals in Tanzania as laid out in government policies.

The Tanzanian healthcare system does provide a foundation, albeit limited, from which to build. Although frequently understaffed and in disrepair, actual facilities exist in many of the key places necessary. Nearly 90 percent of the population is already within five kilometers of a health center.

Average bed utilization at hospitals ranges from 51-90 percent, in line with hospitals in the U.K. and other parts of the world (Exhibit 10, over). Faith-based, private, and non-profit sectors combined provide close to 40 percent of health services in the country. As such, solutions based on indigenous repair and growth, rather than replacement or creation of parallel structures, hold significant promise.

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57 See ibid. 108.

58 MMAM 13.

But the state of these facilities is fragile. Most facilities lack consistent power, water, and emergency communication to function properly, particularly at primary care levels. Because preventive and promotive services primarily occur in primary care facilities, gaps in infrastructure at that level result in a significant missed opportunity to eliminate healthcare issues before they arise or become entrenched.

The patient experience

A good method of showcasing the way in which health system gaps affect the provision of care for individual diseases is to examine how the care that is delivered differs from the clinical pathway, or standard protocols for care. Health interventions are delivered in four stages: promotion and prevention, onset and diagnosis, treatment, and follow-up. A clinical pathway prescribes which activities should take place at each of those stages.

Following Aisha, we wanted to examine maternal care in an effort to identify systemic weaknesses. We also chose three others – children’s care, malaria, and trauma – in an effort to surface systemic issues in areas such as health worker shortages, inadequate skills, insufficient drugs and supplies, and the lack of adequate physical and emergency infrastructure. The process demonstrated that, in order to provide sustainable care for any health condition, including those conditions covered by the MDGs, underlying health system weaknesses actually do need to be addressed.

Maternal care is therefore illustrative...

In Tanzania, maternal health outcomes are relatively weak and result in a large portion of DALY loss. Complications resulting from pregnancy and childbirth account for ten percent of the overall disease burden. But with relatively simple interventions, 75 percent of maternal death and disability is preventable. Being delivered by a skilled attendant in properly sanitized conditions is critical for maternal and neonatal survival, and has been instrumental in reducing maternal deaths in developed countries over the last century.

Take Aisha, for example. Tracing her maternal experience in the Lake Zone reveals the following.

- Before she becomes pregnant, Aisha’s support is already limited. The WHO recommends comprehensive support in reproductive health and nutrition, but only 57 percent of facilities provide family planning support.
- During pregnancy, the WHO recommends four ante-natal visits, while Aisha is 78 percent likely to receive only one. She is unlikely to know whether or not she is facing a complicated delivery, and she

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60 Defined as a communication device at the facility or within a 5-minute walk and available 24 hours.
is unlikely to receive pre-natal vitamins such as folate either before or during her pregnancy.

- Despite treatment standards to the contrary, Aisha will not develop a birth plan. The likelihood that she will discuss a delivery plan is less than half, and the likelihood that she will discuss risk symptoms is less than 25 percent.
- Even in her one antenatal visit, only 35 percent of facilities have essential supplies to provide her with antenatal care.
- While 83 percent of facilities offer delivery services, only 16 percent have essential medicines, and only 8 percent have the supplies to handle common complications.
- Aisha is 53 percent likely to deliver her baby away from a health facility. If she attended one, however, she is only 22 percent likely to be attended by a healthcare worker with delivery skills.
- In addition, only 42 percent of facilities have any ability to handle obstetric emergencies or provide transport to a facility that can.
- Finally, the WHO recommends 100 percent post-natal care, but Aisha is only 68 percent likely to access it. Ongoing, regular care for both mother and child is also extremely unlikely once they have returned to their village.

Out of 100,000 births, 950 Tanzanian women die in labor or within 42 days of delivery, compared with 11 in the United States and other industrialized nations.\(^63\)

In short, poor availability and skills of health workers, lack of adequate infrastructure, and lack of emergency transport cause critical issues in steps two and three of the pathway (Exhibit 11a).\(^64\) Without these

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\(^{63}\) WHO, 2005 figures, not adjusted.

\(^{64}\) Source: TSPAS; Photo of Bukombe dispensary.
foundational elements, adequate care for Aisha and her children will remain forever elusive.

...And the experience is repeated

Nearly 22 percent of MDG-related cases in the Lake Zone are dealt with outside the formal healthcare system. Similarly, a range of health system weaknesses negatively affect the experiences of patients when suffering from malaria, children’s health issues, and trauma (Exhibits 11b-11d). We chose these three disease areas, along with maternal health, as they correspond to a large portion of the disease burden and demonstrate just how important health systems are for delivering simple, available life-saving interventions.

Malaria

With malaria, for instance, the lack of diagnostic equipment and, again, limited health worker training severely inhibit effective treatment. Due to its fast and short lifecycle, malaria needs to be diagnosed quickly. Indeed, the first 48 hours of the disease are critical. Without diagnostic tools and with only poor access to health facilities, this window of opportunity can easily be missed. Aisha’s 4-year old boy, Mbago, is likely to be one of the ~39,000 Tanzanian children under 5 who die of malaria each year. His treatment pathway would be as follows:

- Fifty percent of Tanzania’s population is aware of mosquito preventative measures; but only

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23 percent use an insecticide-treated bed net (ITN) and only two percent of endemic districts use indoor residual spraying. Yet the WHO recommends that 100 percent of children sleep under an ITN.

- With the onset of fever, Aisha’s son Mbago is only 20 percent likely to seek treatment within 24 hours, well short of the MDG target of 80 percent.

- More than 83 percent of patients will ‘self-treat’ initially, despite best practice requiring medical care within 24 hours of onset. Mbago will probably be one of the 58 percent of patients to wait three or more days before seeking help.

- On seeking treatment, he will find that only around a quarter of dispensaries will have smear testing capability, reducing his ability to obtain an accurate laboratory diagnosis.

- But in a rare moment of good news, 92 percent of facilities will have appropriate artemisinin-based or other first-line malaria medicines, so Mbago is highly likely to receive Coartem (for example) on diagnosis of malaria.

- The challenge becomes apparent if his symptoms persist. Only 58 percent of facilities have second-line medicines, and fewer than 11 percent of health centers are employing workers who have recently been trained in malaria treatment protocols or who are proficient in parasitological testing.

In brief, then, if Mbago presented at a clinic early, and was diagnosed with malaria properly, his prospects would be very good; as he won’t, he will needlessly suffer.

**Children’s health**

Among children (from two to five years old), pneumonia, diarrhea, malaria, measles, and now HIV/AIDS cause the majority of illness and death. Most of these can be dealt with through simple healthcare interventions like immunizations, oral rehydration, therapy or nutrition. Mbago’s prospects are not great – of a group containing himself and eight of his...
friends, one will not reach his fifth birthday – but they are better than average in SSA which is thirty percent worse overall than in Tanzania. His pathway looks like the following:

- At birth, his prospects are actually better than the historical average, with the infant mortality rate dropping from 99 per 1,000 live births in 2000 to 68 in 2005, toward an MDG target of less than 50.
- Vaccination is another good story, with more than 71 percent of infants vaccinated against the major disease groups (diphtheria, tetanus, hepatitis B, polio, measles, etc.) toward a target of over 90 percent.
- That said, Mbago is only 23 percent likely to sleep under an ITN, increasing his chances of contracting malaria at a critical stage in his life.
- And his nutrition is likely to be poor, with over 43 percent of children under 5 showing prevalence of stunting.

- In terms of identifying the danger signs for serious illness, Tanzania has made substantial progress in implementing the WHO’s Integrated Management of Childhood Illnesses (IMCI) protocols, so all facilities now offer curative outpatient care for children.
- However, training and counseling for mothers to provide home-based care is limited, primarily resulting from limited access to qualified health workers, so Aisha’s ability to accurately assess Mbago’s condition will be limited.
- While 76-93 percent of facilities will have appropriate first-line oral medicines, only ten percent of dispensaries consistently have adequate supplies or equipment to treat children presenting with relatively straightforward issues.
- The net result is that Mbago is highly likely to be referred to a hospital simply due to the lack of resources at his local primary care facility.

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66 In Tanzania, non-infant child mortality is 122 deaths per 1,000 live births; in SSA, the rate is 161 deaths per 1,000 live births according to the WHO; TSPAS.
In brief, child health really only requires timely access to care, adequate skill levels among health workers to administer appropriate prescriptions and counsel parents on home-based treatments, and, of course, adequate supplies. Lack of health workers, supply-chain issues, and practical difficulties in accessing facilities in Tanzania are critical obstacles to reducing death and illness among children.

**Trauma**

Finally, injuries are an increasing health threat in developing countries, and solutions require decent emergency infrastructure and properly staffed facilities, around the clock, to ensure timely responses. Emergency transport is nearly non-existent in Tanzania. The rural region of Tabora, for instance, with over 1.7 million people, has one emergency vehicle and limited paramedical staff.

Under these conditions, simple trauma cases can be unnecessarily life-threatening — injuries alone represent over eight percent of DALY loss in Tanzania (see Exhibit 3).

- The key issue here is immediate access, per WHO protocols. While previous Tanzanian policy successfully placed a facility within ten kilometers of most of the population, if Aisha were to injure herself during harvest, her local facility is 70 percent likely to be short-staffed.
- Further, the facility is only 16 percent likely to have a health worker on duty during the evenings or weekends.
- If her condition cannot be diagnosed via a basic physical assessment, Aisha will need referral for even minimal diagnostic procedures such as abdominal tap, ultrasound, CT scan, etc.
- Only three percent of dispensaries keep adequate supplies on hand to stabilize trauma patients, such as appropriate pain medication or anti-hypertensives. Even blood pressure cuffs have limited availability.
- If Aisha needs a referral, which would be the case for even minimal surgery, only three percent of dispensaries have access to an ambulance or equivalent, meaning she would have to find her way to a hospital on her own (usually by walking, if she is ambulatory, or being taken painfully by bicycle, if not).
- Assuming she has been successfully treated, follow-up care is also limited. Only 16 percent of dispensaries are staffed with health workers who are appropriately trained in trauma issues.

Appropriate treatment is, again, restricted by health system weaknesses. Applying the molecular approach by addressing systemic issues, such as resource gaps, financing, management, and policy support, would solve many healthcare challenges that often appear to be disease specific.

**Proving the point?**

As suggested recently in *The Lancet*, the measures taken to reduce under-five mortality in Tanzania may show how what we call the molecular approach can achieve earlier results than may be assumed. Currently, under-five mortality is estimated at 116 deaths per 1,000 live births. The recent rate of reduction has been exceptional. Even with half the rate of decrease seen from 1998 to 2004, Tanzania ought to reach MDG 4 within the target’s timeframe (Exhibit 12, over).

Although, on the surface, efforts to reduce under-five mortality seemed essentially vertical, three approaches in particular suggest that molecular thinking was applied:

- First, the government increased healthcare funding overall, not just funding for children’s

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68 Source: Ibid.
healthcare. According to *The Lancet*, general increases in health funding are strongly correlated to better child survival rates.\textsuperscript{69}

- Second, district governments obtained greater control over funds, giving local decision makers an opportunity to identify the most pressing priorities and therefore to allocate a greater proportion of funds to the most urgent needs in their districts.\textsuperscript{70}

- Third, the government and its development partners applied proven interventions for improving child healthcare, such as the expanded use of insecticide treated bed nets, vitamin A supplementation, increased immunization, etc.

- And finally and perhaps key was the use of the IMCI, with the net result being that the child’s entire welfare was taken into account.

As a result, overall utilization of healthcare services by under-five children increased in several districts. For instance, in Morogoro and Rufiji districts, visits to health facilities per child per year went up by 53 percent.\textsuperscript{71} With greater utilization, it seems that outcomes improved.

We believe this example illustrates the potential for building on success in vertical initiatives and expanding upon that success to strengthen the entire health system. Treating vertical interventions, as components within a molecular system rather than a series of disconnected elements, is likely to result in improved outcomes across a range of areas. An approach combining maternal care programs within the health framework of each community could therefore have a similar effect on maternal health, improving the prospects of both Aisha and her baby.

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\textsuperscript{69} Ibid. 1276.

\textsuperscript{70} Ibid. 1278-1282.

Findings: Root causes

Fundamental resource shortages

One of the most evident challenges with the healthcare system in Tanzania and many SSA countries is the severe shortage of almost all the foundational components: resources, staff, supplies and infrastructure.

The health workforce is dangerously understaffed. Drug supplies are generally less than half of required levels. And, while the facility network is comprehensive, fundamental infrastructure like power and water is lacking, especially at primary care facilities, creating a series of problems further up the healthcare chain.

Workforce supply

Tanzania has approximately 25,000 health workers providing health coverage for 40 million people, many times below the number of health workers needed for adequate healthcare. As described in Action now, health worker capacity is barely one-third of Tanzania’s own requirements and one-fifth of the WHO target of 23 health workers per 10,000 people.

