Grand Strategy and Global Health: The Case of Ethiopia

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Despite successes in global health to combat specific diseases, progress remains slow particularly in sub-Saharan Africa. We discuss two challenges in the global health landscape currently: the waning hegemony in global health governance and the recurrent pendulum swing between horizontal (health systems focused) to vertical (single-disease focused) programming by donors and agencies. Using Ethiopia as a case study, our analysis highlights leadership actions that promoted both vertical and horizontal objectives. These included: 1) clarity and country ownership of purpose, 2) authentic engagement with diverse partners, 3) appropriately focused objectives, and 4) the leveraging of management to mediate policy decisions and front-line action. We conclude that effective leadership in global health can reconcile vertical and horizontal objectives, even with increasing numbers of partners and waning hegemony.

THE GLOBAL HEALTH LANDSCAPE

Globalization has brought the world's most daunting challenges to the doorstep of those formerly sheltered by diplomatic, economic, and social isolationism. Our interconnectedness is particularly apparent in the realm of health, where microscopic threats such as SARS and H1N1 have demonstrated the speed of their intercontinental spread and where poor health care in low- and middle-income countries can compromise economic growth and political stability globally. In this environment, a groundswell of support has developed, with the United States (US) government more than doubling its public spending on global health in the last decade from $4.36 billion in 2004 to $10.67 billion in 2010.[1] And following in the footsteps of Carnegie and Rockefeller, twenty-first century giants of philanthropy such as Gates and Clinton, represent a new wave of altruism.

International financial and political investment in global health, defined as a field of research and practice that seeks to improve human health and achieve equity in health for all people worldwide, has enabled important successes during the last half of the century. The eradication of smallpox often ranks chief among the successes; however, less visible global health efforts have yielded similarly impressive results. Malarial deaths have been halved in 25 countries around the world since 2000, the number of people who died of measles fell by 75% between 2000 and 2007, and more than 5 million people are now being treated and surviving with HIV/AIDS.[2]

Despite these battles won against individual diseases, preventable morbidity and mortality continue to devastate human health globally. More than a half million women per year still die in childbirth and 1.6 million people per year die unnecessarily from tuberculosis (TB). A total of 30,000 children under five years old die each day, the equivalent of 75 jumbo jets crashing and killing all passengers daily. And new threats to global health and security continue to emerge. Obesity and other chronic diseases have

now crept into areas of the world long known primarily for their struggles with infectious disease.

Thus, while resources for global health have grown in the last decade, the influx of actors and widening health threats have resulted in greater complexity in the global health landscape. Consequently, answers to the question of how best to achieve the large ends of global health with our limited means have proven elusive. Calculated plans of action to achieve large ends with limited means, or grand strategy, are typically applied to the management of *states*, where political objectives are large and require coordination of limited resources to attain.[3-4] The term grand strategy has its historical roots in the use of power to achieve political and economic ends for nations but has since been expanded to encompass multi-faceted strategies to achieve large ends in a range of domains including diplomacy[3], business,[5] and health.[6] In this paper, we examine several principles of grand strategy, which provide guidance for achieving large ends with limited means, may be applied to current concerns and goals of global health.

GROWING NUMBER OF ACTORS THREATENS HEGEMONY

Addressing the question of how to focus global health efforts to achieve large ends has become more complex as existing authorities in global health, such as the World Health Organization (WHO) and the World Bank, now compete for space with new entrants to the field. The WHO, established at the close of World War II and traditionally regarded as the public health arm of the United Nations (UN), was charged in its constitution as the "directing and coordinating authority" on international health with the explicit objective of promoting cooperation among health agencies.[7] Nevertheless, public failures of WHO programs (e.g., persistence and growth of polio despite decades of WHO-sponsored eradication efforts) and scandals within UN programs (e.g., fraudulent siphoning off funds from the Oil-for-Food program), compounded by the decline of the UN's power and prestige more generally, have challenged the WHO's ability to promote large-scale change. The result is a twenty-first century WHO that performs a considerably altered role from the one envisioned at the organization's inception. Although portions of the original charge, such as synthesizing and disseminating research data, setting standards, and providing governments with technical assistance have been manifest, the roles of directing and coordinating have been less successful.

