Health system assessment project – Global Health Seminar 2013 sponsored by the GHT Internal Medicine Residency, UPMC

Objectives:

- Describe components of health systems and its goals
- Assess the performance of a health system by measuring how well each of the goals is achieved
    - Examine databases and resources available on health statistics and systems indicators
    - Be aware of data quality and limitations
- Propose options for health systems improvement/strengthening

Tasks for seminar participants:

1. Pick a country for this assignment. It could be a country where you have lived/worked/vacationed or you are interested in visiting and getting to know better
2. Research the health system indicators as listed in your hand-out (also in class presentation). You will not be able to look up all the data as many are not available publicly, just enough to paint a picture of the healthcare system in that country for yourself. You may want to use a comparison standard, a neighboring country, even the US to give the audience some perspectives
3. Prepare a 1-2 page write-up of your findings and recommendations with optional powerpoint presentation in class
4. Share experience and lesson learned from this exercise in class. Are there any web-based resources that are particularly helpful?

Suggestion for the write-up:

- One paragraph summary of the country's health and healthcare stats *(choose what you want to highlight)*
- One paragraph summary of health systems' challenges and constraints citing specific health systems data/indicators/sources
- Provide one visual (table, chart, graph, etc.)
- Cite one source that is particularly useful or relevant
- End with opportunities for health system strengthening (disease-specific or health systems responses)

Potential resources:

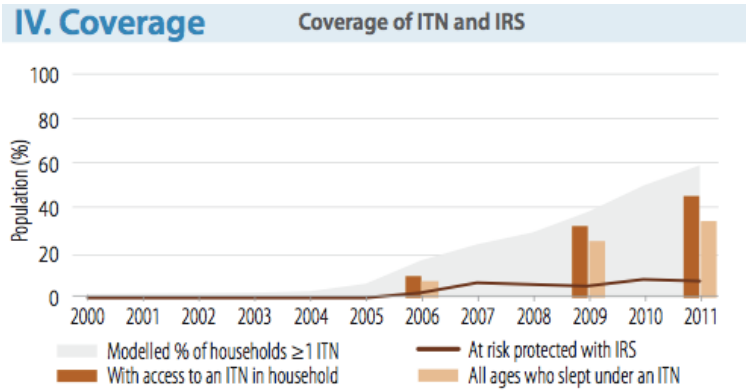
WHO Tool Kit - Monitoring The Building Blocks Of Health Systems: A Handbook of indicators and their measurement strategies
Note that the WHO's Health Statistics, Health Information Systems and the Global Health Observatory are also accessible at the above site
OECD Health Systems Comparison – Multinational Comparisons of Health Systems Data, 2012
http://www.transparency.org/ provides some idea about a country's governance and level of corruption. Scroll to the bottom of home page, under research and country profile.
Poverty reduction strategy papers by country – International Monetary Fund
USAID http://results.usaid.gov/ country page and clearinghouse/evaluation reports
Measure DHS, funded by USAID collects data to advance global understanding of health and population trends in developing countries. Click on Country Quickstats on the left hand column. Statcompiler is also helpful for country comparison. You can also search for publications on MeasureDHS.
Health systems 20/20 database USAID http://hs2020.abtassociates.com/

Uganda Health Assessment 2013

Tim Anderson, PGY2

Uganda is a predominately rural sub-Saharan country of 36 million that has struggled with political turmoil since it's colonial independence in 1962. As a result, Uganda's health infrastructure has is fractured, unequal and stands as one of the largest barriers to population health. In the past decade relative peace has fallen on the country with quieting of the Lords Resistance Army rebellions in the North, the economy has prospered with an economic growth rate of 5.5%, and a hopeful optimism on improving health has blossomed both internally and internationally.

The burden of disease in Uganda is reflective of the fact that 78% of the population lives in rural areas, making it the most rural country in Africa. Communicable disease remains the cause of 65% of mortality and the life expectancy is ~55 years of age. Uganda's infant mortality rate remains 63/100,000 making it one of the highest in the world. Less than 30% of the country has access to improved sanitation and only 80% has access to clean drinking water and as a result diarrheal disease are prevalent. 90% of the population lives in areas of high malaria transmission with fewer than 40% having access to treated bed nets and fewer than 10% in areas covered by insecticide spraying.



Demographics pose another unique challenge in the Ugandan health system. Uganda is the youngest country in the world with a median age of 15. As a result of the conflict, 1.8 million people living in Internally Displaced Populations (IDP) camps have returned home since 2008 though family remain fractured and orphans are common particularly in the North. This has contributed to a regionally low literacy rate of 68%. 37% of the population falls below the WHO poverty standard of $1.25 dollars a day and subsistence agriculture remains the primary occupation in the country. One challenge posed by the youthful population is HIV control. Through the 1990s Uganda had an effective national campaign of abstinence, monogamy and condoms, which helped keep HIV rates among the lowest in sub-Saharan Africa, but since the mid-2000s rates, have been rising with the WHO reporting an HIV prevalence of 7% with condom use under 30%.

There are many potential health-strengthening initiatives for Uganda to undertake and a limited budget to work with, health expenditures are $128 per capita or 9% of the GNP and over half of health spending is comes directly from patients. Given the geographic and financial barriers to health, one starting point is to focus on building Ugandan infrastructure in order to improve citizen's access to health. One initiative already undertaken was the elimination of user fees at health facilities in 2001 which resulted in an 80% increase in visits, with the poorest 20% of the population accounting for half of this increase. Improving Uganda's pharmacy infrastructure should be a priority given that common inexpensive life saving medicines such as oral rehydration salts and anti-malarials are frequently out of stock. Given the rural structure of the country, access to medicines at health centers and not only regional hospitals is vital. Investing in small health centers can begin the education and treatment of the most common treatable communicable diseases as well as allow for condom distribution, prenatal vitamins and vaccinations.

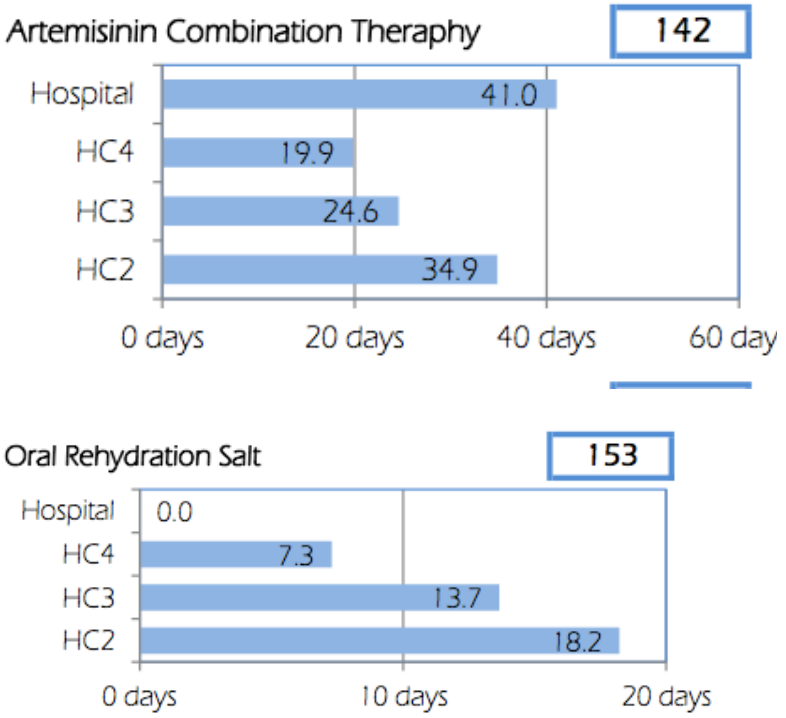


Figure 2: Average number of stock-out days over 3 months of ACT and ORS in pharmacies in different levels Ugandan health centers.

References:

1. WHO Country Profile: http://www.who.int/countries/uga/en/

2. Republic of Uganda Ministry of Health National Health Accounts 2013

http://health.go.ug/docs/NHA_REPORT_FINAL_13.pdf

3. Republic of Uganda Ministry of Health National Performance Report on Medicines Management 2013

http://health.go.ug/docs/NPRMM_MARCH_2013.pdf

Anar Patel
October 3rd, 2013
Health System Performance - Tanzania

Health systems and health actions are important elements in the analysis of a country's health system performance. The WHO defines health systems as comprising all the organizations, institutions, and resources that are devoted to producing health actions. Health actions are defined as any effort whose primary purpose is to improve health including personal health care, public health services or through organizational initiatives. Good health itself involves the continuum of two elements: goodness and fairness. National health systems have three overall goals: 1. Good health 2. Responsiveness to the expectations of the population and 3. Fairness of financial contribution. The six building blocks of health systems as defined by the WHO includes: service delivery, health workforce, information, medical products/vaccines/technologies, financing, and leadership/governance.