The Tanzanian requirements are based on national staffing guidelines, which themselves are based on the number of health workers needed to staff all current and new facilities. The WHO target was determined based on research linking higher densities of clinical health workers to improved patient coverage and to improved health outcomes. Availability of staff is somewhat better at the regional and tertiary care facilities, but still far below required levels (Exhibit 13).

Low health worker production is a major cause of the shortage. Estimated annual student intake in 2009

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72 HBS, TSPAS. Safe onsite water refers to piped water or water from a protected well or water outlet within 500 meters of facility.
73 O’Shea et al. 16.
74 O’Shea et al. 36.
across all cadres is 4,586, resulting in output that comprehensively cannot keep pace with population growth (Exhibit 14).\textsuperscript{76}

In Action now, we determined that there are six major reasons for low production, including a shortage of qualified students and financial support, shortage of clinical faculty, limited non-clinical faculty, fragile clinical and non-clinical (basic science) infrastructure, and overall financial resources.\textsuperscript{77} We developed a set of recommendations for the government to address both facility-level and system-level issues and are developing a practical, private sector approach to address the financing of health education.

But importantly, the rest of the health worker cycle is also problematic. The health industry is not attractive to qualified candidates, and retention issues, especially in rural areas, are a significant factor. Difficulties arise in creating a virtuous cycle to ensure the workforce is at least maintained. The non-training elements of the cycle, therefore, were the focus of our analysis in this report (Exhibit 15).

Health worker attrition results from a variety of factors, many of them directly linked in a molecular way to the wider healthcare and education systems in Tanzania (Exhibit 16).\textsuperscript{78} Nearly 30 percent of health workforce attrition in Tanzania occurs during the very early stages of the management cycle. Twenty percent of graduates will not enter the workforce at all.

\textsuperscript{76} Source: Ottar Maestad, Human Resources for Health in Tanzania, CMI Report 3 (Norway: Chr. Michelson Institute, 2006); 2008 Twiga Model (see O’Shea et al, note 17); Tanzania, Ministry of Health and Social Welfare (MOHSW), HRH Census (Dar es Salaam: MOHSW, 2002).

\textsuperscript{77} O’Shea et al. 26.

Another ten percent of graduating health workers leave the health workforce within one year of employment, but after that period, retention is relatively high (Exhibit 17). In Tanzania’s Lake Zone, health workers who make it past these first few years stay in the health workforce for another 11-22 years.

To a large extent, poor absorption into the system can be explained by the Tanzanian government’s policy of centralized health worker deployment, which is being reviewed. Prior to 2007, the Ministry of Health and Social Welfare placed graduates into the health field based on district needs, without taking into consideration the geographic location or preferences of graduates. Graduates were often assigned to remote facilities, usually far away from their homes.

In 2007, around 20 to 30 percent of clinical officers in Tanzania did not arrive to their new jobs at dispensaries and health centers across the country. In response to this outcome, the Tanzanian government adopted a policy of direct recruitment by districts in 2008.

However, challenges remain. Filling remote rural posts has been difficult, especially without active recruitment by district health teams. Similarly, there are no strategies to ease the newcomer’s transition, causing the other ten percent of loss occurring at the early stages of the management cycle. Orientation programs, early career coaching or housing loans are generally non-existent.

The impact of the attrition challenge is significant. If 50 percent of the attrition that occurs by the first year of health work could be addressed, another 5,400-6,000 health workers could be added into the system.

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79 Source: Capacity Project, National Institute of Medical Research (NIMR) and Tanzania Ministry of Health and Social Welfare (MOHSW), Labour Market Study for the Tanzanian Health Sector: Draft 4 (Dar es Salaam: 2006); MOHSW interviews; Yumkella and Swai.


81 See Capacity Project, National Institute of Medical Research and Tanzania Ministry of Health and Social Welfare (NIMR), Labour Market Study for the Tanzanian Health Sector; Draft 4 (Dar es Salaam: 2006).
in ten years, equivalent to nearly a quarter of the current health workforce.\textsuperscript{82}

An important mitigating factor to health worker attrition in Tanzania is that external emigration is not as extreme a challenge as it is in other SSA countries. Only 6-15 percent of doctors and less than five percent of nurses in Tanzania emigrate, compared with 37 percent of doctors and 34 percent of nurses in some countries.\textsuperscript{83}

The low rate of external migration can be attributed to structural factors – political stability, economic growth, and large numbers of ‘paraprofessional’ health workers such as Assistant Medical Officers (AMOs) and Clinical Officers (COs) whose qualifications are not easily transferrable outside Tanzania. But low health worker migration represents an important advantage for addressing health worker capacity issues in Tanzania compared with other SSA countries, suggesting that if other components of the molecule were to be properly addressed, health worker retention would become less of an issue.

**Face time**

Low health worker productivity further compounds the resource shortage, particularly if observed productivity standards in Tanzania are benchmarked against those in developed economies. Health workers spend only 37 percent of their time on patient care and 20 percent on other productive activities, including administration and management (Exhibit 18).\textsuperscript{84}

In McKinsey & Company’s 2003 analysis, documented in *Acting Now to Overcome Tanzania’s Greatest Health*
Challenge: Addressing the Gap in Human Resources for Health, a three-pronged strategy was presented as both required and feasible: first, a targeted recruitment program to capture more of the current training output; second, an increase in productivity per existing health worker by as much as 75 percent; and third, and in parallel to the first and second, an increase in training capacity by at least 50 per cent, so that the system could remain at current capacity relative to the population.

While productivity benchmarks are difficult to establish, especially across healthcare systems, comparison with those in a developed country system like the United Kingdom’s is revealing. In the U.K., productivity is significantly higher than in Tanzania. Increasing productivity by 20 to 30 percent to match U.K. levels could increase effective health worker capacity by the equivalent of nearly 7,000 health workers each year, almost twice the current annual output of health graduates in Tanzania.

Low health worker productivity stems from a variety of systemic problems: low pay, lack of supplies, absence of comprehensive performance management systems, excessive managerial and administrative duties for health workers and, more generally, low motivation. There are few mechanisms in place to expressly stimulate productivity and improve performance.

Additionally, there are few negative repercussions for low performance is practically non-existent, as is any immediate reward for high performance.

One major positive incentive for health workers is attending trainings and workshops, which often come with an allowance. Unfortunately, most of the trainings are one-off or short term and therefore do not always improve health worker performance. Further, these events tend to take workers off-site, further contributing to low patient face time.

Management can take up a large portion of staff time. In one regional hospital in the Lake Zone that we visited, two-thirds of nurses had been given significant management responsibilities that often took up to 80 percent of their time, according to our interviews. The other third were almost twice as productive as health workers in Tanzanian facilities in general. However, the net result is that only 27 percent of the hospital’s nursing time is spent on patients.

Combined with low production capacity and retention issues, low productivity severely jeopardizes the system’s ability to deliver care. Ensuring that the existing health workers are being productive and are focused on patient care is essential.

Essentials

Shortages of drugs and equipment are frequent in the public healthcare system, compromising access to and the quality of healthcare delivery. Dispensaries, health centers, and district hospitals frequently have fewer than 60 percent of essential items. Commodities involved in family planning, emergency obstetric care, and laboratory work are in even shorter supply. At BMC, for example, 47 percent of 536 line items ordered

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86 Based on availability of tracer items (50 drugs and medical supplies required for treatment or prevention of key health problems based on level of facility). Euro Health Group Denmark and Management Sciences of Health Tanzania, Drug Tracking Study: Final Draft Report (Copenhagen: Euro Health Group, 2007).
in the past six months were not delivered. Most of these are essential (Exhibit 19).88

The supply chain for vertical programs is managed separately within MSD and experiences fewer stockouts. For instance, first-line anti-malarial treatments are available at 92 percent of facilities. Treatments for TB are available at 80 percent of health centers and 87 percent of hospitals.89 The greater availability is thought to be the result of more frequent follow-up by dedicated field officers for vertical programs, and a more timely response by MSD.90

Hospitals such as BMC make up the shortfall of essential medicines by procuring them from private suppliers, funded by ‘cost-sharing’ payments collected from patients. By some accounts, only 20-30 percent of regional hospitals’ actual supply needs are met within the public system.91 Inconsistent drug supply limits access to healthcare and, potentially, lowers demand. Further, patients will go without adequate treatment or, often, purchase drugs from unregulated, informal suppliers where the quality is said to be lower than drugs in the public supply chain.92

The implications of the poor availability of drugs are severe. Shortages lead patients to bypass facilities, primary those at the primary care level. Quality of care is compromised when patients do not receive proper treatment from diagnosis or, as is often the case, buy drugs from local pharmacies or other private sources where quality regulation is minimal.93 And lower diagnostic capacity due to lack of laboratory equipment and limited supply of reagents seriously contributes to reduced health outcomes.

### Primary care

Robust primary care delivered at primary care facilities is essential for improving overall health outcomes, but resources in Tanzania at this level are severely compromised. As the foundational component of the healthcare molecule, primary care plays an integral role, linking community- and family-level activities with services in the formal healthcare system, providing first response, and connecting patients to specialized services.94 Most of the MDG-related, minimal health interventions can be delivered at the primary care level. For Aisha,

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88 Source: Bugando Medical Centre procurement department; observations at the Lake Zone tertiary hospital; a line item is defined as a distinct item on an order; 536 items tracked during last six months of 2007.
89 See TSPAS.
90 See Joint External Evaluation of the Health Sector in Tanzania 1999-2006, Interviews (see appendix).
91 Ibid.
92 Interviews (see appendix).
93 The Management Sciences for Health and other partners are implementing an effort to regulate drug quality and prescribing behavior at private pharmacies
appropriate primary care provides a single source for family planning, antenatal, postnatal, and infant care services. And it is cost-effective: the unit cost of treatment is significantly lower – less than half that of the unit cost of care provided at hospitals (Exhibit 20a). To put this into perspective, according to McKinsey, the average cost of a hospital visit in the United Kingdom is over $4,000, with even the average visit to a general practitioner being about $100. But in the U.K., the health system’s capacity is nearly nine times greater than in Tanzania (Exhibit 20b).

Despite the low cost and clear need, and as highlighted by the WHO's 2008 World Health Report, primary care is generally neglected in SSA countries relative to other parts of the healthcare system. On average, countries in the region spend less than a quarter of their overall health spend on primary healthcare. In Tanzania, although 96 percent of facilities are devoted to primary care, access is limited...
Further, primary care facilities lack communication tools and emergency transport capacity. In the region of Tabora, among the less developed and more rural of the Lake Zone regions, there is only one ambulance for a population of 1.7 million, and it is often out of service for several months at a time. In Mwanza, the second-largest city in Tanzania, ambulance services are available only during daylight hours.

Limited primary care stems from a variety of resource-based constraints. On the supply side, facilities are geographically dispersed, making drug distribution and referral challenging. Relative to colleagues at higher levels of care, health workers in primary care centers are poorly remunerated, poorly supported, and professionally isolated. Systems for managing facilities and health workers are not in place. In the Lake Zone, 53 percent of primary care facilities do not regularly receive supervision by district management teams, 66 percent lack resources for repair and maintenance, and 72 percent do not practice quality assurance activities.

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97 Source: HBS; TSPAS. Safe onsite water refers to piped water or water from a protected well or water outlet within 500 meters of facility.


99 See TSPAS.
On the demand side, there are many disincentives for using primary care services. User fees have been introduced without correspondingly evident improvements in quality. Although at referral facilities the unit cost of treatment and the quality of care delivered is much higher, user fees are roughly similar to those at primary care facilities—a difference of only 1,000-2,000 Tsh, or $0.85-1.75.

In other ways, the resources to properly integrate primary care facilities do not exist. Because such facilities often lack drugs, patients often have to procure them from private sources. For familiar conditions like diarrhea or even malaria, patients can self-diagnose and go directly to a pharmacy if one exists, effectively avoiding primary care support, which may have provided a more accurate assessment. Last but not least, specialized care is simply more trusted by patients and more valued by providers and health authorities.

The lack of resources available to the primary healthcare capacity has many important negative implications. In some cases, patients immediately bypass primary care facilities and create unnecessary bottlenecks and overcrowding at specialized facilities. In others, they tend to wait to reach specialized facilities. Such delays often lead to unnecessary complications.

At a systemic level, weak primary healthcare as a resource results in uncoordinated and ineffective services. Without a properly functioning foundation—a primary care provider who sees Aisha on a regular basis, knows her history and personal context, and is able to direct her overall healthcare—the effectiveness of her treatment, and therefore of the whole system, is dramatically reduced.

The missing link – management capacity

The Tanzanian healthcare system is overwhelmed with service provision. There are few individuals trained in healthcare management or general management practices. As a result, there are a number of missed opportunities to better manage limited resources and optimize performance.