Similarly, the power of the World Bank, heralded as the other institutional giant in global health since the 1980s, has waned. Based on its history as a financial institution, the World Bank's comparative advantage originated from its ability to raise, manage, and lend large sums of money with repayment periods of 35-40 years. By the 1990s, the Bank had devoted $13.5 billion in nearly 250 active and completed projects in health and currently spends more than $1 billion per year on health-related projects.[8] Nevertheless, the modern World Bank faces criticisms based on its narrow focus on capital investments, which have not fostered needed systems improvements in recipient countries.[8] A recent evaluation of the World Banks' health projects concluded that nearly one third of projects had failed to meet their objectives.[9]

For both the WHO and the World Bank, these challenges have been compounded by increased competition for dollars; such competition has resulted in relative losses for the World Bank and WHO. During 1990-2007, US funding for Development Assistance for Health (DAH) nearly quadrupled, yet the proportion of DAH funneled through UN

agencies and development banks decreased.[10] This change may be attributed to the creation of new bilateral and multilateral organizations, private philanthropies, and a broad-based community of global citizens. Despite calls for the traditional powers to assert themselves as a coordinating body,[11-12] neither the World Bank nor the WHO have chosen to take on this role. As such, the WHO and World Bank's hegemony has weakened, leaving gaps in strategic coordination and leadership of the global health community.

THE PENDULUM SWINGS WITH LIMITED PROGRESS

Despite enormous influxes of money, funding streams have suffered from a back-and-forth swing between vertical (i.e. single disease-focused) and horizontal (i.e. broader health system-focused) approaches. This pattern can be traced through the last 60 years of WHO programs and other global health activities. In 1952, the WHO Global Yaws Control Program in partnership with UNICEF marked the first, readily identifiable effort of vertical programming. Yaws is a crippling and disfiguring disease caused by spiral-shaped bacteria that is spread by skin-to-skin contact and can be treated for pennies with a single intra-muscular injection of penicillin. In 1950, it affected some 50-100 million people worldwide. By 1965, the Control Program had reduced global disease prevalence by more than 95%.[13] Such vertical programming was mimicked in the WHO malaria eradication and smallpox eradication programs launched in 1955 and in 1958, respectively.[14]

Despite notable successes, frustration with the vertical approach, viewed by some as short-sighted, unsustainable, and ineffective, grew in the 1970s and 1980s, and ultimately gave way to an era of relatively greater horizontal programming. Resources and enthusiasm were redirected towards broad-based efforts at strengthening health systems,[15-18] including interventions such as constructing new health centers and clinics, training health extension workers and community health workers, and expanding access to clean water and nutritious foods. The Declaration of Alma Ata, adopted by the International Conference on Primary Care in 1978, encapsulated this commitment to horizontal programming, urging international actors to improve access and quality of primary care for all people without regard for specific diseases or treatment.[19]

Nevertheless, just as vertical initiatives had twenty years earlier, horizontal programming too eventually lost its luster for some time. In particular, emerging fears about the spread of HIV/AIDS in the 1980s and 1990s gave new reason for the global community to begin rallying around the opposite pole, allowing the pendulum to swing back towards vertical programming.