Tanzania is a country with more than 47 million inhabitants and only 822 physicians. The country remains one of the least developed countries in the world: ranking 152 of 182 countries by the Human Development Index – a composite measure of life expectancy, educational attainment, and income. To characterize their population, consider the following statistics: 15% of Tanzanians have electricity, 54% have access to clean drinking water, and approximately 20% of the population is illiterate. The health system in Tanzania follows a hierarchical structure with different levels of services. On the top of the system are the central hospitals which are expensive, oriented to international standards, and serve as referral centers. Following central hospitals are: regional hospitals, district hospitals, health centers and dispensaries. Tanzania's government has made significant efforts to reduce poverty and improve health status. Currently Tanzania is implementing it third Health Sector Strategic Plan which was developed in line with the goals of the National Strategy for Growth and Poverty Reduction (MKUKATA), the National Health Policy 2007, and the Millennium Development Goals. The Tanzania Health Systems Assessment was conducted in the summer of 2010 as an internal assessment of the health system as a whole and recommend areas for system strengthening. Their government spent 13% of total expenditures on health although out-of-pocket expenditures account for nearly 80% of private health expenditures. Additionally, international donors have responded to Tanzania's need for financial assistance; for example, the country received $130 million from PEPFAR due to their high HIV prevalence rate of 6.7% and $27 million from the President's Malaria Initiative. Unfortunately, Tanzania is highly dependent on donor funding accounting for more than a quarter (up to 40%) of Tanzania's total health spending.

Malaria is a leading cause of morbidity and mortality in Tanzania accounting for nearly 30% of national disease burden. Studies cite that 9 out of 10 people in Tanzania are at high risk for malaria transmission. It also contributes to 40% of outpatient clinic visits and is the leading cause of death in children below the age of 5 accounting for 25% of all deaths. *Plasmodium falciparum* causes 94% of all malarial disease in Tanzania.

Below is an analysis of Tanzania's health system in regards to malaria (with a focus on mainland Tanzania). Useful resources included Roll Back Malaria website, USAID Malaria Control in Tanzania website, and Tanzania Country brief by USAID.

Health System	**Evidence**	**Strengths/Weaknesses/Opportunities**
Service Delivery	▪ More than 18 million ITN's were distributed between 2007 and 2010 through mass campaigns ▪ IRS began in 2007 and expanded to cover 94% of the targeted structures	Strengths ▪ Interventions have resulted in improved coverage: 63% of households own at least 1 ITN compared to 23% in 2005 ▪ Tanzania changed its recommended

	by 2011 ▪ Rapid diagnostic tests and ACTs have been deployed to reach half the population	antimalarial drug from chloroquine to ACT's allowing for more effective treatment ▪ Increased availability of rapid diagnostic tests ▪ RDT availability has increased thus allowing improved efficacy in diagnosis of malaria Weaknesses ▪ Monitoring system for RDT's in only a few districts ▪ Low ITN retreatment rates is a common problem Opportunities ▪ Continuing efforts to build local capacity for IRS planning process: accurately estimate required quantities of workers and supplies ▪ Support training of health care workers in use of RDT's and scale up monitoring system for RDT implementation ▪ Increase availability of long-lasting nets (LLN) ▪ Consider larval control in conjunction to ITN's (labor intensive undertaking)
Health Workforce	▪ Physician density is only 2/100,000 compared to WHO recommendations of 20/100,000 ▪ In 2004, Tanzania had only 822 physicians	Strengths ▪ Tanzania government and MoH is addressing human resources for health (HRH) crisis Weaknesses ▪ Overdiagnosis of malaria in febrile illness is rampant and leads to wasteful expenses and missed diagnoses Opportunities ▪ Increased availability of RDT's can aid in preventing overdiagnosis of malaria ▪ Increase recruitment from domestic inactive healthcare workers and increase cadre of unskilled workers ▪ Improve geographical balance of healthcare workers, particularly to rural districts
Financing	▪ Household out-of-pocket expenses accounted for 80% of total private health expenditures ▪ Tanzania has introduced community based insurance to increase the rural populations access to care	Strengths ▪ Donors are increasing support, especially for malaria: received $37 million in 2007 from PMI ▪ National Health Insurance Fund is a compulsory insurance program for formal sector employees (3% of population) Weaknesses ▪ Per capita spending on health is extremely low compared with other sub-Saharan African countries ($12 per person in 2003 compared to average $49) ▪ Highly dependent on donor funding (accounts for 25-50% of Tanzania's total health spending) Opportunities ▪ Reduce dependence on development

		organizations and international funding
Leadership/Governance	▪ Tanzania's National Malaria Control Program (NMCP) provided strong, stable leadership in coordinating malaria activities since 1995 ▪ NMCP works in conjunction with international development partners including PMI to achieve its goals focused on expanding availability and use of insecticide-treated mosquito nets (ITN's), intermittent preventive treatment for pregnant women (IPTp), artemesinin-based combination therapy (ACT), and indoor residual spraying (IRS) with insecticides	Strengths ▪ Tanzania has donor coordination mechanism in place ▪ Strong government ownership of the health reform agenda and formal commitment to gradually increasing the funding to the sector over the next several years Weaknesses ▪ Corruption still an issue: more than 30% of Tanzanians have paid a bribe for medical services ▪ Opportunities ▪ Improve malaria surveillance programs so that epidemiological data can drive future initiatives ▪ Improve district level health planning and spending

Mozambique Health System Assessment

Mark Troyer, PGY2
UPMC GH Seminar Series
October 3, 2013

Mozambique is a coastal country of 25 million people in Southeast Africa. It is a low income country whose infrastructure and institutions have been eroded by a prolonged civil war in the 1980's and early 1990's. Following the war's formal end, and multi-party elections in 1994, Mozambique has experienced the most rapid economic growth of a non-oil producing country in Sub-Saharan Africa (avg GDP growth of 7%, 1993-2009)[i,ii].

Relevant Health Statistics

HIV is ravaging Mozambique. With an HIV prevalence rate more than twice that of the rest of the African region, an estimated 74,000 Mozambicans die from HIV/AIDS every year[iii,iv]. Less than half of Mozambique's population survives from age 15 to age 60, and as a result Mozambique's life expectancy is drastically reduced to 53 years[iii]. These figures are worse than both the African regional and global averages. In the face of 1.4 million Mozambicans living with HIV, and 130,000 new cases of HIV each year, only 46% of those with HIV receive antiretroviral therapy (ART)[iv].

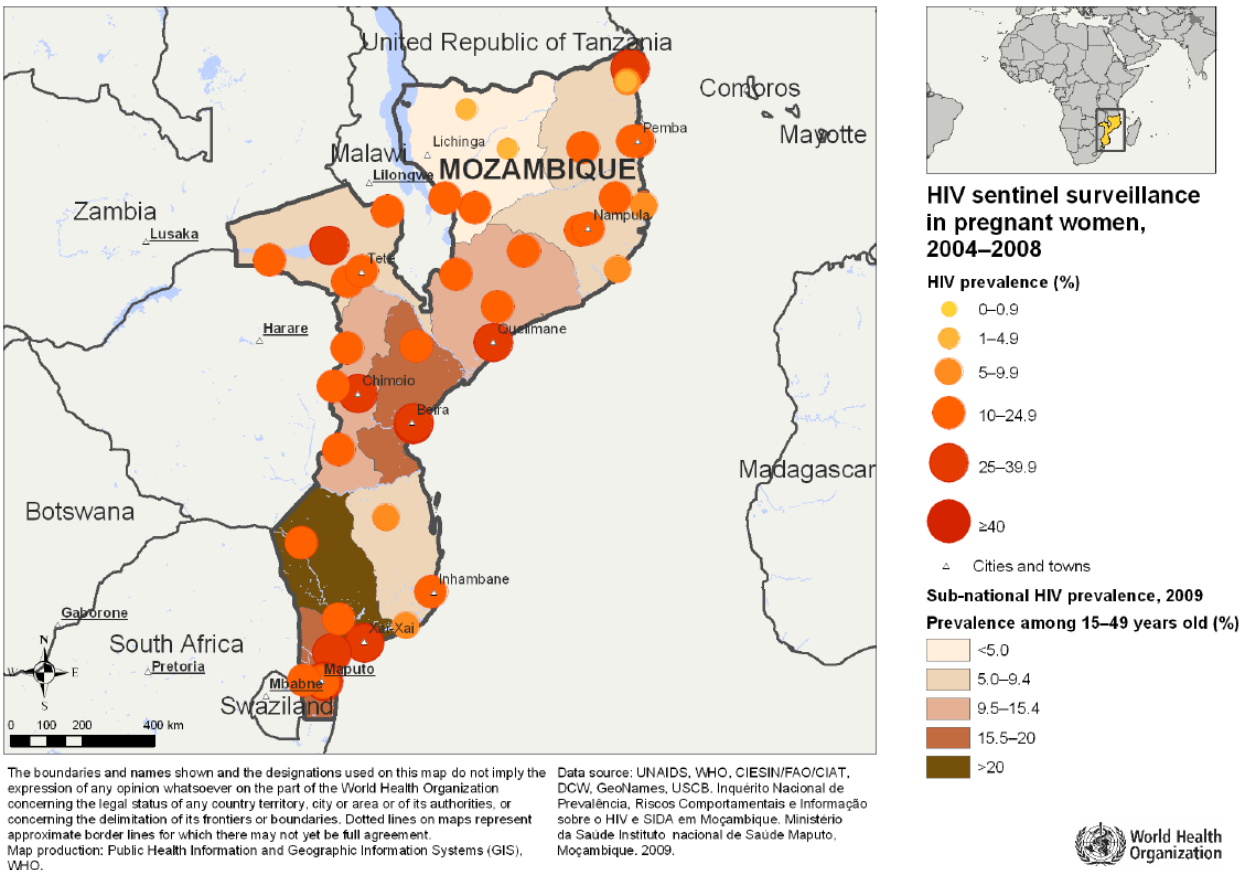
Health System Features and Constraints

Mozambique's health system is fractured by individual poverty, low government revenue compared to large external funding sources, and a shortage of health professionals in the public sector. Approximately, 70% of healthcare funding in Mozambique comes from external donors[v]. Individual out-of-pocket expenditures are limited by individual poverty to $2 per household, or 9% of total health expenditures[v]. Government health expenditures are limited by low overall government income. Mozambican physicians are rare, only 0.04 per 1,000[vi]; and these physicians are being drawn away from public sector positions to international NGO's practicing in Mozambique[vii]. These health system features result in a fragmented health system with an uncoordinated response to health priorities.