Limited management capacity stems from three major issues: ineffective supply chain management to ensure more consistent availability of basic supplies; weak performance management at both the facility and system level resulting in low productivity of staff and healthcare facilities; and a lack of communication tools needed to better organize and manage care.

Supply chain management

The management of the drug and equipment supply chain, which serves all public and government-designated non-profit and faith-based facilities, seems ineffective. Given that drug stock-outs are frequent, yet supply into the country is not always the cause, suboptimal management of the supply chain seems to be the logical reason for low performance.

There are multiple issues on both the supply side (supplier and distributor) and the demand side (facilities and healthcare workers). On the supply side, the Medical Stores Department (MSD) (a relatively autonomous government department reporting to the Ministry charged with distributing supplies to facilities) faces significant challenges relating to the procurement, warehousing, and distribution of medicines to the district level.

The department is understaffed and does not always have the capacity necessary to manage procurement well. Further, it has a complex supplier system consisting of more than 500 agents and relies...
exclusively on local wholesalers. Storage and shipment are principally centralized in Dar es Salaam with the exception of the Lake Zone, which has a warehouse in Mwanza. And procurement tends to be restricted by transaction capacity, leading to stock-outs at zonal facilities where shipments are sent.

While stakeholders in the system recognize that the department faces a challenging task, there is significant criticism of what is perceived as a lack of accountability, primarily stemming from the way that payments for drugs and supplies are structured. Under the current system, each facility receives a credit to purchase supplies from MSD, but MSD receives the actual funds from the Ministry. Facilities therefore have little recourse against low MSD responsiveness, as they do not have the actual cash in hand with which to seek alternative suppliers.

This issue was raised by many in our interviews and focus groups as one of the major reasons that the performance of MSD has stayed relatively low, despite enormous investment by the Tanzanian government and international donors. At the time, a group of district medical officers had put forward a proposal to give facilities over 30 percent of the MSD budget allocation to purchase products directly, but the request had not been granted.102

Mounting pressure has resulted in several new initiatives being launched at the department to address some of the core issues. John Snow, Inc. is rolling out a program to better integrate suppliers, MSD, and facilities, and to improve facility inventory management practices. MSD’s responsibility has been reduced to managing 300 core products, in the hope that this will improve performance. Packing is being decentralized to increase system capacity and therefore reduce delays. In most cases, however, it is too early to make any impact assessment.103

There are also challenges on the demand side. MSD only delivers to the district level and above, and it is the responsibility of district hospitals to distribute supplies to primary care facilities. However, they generally lack the capacity to do so well, so distribution to dispensary networks is particularly affected. Facilities themselves often lack the skills necessary for effective procurement and management of their supplies (Exhibit 21),104 given that they face a dramatic skills shortage even for undertaking their core mission.

Thus the last-mile distribution problem is particularly acute – not from the facility to a dispensary as is often thought, but from the dispensary to a patient via a health worker’s diagnosis. With better organization of the supply chain system, better distribution of accountability, and increased procurement and

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102 At the time of writing, the MSD budget had been reduced by 30% accordingly, but funds had not yet been allocated to facilities.
103 Interviews with the Ministry (see appendix).
104 Source: TSPAS.
management skills at all levels, much of the drug stock-out problem could be prevented.

**Performance management**

Shortages in management capacity are also evident through minimal target setting, evaluation, and enforcement of accountability in the healthcare system. Performance management strategies have started to gain traction on the ground in Tanzania, as evidenced by programs such as pay-for-performance schemes designed to incentivize maternal and child care objectives. But as yet, there is no systemic, molecular approach to the issue.

At the national level, the health system undergoes periodic review to ensure adequate utilization of funds and completion of milestones developed in health strategic plans. However, translating Ministry goals to activities at the district levels is a challenge. In principle, Regional Health Management Teams (RHMTs) manage district teams. In practice, because they lack funds and capacity to effectively enforce Ministry policies, council and hospital management teams ‘operate with limited external governance and supervision’.

A different challenge is the lack of adequate protocols at individual facilities. Even at BMC, a tertiary hospital, much-needed infection control and laboratory staff safety protocols are either missing or not being followed.

Existing systems are not sufficiently far-reaching. Some facilities have begun using the Open Performance Review Appraisal System (OPRAS), an employee evaluation tool that allows employers to link individual performance objectives with facility-level targets, but overall uptake is limited.

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**‘PERFORMANCE CULTURE’ AT KCMC**

KCMC is a tertiary hospital in northern Tanzania covering a population of 13-15 million, similar to BMC’s catchment area. The hospital has set clear hospital- and department-level targets, tied staff performance to financial and non-financial incentives, and encouraged a problem-solving culture. The hospital has developed simple protocols to implement the strategy. For instance, lab requests are religiously stamped with start-time and end-time, which has increased awareness of the need to process samples more efficiently. Other measures were put in place to reduce average length of stay (ALOS). Although current performance on both lab turnaround times and ALOS does not dramatically exceed BMC’s and is therefore not up to international standards for a similar hospital, these achievements are notable given the conditions.

A key success factor has been direct involvement by the Director of Hospital Services, who talks candidly to staff who are under performing, and encourages other staff to report issues directly to him when necessary. For instance, lab technicians are asked to report any breaches in lab request and processing protocols directly. As a result, since 1999, the hospital has reduced lab sample turnaround times. Although they are still high by international standards, lab turnaround times are now 18 percent lower than at BMC. Further, ALOS has been reduced from 14 to 9 days in the equivalent time period.

The Tanzanian government is also developing a pay-for-performance scheme, to be implemented broadly in 2009, that covers maternal and child care. This scheme will award bonus payments to health workers twice a year for meeting quality and coverage targets (i.e., immunization, delivery in health facilities, etc). However, as the scheme is limited to two areas of need, Aisha’s needs might be met here, but her older children’s needs will not.

Fragile performance management lowers productivity and reduces service quality, and therefore demand.
In the Tanzanian health system, workers often lack a clear set of standards to guide them, jeopardizing morale and increasing the potential for confusion. But where standards exist, the experience of the Kilimanjaro Christian Medical Centre (KCMC) suggests that performance improves. KCMC’s experience suggests that there are no cultural or philosophical barriers to the implementation of a performance management program, so a national program could well be created.

**An information vacuum**

Data collection and information systems available in Tanzania are insufficient to provide authorities with the evidence needed to formulate better policies and healthcare management strategies. Differences in information technology between developing countries and developed countries are wider in the health sector than in others.\(^{108}\)

For instance, in the United States, the Center for Disease Control’s online database offers public access to continuously updated, comprehensive data, reports, and references so that health workers, managers, and researchers can understand healthcare needs, benchmark performance and plan for the future.

A similar health management information system (HMIS) exists in Tanzania but faces significant limitations at all key points – data collection, synthesis, and dissemination. There are significant gaps and inaccuracies in the data collected at the facility level. The paper process is onerous and health workers have little incentive to collect information they do not use themselves (though this is not unusual in other health systems).\(^{109}\) The HMIS department at the Ministry has a further need for qualified staff.\(^{110}\) And although the information is publicly accessible, it is not available in electronic form, limiting its utility to feed into models or influence management thinking.

The Ministry, for example, does not know whether or how often Aisha seeks or is provided with ante-natal care, despite a Tanzanian government mandate that she should receive it for free.

**HUMAN RESOURCE INFORMATION IN TANZANIA**

The shortage of human resources data is a key obstacle to improving management of the health workforce in Tanzania. The Ministry does not have a robust human resources information system (HRIS) and depends upon the results of censuses conducted at five-year intervals to track the workforce. In October 2006, an assessment of human resources management was conducted by independent consultants working with Management Sciences for Health, the Capacity Project, and key individuals in the Health Ministry. The team concluded that the Ministry needed additional IT capacity – both equipment and trained staff – as well as clearly delineated responsibility for data collection and analysis between different levels and departments within the Ministry itself. Similar needs have been identified by disease-specific programs regarding the data management required to track drug distribution and other commodities in the country.

In response to this need, both USAID (United States) and JICA (Japan) are currently working with the Tanzanian government to develop a Human Resource for Health Information System and a Training Institution Information System to deal with information gaps. The systems will track numbers of workers from the time they enroll in training programs through the various stages of their careers. At the time of publishing, initial tools had been developed and were in testing stage. However, successful implementation would fill a critical management need for the Tanzanian system.

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110 See Ibid. 1-21.
management, are generally not used in Tanzania. A shortage of adequate medical records jeopardizes clinical effectiveness and continuity of services. Meanwhile, a weak HMIS system and shortage of other management tools (like a health worker registry) results in limited planning ability and therefore sub-optimal system management.

**Communications**

The public sector is also challenged by shortages in basic communication infrastructure – phones, radios, internet connectivity, and email. Over half of public facilities do not have the consistent power supply necessary to operate communications systems, and three-quarters do not have land-based telephones. Where landlines or radio communication exist, they are often not used or non-functioning. Health workers use their personal mobile phones in emergencies. As a result, high-impact and creative uses of telecommunication, such as telemedicine (obtaining medical counsel at point of care through telecommunications), are being piloted but are difficult to implement in any sustained, meaningful way without basic communication infrastructure.

Low levels of consistent communication have numerous negative implications:

- With limited ability to reach referral facilities, health workers cannot make appropriate value judgments on where to send patients, resulting in delays, complications, and ultimately, loss of life.
- Health workers lack up-to-date information on best practices, reducing the quality of care.
- Lack of communication adds to the isolation of many rural health facility personnel, a significant retention issue.
- Without dynamic tracking and reporting of public health information, the health system cannot adequately respond to outbreaks of disease or changes in need.
- Resources are more difficult to manage: in the faith-based sector, better internet and computer availability has enabled facilities to procure drugs more efficiently, avoid stock-outs, and essentially save more lives. The interesting element here, however, is that such a shortage also provides an opportunity for a clean-sheet approach to connectivity using the one structural element that does exist – the mobile phone network, which is discussed later.

**Enabling repair: financing & mindsets**

The enabling environment in Tanzania needs significant attention in all areas, but particularly in financing and mindsets. Appropriate healthcare cannot be provided with the existing levels of funding in Tanzania. First, financing healthcare through public and charitable contributions from faith-based organizations and donors will not be sustainable in the long term. Second, more healthcare financing will need to be transferred to Tanzanian consumers. Such contributions will give Tanzanians a greater stake in and more influence over their healthcare system and help develop a system that may be more responsive to their needs.

Additionally, as is well recognized in Tanzania, health worker mindsets will need to change. According to many of our focus group participants – no doubt largely a result of years of working under challenging circumstances – health workers do not always exhibit an optimal approach to their work. Further, few health workers, including experienced clinicians, are playing a real leadership role in the system. Typical mindset change requires both environmental

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111 Cohen 8-9.
and personal factors, and while many of the environmental drivers of mindset issues are discussed throughout this report, it is clear that personal leadership is also a challenge that cannot be ignored.

Meeting the Abuja target

Health spending in Tanzania is very low. At less than $18 per capita, current levels of spending will barely cover basic healthcare needs. Tanzania’s healthcare expenditure is well below that of neighbors such as Uganda and Kenya, which spend $25 and $29 respectively, and is about half of that spent by developed countries like Germany, France, and Japan. This puts health expenditure in Tanzania at 5.5 percent of GDP, compared with 8-11 percent in developed settings and chronically below the 17 percent share seen in the United States in 2008.

Fortunately, since 2000, healthcare spending has been growing at an accelerated pace and is becoming a larger portion of GDP. However, a significant portion of the growth is fueled by the rapid expansion of external assistance (Exhibit 22). External funds...
represent 35 percent of total health sector expenditure, providing nearly $6 per capita (Exhibit 23).\textsuperscript{116}

The government spends about 11 percent of its total budget on healthcare, close to the 15 percent target agreed upon by African governments in 2000 (Exhibit 24).\textsuperscript{117} While this funding should be expanded, however, it is clear that government and donor funding alone will not be sufficient to meet Tanzania’s healthcare needs.

Donor funding is critical in order to improve the health sector. However, it tends not to be sustainable in the longer term, and to meet even those needs represented by the MDGs, funding from all sectors needs to increase. According to our research, even in the best scenario, both the Tanzanian government and international donors can close only $9 of the health funding gap, if they met their commitments to reach the Abuja target and double aid, respectively. But a further gap of $6 would remain. The net result is that (in the absence of a dramatic increase in the Tanzanian budget) significant increases in private spending will be necessary to reach the minimum spend on healthcare across the country (Exhibit 25).\textsuperscript{118}

\textbf{Leveraging the private sector}

Possibly contrary to popular belief, private facilities are highly utilized. Supply is met with sufficient demand, and both rural and urban citizens use for-profit private health services.\textsuperscript{119}

\textsuperscript{116} Source: Ibid.