Vertical efforts to fight HIV/AIDS accelerated, with strong advocacy, particularly in the US. Internationally, the AIDS epidemic continued to accelerate despite public health education efforts. Global health experts began to recognize that prevention efforts alone would not stem the epidemic and, with the lower of the costs of medications for HIV/AIDS, providing treatment seemed possible in resource-poor countries. In 2000, leaders at the G-8 Summit acknowledged the need for additional resources and committed to specific targets for HIV/AIDS, TB, and malaria treatment. Ultimately, large scale international engagement was reflected in the creation of innovative public-private partnerships such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) of 2002 and the launch in the US of the

President's Emergency Plan Fund for AIDS Relief (PEPFAR) in 2003. Since their inception, the Global Fund has approved over $19 billion to in-country partners and PEPFAR has committed approximately $32 billion, including the US contribution to the Global Fund over the course of its 7-year history.[20]

Despite these successes of vertical programming, the pendulum has again started to move back in favor of horizontal programming. The reversion has been prompted by the recognition that disease treatment strategies alone, without simultaneous efforts at system building, are not cost-effective and may be unsustainable. The core objectives of the Millennium Development Goals (MDGs) are unlikely to be attained by focusing on HIV/AIDS, TB, and malaria alone.[21-23] Additionally, new evidence from Mali, for instance, shows that health care improvements for patients with identified diseases may have compromised quality of care for patients and communities with needs unrelated to the targeted diseases.[24] The prevailing view is that health systems in the form of improved clinics, health education, and hospitals are needed to achieve the international targets for reductions in infant and maternal mortality.

This pendulum swing has had a hypnotic effect on the global health community, which too often views the poles as alternative strategies that, when applied in the right instances, will ensure success. As a result, debate between the proponents of each approach continues, prompting short-term campaigns in one direction and then the other, while systematic progress remains limited. In this global health landscape – with health needs that outstrip available resources, fragmented authority, and a multitude of diverse stakeholders – are we destined to repeat the refrain from vertical to horizontal programming and back again? Or can we instead pursue a strategic approach that integrates seemingly contradictory elements to accomplish an overarching vision?

IN THE MOST UNLIKELY PLACES

In the face of the changing institutional and funding environment and despite devastating poverty, Ethiopia provides an example of how grand strategy can enable a country to accomplish ambitious health objectives even with limited means. Among the poorest of the 196 countries in the globe, Ethiopia ranks 167th out of 173 nations on the UN Human Development scale. Its epidemiologic profile shows a life expectancy of less than 50 years and maternal mortality ratios 65 times higher than those in the US. Nevertheless, recent progress in health indicators is impressive in Ethiopia. Deaths from malaria fell by more than 50% from 2005-2007,[25] while the number of people starting HIV treatment increased more than 150-fold during 2005-2008.[26] During the same period, the Ethiopian Ministry of Health has built 4,000 health posts, trained and deployed more than 30,000 health extension workers, and developed a new cadre of hospital management professionals. Furthermore, in 2010, Ethiopia was chosen by the US State Department as one of the US Global Health Initiative *Plus* countries, where the US will support innovative global health efforts.

How have these successes, in both vertical and horizontal approaches, come to be? Ethiopia's real and focused progress in areas that matter to its people illustrates masterful strategy implemented by courageous leadership. Their story demonstrates how success can be achieved through clarity of purpose, authentic engagement of complementary partners, vigilant attention to focused objectives, calculated use of leverage, and an implementation design that facilitates rapid responsiveness to front-

line realities. Additionally, the path of Ethiopia's health improvements reflects an integration of approaches, neither vertical nor horizontal but rather both at once.

ENSURING CLARITY OF PURPOSE AND COUNTRY OWNERSHIP

Critical to every aspect of Ethiopia's health reform strategy has been clarity of purpose, reflecting the priorities of the country rather than the priorities of donors. Following the 2005 elections, Prime Minister Meles Zenawi appointed what would be the first non-physician Minister of Health in the country: Minister Tedros Adhanom Ghebreyesus. Although he was trained as a microbiologist and malaria researcher, Minister Tedros had previously run the Regional Health Bureau in Tigray, a large rural region in Ethiopia. This experience brought him in close contact with rural and semi-urban communities, who complained persistently about the hospital care in Ethiopia. With fewer than 200 hospital beds per 1 million people and in some regions, only 1 physician per 30,000 people, hospital care was viewed as dismal. Data on the poor hospital system had been abundant for decades, but heretofore, efforts to elevate quality and access had been sporadic.