Opportunities for Strengthening and Battling the HIV/AIDS epidemic

The Mozambican Ministry of Health and public health system are owners of the HIV/AIDS epidemic and hosts to many external organizations eager to help address this crisis. They should be placed centrally in the global response to HIV/AIDS in Mozambique rather than witnessing further erosion of public health infrastructure by an insurrection of international donors. This could take the face of capacity building and training of Mozambican professionals to manage the HIV/AIDS response, and invitation of these officials to the decision-making process of fund allocation. External donors are obliged to reverse the internal migration of physicians back to the public sector by supporting public hospitals and clinics, and perhaps funding the physician training programs in public hospitals.

Mozambique like many low income countries has inadequate infrastructure to collect personal taxes. Like its peers, the Mozambican relies heavily on natural resource extraction – rare earth metals, aluminum, and hydroelectricity – for its economic growth; appropriate taxation of these resource extractions would increase government revenues and the ability of the Mozambique government to rebuild is health sector infrastructure. Mozambique also has the prerogative to issue compulsory licensing of generic HIV therapy; proportional decreases in the cost of ART could allow greater ART coverage for the many Mozambicans living with HIV, decreasing HIV/AIDS mortality and incidence.



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.
Map production: Public Health Information and Geographic Information Systems (GIS), WHO.

Data source: UNAIDS, WHO, CIESIN/FAO/CIAT, DCW, GeoNames, USCB. Inquérito Nacional de Prevalência, Riscos Comportamentais e Informação sobre o HIV e SIDA em Moçambique. Ministério da Saúde Instituto nacional de Saúde Maputo, Moçambique. 2009.

References accessed Oct 2, 2013

[1] World Bank, World Development Indicators.
http://data.worldbank.org/products/wdi.

[1] African Development Bank Group, Mozambique Country Strategy Paper (2011-2015), published Aug 2011.
http://www.afdb.org/en/countries/southern-africa/mozambique.

[1]World Health Organization, Mozambique Health Profile.
http://www.who.int/gho/countries/moz.pdf.

[1] UNAIDS, Mozambique HIV and AIDS Estimates, 2011 estimates for Mozambique.
http://www.unaids.org/en/regionscountries/countries/mozambique.

[1] World Health Organization, Global Health Expenditures Database, Mozambique Health System Financing Profile.
http://apps.who.int/nha/database/StandardReport.aspx?ID=REPORT_COUNTRY_PROFILE.

[1] World Health Organization, Global Health Observatory Data Repository. 2008 data for Mozambique.
http://apps.who.int/gho/data/node.main.

[1] Sherr K, Mussa A, Chilundo B, Gimbel S, Pfeiffer J, et al. (2012) Brain Drain and Health Workforce Distortions in Mozambique. PLoS ONE 7(4): e35840. doi:10.1371/journal.pone.0035840.

Zambia: A Health System Under Construction **Ted Belsches PGY1**

Ranked 164th out of 187 countries in the Human Development Index of the United Nations, Zambia and its 14 million citizens still have a significant amount of work to do to establish an adequate health system. The four leading causes of death are all infectious diseases with HIV causing 24%. The average life expectancy is 54 for males and 56 for females ranking 176th in the world. The gross net income per capita is $1,490, but over 82% of the population lives on <$2/day. The government only spends 6% of the GDP and 16% of its budget on health which amounts to $52 per capita. Infant mortality is 70.6 per 1,000 live births (23rd worst in the world), but over 94% of pregnant women have at least one antenatal doctor visit. Over 80% of infants receive vaccinations and ART to prevent vertical HIV transmission when warranted with coverage >90% some years.

Significant problems include the accessibility to healthcare, a shortage of health personnel, high burden of disease, inadequate funding, poor social support system, and extensive poverty. With only 39% of the population living in urban areas, access to care is a significant issue. Currently the health system is designed so that most people receive healthcare at health posts (clinics) built to serve communities of 500 families. Then patients can be referred to health centers which have a few inpatient beds or to the district hospital which has limited surgical, obstetric, and diagnostic capabilities. While there are sufficient health centers and district hospitals, only 19 of the planned 3,000 health posts have been built (as of 2005). The secondary and tertiary referral hospitals are also disproportionately concentrated in 2 districts, limiting the availability of much of the population to specialist care.

Major Diseases in Zambia

Disease Name	Indicator	2004
Malaria	Incidence/1000 Cases Death	383 4,328,485 8,289
Non-pneumonia Respiratory infection	Incidence/1000 Cases Death	153 1,726,597 1,436
Diarrhea	Incidence/1000 Cases Death	75 843,423 2,725
Pneumonia	Incidence/1000 Cases Death	44 494,040 4,186
Eye Infections	Incidence/1000 Cases Death	40 448,280 5

Even when patients can come to a health center, these are often understaffed. Using WHO recommendations of doctor and nurse:citizen ratios of 1:5,000 and 1:700, Zambia only has ¼ of the recommended number of doctors, and1/3 the recommended nurses. These personnel are not evenly distributed with Lusaka province having 1 doctor per 6,000 citizens and the ratio 1:65,000 in the Northern province. There are unattractive working conditions throughout the country, and staff do not want to work in rural provinces in particular. Overall it is difficult for Zambia to compete for well-trained medical personnel in the regional/international market given its current conditions.

Potential solutions to strengthen the Zambian health system should start with better coordination between the public and private health sectors. An additional $35/capita is spent on health through the private sector, but there is minimal coordination between the two sectors. By partnering with the private sector, the country may be able to establish more rural health posts and improve care in the rural areas. It is also important to continue the current system where doctors are required to serve in rural locations for 1 year after completing medical school. This should be expanded to 2 or even 3 years and should be established with nurses as well. These ideas will improve rural healthcare, and further steps should be taken to improve the nation's economy and social support system.

Reference: National Health Strategic Plan 2006-2010. Lusaka, Zambia: Republic of Zambia Ministry of Health, 2005.

Michele Van Hal, MS4

India is diverse country that has made large strides in the last approximately 60 years since independence from colonial rule. It is, however, a large country with vast territory and diverse population and as such has a wide variance in its health statistics with generally the wealthiest states having near developed country achievements in health measures while poor states languish with poor health status and resources that often rival Sub-Saharan Africa in terms of health outcomes.

India has a population of 1.2 billion with approximately one third of its population residing in an urban setting. The total fertility rate per woman is 2.6. Life expectancy at birth for both sexes is 65, although this varies widely by state, dipping as low as 48 and rising as high as 71 in the wealthiest state. The maternal mortality ratio is 200. The under five mortality rate is 61 per 1000 live births. Infant mortality is 50 per 1000 live births. There are 6.5 physicians per 10,000 inhabitants and nine hospital beds per 1000 citizens. Per capita expenditure on health has almost doubled in last 5 years from approximately $30 dollars to near $60. However, the individual still contributes 72% toward total health expenditure. The estimates of public contribution are low with only 1.3—3.4% of GDP spent on healthcare. Access to clean water is one of India's best achievements as over 90% of its inhabitants have access to clean water. Sanitation lags behind however as only 50% of population has toilet facilities with as high as two-thirds of the population in rural communities without sanitation. The literacy rate is 74%, including a nearly 50% female literary rate increase in last 10 years. However, this is not distributed equally across all demographics as still more then 60% of women who reside in rural settings remain illiterate. Less than half of Indian women deliver their babies in institutional settings. Only 50% households use contraception. Less than 50% children are fully immunized.

Thus, significant issues that negatively impact health still need to be overcome. Malnutrition remains a significant social problem in India as the country continues to have the highest number of malnourished children in the world. Approximately half of children under three are malnourished with higher percentage of rural children with significant nutritional deficiencies (see Figure 1). In fact, malnutrition is thought to be the etiology of half of all childhood deaths and has far reaching effects seen even later in life through decreased physical and mental capabilities. Furthermore, even though rates of obesity are rising in the country with the adoption of different dietary habits—sometimes approaching 40% in affluent urban areas— nearly one third of Indian adults still have a BMI under 18.5. Micronutrient deficiencies also remain a significant issue as iron-deficiency anemia is still a significant problem among women of reproductive age, children and lower social classes with prevalence rates that continue to hover around 70-80%. India continues to have high prevalence of low birth weight babies at almost 25% of live births.