\textsuperscript{117} Source: Ibid.

\textsuperscript{118} Source: Ibid.

\textsuperscript{119} See The Business of Health in Africa: Partnering with the Private Sector to Improve People’s Lives.
For instance, when asked about the site of care for children under five with conditions such as diarrhea or acute respiratory infections, respondents to demographic and health surveys reported that they use private facilities 27 percent of the time. This is much lower than in countries like Ghana or Uganda, which have more developed private healthcare access, but it does show that demand for services from such facilities usually meets supply.

It is worth noting two further points. First, across SSA, both rural and urban citizens rely on for-profit private health services. Data was not available for Tanzania, but in countries ranging from Uganda to Mozambique, the ratio of population use of for-profit services varied only marginally, by six points on average.

Second, and perhaps counter-intuitively, wealthier communities tend to benefit more from public health services, primarily due to ease of access and the location of such services in urban centers. This is especially true of hospitals. For instance, the poorest quintile in Tanzania (based on wealth) receives only 17 percent of public spending dedicated to inpatient and outpatient hospital services, while the richest quintile receives nearly 29 percent.

Finally, private services, especially those offered by NGOs and faith-based organizations, are supported by the public sector in multiple ways. Some hospital facilities receive direct subsidies in exchange for being designated hospitals. Faith-based facilities may also receive support through training of staff, secondment of public employees, and provision of medicines. In addition, all facilities work with communities and in collaboration with community health teams.

**Health insurance**

Low private health expenditure results, in large part, from demand-side issues such as the lack of attractive pre-payment schemes. However, even the poorest Tanzanians spend private income on healthcare, over 83 percent of which is out-of-pocket. This is true in most of Africa.

There are three major health insurance schemes in Tanzania:

- the National Health Insurance Fund (NHIF) for government employees
- the Community Health Fund (CHF) cost-sharing scheme for rural communities, and its urban equivalent, *Tiba Kwa Kadi* (TIKA), which offers a similar solution for the urban demographic working in the informal sector, and
- private employer-based insurance.

Unfortunately, these schemes cover less than 15 percent of the population. Although the NHIF, which offers health insurance to central government employees and their dependents, is now being expanded, it still includes only 5.1 percent of the population, roughly two million Tanzanians. Given that only eight percent of Tanzanians are formally employed anyway, its reach will remain limited for some time.

In 1996, the government launched the CHF scheme to target those in rural areas and the informal sector of the workforce. It has been progressively rolled out to 72 of 98 rural districts, and serves as an alternative to paying user fees at public facilities. Families

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120 Marek et al. 4.
121 See The Business of Health in Africa: Partnering with the Private Sector to Improve People’s Lives.
123 See The Business of Health in Africa: Partnering with the Private Sector to Improve People’s Lives.
contribute 5,000-10,000 Tsh annually, equivalent to the cost of five visits without the prepayment scheme, to gain access to free care at all primary care facilities.\footnote{Joint External Evaluation, 99.}

However, thus far only ten percent of eligible families have enrolled in the CHFs. In Hanang district, for instance, an extensive information campaign resulted in a temporary spike in enrollment levels, reaching 22.8 percent of the population, but this later fell to the pre-campaign level of two percent. We estimated that the total coverage for both community-based schemes includes 1.5 and 3.1 million people for CHF and TIKA respectively.\footnote{Gemini Mtei and Jo-Ann Mulligan, *Community Health Funds in Tanzania: A Literature Review*, Ifakara Health Research and Development Centre, (Jan. 2007).}

These figures are extremely low, considering that about 85 percent of the population lives in rural areas or works in the informal sector.\footnote{According to the IFC report, less than 10% of households in districts have adopted the CHF have joined; we assume that the same level of buy-in is true for TIKA.} After the marginal number of households with private insurance coverage is added,\footnote{Peter Kamuzora and Lucy Gilson, “Factors influencing implementation of Community Health Funds in Tanzania,” Health Policy and Planning 22 (2007):95-102.} only 8.3-15.3 percent of Tanzanians are covered by some form of health insurance, leaving up to 36.7 million people without any form of healthcare financing.

Given the state of primary care facilities, it is understandable why villagers are less likely to participate in the CHF. It is possible that users would expect some improvement in the quality of services if they are to enroll in the scheme and invest money up front for their health needs. In line with this principle, NHIF-insured individuals often gain access to private wings of hospitals if they exist, providing a distinct incentive for enrollment.

Overall, the implications for healthcare access are that Tanzanians, on average, rarely visit a health worker.

### Mindset change

One of the chief findings of our focus groups was that weaknesses in the public health sector, in particular, seem to result in unconstructive mindsets in both users and providers alike. The net effect further jeopardizes the already-compromised quality of care. Both patient evidence and health worker discussions indicate that providers can be unresponsive to patient needs, unaccountable, and often unmotivated. Such provider attitudes, in the experience of our focus groups, had a poor effect on the patient experience, reducing users’ willingness to seek care and the quality of patient services both by creating the potential for error as well as being generally inefficient.

In response, users turn either to private healthcare workers if they can or to traditional healers, limiting access to a well-regulated healthcare system.

In contrast, low regulation was seen to be the primary challenge in the private-care setting. Patients felt they were often over prescribed and over treated in order to increase revenues at private facilities. Further, users felt that for more complicated healthcare conditions, the public system provided the best care simply because the highest-skilled providers and the best healthcare equipment is located at national, public hospitals.

### Clinical leadership

Provider mindsets are therefore a significant issue in improving access to and quality of services. A large part of this issue seems attributable to the lack of clinical leadership within the system. ‘Clinical leadership’ loosely refers to the way the roles and

126 Joint External Evaluation, 99.
128 According to the IFC report, less than 10% of households in districts have adopted the CHF have joined; we assume that the same level of buy-in is true for TIKA.
130 According to the Tanzania Integrated Labour Force Survey 2000/1, <http://www.tanzania.go.tz/ilfs.htm> (accessed 3 Mar. 2009) there were about 660,000 people employed by parastatals, NGOs, and other parts of the private sector. We assume that coverage of them and their dependents ranged from 25 to 50%.
mindsets of hospital doctors contribute to the management of clinical services.)

In Tanzania, the level of involvement is highly variable between departments and individuals. Clinicians are often engaged in system-level management, such as monitoring performance at lower-level facilities, but not in management issues related to their own facilities (with the exception of the Medical Officer in Charge). Clinicians are, therefore, typically not engaged on broader issues surrounding healthcare such as costs, strategic performance, or targets.

Further, clinicians’ incentives to increase their leadership role in service provision are low. Overall system incentives, including compensation and promotion, seem misaligned with the provision of public health services. Promotions are often awarded based on tenure and carry the privilege of allowances that come through attending workshops or meetings. Individual compensation does not differ based on productivity or quality of service delivery, although there are efforts to introduce facility-level pay-for-performance systems, as discussed earlier.

The most capable and respected physicians in the system seem to spend little time in patient care, which given their rarity, creates a vacuum at the top of health training and delivery.
Diagnostic initiatives

Given the extent and the interconnectedness of health system challenges in Tanzania, strategies that address these issues at the molecular level are clearly necessary. The three root causes of health system dysfunction that we identified – a shortage of resources, limited management, and an insufficient enabling environment – are pervasive challenges, and solving them from within is no small exercise.

Despite this, the team developed 32 short- to medium-term, practical interventions that would help stimulate the creation of the next-generation health care system. We include them below, partly for informational purposes, but also as they demonstrate the thinking which directly led us toward defining each of the three key recommendations of this report.

Addressing resource availability

1. Expand training: As recommended in the Twiga Initiative, among the highest-priority actions is to expand health worker training on a school-by-school basis. This should be done in parallel with the implementation of system-wide policy shifts in areas such as student housing, the retirement age of healthcare professionals, and creation of opportunities for teaching (the ‘transformation’ initiatives designed to support increased training capacity).\textsuperscript{131}

2. Target rural workforce: Develop a rural health worker attraction, management, and retention scheme targeting the first two (and highest) years of attrition. The initiative would provide various material incentives as well as professional development opportunities through career services and mentoring networks.

3. Develop eLearning: Implement on-site continuing education programs through eLearning together with in-person mentoring to increase health worker capacity. Such a program could be delivered via CD-ROM, 3G, or satellite-supported interactive modules.

4. Pay-per-consultation: Reward MDs by linking compensation in part to the number of consultations they provide, which would help increase health worker productivity. Careful oversight is necessary to ensure that quality of care is maintained.

5. Integrate traditional healers: At the community level, ‘traditional healers’ often provide services when no health worker is present. Minimum levels of basic services, prevention, and nutrition education can be better integrated into the traditional healer’s portfolio via training, protocols, and communication tools to help increase timely referral to the formal health system.

6. Supply private medicines at non-profit prices: Improve drug supply by making private sector resources more readily available to public or non-profit health services. For instance, international drug manufacturers already provide medicines at non-profit pricing (i.e., at cost of manufacturing) to parts of the health system in Tanzania, which could be expanded.

7. Stimulate local drug manufacture: Continue to stimulate the local manufacture of supplies,
medicines, and equipment. This could be accelerated by providing land grants, discounts on the costs of utilities, or other subsidies to establish new manufacturing companies.

8. Develop mobile primary care: Bring healthcare to the last mile through mobile service providers. Independently trained health workers can be distributed into the field and supplied with basic supplies and communication tools to send data and receive clinical guidance. They would report to facility-based staff and be linked with other community-level healthcare.

9. Create private, franchised dispensary networks: Catalyze the creation of an independently owned and operated set of franchised clinics, with financing from a blend of government, non-profit, and user fees. These can be similar to efforts under way in Kenya but should offer more comprehensive care and be subsidized on a pay-per-consultation basis. A central franchise organization with its own distribution arm should support the franchisees, thereby enabling clinical officers with no management expertise to effectively run their own businesses.

10. Support MMAM execution: To ensure the 1,762 new primary care facilities and seven hospitals proposed for the Lake Zone under the MMAM are built in time, provide support for fundraising, developing, implementing, and managing a feasible roll-out plan. Implementing Twiga in parallel would help staff the new facilities.

11. Improve rural promotion and prevention: Make important improvements in primary care efficacy by implementing nutrition and prevention education programs in rural communities. These can be quite low-tech and/or utilize mobile technology for social marketing as has been done to increase testing rates for HIV/AIDS.

12. Develop a maternal training program: To build on current momentum and facilitate further improvements in infant and children’s care, provide a home care training program to new mothers. This initiative should teach mothers to identify and take action on simple but life-threatening issues like diarrhea and fever.

Bridging the management gap

13. Outsource the drug supply chain: Given the challenges with the public health supply chain system managed by MSD, parts of the supply chain could be outsourced to a private logistics company to stimulate a turnaround, or entire drug lines can be managed by a private organization in competition. This could be done for priority items where a separate supply chain already exists or as a demonstration in certain regions.

14. Leverage existing supply lines: In tandem, leverage partnerships and undertake drug distribution on the routes of consumer and telecom private companies such as Coca-Cola and Vodacom (Vodafone) with proven ability to deliver to the ‘last mile’.

15. Improve hospital productivity: To improve productivity from the top of the pyramid down, roll out a comprehensive performance improvement strategy at tertiary, regional, and district hospitals. This initiative would begin at the tertiary level and be progressively cascaded down the network, strengthening the level of networking, mutual support, and accountability between hospitals.

16. Improve primary care productivity: To improve productivity from the bottom up, roll out a performance improvement strategy at health centers and dispensaries, focused on staff training, supply lines (power, water, drugs) and quality monitoring. This can be mobilized by the regional governments and implemented by CHMTs at the district level.
17. **Create an independent regulatory agency:**
Manage quality of care by putting in place an independent regulatory agency that can provide oversight, publish standards, and maintain accreditation for healthcare facilities at all levels of the system. Currently, the majority of healthcare is paid for and often provided and regulated by the public sector. External oversight is a proven method of protecting patients and stimulating quality improvement.

18. **Create public facility report cards:** Publish hospital and/or district ‘performance report cards’ to stimulate competition and leverage institutional and professional pride as a means to ensure better healthcare for the Tanzanian people.

19. **Create a referral hotline:** Develop a program whereby referrals are managed according to the availability of experts, staff, and resources. This can be done through a hotline that provides information to lower-level facilities on where patients can be accommodated in the system and be provided with appropriate care.

20. **Improve triage and emergency care:** Triaging protocols are also lacking in many facilities, and emergency care is not currently seen as an area of specialization. Developing and implementing protocols and a specialist ER network would increase the efficiency and effectiveness of the system further down the care pathway.

21. **Create new emergency transport:** An alternative emergency transportation system is necessary. In a region of India taxi drivers have been trained to provide basic first aid and facilitate transportation to casualty departments at hospitals. Existing transportation networks – whether private, public or faith-based – can be leveraged in a similar manner in Tanzania.