Committed to improving hospitals as a pivotal campaign in large-scale efforts to improve the health of his country, Tedros and his colleagues nonetheless recognized their obstacles. The Ministry was somewhat beholden to a donor community that was vertically focused on HIV/AIDS, TB, and malaria programs when Tedros first assumed his leadership position with a horizontal, systems-based agenda. With little economic surplus, the country lacked capacity to build its own health systems, and much of the Ethiopian human resources for health had fled the country. Although adequate resources were available for supporting the now well-documented effort to expand primary health care through deployment of health extension workers and building of health posts throughout the country,[27-28] fewer resources were apparent for improving hospital care, the focus of this analysis. At that moment in 2005, Ethiopia had strong conviction but mismatched resources for fulfilling its own agenda and purpose. Clarity of purpose alone, however, produced little in the way of concrete action. Authentic engagement amongst the new partners with needed resources, skills, and networks would have to be sought.

SEEKING AUTHENTIC ENGAGEMENT WITH COMPLEMENTARY PARTNERS

In his new role, the Minister found himself mired in challenges, offers, and ideas. In 2006, Ethiopia received more than 1.9 billion dollars in development aid, placing it among the largest recipient countries in sub-Saharan Africa. Nevertheless, finding partners to work with the Ministry on the development of hospital systems was difficult in a climate of vertical programming priorities. Tedros worked with the larger donors, including the multilateral Global Fund, to push the envelope on using Global Fund resources for horizontal systems improvements in the country, particularly if such efforts could be explicitly linked with care for patients with HIV/AIDS, TB, and malaria. Tedros would have to wait until his first meeting with President Clinton to find a partner who would commit to making the Minister's goal of improving hospital care in Ethiopia a reality.

At the conclusion of their first meeting in 2005, President Clinton vowed to help Tedros. A personal connection was made, and the men began to occupy a common ground with potential for realizing progress. This ground was one of partnership built on engagement of complementary partners. Tedros brought to the partnership the leadership to sustain focus on the selected agenda, the political acumen to facilitate enabling legislation as needed, and first-hand knowledge of what was needed. President Clinton and the Clinton HIV/AIDS Initiative (CHAI) brought to the partnership a commitment to work on Tedros' priorities and their network, which provided sources money, expertise, and credibility. Both were new and enthusiastic learners in the field of health systems, both were interested and inspired by the other's story, and both were committed to improving the health of Ethiopia's people through high quality hospital care. The friendship of Tedros and Clinton subsequently served not only as a powerful international lever but also as method for garnering and sustaining support from within the country. The highly visible support from the former US President likely helped Tedros avoid interference from Ministry of Health bureaucrats and other Ethiopian ministries competing for donor funds.

Still, in early 2006, the partnership lacked a critical asset, which was the technical knowhow in hospital capacity building. President Clinton admits, in retrospect, that he chose to lead CHAI into Ethiopia because he recognized soon after meeting Tedros that the man was "a rock star." Tedros, in retrospect, describes Clinton as the only partner who would work on system development rather than on a specific disease and who possessed the strong value to support the country's needs as expressed by the government. The commitment to Tedros' goals was unparalleled; CHAI, however, had little experience in the sort of work Tedros was hoping to begin. Since its founding in 2004, CHAI had built a well-established reputation as a hard-nosed negotiator of HIV/AIDS drug prices that dramatically improved access to the life-saving treatments in low- and middle-income countries. Despite this wealth of experience with HIV/AIDS, virtually none of CHAI's work to date had been in hospital or health system building.

With no past experience between them, Tedros and Clinton agreed on the need to engage a third partner who might help contribute technical and strategic expertise in the area of hospital strengthening. Yale University was ultimately chosen to fill the void, adding to the mix a long-standing history of research, public health, and strategic leadership. Together, the three groups would next engage in the tricky business of settling upon an objective that was both achievable but auspicious; one that was grounded in the harsh reality of Ethiopia's current landscape but one that, if achieved, would make global health history.