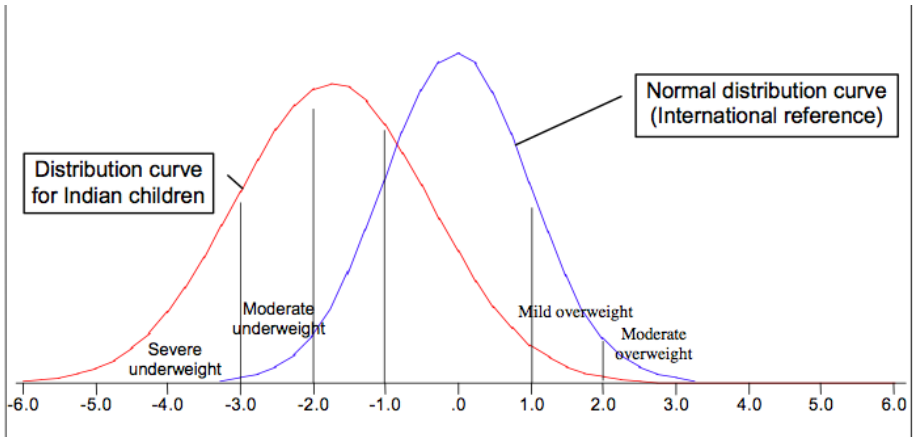


Figure 1

India has many opportunities for ameliorating its health system. Chief among these seem to be nutritional improvement especially for children both in macro and micronutrients. Iron-deficiency anemia also continues to be a significant public health problem among children and women of reproductive age. In addition, the discrepancies in education, especially for women and lower classes continue to have longstanding effects on the country's health. Wonderful efforts have been made in achieving clean water; similar efforts await in improving and providing sanitation.

Useful reference:

Indian Human Development Report 2011, Institute of Applied Manpower Research, Planning Commission, Government of India. Oxford University Press: New Delhi, India, 2011.

Health System Assessment: The Philippines Emily Insetta, MS4

The population of the Philippines includes over 97 million people living across 7,000 islands. The gross national income per capita is $4,140 and total expenditure on health per capita is $169, which represents 4.1% of the Gross Domestic Product. Life expectancy is 66 years for males and 73 years for females. The *2011-2016 WHO Country Cooperation Strategy for the Philippines* evaluated the country's health system performance from 2008-2011. Millenium Development Goals (MDGs) 4, 5, and 6 were indicated as the primary health system challenges in the Philippines.

Although under-five mortality (MDG4) has decreased since 2008, the Philippines will be unlikely to attain the goal of two-thirds reduction by 2015. Neonatal mortality accounts for over half of these deaths, and there has been no improvement in neonatal outcomes in the last fifteen years. Maternal health (MDG5) is another major concern. Maternal peripartum deaths have leveled off at 162 per 100,000 live births, far from the MDG target of 52 per 100,000. Among the primary causes of maternal death are complications from unsafe abortions. Despite abortion being illegal, of the 3.1 million pregnancies in 2000, over 473,000 women terminated their pregnancy unsafely, and two-thirds of these terminations did not involve a healthcare professional. Finally, controlling infectious diseases (MDG6) is an important public health problem in the Philippines. Although malaria prevalence has decreased by 50% and TB incidence is on track to be reduced by the same amount, there have been striking changes in the HIV profile. The Philippines is one of seven countries worldwide in which new cases of HIV increased by over 25% from 2001 to 2009. While sexual transmission accounts for 90% of cases, HIV prevalence among injection drug users increased from 0.4% in 2007 to 53% in 2010.

A major challenge in reducing neonatal and maternal deaths is poor healthcare quality. Almost half of neonatal deaths are due to preventable causes such as birth asphyxia, prematurity complications, and sepsis. A 2011 nationwide study of 51 large hospitals revealed that newborn care in the Philippines was below WHO standards. Similarly, this study showed that obstetrics practices were not aligned with best-practice guidelines. In 2008, 36% of deliveries were assisted by a traditional birth attendant rather than an obstetrician. The top three barriers to accessing obstetric services are lacking money, taking public transportation, and not wanting to visit a health center alone. Drug supply also interferes with care; one-third of hospitals are lacking in essential medicines such as oxytocin. Finally, it is challenging to address deaths from unsafe abortions due to sociopolitical conflict and the country's strong Catholic culture. Abortion is illegal in all cases and Filipino women have difficulty accessing contraceptives.

The largest challenge to combatting the rise in HIV/AIDS in the Philippines is lack of awareness and education for patients and providers. TB and malaria have been successfully targeted thanks to initiatives promoted and enforced by the Department of Health. Barriers to initiating a new government initiative for HIV/AIDS include limited resources related to a worsening poverty level since 2008, decentralization of healthcare, and poor distribution of healthcare workers. Although there is a large number of healthcare workers in the Philippines, many providers are concentrated in cities. Also there is large scale emigration of healthcare workers, making the Philippines one of the largest suppliers of nurses in the world.

The Philippines government is developing opportunities to strengthen the health system in addressing the issues of infant mortality, maternal health, and HIV/AIDS. In 2008 the Department of Health adopted the Maternal, Neonatal, and Child Health and Nutrition Strategy, which aims to reduce maternal and neonatal mortality by training local government units to deliver Basic Emergency Obstetric and Newborn Care Services. The government has not yet targeted the large emigration of health workers, but incentives for practicing in the country could be one strategy. Improving healthcare quality also requires increasing drug supply, as supported by the 2008 Cheaper Medicine Act. In addition, after fourteen years in Congress, the Reproductive Health Bill was passed in December 2012 to provide Filipinos with better access to family planning services, although abortion remains illegal. Education must address religious and cultural views to ensure the bill will be accepted and implemented at the local level.

The Philippines Integrated Disease Surveillance and Response framework was initiated in 2008; the only program for HIV/AIDS in this group is the Integrated HIV/AIDS Behavioral Serologic Surveillance System which includes a registry of HIV/AIDS patients. As the country's HIV/AIDS explosion has received international attention, increasing awareness may promote the development of programs not only for surveillance but also for prevention and treatment strategies. As I experienced while conducting public health research in the Philippines, Department of Health programs are effectively implemented when there is adequate awareness and education along with drug supply and workforce. Overall, the Philippines government is aware of the country's shortcomings in achieving MDGs and is striving to address health concerns despite financial, geographic, and cultural barriers.

Visual

ANNEX C: STATUS OF MDGS

Table C. MDG Progress at the National Level

MDG goals, targets and indicators	Baseline data	Latest/ current data	Target by 2015	Official, UNSIAP method	adjusted, UNSIAP method		adjusted, ESCAP/ADB/ UNDP method	
				probability	pace	probability	estimated year	on/off-track
Goal 1: Eradicate extreme poverty and hunger								
Population below poverty threshold	45.3 (1991)	32.9 (2006)	22.7	MEDIUM	—	—	2023	■
Using CBN/FLOL	36.7 (1991)	26.9 (2006)	18.35	—	0.854	MEDIUM	2024	■
Population below food threshold	24.3 (1991)	14.6 (2006)	12.2	HIGH	—	—	2011	▲
Using CBN/FLOL	19.43 (1991)	12.73 (2006)	9.71	—	1.103	HIGH	2016	■
Prevalence of underweight children under-five years of age	34.5 (1990)	26.2 (2008)	17.3	MEDIUM	0.670	MEDIUM	2035	■
Proportion of households with per capita intake below 100% dietary energy requirement	69.4 (1993)	56.9 (2003)	34.7	MEDIUM	0.793	MEDIUM	2028	■
Goal 2: Achieve universal primary education (1991/92 – 2008/09)								
Elementary education net enrolment rate	85.1	85.1	100	LOW	0.000	LOW	—	▼
Elementary education cohort survival rate	68.7	75.4	100	MEDIUM	0.663	MEDIUM	2070	■
Elementary education completion rate	66.5	73.3	100	MEDIUM	0.569	MEDIUM	2075	■
Goal 3: Promote gender equality								
Ratio of girls to boys in elementary education participation rate	98 (1996)	101 (2006)	100	HIGH	139.650	HIGH	2002	●
Ratio of girls to boys in secondary education participation rate	116 (1996)	116 (2006)	100	HIGH	0.000	LOW		▼
Ratio of girls to boys in elementary education cohort survival rate	115 (1996)	111 (2008-09)	100	HIGH	0.422	LOW	2041	■
Ratio of girls to boys in secondary education cohort survival rate	113 (1996)	111 (2008-09)	100	HIGH	0.244	LOW	2076	■
Ratio of girls to boys in elementary education completion rate	116 (1996)	113 (2008-09)	100	HIGH	0.297	LOW	2062	■
Ratio of girls to boys in secondary education completion rate	115 (1996)	113 (2008-09)	100	HIGH	0.211	LOW	2090	■
Goal 4: Reduce child mortality								
Infant mortality rate	57 (1990)	25 (2008)	19	HIGH	1.170	HIGH	2014	▲
Under-five mortality rate	80 (1990)	34 (2008)	26.7	HIGH	1.199	HIGH	2013	▲
Note: Neonatal mortality rate	17.7 (1993)	16 (2008)	5.81		0.210	LOW	2158	■

Goal 5: Improve maternal health								
Maternal mortality ratio	209 (1990)	162 (2006)	52.3	LOW	0.469	LOW	2064	■
Contraceptive prevalence rate	40 (1993)	51 (2008)	80	LOW	0.269	LOW	2048	■
Goal 6: Combat HIV/ AIDS, malaria and other diseases								
Number of new HIV/ AIDS reported cases	66 (1990)	835 (2009)	0	LOW		LOW		
Number of population aged 15-24 with HIV	311 (~1995)	218 (2009)	0	MEDIUM	0.427	LOW	2221	■
Malaria morbidity rate	123 (1990)	20 (2009)	0	HIGH	1.102	HIGH	2040	■
Malaria mortality rate	1.5 (1990)	0 (2009)	0	HIGH	1.316	HIGH	2009	●
Tuberculosis treatment success rate	84 (2000)	89 (2008)	85	HIGH		HIGH	2002	●
Goal 7: Ensure environmental sustainability								
Proportion of population with access to safe water	73.8 (1991)	84.1 (2008)	85.9/ 96	HIGH	3.385	HIGH	2011 / 2028	▲/■
Proportion of population with access to sanitary toilet facilities	71.8 (1991)	89 (2008)	86.9 / 91	HIGH	4.094	HIGH	2006 / 2010	●

Source for columns 1 to 4: Reyes, C, slides 98-100, "Philippine Progress Report on the MDGs 2010", Presentation on 16 July 2010, and Philippines Fourth Progress Report on the MDGs, 3rd draft (NEDA, July 2010). Cited in United Nations Complementary Country Analysis Synthesis, Philippines. September 2010.

