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Treating Tuberculosis in Sub-Saharan Africa in an Era of Globalization

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Abstract

This paper looks at the issue of tuberculosis (TB) control in Sub-Saharan Africa in the modern era of globalization. Global TB has been on the rise in recent years and Sub-Saharan Africa carries a majority of the disease burden. TB is a public health emergency in this region of the world and in order to achieve the UN Millennium Goal of halving the prevalence of TB disease and death between 1990 and 2015, the situation in Sub-Saharan Africa must be addressed.[1] In an era of globalization the Millennium Goal is attainable; however, the challenges to improving health in Sub-Saharan Africa are multi-faceted. This paper examines the context of fighting TB in Sub-Saharan Africa by examining: (1) the global and Sub-Saharan African TB epidemic; (2) globalization and health; and (3) the situation on the ground in Sub-Saharan Africa, particularly with regard to state healthcare capacity. To conclude, improved strategies for combating TB in Sub-Saharan Africa are considered.

[1] Broekmans, preface

(1) Global and Sub-Saharan African Tuberculosis Epidemic

Tuberculosis (TB) is a tragic global problem as today one-third of the world's population is infected with the bacterium that causes TB and between 2 and 3 million people die each year from it.[2] Tuberculosis is the second most common infectious cause of adult mortality and is ranked tenth of all causes of loss of health worldwide.[3] Over an infected individual's lifetime, they will typically infect 20 other people. This transmission happens through the air and thus TB knows few physical boundaries.[4] As a result the disease has spread across the world.

Tuberculosis wreaks havoc on the body of an infected individual. The bacterium enters the lungs through the airway and has the potential to spread throughout the body. In approximately 1 in 10 cases, the infection is never completely controlled by the body's immune system. In these cases the TB bacteria destroys the lung tissue, at times impairing the infected individual's breathing. The TB bacteria can also spread to the bones, kidneys, gastrointestinal tract, and lymph nodes. In the bones it causes abscesses and deforms them. If it attacks the gastrointestinal tract it can cause frequent, uncontrollable diarrhoea. In the lymph nodes it eats through the skin and causes draining sores.[5] The infection is absolutely devastating for 10% of those with the disease.

[2] Lee B. Reichman with Janice Hopkins, *Timebomb: the global epidemic of multi-drug-resistant tuberculosis* (New York, McGraw-Hill, 2002), p.12
[3] Stewart T. Cole, Kathleen Davis Eisenach, David N. McMurray and William R. Jacobs, Jr., *Tuberculosis and the tubercle bacillus* (Washington DC, ASM Press, 2005) p.3
[4] Reichman p.12
[5] Reichman, p.13-15

In modern times the global incidence of TB was thought to be decreasing as antibiotics against TB were discovered in 1943 and they seemed to be the solution to the global pandemic.[6] Between the 1940s and the late 1980s antibiotics controlled the global spread of TB. However, in the 1980s and early 1990s two things happened. Firstly, there were outbreaks of a new 'W' TB strain in New York and parts of Europe. This strain was discovered to be a multi-drug-resistant TB that increased the virulence, transmissibility and evolutionary ability of the bacterium.[7] This 'W' strain could not be cured with modern antibiotics. Secondly, in the 1980s, HIV/AIDS was discovered. HIV/AIDS weakens the immune system and thus leaves it open to opportunistic infections. A person infected with HIV is more susceptible to other infections because their body does not have the resources to fight off another disease. In the case of TB, an HIV victim's body cannot control the secondary infection. HIV/AIDS victims frequently die from TB and therefore the rise of the HIV/AIDS epidemic has led to a rise in the TB epidemic.[8] It can therefore be seen that through drug-resistance and the HIV/AIDS epidemic, TB has again became a major concern in the late twentieth century.