22. **Coordinate NGOs:** The efforts of various NGOs should be better coordinated by an external agency or an independent body, reporting directly to the Minister for Health, to ensure efforts are not duplicated or resources poorly leveraged.

23. **Implement electronic records management:** An electronic patient records system could be put in place using existing document imaging technology combined with new techniques in cloud computing and data management. Cloud data management involves dynamically scalable and often virtualized resources which are provided as a service over the Internet, where users need not have knowledge of, expertise in, or control over the technology infrastructure ‘in the cloud’ that supports them. In Tanzania the network would likely need to be based on the mobile phone system in place.

A cloud approach to data management would reduce redundancies and directly improve the quality of care. Imaging systems have been put in place in several African countries including Kenya, Zambia and South Africa. Cloud data management is a new field but, when combined with 3G internet access technologies, it provides extraordinary and new opportunities for patient management.

**Enabling environmental change**

24. **Create a healthcare development fund:**
Similar to the Twiga Initiative’s $50,000 grant competition, create a healthcare development

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132 Interview with Dr. Steve Justus.

fund to allow RMOs, DMOs, and facility managers to apply to improve services at their facilities.

25. **Expand community funds**: Refine and expand community-level financing for healthcare by improving and better marketing the existing Community Health Funds scheme. The program should seek to better differentiate the healthcare services that CHF users receive from those not on the plan and ensure better quality.

26. **Accelerate national health insurance**: Accelerate the current expansion of the National Health Insurance Fund to cover more formally employed individuals in the private and faith-based sectors, in addition to public employees.

27. **Develop micro-insurance options**: Provide greater support to groups seeking to set up micro health insurance funds. These funds can be launched by leveraging women’s credit groups, agricultural co-operatives, or similar existing vehicles.

28. **Empower RHMTs and link to CHMTs and national oversight**: At a system level, the Regional Health Management Teams need to be empowered to fully perform their oversight duties. After decentralization, they have been effectively marginalized through budget decreases and cannot fully execute their role of linking Ministry policy to district and community practice.

29. **Provide incentives for mindset change**: In order to better support health workers in their efforts to provide quality services under difficult working conditions, offer performance-based financial and non-financial incentives to motivate the health workforce to deliver more and better care.

30. **Create and support professional associations**: Create and/or provide access to professional associations, increasing connectivity, camaraderie, and mutual support. Such associations would be used to also facilitate a formal sharing of best practices.

31. **Integrate private and public practice**: Public sector moonlighting is common and often occurs within public health facilities with some degree of complicity. However, public facilities can actually use this to advantage by allowing health workers to provide for-profit services in public health facilities and share fees with the institution.

32. **Create a bill of rights**: Provide a ‘patient bill of rights’ to clearly communicate the vision and mission of the Tanzanian health system and ensure patients have a mechanism to hold providers accountable for quality services.

**Finding a path toward molecular strengthening**

Implementation difficulties of each initiative vary widely, and our charter was to develop a small suite of interventions that can be implemented now and that would have immediate positive effects. Thus we used a traditional portfolio-of-initiatives model to help prioritize the most effective interventions that would, we believe, have the highest near-term impact (Exhibit 26).

**Possibilities with uncertain outcomes**

The initiatives in the upper left quadrant of Exhibit 26 can be implemented but would at best create incremental improvement rather than radical enhancement of the health molecule. For instance, expanding the NHIF to all *formally employed* Tanzanians still only reaches eight percent of the population and their dependents. Similarly, improving referral practices in a severely under-resourced system would increase efficiency but might not resolve access issues.

However, these initiatives are valuable in the medium and long term, especially in combination with others, and should be carefully considered as part of a second-line rollout.
High impact beyond significant obstacles

Initiatives in the lower right potentially face significant obstacles from health workers, the political system or external agencies. For instance, initial implementation of pay-for-performance requires skilled management to gain health worker support, at least prior to proving its worth. The CHF program has been under way for years and further improvements to the scheme require significant capital investment in the healthcare facilities – investment that may be difficult to secure in the current economic climate. For these types of initiatives, where there are clear impediments to implementation but the potential for significant impact down the line, an appropriate approach would be to explore the path forward now, design a program for implementation in the medium term and aim for full implementation in the long term.

Uncertain and difficult

Some initiatives, identified in the lower left, clearly face both challenges. For instance, publishable ‘performance report cards’ could create significant public pressure to improve healthcare delivery.

However, this approach may backfire if criticism is directed entirely at those health workers who are striving most to improve. As such, these initiatives would require significant further analysis before an action plan is developed.

Prioritized initiatives

This prioritization exercise left us with the eight initiatives in the upper right that are both feasible and likely to have high impact. These core initiatives can be considered as independent initiatives or as components of a broader strengthening strategy.

Given our emphasis on molecular repair, however, we believe that the most sustainable approach to implementing these solutions is as part of a three-pronged health system strengthening program.
Applying molecular thinking

Individual initiatives will usually fail the molecular standard. Increasing the supply of health workers without ensuring that they have positions and salaries after training will result in oversupply, driving salaries downward and not increasing capacity or providing broader healthcare. Mobile primary care requires a network and a base from which each of the health workers involved can function effectively. Private dispensary networks assume that government policy will enable them to operate. Increased efficiency of the drug supply chain assumes that correct and timely diagnoses are being made at the primary care level for those drugs to be prescribed. And performance management programs assume there is a hierarchy and network of staff already in existence whose performance and productivity can be increased.

Thus for any initiative to work it must encompass each of the core elements of the healthcare molecule.

But in allocating scarce resources, we – like all investors – have to choose some subset of possible activities. The problem is that every atom in a molecule is essential for its stability and properties, but only by appropriate linkages to other atoms can it become effective. And only complete molecules will bind properly to others to create a recognizable and efficient health system capable of natural crystalline growth and self-repair.

There are three principles that we believe are critical in conducting any intervention aimed at creating sustainable change:

- Access to quality primary health services is absolutely essential and must be balanced by an effective referral network to ensure appropriate and cost-efficient healthcare. It must also be capable of renewal through established training at all levels.
- A growing, well-supplied, and well-supported health workforce is necessary with sufficient numbers of both higher- and lower-skilled cadres, providing teaching capacity across the network and supported by continuous development programs.
- The system needs appropriate management, including rigorous planning and management of resources, serious business planning, investment in leadership capacity, appropriate financing, and so forth.

Given this, and building from both the 32 initiatives and our experience on the ground with the four intensive studies conducted by McKinsey and our own teams, we make the following three recommendations.

**Recommendation 1:**
**Rebuild primary care capacity**

Our findings emphasized the clear need to improve the access and quality of primary care in order to remove seemingly unrelated bottlenecks elsewhere in the system. From our work both in Mwanza and on the Twiga Initiative, it also became clear that the financing of any health system even appropriately sized for Tanzania’s population was far beyond the economic capacity of the Tanzanian government, even assuming double-digit economic growth over the next decade. An inescapable conclusion, therefore, is that any dramatic enlargement of primary care facilities will be driven by the non-government sector.
There are two key challenges in doing so. The first is that non-government health delivery in rural and remote areas has long been considered uneconomic. And the second is that business management skills are rare but obligatory – for instance, one of the major obstacles to growth for the ADDOs chain is a shortage of business management skills. However, the franchise model was designed to directly address both of these problems.

This recommendation takes, as its core, a network of primary care facilities linked to a single health center, and uses that network to provide the kernel of an enabling environment on which to build other networks. Key components include the following:

- The franchise itself, based around a ward of ten to 20 villages, with one dispensary per village as defined by the MMAM target and headed by a rural health centre. Key attributes necessary include:
  - Franchisee ownership by either a private corporation or a faith-based organization.
  - Staffing levels at the full Tanzanian government Staffing Requirement for the health centre, and at least one-fifth of the required staffing levels for dispensaries, ensuring that each dispensary is fully staffed at least one day per week.
  - Facility ownership, either outright or by operating partnership with either the community or government (if existing facilities are incorporated into the franchise).
  - Franchisor ownership by a well-resourced organization, separate from the franchisee owner, including at least five years’ operating capital and significant business management expertise.

- A formal partnership with the 3G network carrier, such as Vodacom or Zain, preferably one with experience in conducting financial transactions through the 3G network and its own partnership with a financial institution.

- A formal partnership with the CHMT and the nearest district hospital to leverage local expertise, increase networking capability, and decrease parallel effort.

- A formal partnership with any major private industry in the area, such as Barrick Gold Tanzania or other organizations with explicit and demonstrable interest in community health.

- A formal partnership with any NGO operating in the relevant ward, particularly those undertaking vertical programs in HIV/AIDS, TB, or malaria, with stated objectives to pool resources and reduce duplication to ensure both vertical and horizontal care.

- Financing through multiple income streams, at minimum including a small payment from the Ministry per consultation, private sales of medicines, sales of other convenience items, and a possible bank branch opportunity given the infrastructure would exist.

A molecular approach focused on increasing primary care capacity would, therefore, provide a platform for franchised and mobile care, create demand for effective private supply chain management, increase demand for well-qualified students, provide career empowerment and increased income, provide incentives for increasing productivity, and provide a platform for a variety of technological supporting mechanisms aimed at reshaping the healthcare paradigm for Tanzania (such as through ‘cloud’ data management and call center support).

Franchised primary care

We developed a social enterprise model to create a chain of franchised dispensaries not entirely reliant on government support. The franchisor would support qualified health workers at the CO level to be franchisees and own their own dispensaries. Each business would rely on multiple income streams, including drugs and supplies, along with primary care treatments delivered. The franchisor would be responsible for all elements usually provided by
such an organization: training franchisees, enabling economies of scale in purchasing, providing backoffice support, and maintaining reporting and quality standards.

Financing for a rural-based dispensary operation is not a small issue. Initial team assessments suggested that reliable income streams can be drawn from sources which may include the following:

- Co-payments from patients able to do so (it is in the franchisee’s interests to know her community and therefore identify those able to co-pay for services).
- Government support at the rate of 3,000 Tsh (US$2.30) per consultation.
- Profits on the sale of ITNs, medicines and supplies, hygiene products, and perhaps even healthy drinks, food, and telecommunications products.
- Economies of scale due to centralized supply chain management, etc.

According to our analysis, by 2017, a small franchise operation could grow to 111 dispensaries in semi-urban and urban areas throughout the Lake Zone. A single operation would deliver:

- care to 1.15 million additional patients
- relief for already overflowing health centers and district hospitals, and
- better triage and referral for patients at the primary care stage of the health pyramid.

Clearly multiple franchise operations could be catalyzed to grow in parallel, creating a serious change in the provision of primary care.

**Track record**

Similar efforts have been modestly successful in various parts of Africa, though all have relied heavily on outside subsidies and support for central operations. The Child and Family Wellness (CFW) shops in Kenya run a chain of 65 dispensaries in Kenya, with plans to increase that number to nearly 250 by 2012. The ADDO chain, mentioned earlier, has also proven that the model has serious potential in using the private sector to assist in delivering public health preventions and treatments.

**Requirements for success**

The enabling environment, in particular government policy support, is critical. But the key for success is the right balance of skills, initial investment, support from drug and other suppliers, and entrepreneurial savvy. As the ADDO model proved, it is difficult to build capacity fast enough to enable such a system to achieve critical mass. But the key element – knowledge of how to run a business – is centralized to the franchisor. As such, one obstacle defined in the ADDO program would be directly addressed.

In terms of potential, however, we feel that the franchised model of primary healthcare could have enormous implications for healthcare outcomes in both urban and rural areas, providing essential health services to a significant portion of the Tanzanian population.

Such an attempt at rebuilding primary care through franchised dispensaries will even work at the rural level in the Lake Zone, particularly when implemented in combination with mobile care.

**Mobile care**

As a plug-in to a franchise model or as an extension of existing facilities, we developed a mobile primary care model to improve access to quality primary care in a reliable, systematic, and economic fashion. The model provides for the deployment of large numbers of rural-based field workers with technology and supplies to deliver quality primary care through ‘the last mile’, particularly in more remote areas that tend to be neglected due to access or cost issues.

Workers would need to be linked to a call center through a 3G network that can also provide real-
time medical advice and coaching. If combined with a cloud-based health information system, this would provide significant opportunity for real-time evaluation of overall health outcomes.

In addition, a coordination center can implement a performance management program and provide regular supervision to ensure productivity and quality of workers delivering care. To increase reach, field workers can coordinate and train formally employed community workers in each village, who can also serve as the permanent first-line contact and who would be responsible for health education and awareness in their communities.

**Leverage**

This delivery platform can be relatively low cost, as it can reduce the infrastructure and operating costs of standing facilities. The key is that more health workers can be deployed from their ‘home’ health centre, reducing the need for maintenance of a supporting infrastructure. Based on our modeling, delivering a set of defined interventions through the mobile primary care model would reduce the cost per patient visit (for adequate healthcare) from $15.75 to ~$9.10.