MDG Progress Classification:

- ● early achiever : already achieved 2015 target
- ▲ on track: expected to meet 2015 target
- ■ off track-slow: expected to meet target but after 2015
- ▼ Off track- No progress/regressing: stagnating or slipping backwards
- — Cannot be determined because of insufficient information

Source

World Health Organization. *WHO Country Cooperation Strategy for the Philippines 2011-2016*. E.T. Ona and S. Young-soo. Manila, Philippines: WHO Western Pacific Regional Publications, 2011.

Assessing Health System: Nigeria **Ihus Mbata, PGY2**

Nigeria is the most populous country in Africa, with a population estimated at 169 million in 2012, and one of the richest countries in the continent. With a GDP of 262 billion, primarily from revenue generated from crude oil and agriculture, Nigeria is the largest economy in West Africa and the second largest in Sub-Saharan Africa, just behind South Africa. Since 1999, after the end of the military regime, the country experienced robust economic growth with an average yearly GDP increase of 7%. In According to the IMF and World Bank, Nigeria ranked 37th largest economy in the world in 2012 [1, 2]. Unfortunately, there is a high incidence of poverty of 64%, as the country's economic growth has not improved welfare for the vast majority of its citizens. Nigeria reportedly has the potential to meet only 2 out of the Millennium Development Goals (MDGs), namely MDG 2-Achieve Universal Primary Education and MDG 8 –Develop Global Partnerships for Development. In fact, it has made very little progress in most of the health-related MDGs (with the exception of MDG 6- HIV and Malaria) because despite the robust economic, the country has failed to invest significantly in its health care system.

As of 2011, the total expenditure on health was only 5.3% of its GDP, which correlates to ~139 US dollars per capita. As a result, the poor state of Nigeria's health system is evidenced by multiple indicators including low life expectancy (from the time of birth) at 52 among males and 54 among females, high under-five mortality, maternal mortality, low ART coverage, rural and urban disparities in health care staff [3, 4]. Although the prevalence of HIV has decreased from 5.8% in 2001 to roughly 3.7% in 2012 [5], the country still has the second largest population living with HIV/AIDS in sub-Saharan Africa at 3.4 million. It has been reported that with 400,000 persons on receiving ART, adult and pediatric ART coverage are only at 26 and 7 percent, respectively [5]. Under-5 mortality has improved over the past decade but remains high at 124 per 1000 live births in 2009. Maternal mortality has been one of the most challenging problems to improve and was most recently reported at 630 per 1000, 000 live births as of 2011 [3]. The table below demonstrates the trends in some of the health indicators described.

Table 1. Trends in basic health indices

Indicator	2000	2008	2011
Total health expenditure per capita (US Dollars)	10	57	139
Maternal mortality ratio per 100,000 liver birth	980	840	630
Deliveries assisted by SBAs (%)	42	36.3	39
Under-five mortality per 1000 births	183	138	124
HIV prevalence (%)	5.8	4.6	3.7

There are a number of challenges that should be addressed to improve Nigeria's health system performance. One of which is the need for human resource capacity development throughout the health sector and recruitment of health staff to serve in facilities underserved regions. For instance, maternal mortality in Nigeria has been attributed to persistently low rate of skilled attendants at the time of delivery; only 39% of deliveries in 2009 had SBAs present. However, further analysis, suggests that in several of the southern states, as high as 98% of all

deliveries are assisted by SBA while the northern states as low as 5% of all deliveries are assisted SBAs [3, 4]. A similar variation is observed when rural regions are compared to the urban regions. Interestingly, Nigeria has nearly twice the number of physicians, nurses, and midwives per 10,000 persons compared to other countries in West Africa; however, remuneration packages vary between federal and state level as well as between states such that health care workers gravitate to higher-paying, well-equipped facilities in urban resulting in decreased access to quality care in rural regions where disease burden is greatest [4]. Also, the rural regions, have dilapidated infrastructure, lack electricity and clean to water that limit ability to provide basic services [2].

Another hindrance to improvement of the health care system is the tier-structure of the health care system that parallels the government structure resulting inadequate decentralization of health services and weak primary health care system. The country is made of up 36 states each with a governor. The states are divided into local governments, which are further divided into political wards. There are 774 LGAs and 9572 political wards, which is the lowest political unit and the lowest unit of health service delivery. Considering that funds flow from the federal government to the political ward, and each states has autonomy over allocation and utilization of resources, this constrains the influence of the federal government to influence, the state government, LGA, and political ward to invest in primary health care and establish strong referral system between levels of care. As a result the PHC facilities offer very limited package of services. Most health services can only be accessed at secondary and tertiary levels that are concentrated in urban areas, thus limiting access by rural populations. Weak PHC also limits adequate monitoring and surveillance of disease burden.

Another challenge is the poor investment of the federal government in health care such that on average 60% of total health care expenditure is funded through private-out of pocket payments [1]. This hinders the poor, who also tend to be the sickest from seeking health care. However, considering that the country's continued economic growth, there is opportunity for continued investment in the health sector. In 2006, per capita health expenditure was 10 US dollars, but that has increased to 139 US dollars five years later. The federal government can impart on the state and local governments through coordination with international partners to strengthen primary health care system. However, to be successful there will be need for improved transparency and accountability.

An innovative strategy that was initiated by the former Minister of State for Health, Dr. Pate Mohammed, is the Midwives' Service Scheme (MSS) designed to mobilize midwives to selected primary health care facilities in rural communities to facilitate increase in skilled birth attendance and delivery of services. In the last year, the scheme has mobilized 4000 midwives covered 1,000 PHC facilities and 400 general hospitals [7]. This model can be extrapolated to mobilize physicians and mid-level health care workers to rural regions to provide PHC services. Educational campaigns on disease prevent will strengthen the health care system, especially considering that 70% of Nigerians are literate [1]. Another opportunity to strengthen the health care system will be the likelihood of synergy from working with other agencies (including international organizations) to develop a unified agenda for the health sector for each state. In summary, there has been minimal improvement in Nigeria's health system despite reported economic growth, but with increased financial investment, continued collaboration with international organization to strengthen the PHC, accountability, transparency, redistribution of human resources there is potential for considerable progress.

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Assessment of Country's Health System Performance Elena Jiménez Gutiérrez, PGY1

Costa Rica

Through the government's sustained social spending, approximately 20% of GDP annually, Costa Rica has made substantial progress toward achieving its goal of providing universal access to education, healthcare, potable water, sanitation, and electricity.[1] Since the 1970s, expansion of these services has led to a rapid decline in infant mortality, an increase in life expectancy at birth, and a sharp decrease in the birth rate.[1] The average number of children born per women has fallen from about 7 in the 1960s to 3.5 in the early 1980s to 1.8 in 2011.[1,2] At the national level, the infant mortality rate decreased from 68.4 per 1000 live births in 1970 to 18.1 in 1980 to 9.2 in 2010 (Figure 1).[3] The overall life expectancy at birth has increased from 65.8 in 1970 to 79.3 years in 2011, with women's life expectancy being slightly higher than men's, 81.8 versus 76.8 years (Figure 1).[2,3,4] In 2011, the national maternal mortality rate per 100,000 live births was 40.[2]

Regarding morbidity, while certain diseases such as malaria have declined over time, others such as tuberculosis and HIV/AIDS, as well as breast and lung cancer, have increased.[5] Non-communicable disorders, primarily cardiovascular disease and malignancies, are now estimated to account for 80% of all deaths in Costa Rica (Figure 2).[2,4,6] Injuries are estimated to cause 13% of all deaths (Figure 2).[6] At the national level in 2011, the prevalence of HIV and tuberculosis per 100,000 people were 187 and 15, respectively, whereas the incidence of malaria per 100,000 people was 2.8.[2] Although Costa Rica is now classified as a middle income country and it has one of the highest rankings in the Americas on both the Human Development Index, its poverty rate has stalled at around 20% for almost two decades and social inequalities as well as the vulnerability of several societal sectors have increased over the same time period.[1,4,5]

In terms of its epidemiologic situation, Costa Rica demonstrates very favorable health indexes. Nonetheless, several problems that represent significant challenges for the national health system persist. According to the World Health Organization's Strategic Agenda, one of these entails reducing the ongoing inequities in health that primarily affect indigenous populations, immigrants, and the counties with the lowest social development indexes.[4,5] Another challenge comprises strengthening the water and sanitation network to meet the demands of the population.[4,5] Although the country possesses a good track record in providing access to safe water for human consumption and disposal of human wastes, the coverage by sewage systems with wastewater treatments is very low.[4] Global warming also poses a challenge because its consequences will not be distributed uniformly and may predominantly affect vulnerable areas of the country, including those affected by droughts and floods and by diseases such as dengue and malaria.[4] In addition, decreasing corruption and inefficiency within the national public health institutions, such as the Ministry of Health and the public health insurance system, also known as the Costa Rican Social Security Fund, and strengthening these organizations' roles as promoters of health policies and services entail yet other challenges.[4,5] Finally, obtaining financial sustainability of the public health insurance system, which is directly related in the medium- and long-term to widespread tax evasion practices and an outdated tributary system, entails another challenge.[4,5] Of note, various public hospitals have deficient building installations, relatively outdated technologies and prolonged wait times for specialty consultation and surgical care.