STAYING FOCUSED

Managing scope was central to the strategic approach and Tedros' leadership. Armed with data from multiple needs assessments, the partners started to formulate a plan aimed at strengthening Ethiopia's hospital system but quickly became distracted by other challenges. Ostensibly, the objectives of the partnership were well-articulated in the pertinent grants and contracts, but within months, sizing the project became a point of contention. What had been in January 2006 a program aimed at improving eight hospitals in Addis Ababa ballooned to a program targeting 40 plus hospitals throughout the country by March of the same year. Visible, fast action in all regions was needed to

demonstrate the Minister's work for the public he served while the implementing partners voiced concerns that their resources would be spread too thin.

Negotiations surrounding the scope of the project were lengthy. Tensions grew; although all parties wanted to maximize impact, what the Ministry saw as appropriate expansion, other partners viewed as overreach. But every hospital-level fix required another part of the system to adjust, rendering piece-meal interventions impossible if not impotent as may be expected in health systems strengthening efforts.[29] The partners thought about expanding the total number of hospitals but focus on one region; this too was rejected as fears of perceived regional bias among a federal Ministry in a land struggling to retain its union chilled more regionally-focused objectives.

After multiple rounds of pointed debate, consensus emerged. The resulting project was a purposeful expansion of what was originally proposed, ultimately accommodating each participant's agenda. The number of hospitals would be expanded slightly in the first year with a stepped pattern over three years of increasing numbers of hospitals in the program. Efforts were stretched not to the entire country but to the five most populous regions. Interventions per facility were sized to be feasible and synchronized to multiply the effects of disease-focused efforts already in place, and budgets were adjusted to reflect the larger staff needed. Most importantly, the time and effort invested in candid debate provided the partners with a shared history that would serve them well in many strategic decisions ahead.

EMPOWERING (MIDDLE) MANAGEMENT

The principals in this massive endeavor fundamentally believed that management was the oil on which the complex organizational machinery of hospitals ran. The Ministry and partners invested in management as the building block for subsequent improvements. The strategy was complex as it required the establishment of a management head, Chief Executive Officer, as a new position in the civil service, and a governing board to oversee hospital strategic plans. Establishment of a cadre of professionals to lead hospitals required new proclamations, executive-style educational methods, and a devolution of power from federal to regional to facility-based staff. Reforms required facility-based management teams and community-based governing boards to manage hospital finances, staffing, and strategic direction. The empowering of management was a leverage point. Improved management not only solved specific problems (e.g., long wait times, medical stock outs, worker absenteeism) but also provided access to large numbers of staff and community-based individuals who subsequently engaged with the hospital reforms. With this model, multiple new policies and procedures were published in relatively short order including a *Blueprint for Hospital Management in Ethiopia* and standard-based supervision of hospital functions, providing critical leverage for large-scale changes in hospitals across the country.[30]

In addition to its leverage value, the management capacity at hospitals was revolutionary, as this new cast of middle management health workers could connect the policy-level directives from the Ministry with the frontline needs of the facility they managed. Core to this coordination was the development of common and reliable reporting systems that linked the realities of the front-line to higher-level government policy makers. As inadequate information flow between the front-line operation and the

central government strategy often spells failure of large campaigns, shoring up this communication channel with explicit focus on the middle management enabled a grounded approach to reforms, based on intelligence that otherwise might be difficult to gather.

Together, an international team of 30 hospital management mentors, selected because of their experience and training in hospital management, participated in more than 60 projects; the first year saw multiple successes[31-32] with improved adherence to management standards and concomitant reduction in post-surgical infection rates, reduced waiting times, and improved patient ratings of care. These projects would then be replicated throughout other portions of the system. Within five years, new systems of hospital financing, surveillance, and accreditation were launched and, today, Chief Executive Officers and management teams exist in all government hospitals with early data suggesting many are leading successful health care improvement efforts in their country.