Additional financing is clearly required for the call center, coordination center, and training activities. Such funding is needed for direct salary costs for call center and clinical staff workers, capital costs (e.g., computers and software) as overhead costs for call center rent and utilities, cell phone connection, and vehicle fuel and maintenance.

**Operating model and impact**

Mobile care can be readily deployed in most rural areas. One method of deployment is the **BOOT** model (build own operate transfer). Under this approach, the scheme would need to be externally funded for the first four years, the cost of which we estimated to be about $11.8 million ($1.1 million in capital expenditure and $10.7 million in operating expenditure). More sustainable funding, or a significantly different financing scheme, would then be necessary, which is where the greater economies of scale provided by a franchise chain would help. This solution could potentially result in vastly improved coverage of services and resulting outcomes at the primary care level. In addition to increasing the availability of resources (e.g., health workers and drugs) to properly administer care, it can be used as a platform on which to establish a performance management program. The net result can be better protocol compliance as well as increased use of data systems to evaluate outcomes and conduct proper disease monitoring.

By the fifth year, according to our analysis, impact on the health system could be as high as the following:

- **On promotive/preventative issues,** over 3.6 million people would have received at least one visit by a trained professional and, therefore, instruction on public health issues (e.g., sanitation) and means of disease prevention.
- **On the curative side,** an additional 456,000 patients could be treated even without the requirement for additional dispensaries, and another 1.4 million patients would have increased access to healthcare.
- **On capacity building,** increased leverage at the primary care level (as a result of utilizing a further 1,438 community health workers and 413 field workers) can create increased capacity at higher levels of the healthcare worker pyramid.

**Proven results**

Similar efforts in India have initially proved successful. The Kranti model, for instance, is an innovative service delivery program developed

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to reduce bottlenecks preventing basic care from reaching people, especially in more remote locations. In Kranti, technology is highly leveraged to coordinate and oversee delivery of primary care, including the distribution of drugs. The goal of Kranti is to integrate the entire system, including supply chain, workforce, and community support, while offering opportunities for partnerships with existing players in for-profit sectors (e.g., the financial and telecom industries).

Requirements for success
Successful implementation of mobile care will require careful coordination with the formal healthcare system from the beginning to create the necessary conditions for symbiotic support in the short term and convergence in the long term. Dependencies include addressing recruitment, ensuring support from multiple stakeholders (such as the Ministry and other stakeholders), and ensuring appropriate financing for the short and medium term.

Specifically, an adequate number of community health workers and field workers would need to be available, and due to remoteness issues, they would also need to be properly trained, compensated, and well managed. Such management risks also extend to vehicle maintenance, supply chain issues, and infrastructure preservation.

Private supply chain management
To help ensure the availability and efficient distribution of essential drugs to both a mobile and franchised primary care network, we believe that action is required on two levels: (a) awarding at least 30 to 50 percent of government funds available directly to facilities and promoting competition from private pharmacies, and (b) upgrading competencies across the public system (including MSD) to enable a smooth transition to a hybrid system.

Create incentives
Opening the public drug market to competition, by allocating funds directly to health facilities while also allowing private players to supply drugs and medical products, would lead to structural pressure for improved performance and more timely availability of drugs and equipment at lower prices.

The private approach is intended to prevent stockouts and increase capacity to handle system growth and unexpected demand spikes. It should be coupled with an operational turnaround of MSD, improving its capacity to compete by enhancing forecasting and inventory management skills both at the central and facility level. Performance management systems also need to be put in place to enhance productivity and efficiency.

Organize demand
Drug distribution system issues will need to be addressed from the demand side as well. A capacity improvement and turnaround program is required at the district and facility level and can be accomplished by training health facilities in inventory management techniques, while also training district purchasing officers in effective tendering.

But through purchasing power and traditional economies of scale, combined with better electronic measurement of health indicators, the franchise owner can create a greater sense of urgency in the system and may even take part in investing in a private supply chain solution, stimulating growth in demand throughout the public and private sectors. The net result would be decentralized procurement enabling better last-mile distribution of drugs and supplies.

Requirements for success
Our team determined that it would take ten years to build out a private supply chain, including a pilot phase to conduct a deeper supply chain diagnostic and develop a strategic supply chain plan for the Ministry.
A project design for the complete turnaround of MSD would also happen in the pilot phase, with a two-year implementation program following soon after. However, in combination with franchised and mobile primary care, private investment in the supply chain may be possible much sooner.

Successful implementation may require regulatory change to assure drug quality as well to ensure that the private distributors are properly vetted and audited. In addition, financing arrangements require modification to allocate at least 30 to 50 percent of purchasing power directly to hospitals and districts from all sectors, to enable them to take part in a private or hybrid supply chain network.

**Primary care productivity**

Productivity even at lower levels represents one of the most promising methods of extracting better health outcomes from the existing workforce. We believe that franchised primary care, linked to a mobile network and supported by a private or hybrid supply chain model, would already create increased productivity given that financial incentives and support are more closely tied to health outcomes through the sheer additional numbers of treated patients. However, there are a few other elements that may assist.

The primary care productivity program developed by the team was designed around setting standards and providing coaching and other low-cost techniques for improving quality. Focused on training health workers to manage their facilities, acquire and dispense supplies efficiently, and monitor quality, a regional steering committee would develop an overall vision and operating plan for primary care in the area. The plan would consider resource constraints and identify ways to alleviate them, determining how to enhance and employ existing resources.

Committee members would work with their colleagues at the district level to syndicate visions for the program to the CHMTs in each district. These teams would implement a performance improvement program aimed at increasing the quality of care provided at current dispensaries. Each district would mobilize capability-building teams to spend at least one week at each dispensary and two weeks at each hospital yearly, effectively providing full coverage across the region.

It is important to note that this approach does not need to be tied, or limited, to franchised primary care. As with mobile care, it can be supported by the franchise owner but the program should be owned and managed by the Ministry's regional and district health administration, ensuring that Tanzanian government policy and practice is not left out of the equation.

With successful implementation, over three-quarters of dispensaries should see a boost in productivity by about 25 percent. Access to primary care in the Lake Zone would increase by 52 percent, enabling capacity to handle an additional 400,000 patient visits.

In this program management is crucial: without an effective management system in place, along with appropriate incentives designed to stimulate positive adherence, key elements will dissipate over the medium term. At the regional level, success relies on ownership by the steering committee; at the local level, the full understanding, ownership of, and execution by the district teams is also critical.

**Opportunities with technology**

It is worth highlighting the potential role of technology in rebuilding primary care. First, private telecom providers have been known to locate their mobile masts and associated power generators close to key public services, e.g., hospitals, to create a mutual benefit: community services provided by access to backup electric power, creating community-inspired protection for the telecommunications equipment itself.

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135 Interviews; based on experiences of performance improvement measures in primary care facilities in the UK and Canada.
Mobile phones themselves can be used, with existing support but in combination with cloud computing technologies, to track drug supply, identify patients (through linkage with a fingerprint scanner, for example), submit invoices, provide early diagnostics (through linkage with rapid test equipment), and assist with network connectivity. Salaries, copayments, and other financial methodologies already exist, such as Safaricom and Vodafone's M-PESA mobile payment service.\(^{136}\)

The franchise owner's call center, constantly receiving on-the-ground data, can collate and analyze information in real time, reducing the gap between need and action in cases of emergencies and epidemics, or as new issues emerge in the health sector. In sum, technology solutions that already exist can leverage the existing franchised businesses as the physical environment on which to enable those solutions actually to operate. In the same manner as content and distribution in broadcasting and entertainment, technology and primary health care can be organized in a symbiotic manner.

**Molecular impact**

Aside from adding resources, the franchise model can act as an instigator for better-quality health services. It would increase demand, and given a franchisee's direct and personal relationship with her community, people such as Aisha would be empowered to demand better support from providers further up the referral network through their local dispensary.

Retention, particularly at the primary care level, poses the single largest risk to the sustainability of the existing health workforce. Franchised clinics and mobile networks offer part of the solution—good jobs with career potential and the ability to earn higher salaries along with productivity increases.

Further, private services traditionally require payment mechanisms such as insurance. Another positive outcome of a related number of franchised wards would be enough critical mass to create viable conditions for community health insurance (e.g., CHFs) to operate effectively. Doing so might mean that the financing gap of $15 per capita by 2015 may not be insurmountable.

Finally, health worker productivity is presently hamstrung by workers’ need to undertake other income or food-generating activities, such as working in primary production. However, since the franchisee's income streams would be designed to grow directly in line with increased productivity (i.e., more patients creates more pay) then incentives toward higher productivity will exist. Health workers in such a situation will respond no differently from health workers in other parts of the world: they will increase productivity accordingly, effectively increasing capacity throughout the entire health system.

**In summary**

In the third Tanzania Health Sector Strategic Plan (HSSP III), the Tanzanian government strongly endorsed partnerships with the private sector to increase access to health services. In private, health system leaders often show even greater enthusiasm, knowing as they do that a comprehensive public health system is not possible given the country’s economic reality. What is missing is a business and investment plan defining the policy changes that need to be made to support it.

Franchised dispensaries can serve as a means of bridging the gap to building and staffing the facilities needed under the MMAM, as long as those facilities become ‘designated’ primary care centers. They expand further employment opportunities for newly graduating health workers, and they provide incentives for those workers to spend more time

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diagnosing and treating patients. And the model provides an enabling framework, addressing the key bottlenecks restricting health system recovery.

Following implementation, Aisha would have the option of attending a nurse at the private dispensary and purchasing medicine at the clinic. Her HIV-positive relatives would find subsidized ARV treatment and VCT services available. Payments for services would effectively be partly subsidized by the government and by private companies providing medicines. Between health center visits, she would have access to a mobile primary care worker who receives clinical guidance and supervision from a network created by a blended public, private, and faith-based health system.

Finally, the treatment, medicines, disease states, and services Aisha receives would add to those of her community and provide real data on health outcomes in her village and the broader community.

**Recommendation 2: Rebuild the health workforce using hospitals as development centers**

Our findings indicate a clear need to increase both training and the quality of health services provision across the network. Rebuilding professional capacity and the hospital network requires a top-down, health workforce management approach. This concept would use, at its core, a teaching university and hospital to provide cascaded education and professional support with services provided to patients being referred by primary and secondary facilities.

Key components include the following:

- A university and teaching hospital – such as Weill Bugando in the Lake Zone, KCMC in Arusha, or Muhimbili University in Dar es Salaam – which has responsibility for pre-service and in-service education and the professional development of all healthcare workers throughout its catchment area.
  - Formalized partnerships between the tertiary facility and all hospitals in its catchment area, both public and private, to use the latter as training facilities for lower- and mid-level cadres.
  - Formalized partnerships between or absorption of smaller, single-cadre training schools, both to enable a multilevel training experience and to increase the clinical training capacity of the governing institution.
  - Increased access to training finance through a national, privately run student-loan financing scheme. More cash would support increases in training faculty, leveraging district and regional health workers who are not currently teaching, and assist in financing increased patient transport and communication throughout the network.
  - Formal performance management, staff development, and mentoring relationships across the network, with existing specialists directly connected to understudies to provide leveraged specialist training and expand health care capacity throughout the system.

A molecular approach aimed at rebuilding professional capacity would build upon the work of the Twiga Initiative, strongly address retention and professional development issues, provide a formal framework in which to introduce a continuing medical education program and in-service eLearning, and provide the network infrastructure to support dramatic increases in hospital and primary care productivity.

**Expanding training**

The Twiga Initiative was developed separately by the Minister for Health and Social Welfare to encompass

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137 See O’Shea et al.
138 See O’Shea et al.
all of Tanzania, not just the Lake Zone. The diagnostic has been undertaken and action plans produced, all documented in our other report, *Action now.*\(^{138}\)

Twiga was designed to address the capacity of the Tanzanian health worker training network to produce sufficient numbers of health workers. While the recruitment, deployment, retention, and professional development of health workers are all essential components of robust workforce management, it is clear that without a dramatic increase in the number of potential health workers entering training programs, the required workforce growth is not achievable.

Twiga included four components, which together address the near- and medium-term expansion of the training network, while laying the groundwork for transformational change in medical education in sub-Saharan Africa.

- First, the program would execute the action plans that have been developed for the Lake Zone’s share of the 39 health worker training schools. Each would reach their full potential capacity by expanding limited infrastructure, maximizing productivity of the existing faculty resources, and building relationships between training schools and area hospitals and health centers for expanded clinical training opportunities.

- Second, and in parallel, the program would provide Ministry officials with technical assistance to assess the remaining schools in the Lake Zone that were not included in the initial diagnostic, beyond initial assessments that may already have taken place. Action plans would be drawn up and costed based on those assessments.