In order to maintain and improve achievements in health, Costa Rica must overcome many, if not all, of the challenges described above. In order to attain sustainable financing of the public healthcare system as well as the water and sanitation network, strengthening of the tax collection procedures and a profound tributary reform are needed. Another suggestion for improvement would entail restructuration of the Ministry of Health and the Costa Rican Social Security Fund to promote efficiency and decrease corruption. For example, the healthcare workforce' wages could be structured in a manner to include remunerations based on achieving quality measures and patient outcomes. In addition, if financially attainable, available technologies, such as the internet for teleconferencing and remote consultation as well as electronic medical records, could be utilized to increase productivity and lower long-term costs in education as well as patient care. Another recommendation would include designing and establishing policies and programs that would extend health services and social protection to excluded groups in order to bridge gaps in health.

Figure 1. Life expectancy at birth by sex and child mortality rate by period. Costa Rica, 1950 to 2010.[3]

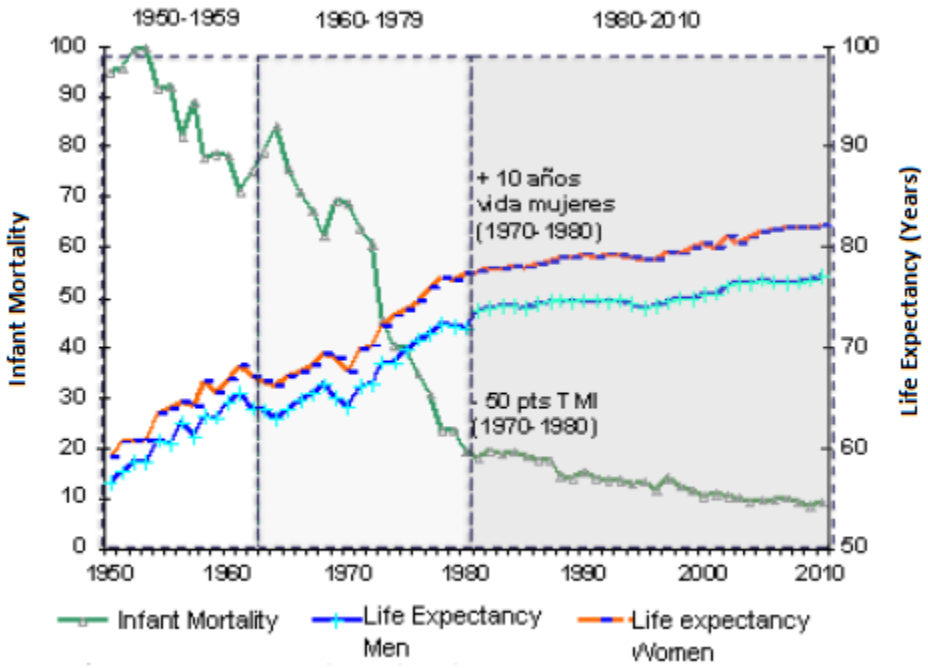
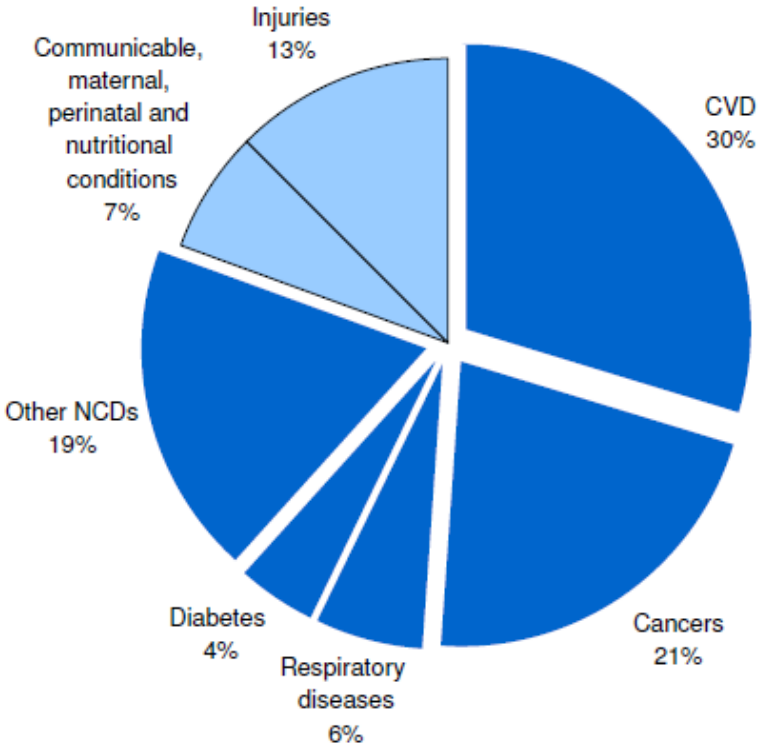


Figure 2. Proportional mortality (percentage of total deaths, all ages). Costa Rica, 2010.[6]



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Reem Hanna, PGY1

Thailand's Health System

Thailand, which has a documented population of 66,785,000, has an established universal health care system that was introduced in 2002. In fact, among the Thai nationals, 99% have universal coverage. As a percentage of total government expenditure, the general government expenditure on health is about 14.5%. Thailand's health indices are also impressive; the live expectancy at birth is 71 years of age for males and 77 years of age for females. Among one year-olds, 98% have received their Hepatitis B immunization, 98% have obtained their measles vaccination, and 99% have received the Diphtheria tetanus toxoid, and pertussis (DTP3) vaccine. In addition, 99% of births were attended by skilled health professionals.

Nevertheless, Thailand faces numerous challenges. Due to its large mobile/border population, emerging drug resistances to communicable diseases are on the rise. In 2011, 24897 cases of Malaria were reported. Thailand is one of the four countries with artemisinin-resistant parasite detected. The emergence of artemisinin-resistant malaria could result in dire consequences due to the lack of alternative antimalarial medication with the same efficacy and tolerability as ACTs. Thailand also has a high prevalence of HIV/AIDS. In fact, with about 520,000 people ages 15-49 living with HIV/AIDS, Thailand has the highest HIV prevalence in South East Asia. The geographical distribution and prevalence of HIV is shown in Figure 1.