THE WAY FORWARD

Paving the way forward in global health requires strategic action at all levels. At the international policy level, strategic coordination of global health action demands a restoration of some form of hegemony, whether through an established entity such as the WHO or a new multilateral governance system for health. In the absence of such global oversight, however, a new set of competencies is emerging for effective leadership in global health at national, regional, and local levels. These competencies are not in the technical fields of medicine and public health but are rather in the practical realm of grand strategy, the practice of designing plans of action to achieve large ends with limited means.

The Ethiopian experience illustrates the application of these competencies to global health. The competencies include the capacity to articulate and maintain a compelling purpose endorsed by the country, the ability to engage with complementary partners and manage potentially contradictory approaches, and the wisdom to invest in middle management that can translate large-scale strategies into focused and effective action. Although Tedros faced donors who supported more vertical programming, his commitment did not waver, in large part because he understood the legitimacy of his constituents' calls for improvement. Instead, his Ministry engaged with partners who represented potentially contradictory (horizontal and vertical) approaches and focused on their capacities as complements to achieve the larger goals no single partner could achieve on their own. The approach in Ethiopia also addressed the challenge of implementation. The partners managed scope through candid debate about what could and could not be achieved, preempting failure due to overreach. Implementation efforts used leverage through the building of middle management, which resulted in more effective information flow and problem solving among the strategic, operational, and tactical levels of coordinated action. Managers were the boundary spanners between the Ministry and the facility-based staff, and in that role, potentiated the power of both the policy-level ideas and the frontline staff to better align goals with action. Key to this alignment was the gathering and use of frontline intelligence about reality on the ground, which allowed more nimble responsiveness to unexpected and shifting events.

As global health takes its place on the stage of international affairs, addressing the threats of disease across the globe demands the use of strategic thinking. Exceptional strategists in global health insist on clarity and country ownership of purpose, authentic engagement with diverse partners, appropriately focused objectives, and the leveraging of management as a mediator of grand strategic decisions and front-line action. Finally, effective grand strategists in global health will avoid the mistake of supporting either vertical or horizontal efforts and instead find ways to apply both at once in varying ways, viewing these as means to the larger end of improving health and health care globally.

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[1] "Programs in the U.S. Global Health Initiative (GHI) & Other U.S. Global Health Investments, FY 2004 - FY 2011, 2010." Available at: http://facts.kff.org/chart.aspx?ch=1320

[2] "Success in Global Health: Progress in the Fight Against Disease 2009." Available at: http://www.gatesfoundation.org/livingproofproject/Documents/global-health-fast-facts.pdf

[3] Liddell Hart BH, *Strategy*. (London: Penguin Group; 1954).

[4] Kennedy P, *Grand Strategies in War and Peace*. (New Haven: Yale University Press; 1991).