- Third, the program would work with the Ministry on implementing policy changes necessary to ensure that the school-specific improvements can have their maximum impact. This includes offering incentives for retired physicians and nurses to continue teaching, and for recent graduates to enter health education; facilitating the development of off-campus housing as a safe and affordable alternative to the construction of dormitories; etc.

- Finally, the program would provide a blueprint for in-depth diagnostic studies to be conducted to develop projects that could fundamentally change the way that health education is approached in sub-Saharan Africa, by targeting specific limiting factors of teaching staff, training time, and clinical teaching space.

**Impact and requirements for success**

Success of the Twiga Initiative will depend greatly on related activities targeting other phases of the human resource management cycle – namely efficient recruitment of medically trained graduates, strategic deployment of new health workers to underserved and rural areas, management of the workforce within each health care facility to maximize productivity, development of targeted retention programs to stimulate higher worker satisfaction, and professional development of the existing workforce to continually upgrade skill levels.

In the absence of these complementary efforts, increased production may be largely lost to attrition and the urban concentration of the workforce.

**Workforce retention**

Retention, therefore, is a critical component of the success of Twiga, and as such we recommend undertaking attrition-related efforts in parallel. Our thoughts on retention are designed to address ‘leakage’ in the part of the health worker pipeline where the greatest loss occurs, i.e., within the first year. While we focused on rural districts to improve health worker distribution, it is clear that the retention issue as a broader subject cannot, like maternal mortality, be addressed through just one targeted intervention – so many elements are at play.
here that only marginal change can be created by isolated efforts.

However, there are four major components which, taken together, can lead toward material improvement in rural health worker loss:

- First, the program would provide student loans and housing loans for nascent health workers to attract staff to underserved locations, namely in rural areas. Schools and lenders would be asked to give preference to students who commit to work in locations with greatest needs for health workers.

- Second, the program would focus on providing management tools for districts to improve recruitment practices to attract talented workers into their specific facilities. Resources would be directed toward coaching district health management teams, the future employers of the students, in developing their value proposition and recruitment strategies.

- Third, following graduation, the program would provide incentives and quality-of-life programs in exchange for working in high-priority locations.

- Fourth, organized support, mentorship networks, and assistance for continued education will facilitate career and development support.

If targeted toward rural areas, we believe that this retention model would increase the overall workforce in the Lake Zone by 15 percent over ten years. And the impact would be even more significant. For example, at Shinyanga Regional Hospital, MD capacity would double, and up to 30 additional dispensaries and health centers would have new staff. Additional benefits include improved mindsets, morale, and productivity. The approximate annual cost of the model, with nearly 2,000 health workers enrolled in the program, is estimated at $6 million.139

Requirements for success

A number of elements would need to be in place to ensure success. The physical infrastructure of the health facilities, particularly in rural areas, must be improved to ensure more consistent availability of power, water, and communication. The management and mentorship capacity of DMOs and RMOs will need to be enhanced. And there must be a mindset shift among students about working in rural areas.

Increase financing options

Expanding the number of spaces in training programs will not meet with full success unless students are willing and able to fill those spaces. In Tanzania, otherwise qualified students are often unable to enroll in medical training programs because they lack the money to pay tuition and fees, feeding a vicious cycle in which schools then lack the income to invest in expansion. One way of addressing this issue, laid out in greater detail in Action now, is through a private-sector student-loan program, operated by a commercial retail bank and available to all students pursuing a health training program.

Increased school income will have the greatest impact in schools that have developed comprehensive expansion plans, together with the schools and clinical

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facilities in their network, to determine the allocation of additional funds.

**Kick-start the development network through partnerships**

The health workforce in Tanzania does not currently function as a molecule, but is instead largely atomized into isolated training schools and individual health care facilities. The first step is therefore to build the partnerships between institutions that can strengthen the system’s ability to make efficient use of existing resources: these include leveraging more hospitals as clinical training partners for the schools, and large universities as supervisory or mentoring bodies for the smaller training schools in their regions.

Building a training network requires investments in expanding or creating student housing, increasing transportation and communications capacity, adding diagnostic facilities to mid-level hospitals, and otherwise ensuring that all of the inputs necessary for effective clinical training are present. Increasing the space for clinical training will be most effective in conjunction with increasing space for classroom training, likely necessitating all of the system-expansion activities laid out in the Twiga report. Further, the increased demand for careful and competent network management is not small.

**eLearning and on-site in-service training**

Our team also concluded that health worker skills and better retention could be achieved by providing in-service education through eLearning coupled with active mentorship. The near-term focus of this component is to develop content for MDG-specific courses. Down the line, with the infrastructure in place, the program can be expanded to provide online reference materials as well as form the base for tele-medicine (medical expertise exchange via telecommunications). The information infrastructure, once in place, can even be leveraged to manage drug supply.
eLearning consists of providing computers at district hospitals and health centers, linked either via satellite or 3G cellular technologies. A few designated mentors in each district would identify trainees and act as advocates for ongoing in-service training and use of information communication technology across the facility. Trainees would take modules directly on site based on their needs, as identified by mentors, which would reduce the productivity loss resulting from offsite trainings. In addition to classroom learning, trainees would be required to participate in clinical teaching, provided by mentors, to supplement learning.

The resulting larger, better-skilled workforce can be more effectively applied if we prevent periods of short-term workforce loss while staff learn the new skills necessary. Technologies, such as DVD-based coursework or on-line programs, would enable multiple sites to conduct simultaneous upgrading courses without becoming a significant drain on limited teaching resources.

Upgrade courses can also be a powerful driver of retention, particularly when paired with efforts targeting other components of job satisfaction. Short continuing education that develop new skills but do not result in cadre upgrades can also serve as potent professional development tools that hospitals can use to motivate workers, encouraging them to remain in their positions or increase their skills and therefore their compensation.

To be most effective – and to provide a platform for other ancillary benefits, like access to reference materials and a more efficient way to manage procurement – any eLearning solutions require some degree of broadband connectivity.

International collaboration (‘Twinning’)

International partnerships with medical education institutions from developed countries have not broadly resulted in molecular strengthening of the host SSA health system. The reasons for this are complex, involving a blend of mindset and cultural differences as well as resource allocation often driven by research-funding institutions. But such programs have the potential not only to alleviate capacity constraints in Tanzania by contributing classroom faculty and clinical mentors, but also to empower students by sharing new ideas about doctor-patient relationships, health care teams, evidence-based process improvements, and myriad other aspects of healthcare work.

Training students in management techniques and productivity enhancements will have greater success if combined with robust performance management policies in health care facilities where these students will work after graduation. Management will also be strengthened if paired with in-service training for existing staff, which would make possible mindset shifts of entire hospital staffs, and all would have a greater chance of becoming standard practice if pursued in the context of an international collaboration.

Students benefitting from these partnerships would graduate better prepared, not just to treat patients but to educate and advise them, to maximize their productivity, and to manage health facilities effectively.

Each of Tanzania’s four key tertiary facilities would then be well-positioned to take advantage of international collaboration and research opportunities, providing as they would significant resource and research capacity throughout their catchment area.

Impact

Implementing this recommendation would have a positive impact on the entire health workforce development cycle. Aisha’s sister, who previously thought she could not afford the fees to become a nurse, would be able to enroll with the help of a private student loan. She would be part of a class of health service students double its previous size but with dramatic increases in clinical training opportunities. She would be taught by both physicians...
and nurses, including gaining some exposure to particular specializations, but the bulk of her training would take place in a facility typical of one in which she would later work. She would also be connected to a professional group with the incentive to be mutually supportive throughout their careers.

After graduation, she would receive direct and personal support in choosing a job location, have an opportunity to build on the knowledge she received in school through advanced technology, and become part of a professional network. And she would have the opportunity to further her own skills, teach others, and ultimately pursue a fulfilling career while saving lives and giving back to her community.

Recommendation 3: Invigorate leadership, planning, and management

A great deal is made of the need for health-related products (medicines, vaccines, test kits, etc.) and services (VCT, diagnostics, treatment, etc.) in the developing world. But based on our experience on the ground, we believe the most critical missing ingredient is management capacity: specifically, this means the development of clear business plans designed to stimulate investment in health sector development and then leadership skills to drive professional growth.

Key components include clinical leadership, where health workers are placed at the center of service provision; information management; performance management, both at the institutional and individual level; operational planning at the grassroots level; and research and evaluation. The experience of the ADDO clinics referenced earlier demonstrate that there is a clear shortage of business and entrepreneurial leadership, creating a crucial gap in the system’s capacity for renewal. This recommendation is designed to fill that gap.

Clinical leadership

Clinical leadership is defined by McKinsey as ‘putting clinicians at the heart of shaping and running clinical services, so as to deliver excellent outcomes for patients and populations, not as a one-off task or project, but as a core part of clinicians’ professional identity’. In McKinsey’s view, clinical leadership is not an end in itself but a means toward an end, the end being the development of a high-performing health system.

Citing examples from Kaiser Permanente in the U.S. to the Heart Hospital at University College London Hospital, McKinsey suggests that the core elements are as follows:

- Both health workers and support staff share the common aim of excellent health care delivery
- Physicians and administrators collaborate on key decisions
- Patients form the core of all decisions, both in outcomes and in the patient experience
- Departmental performance and cost is tracked in real time, and
- Failures are discussed openly with students and practitioners.

Based on a method developed for researching drivers of industrial productivity, McKinsey conducted surveys of 170 managers and heads of clinical departments. Responses indicated that multiple doctors’ direct involvement in clinical management issues at facilities correlates to greater cost-effectiveness and better performance. When

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141 Ibid. 3.
general managers had medical training, overall management improved. According to McKinsey, then, involvement in management issues of hospitals by leading clinicians results in material improvements in performance.143

In the context of the Lake Zone, clinical leadership development driven by Bugando and the regional hospitals would build required skills and enable clinical leaders to drive change in all of these facilities. Clinical ownership would lead toward positive mindset change in the area of patient care.

Clinical leadership makes sense: clinicians know what practice or service will be most effective and can provide useful guidance on how to direct resources to support those interventions. Clinician involvement in more than just daily tasks will be important in advancing healthcare in Tanzania. Yet, while capacity is so low, the challenge in leveraging such leadership without deleteriously impacting on health care provision is not small, which is part of the reason why the leveraged human capacity created in Recommendation 2 is so important.

**Information management**

One of the most striking issues in any assessment of African healthcare is the difficulty of obtaining data in an accessible form from standardized collection mechanisms. While individual facilities do keep detailed records of patients, disease prevalence, their own resources, etc., obtaining this data usually requires a personal visit to the facilities concerned.

Management information, such as cost and efficiency metrics, is likewise difficult to find or, where it exists, is contained in overstretched facilities with limited or no library management capacity. At BMC in 2008, for instance, an incident resulted in the collapse of shelving holding tens of thousands of patient records, significantly reducing both patient services and data reliability over the medium term.

As a result, our team relied on a combination of Ministry statistics, individual facility records, and on-the-ground data gathering in order to develop some meaningful indicators of health spending, cost, quality, and utilization. We believe this can be aggregated to provide a relatively accurate picture of the disease prevalence and health system needs across the country, which is critical from the policy point of view. It also translates into the likely needs and resource requirements of individual facilities. However, it creates only limited impact on Aisha’s personal health, as her own needs, requirements, and history are still likely to be unknown.

Assuming time and resources are available, the challenge is not so much in data gathering, but using that data to inform health system leaders and managers as to whether their efforts are having any particular impact at the individual level. What is needed is a common set of metrics to develop uniform reports that measure clinical quality, patient safety, service performance, and efficiency.

Harnessing the power of information, in particular through techniques such as disease registries, can have substantial impact on clinical outcomes: at Kaiser Permanente in California, for example, the implementation of a disease registry in one geographical area resulted in an increase in cholesterol screening from 55 to 96 percent and a reduction in mortality from any cause by 76 percent.143 By some estimates this process saved nearly 200 lives per year in coronary issues alone. According to Kaiser Permanente, one of the key success factors is the insistence on the use of reliable metrics at every meeting.
In Tanzania, any discussion on information management ordinarily revolves around shortages in technological capacity. Certainly, a paper-based patient record system (for example) is not ideal in such a difficult environment. But one of the first steps toward invigorating patient management might be to catalyze an agreement by system leaders on a set of consistent patient metrics (to be recorded on a medium such as a ‘health passport’ or similar). Given the ease of implementation, this alone would quickly lead to improved physician knowledge and therefore health outcomes.

Second, the availability of wireless networks in Tanzania creates significant opportunities for just-in-time data access using cell phone networks linked to cloud repositories containing patient data – which would potentially revolutionize the way healthcare is delivered. Such repositories would also create a platform for other critical areas in both preventive and curative medicine, as well as provide clear measurements on the demand side for drugs and supplies. We recommend an implementation plan for such a system. Being eminently scalable and feasible even in a resource-poor environment, this approach would immediately put Tanzania at the leading edge of global patient records management.