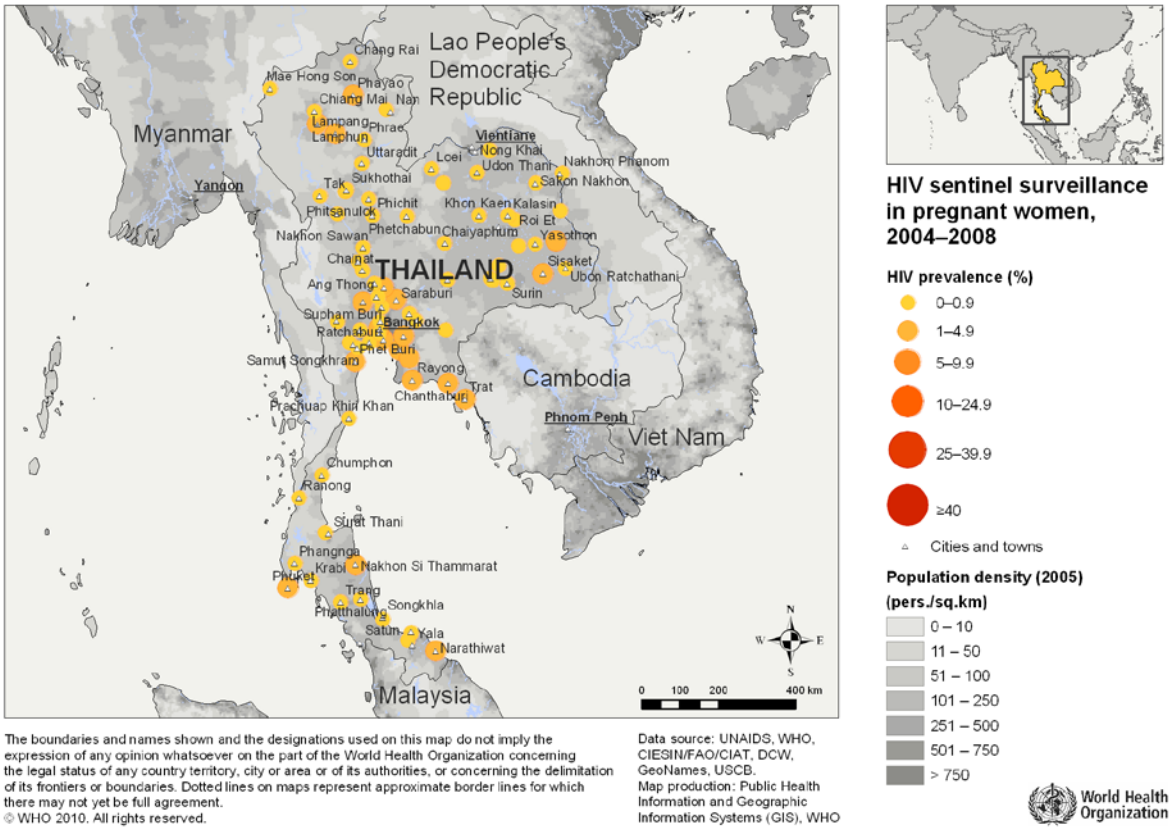


Figure 1. Prevalence and distribution of HIV in Thailand.

Of the eligible patients living with HIV/AIDS, only 64% are on anti-retroviral therapy. Most attribute the low percentage to the lack of access to quality HIV services throughout the country. Other major challenges that Thailand continues to face include road safety. Due to its poor infrastructure, injuries particularly related to road crashes account for about 12% of all deaths in Thailand.

To further strengthen Thailand's health system and to improve health outcomes, vital changes must take place. To address the emerging artemisinin-resistant malaria, the government must actively remove oral artemisinin-based monotherapies for malaria from the markets. The high prevalence of HIV/AIDS in Thailand is also concerning. Increased accessibility of health-care services to all of Thai nationals, especially to the

migrant and mobile populations, is imperative. Establishing health sites at the key areas noted in Figure 1 would ensure access to health care services in HIV prevalent areas. The government should also invest in building better road system and implementing road safety measures to increase accessibility to health care facilities and to decrease the number of road crashes in the country.

Source:
"WHO: Thailand" < http://www.who.int/countries/tha/en/>. WHO 2013. Accessed on September 28, 2013.

Anita Lyons, PGY1

Health System Assessment: El Salvador

Basic health statistics

El Salvador is the most densely populated country in Central America with 6.1 million people living in 8,000 square miles. Its health indicators reflect a country that is trying to modernize itself, moving beyond its devastating civil war that ended in 1992, but which still suffers from marked inequalities and systemic violence. El Salvador is still home to extreme poverty: 37.8% of the population lives below the poverty level and nearly 50% is unemployed or underemployed. Despite this, overall life expectancy is fairly high at 71 years. Literacy is high (84%) and a majority of households have access to electricity (92%) and potable water (83%), though these numbers vary greatly between urban and rural communities. Childhood vaccination rates (~80% for most routine vaccines) show a moderately functional basic health system. Many communicable diseases, including malaria, tuberculosis, and measles have been mostly eradicated, though there is still a significant burden of Chagas (2% seropositivity) and Dengue (33,000 cases/5 yrs). More troubling numbers are the country's high maternal mortality (50-80/100,000) which is more than three times higher than the USA, reflecting the fact that only 85% of births are attended by qualified personnel and only 78% of women receive basic prenatal care. Childhood malnutrition is very common and >20% children have iron-deficiency anemia. In addition, social factors contribute substantially to mortality: violence (homicides), road traffic accidents, and alcohol-related deaths rank 2nd, 6th, and 9th respectively on 2010 WHO list of mortality causes (see attached graphs). In addition, 50% of women report being victims of domestic violence.

Barriers to health

As suggested from the statistics above, one of the greatest barriers to health in El Salvador lies in its social ills. The inequality that sparked the civil war of the 1980's continues to persist: with the wealthiest 20% controlling >50% of the country's wealth. While this upper class lives in major cities and utilizes private hospitals and clinics, the poorer majority rely on underfunded government facilities. Despite the fact that healthcare is free, patients are often told to purchase medicines out-of-pocket when the clinic supply runs out or to pay for private tests like MRI's because the government waitlist is months long. There are only 2.0 doctors for every 1,000 citizens, with a much lower ratio in rural areas. The government itself spends only 6.1% GDP on health despite the fact that it covers healthcare for 75% of the population. About 40% of the population lives in rural areas and is further isolated from healthcare: living hours away from nearest clinic, with no disposable income and little education. Private, for-profit, clinics are minimally regulated and often take advantage of uninformed, simple peasants. Medicines in general have almost no regulation and are sold direct-to-consumer in stores, buses and street-corners. The poor are increasingly affected by environmental issues, including toxic pesticide exposure that has contributed to El Salvador's shockingly high rates of death from renal failure (#1 in world). In addition, though overall access to potable water is acceptable, only 64% of rural households have clean drinking water—contributing to childhood malnutrition and anemia. This lack of basic infrastructure in rural areas continues to be a major challenge to health improvement. Finally, the homicide rate ranks among the highest in the world, reflecting massive unemployment and income inequality, which has caused the government previously to focus on security at the expense of public health initiatives. The mental health and substance abuse problems that go along with systemic violence continue to be largely ignored.

Strengthening the system

Recent changes in El Salvador's government provide significant sources of hope for a more equitable healthcare system. In 2009, the left-wing FMLN party came to power with the election of President Mauricio Funes and launched their plan for social welfare: the "Universal Social Protection System". This included a restructuring of the health system into basic, community units staffed by local health promoters, modeled on the Cuban health system. Health campaigns to date have focused on maternal and child health, specifically, universal prenatal care and delivery in hospitals, increased breastfeeding, universal vaccination, and improved child nutrition through fortified supplements. The government has truly tried to take healthcare to the people and focus on basic needs. While it is too soon to measure the effectiveness of these campaigns, they do appear to be appropriately targeting the worst health indicators as highlighted by the WHO. Opportunities for greater strides exist in the fields of mental health and substance abuse. There are currently few formal services available in the country as a whole and absolutely no resources for rural citizens. Informal groups like Alcoholics Anonymous have had success and demonstrate that lay persons can provide effective mental health support. The government could make a positive impact by hiring and training mental health promoters to complement its health teams in rural areas. El Salvador remains a deeply-divided country with systemic poverty and violence that contribute to poor health; however it is encouraging the government has begun to make measurable strides toward bringing basic healthcare to even its most remote citizens.

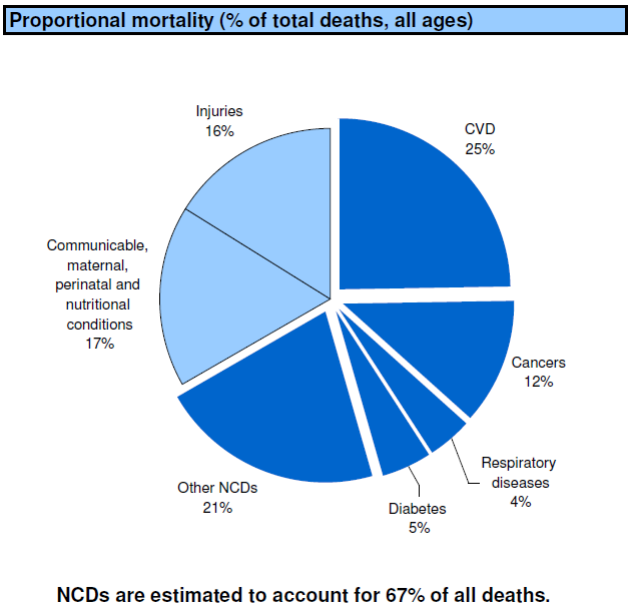
Figures demonstrating causes of mortality

Total deaths by cause: #deaths %total mortality

1	Coronary Heart Disease	**4,934**	14.48
2	Violence	3,366	9.88
3	Kidney Disease	3,177	9.32
4	Influenza & Pneumonia	2,849	8.36
5	Diabetes Mellitus	2,035	5.97
6	Road Traffic Accidents	1,778	5.22
7	Stroke	1,591	4.67
8	HIV/AIDS	1,350	3.96
9	Alcohol	1,258	3.69
10	Hypertension	1,050	3.08

Taken from website: www.worldlifeexpectancy.com, based on WHO data

WHO estimates of mortality causes:



NCDs are estimated to account for 67% of all deaths.