[5] Hitt M, Ireland M, "Palin K: Industrial Firms' Grand Strategy and Functional Importance: Moderating Effects of Technology and Uncertainty." *The Academy of Management Journal* 1982;25 (2):265-98.
[6] Curry LA, Loung MA, Krumholz HM, Gaddis J, Kennedy P, Rulisa S, et al.,"Achieving large ends with limited means: grand strategy in global health." *International Health* 2010;2 (82-86).
[7] World Health Organization, *Constitution of the World Health Organization*. Geneva: 1946.
[8] Ruger JP, "The changing role of the World Bank in global health." *American Journal of Public Health* 2005;95 (1):60-70.
[9] International Bank for Reconstruction and Development and The World Bank Group, *Improving Effectiveness and Outcomes for Health, Nutrition and Population*. Washington, D.C. 2009.
[10] Ravishankar N, Gubbins P, Cooley RJ, Leach-Kemon K, Michaud CM, Jamison DT, et al, "Financing of global health: tracking development assistance for health from 1990 to 2007." *Lancet* 2009;373 (9681):2113-24.
[11] Moon S, Szlezak NA, Michaud CM, Jamison DT, Keusch GT, Clark WC, et al.," The global health system: lessons for a stronger institutional framework." *PLoS Medicine* 2010;7 (1):e1000193.
[12] Szlezak NA, Bloom BR, Jamison DT, Keusch GT, Michaud CM, Moon S, et al., "The global health system: actors, norms, and expectations in transition." *PLoS Medicine* 2010;7 (1):e1000183.
[13] World Health Organization, *Working for Health: An Introduction to the World Health Organization*. Geneva 2007.
[14] World Health Organization, *WHO in 60 Years: A Chronology of Public Health Milestones*. Geneva 2008.
[15] Kwadwo-Amofah G, "The Coordination of Vertical Programmes and the Development of Integrated Health Systems in Ghana: A Regional Perspective." *National Meeting on the Coordination and Integration of Health Programmes and Services in Ghana*; 14-16 January 1991; Ministry of Health Accra 1991.
[16] Taylor C, andWaldman R, "Designing Eradication Programs to Strengthen Primary Health Care." In: Dowdle W, Hopkins D, editors. *The Eradication of Disease: Report of the Dahlem Workshop on the Eradication of Infectious Disease*. (West Sussex: John Wiley & Sons; 1998). p. 145-55.
[17] World Health Organization. *Challenges and Strategies for Health Systems Development*. Geneva 1997.
[18] Yekutiel P, "Lessons from the Big Eradication Campaigns. World Health Forum." 1981;2 (4):465-81.
[19] World Health Organization, editor. *Declaration of Alma Alta. International Conference on Primary Health Care; 1978; Alma-Alta, USSR*.
[20] Bill Gates, "Testimony Before the Senate Committee of Foreign Relations 2010." Available at: http://www.gatesfoundation.org/speeches-commentary/Pages/bill-gates-2010-senate-testimony.aspx
[21] Freedman LP, "Achieving the MDGs: Health Systems as Core Social Institutions." *Development* 2005;48 (1):19-24.
[22] Sachs JD:,"Health in the developing world: achieving the Millennium Development Goals." *Bulletin of the World Health Organisation* 2004;82 (12):947-9.
[23] Travis P, Bennett S, Haines A, Pang T, Bhutta Z, Hyder AA, et al., "Overcoming health-systems constraints to achieve the Millennium Development Goals." *Lancet* 2004;364 (9437):900-6.
[24] Cavalli A, Bamba SI, Traore MN, Boelaert M, Coulibaly Y, Polman K, et al., "Interactions between Global Health Initiatives and country health systems: the case of a neglected tropical diseases control program in Mali." *PLoS Neglected Tropical Diseases* 2010;4 (8):e798.
[25] Reducing Malaria Deaths by 2015 is Attainable 2010. Available at: http://endtheneglect.org/2010/04/reducing-malaria-deaths-to-zero-by-2015-is-attainable
[26] Assefa Y, Jerene D, Lulseged S, Ooms G, and Van Damme W, "Rapid scale-up of antiretroviral treatment in Ethiopia: successes and system-wide effects." *PLoS Medicine* 2009;6 (4):e1000056.
[27] Ghebreyesus TA. "Achieving the health MDGs: country ownership in four steps." *Lancet* 2010;376 (9747):1127-8.
[28] Wakabi W. "Extension workers drive Ethiopia's primary health care." *Lancet* 2008;372 (9642):880-6.
[29] de Savigny, R and Taghreed, A (eds). *Systems Thinking for Health Systems Strengthening*. Alliance for Health Policy and Systems Research, WHO, 2009.
[30] Pashman J, *Blueprint for Hospital Management in Ethiopia*. (New Haven: Yale Reprographic and Image Services; 2007).
[31] Hartwig K, Pashman J, Cherlin E, Dale M, Callaway M, Czaplinski C, et al., "Hospital management in the context of health sector reform: a planning model in Ethiopia." *International Journal of Health Planning and Management*. 2008;23 (3):203-18.

[32] Wong R, and Bradley EH, "Developing patient registration and medical records management system in Ethiopia." *International Journal for Quality in Health Care*. 2009;21 (4):253-8.