Talent management

But managing patient data is, in a molecular world, only a part of the story. Performance management issues, both institutionally and at the individual level, are a significant cause of low productivity and inefficient resource utilization at the upper levels of healthcare delivery. We believe that the Lake Zone requires a comprehensive performance improvement strategy (e.g., lean operations, performance management, talent management, clinical leadership, etc.) to drive operational improvements at tertiary, regional, and district hospitals. A corollary effect would be to leverage the referral network and build formalized partnerships between facilities per Recommendation 2.

We would begin at the Bugando campus: to develop and implement tools and processes required for performance transformation, then cascade them through networks at regional and district hospitals and stimulate clinical ownership across facilities. Specific interventions include implementing systems that articulate and hold people accountable for performance and outcomes, e.g., target setting, tracking, and monitoring, among others.

Productivity as an issue was identified in McKinsey’s original analysis in 2003, with those conclusions supported by our fieldwork as shown earlier in Exhibit 18. As such, resulting efficiency gains from improved productivity would allow better utilization of the existing workforce. Improved productivity of the system, such as reducing the average length of stay (ALOS), which is roughly double international standards, would enable better use of existing funding and increase patient load capacity.

The team’s findings suggested that even capturing 35-40 percent of ALOS would result in at least a 17-20 percent increase in patient treatments. More formal connections within and between facilities would improve communication as well as allow for continued best-practice syndication. According to the team’s analysis, a comprehensive pilot would cost around $3.6 million, with cascading implementation throughout the region costing at least $19 million. But this may be the most cost-effective way of increasing capacity by up to 20 percent.

The dearth of formal performance management systems and productivity reporting is an inherent
problem in healthcare systems globally that, with the appropriate approach, can be addressed at any level. Similar approaches have been successfully implemented by McKinsey throughout the world and within different types of settings, and many relevant components of the solution exist. The challenge in Tanzania is that such systems rely heavily on critical dependencies to operate, including financial, technological, and human resources, as well as close links to ongoing government policy development and related efforts.

Business planning

Our work on Twiga demonstrated the need for operational plans that can be executed at a grassroots level within the constraints on the ground. More detailed than policy, able to be used both for investment purposes and as a roadmap for execution, such plans need to be definitively linked to the facilities, institutions, and investments concerned.

The Twiga Initiative resulted in such operational plans, as described in Action now. The above two recommendations are ready to be worked into operational plans. Recommendation 1, for instance, involves a clear need for a prospectus for potential investors, along with a business plan for execution in at least three wards in an area of the Lake Zone. Recommendation 2 requires partnership development and seed capital to first develop cascaded training and then develop eLearning modules. But by developing clear business plans alongside potential investors, each of the local stakeholders and populations have something concrete around which they can organize and which they can invest in and own.

Business planning is also necessary within the system, focused on improving administrative departments like procurement, finance, or HR with formalized performance management programs at both primary care and hospital levels. Often, stakeholders choose one point in the system with which to interact – the top layer (i.e., referral hospitals), the bottom layer (i.e., primary healthcare) or the middle (i.e., district health services) – but sometimes action needs to take place at all three levels to materialize into a paradigm change with positive health outcomes.

Out-of-the box thinking

The four aspects of performance management identified earlier – performance metrics and incentives, clinical leadership, lean operations, and talent management – require mindset changes at every place in the healthcare system. Designing a successful change program means putting supporting processes and structures into place, building skills and capabilities, creating role models to drive change, and addressing the culture in a system.

Administrative support is the backbone of any organization; when managed well in healthcare, resources are released to concentrate on patient care and provide better ‘customer’ service, leading directly to improved system performance.

For the health system to repair itself in the Lake Zone, and by extension throughout Tanzania and SSA as a whole, stakeholders need to be significantly more entrepreneurial. There are a number of non-donor-based sources of investment, particularly for infrastructure, that simply require clearer transparency and accountability, and better business planning. Skills transfer, task-shifting, private primary care, leveraging student assistance in delivery, cascaded training, faith-based partnerships, NGO coordination – all can play a mutually supportive role in a system managed with appropriate and well-thought-through business plans.

On financing, the IFC, for instance, can provide leveraged financing for housing and hospital infrastructure, such as health workers’ apartment complexes, where the potential return is clear. Banks and other sources of social capital, such as the Acumen Fund and similar organizations, can provide financing for everything from dispensary networks to tertiary facilities, again when the business plan is clear and when the finance streams are identified.
In short, however, challenges in leadership, planning, and management create a disproportionate level of dysfunction in the health system in the Lake Zone. But this can be turned positive: if directly addressed, these challenges will therefore provide a disproportionate stimulus for health system repair.

**Measuring impact**

**Assumptions**

A key underlying assumption affecting the 2015 baseline is that the Twiga Initiative plans are fully executed, along with strong progress toward the MMAM targets. However, with the exception of franchised dispensaries and mobile care, our modeling does not rely on either of these developments. Facilities are not always rate-limiting resources as they tend to be underutilized, and workforce productivity programs are relatively limited in scope and do not cover even the entirety of the existing workforce.

A key requirement is the additional health workers necessary for the success of the primary care effort. On one implementation plan, an additional 267 workers are needed to staff the franchise dispensary model – mostly achievable using existing training output. But broad-scale mobile primary care requires nearly 1,700 staff – a significant challenge. Even though current training programs allow the current cadre of clinical assistants to achieve this number by 2015, realistically, mobile staff would need to be drawn from a new supply.

A few other assumptions are worth mentioning. First, although the balance between supply and demand relies on many factors, we assumed that any additional supply in the system would always be met by demand. Second, we assumed that increased resources could be translated into increases in capacity rather than increases in quality or wages. Capacity is more straightforward to predict. Hence, rather than develop a theoretical algorithm that compares capacity with supply, service quality and salaries, which would be difficult to support with data, we opted to focus exclusively on capacity as a distinct category. Finally, our modeling focuses entirely on MDG impact and does not take into account impact on other key health areas. In other words, the impact on the health system may be far greater than we assume.

**Directional accuracy**

Modeling health services coverage and the impact of comprehensive initiatives in SSA cannot be an exact science. In Tanzania, we found data on access to health facilities to be especially limited. Any model will rely on limited data of unknown quality and compare it with a number of assumptions and real-world outcomes that cannot be accurately predicted even when based on previous experience. For instance, would additional finances or system productivity only increase wages, or increase patient coverage? Will demand fall in line with increases in supply? Or will additional social marketing efforts, mindset change, and other incentives be needed to bring patients to facilities?

Our objective was not necessarily to provide a definite indication of impact but rather to establish the direction of the positive outcomes that could occur and the extent to which they might. As a result, our conclusions are, we believe, directionally accurate, without necessarily being absolutely precise. Based on our experience working at the grassroots level in the Lake Zone region of Tanzania over the past five years, we are confident that recommendations made in this report would deliver in accordance with – or better than – our projections.

**Impact**

If implemented at the scale we described, our recommendations would have tremendous impact on healthcare in the Lake Zone. They are designed to be beneficial for both quality and access to healthcare services.
Workforce retention, mobile primary care, franchised clinics, cascaded performance management, and primary care performance management are focused on increasing capacity by better utilizing elements already in existence or by adding new resources. The team’s analysis suggests that, following implementation, an additional 3.4 million patients would access the system by 2015 on an annual basis, and that a further 3.6 million patients annually need to access the system for the Lake Zone to meet the MDGs. This alone would therefore be enough to halve the estimated gap to reach MDG targets (Exhibit 27).\textsuperscript{146}

The implications for quality are also potentially significant, relating to availability of appropriate medicines, use of WHO-recommended protocols, conditions in facilities and available staff knowledge and skills.

\footnote{\textsuperscript{146} Source: 2008 Lake Zone Initiative Impact Model (see note 139).}
Our experience in the Lake Zone region of Tanzania has shown us that there is enormous capital and potential within the country – along with a great deal of energy and enthusiasm at both the facility leadership and senior levels of government – for a paradigm change in the delivery of health care to the Tanzanian people.

Our Lake Zone team identified 32 initiatives that even alone would go a long way toward fulfilling the healthcare needs of the Tanzanians in the region. The team did not do so in a vacuum with only research, analysis, facts and figures in support, but rather by asking and by working with the people who live in the Lake Zone itself. Our Tanzanian partners worked with us over a number of years to develop those initiatives into the three core recommendations contained within this report. And we did so not as an intellectual exercise but directly in response to the Tanzanian government’s request for solutions – solutions that can actually be implemented now.

It bears repeating that while the root causes of low health outcomes are a lack of resources, challenged system management, and a dysfunctional enabling environment, the solution will not be found through individual efforts aimed at isolated elements of the molecular problem. Our work has shown that there is indeed an opportunity at the bottom of the pyramid, and that this opportunity can be realized by leveraging and extending primary services through mobile health, technologies, franchises, teaching, partnerships, and so forth. There is also an opportunity at the top to use education as the means through which retention, performance, productivity, and other issues can be resolved, as well as the means to close the acute gap in the health workforce.

In short, our approach would increase the reliability, quality, and productivity of the health system, transforming a vicious circle into a virtuous one using the system’s component parts. While most investors see a health system as too complex to repair at a system level, seen through a molecular framework the problem can become more straightforward. As such, our recommendations constitute a practical approach aimed at unlocking existing capital and potential, and they can provide the catalyst for success in any health system strengthening program.

Aisha’s baby is 11 times more likely to die than he would be in the United States. She herself is 50 times more likely to die during childbirth. But she doesn’t have to. With proper access to primary care, medicine, financing, diagnostic equipment, health education, and specialist support, her chances – and the chances of her people – would dramatically improve.
Appendix – List of Interviewees

Our fact-gathering process for Lake Zone relied heavily on local knowledge and data. We conducted nearly 200 interviews and over half a dozen workshops with health workers, patients and members of the public. We interviewed both healthcare providers and recipients, as well as managers at all levels of the system – central (the Ministry), regional, district and facility-level. Notably, the Ministry, under the CMO’s leadership, and Regional Medical Officers from all six regions provided considerable input on the content, direction, and findings of the diagnostic phase. Additionally, we consulted external experts and other NGOs concerned with healthcare capacity issues in Tanzania and Africa. Those interviewed are not limited to but include the following.

Dr. Samiji Abubakar
Medical Officer in Charge
Maswa District Hospital

Rose Alphonce
Mwanza User Group Participant, FINCA International

Aziza Amani
Mwanza User Group Participant, FINCA International

Regina Andrew
Shinyanga User Group Participant

Dr. Animatlee
District Medical Officer
Mara District

Leocardis Arnel
Medical Assistant
Nyakasungwa Dispensary

Joseph Baganga
Owner, Assistant Medical Officer
St. Joseph Dispensary

Rt. Rev. Bishop Aloysius Balina
Chairman Weill Bugando University College of Health Sciences
Diocese of Shinyanga

Dr. Valentino Bangi
Regional Medical Officer
Kigoma Region

Leah Barrett
Program Officer
Village Reach

Dr. Zachary Berege
Head of Hospital Services
Ministry of Health and Social Welfare

Suzy Brayson
Mwanza User Group Participant

Sister Bugomola
Nursing Officer in Charge
Ngokolo Roman Catholic Dispensary

Adita Buhha
Nurse matron
Nyakaliro Health Centre

Meshak Bunzari
Mwanza User Group Participant

Robert Bushini
District Nursing Officer
Bukombe District

Charles Bushiri
Shinyanga User Group Participant

Catherine Casey
Acumen Global Fellow
The HealthStore Foundation/CFW Shops

Sophia Chagulla
Nursing Officer
Tarime District Hospital

Dr. John Changaucha
Director of the NIMR Mwanza Centre
National Institute of Medical Research (Tanzania)
Dorah Chilongani  
Nursing Officer  
Bugando Medical Centre

Clinical Officer  
Igalukilo Health Centre

Clinical Officer  
Mwamagisi Dispensary

Clinical Officer in Charge  
Wanange FBO Dispensary

Dr. Tom Cooper  
Opportunity International

Ms. Dementria  
Medical Attendant  
Kigoleli Dispensary

Grace Deus  
Shinyanga User Group Participant

Tony Diallo  
Member of Parliament  
Mwanza Region

Rosalia Dominio  
Medical Assistant  
Nyamezeze Dispensary

Silvester Donard  
Mwanza User Group Participant

Dabney Evans  
Director  
Medical Education Cooperation with Cuba

Dr. Dan Fitzgerald  
Medicine  
Weill Cornell Medical College

Prisca Francis  
Mwanza User Group Participant

Dr. Justin Ganda  
Medical Officer in Charge  
Musoma Regional Hospital

Christina Gervas  
Mwanza User Group Participant

Bimba Hamazani  
Shinyanga User Group Participant

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