Sources:

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Country Profile: Haiti

Global Health Seminar 2013

Marisa Sochacki, PharmD

1. Summary of health statistics

Haiti has a population of around 10,124,000 and a gross national income per capita of $1,160.[1] Life expectancy at birth is approximately 63 years.[1] Seventy-two percent of years lost are from communicable causes, 22% from noncommunicable causes, and 6% from injuries.[1] The prevalence of TB, HIV, and malaria are 307, 1145, and 1896 per 100,000, repectively.[1] Prevalence of HIV in those aged 15-49 is estimated at 2.2%.[2] Surveys have shown that there is high satisfaction among the population with regards to priority diseases such as TB and HIV.[3] The percentage of the population with raised blood glucose, raised blood pressure, obesity, and tobacco use were 9.6%, 28.1%-33.6%, 8.4%, respectively.[1]

Looking at reproduction and childcare, only 32% of the population use contraception and only 54% utilize antenatal care.[1] Although the majority of women know about family planning, only 31% of married and 35% of non-married women use a modern method of family planning.[2] The fertility rate in is 3.5.[2] Twenty-three percent of births are delivered in a health facility.[2] The under 5 mortality is 70 per 1000, and the infant mortality rate is 59 per 1,000 live births.[1,2] Only 46% of children 12-23 months are fully vaccinated.[2] The percentage of children underweight, stunted, and wasted in is 11.4%, 21.9%, 5.1%, respectively.[2] Forty percent of children under six months are breastfed exclusively, but only 15% of breastfed and 10% of non-breastfed children are fed according to Infant and Young Child Feeding recommendations.[2] The percentage of children 6-59 months with anemia is 65% and for women aged 15-49 is 49%.[2]

2. Summary of challenges and constraints

Haiti has a variety of challenges and constraints impacting health system development. Financial and economic constraints are significant. The country continues to spend little per capita on health.[1] Health expenditure per capita is $76.[4] The GDP per capita is $1,171, and 61.71% of the population lives on less than $1.25 per day.[4] Haiti receives approximately $131 million dollars in financial development assistance for health.[4] The government spends 40% and private expenditure is 60%.[4] External resources are 39% of total expenditure on health, and out of pocket expenditure is 39%.[4] In recent years there has been an increase in foreign assets and imports and a decrease in exports, which thwarts the development of domestic economic activites.[3] Agriculture has been the backbone of Haitian economy, but is decreasing due to subcontracting industry, rural exodus, deforestation, and excessive pressure on farmland. Haiti is only able to meet 50% of the country's demand for grains.[3] Some challenges include small farms, land insecurity, little technology, little cooperation, poor infrastructure coverage, lack of interest by financial sector, decapitalization of farms due to weather.[3]

Natural disasters have also been a significant challenge for Haiti. Hurricanes Fay, Gustave, Hannah, and Ike caused damage estimated at 15% GDP.[3] On January 12, 2010, Haiti was devastated by a massive earthquake which killed more than 300,000 people, destroyed approximately 105,000 homes, and damaged over 208,000 homes.[3] More than 50 hospitals and health centers were collapsed or unstable.[3] The estimated damages and losses were $7.8 billion dollars (120% of GDP 2009).[3] Cholera epidemic struck in the second half of 2010.[3] At least 312 people have died so far in 2013 from cholera, but the number of cholera centers has fallen by 16% since 2012 and remaining centers have fewer support.[5]

Sanitation and environmental issues are significant challenges as well. Around 60% of the population use improved drinking water sources and slightly over 20% use improved sanitation facilities.[1] Only 38% of households have electricity.[2] Thirty four percent of those with access to improved drinking water have to travel 30 minutes or more to access it.[2] Nearly half of the population, 44%, have non-improved toilet facilities.[2] Nineteen percent of households have an insecticide-treated mosquito net.[2] One sources states that the combination of lack of activity, unemployment, and skyrocketing prices have made it impossible to improve living conditions.[3]

The countries current health system contains numerous deficits. The country has a corruption score of 19 (rank of 165/176), and a control of corruption score of -1.26 (7th percentile).[6] Kaiser Family Foundation has no information on number of healthcare providers per 10,000 patients.[4] In 2007 there were 1.7 hospital beds per 1,000 people.[7] In 1998 there were 0.25 physicians per 1,000 people.[7] Only 80% of children under 5 are registered.[2] In Leogane, the epicenter of the earthquake, Medecins Sans Frontieres (MSF) is the only hospital open 24 hours, and it continues to draw even distant patients, indicating lack of availability of services throughout Haiti.[8]

The education status of the population is also a challenge for Haiti. The percentage of women who are literate was 73.6% in 2012 and percentage of respondents with secondary or higher education was 48.9%.[2] The fact that HIV can be transmitted by breastfeeding and the fact that the risk of mother to child transmission can be reduced with medications was known by 46% of women and 44% of men.[2] Half of women and 69% of men have never been tested for HIV.[2] Additionally, gender inequalities exist; 66% of women report making less than their husband.[2] Nearly a third of women, 28%, have experienced physical violence since age 15, and 13% of women have experienced sexual violence.[2] Ten percent of children are orphans, and almost two-thirds, 65%, of children 5-11 participated in child labor the week before they were surveyed.[2]

3. Visual aid[1]

Selected indicators (2011)					
			Country	Regional average	Global average
General	Total population (thousands)		10124	--	--
	Population living in urban areas (%)		53	80	52
	Gross national income per capita (PPP int. $)		1180	25373	11536
	Total fertility rate (per woman)		3.3	2.1	2.4
Mortality and burden of disease	Life expectancy at birth (years)	Both sexes	63	76	70
	Life expectancy at age 60 (years)	Both sexes	16	22	20
	Under-five mortality rate (per 1000 live births)	Both sexes	70	16	51
	Adult mortality rate (probability of dying between 15 and 60 years per 1000 population)	Male	258	160	190
		Female	223	89	129
	Maternal mortality ratio* (per 100 000 live births)		350	63	210
	Prevalence of tuberculosis (per 100 000 population)		307	35	170
	Prevalence of HIV (per 100 000 population)		1145	319	499
	Incidence of malaria* (per 100 000 population)		1896	194	4082

* Data refers to 2010.

4. Useful source

One source that I found surprisingly helpful was the Measure Demographic and Health Surveys website. The Mortality, Morbidity, and Service Utilization Survey provided a lot of useful information on a variety of the indices for measuring health systems. I was not aware that these reports existed. The reports provided summary charts, text descriptions that elaborated on the numbers, and also useful graphs. The report also broke up various measures by region to identify disparities within the country that may have swayed the averages.

5. Opportunities for health system strengthening

The Haitian government has addressed plans for improving health care in its Poverty Reduction Strategy. The amount spent on health in 2009-2010 was 1,840 million goudes, but over 6% of this is spent on operating expenses and less than 1% is spent on investment expenses.[3] This illustrates that reallocating resources with a greater emphasis on investment could be more beneficial in eliminating poverty and improving health systems.[3] The amount spent on health has been increasing since 2006.[3] In 2010, Pillar II, Human Development, which includes health, education, and drinking water received 24% of the funding.[3] Indirect goals related to improving determinants of health includes promoting modern agriculture that creates wealth and protects the environment.[3] Another is to make tourism one of the levers for development.[3]

Foreign governments and organizations are undertaking projects to improve health care in Haiti. The US is supporting the initiative of a program that models the Feed the Future program in the United States with goals of reducing prevalence of underweight children and anemia in women.[9] The Bill and Melinda Gates Foundation has launched WASH for Life (Water, Sanitation & Hygiene for Life) to identify, test, and transition to scale approaches to achieve better, feasible sanitation and hygine practices in developing countries.[9] The US strategy to improve health systems in Haiti includes investment in integrated referral networks to coordinate care.[10] Additionally, it includes management of funds to strengthen links between public, private and nongovernmental organization providers.[10] Investments at the ministry of health level in technical programs, health financing, health workforce, commodities, supply chain management, and health information systems including surveillance.[10] The overall goal is to support Haitian systems to provide health services.[10]

There are significant deficits and room for improvements in all of the building blocks for Haiti's health system.

- Leadership: Increasing commitment of leadership to develop and fund policies that focus on strengthening the countries health care system is critical.[11] Policies must be regulated through mandates and incentives.[11] Haiti receives a significant amount of foreign aid, but mechanisms need to be implemented to channel donor funding.[11] Also, government corruption must decrease.
- Health information systems: Haiti needs to implement a monitoring and evaluation plan that includes a method for data collection.[11] This would start with registering people and issuing birth certificates. According the CDC website, a National Sentinel Surveillance System was recently established to provide information on diseases and prioritize public health problems.[13] In cities with electricity, simple electronic medical records may increase data collection. Additionally, cell phones/text messaging provides an innovative strategy for improving health systems.
- Health financing: Health spending has been identified in the Poverty Reduction Strategies report as an important area for funding, but the country only spends <1% of healthcare money on investment in health care.
- Human resources: There is limited current data on the availability and access to healthcare providers. Policies by the government or nonprofit organizations should be dedicated to training healthcare providers willing to stay and work in Haiti. The government needs to become more reliable at paying healthcare providers decent wages. Improving 'brain drain' both internally and externally is necessary as well. Nongovernmental organizations need to work with the government to improve training and retention of Haitian providers. This would improve employment and access to care. Additional strategies include training technicians and non-physician level health aids to provide needed health care services.
- Medical products and technologies: Haiti has a national formulary.[12] A system to allow reliable access to these medications for all patients should be implemented. Programs educating patients on medications should also be implemented. Improvement and access to preventative measures such as drinking water, sanitation facilities, and mosquito nets would improve disease burden of a variety of significant diseases such as cholera and malaria. For urban areas, community wells or filtering systems could be installed, and all people in the community would have improved access to clean water.
- Service delivery: Improved access and payment strategies should be implemented.

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