[6] Ibid, p.36-37
[7] Linh N. Nguyen, Gwendolyn L. Gilber and Guy B. Marks, "Molecular epidemiology of tuberculosis and recent developments in understanding the epidemiology of tuberculosis," *Respirology*, 9 (2004), p.314
[8] Reichman p.44-45

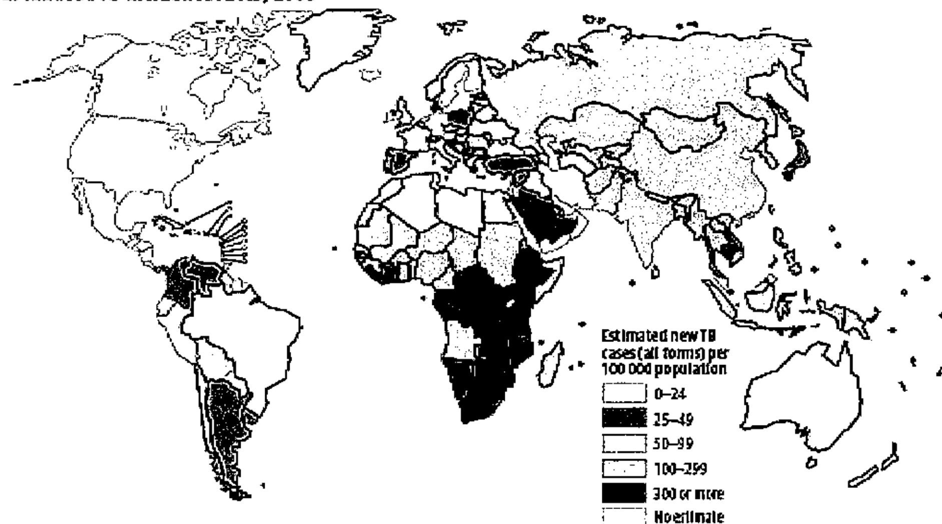

Figure 1: WHO 2005. The incidence of TB per 100,000 population increases dramatically in developing countries. The majority of countries with high TB disease incidence are in Sub-Saharan Africa.[9]

This new global TB epidemic has caused concern around the world, but it is the most alarming in developing countries. Between 90 and 95% of TB cases are in the developing world, and South Asia, South-East Asia, the western Pacific and Africa are hit the hardest by the epidemic.[10] Every year the World Health

[9] WHO Global Control Report 2007 http://www.who.int/tb/publications/global_report/en/index.html
[10] Nguyen, p.314

Organization (WHO) publishes yearly reports on the spread of TB. Figure 1 above indicates the 2005 TB incidence rates and it can be noted from this figure that the developing world has been the hardest hit. In fact over 98% of TB deaths occur in developing countries.[11] To add to this, TB notification rates are very poor in these countries. The WHO predicts that healthcare workers in developing countries are only notified of between 40 and 50% of TB cases and therefore the incidence rates in these countries may be even higher.[12]

The tuberculosis problem is gravest in Sub-Saharan Africa[13] where the incidence of TB is growing at approximately 4% each year and 6% in Eastern and Southern Africa. This is a dramatic difference to the 0.4% per year global increase. Approximately 80% of the global TB load can be found in 22 high burden countries, of which nine are in Sub-Saharan Africa.[14] There are a couple of reasons for the dramatic TB increase in Sub-Saharan Africa. The first is the HIV/AIDS epidemic and the second is the state of healthcare in this region of the world.

The HIV/AIDS epidemic is wreaking havoc on Sub-Saharan Africa and as noted earlier there is a direct correlation between

[11] Cole, p.3
[12] Nguyen, p.313
[13] Chris Dye, *Global TB epidemiology.* World Health Organization (WHO) Global Surveillance and Monitoring Project 2006 Report. http://www.who.int/tb/surveillanceworkshop/documents/Global_TB_epidemiology_Chris_Dye.ppt
[14] Dermot Maher, Antony Harries, and Haireyesus Getahun, "Tuberculosis and HIV interaction in Sub-Saharan Africa: impact on patients and programmes; implications for policies," *Tropical Medicine and International Health*, 10 (2005), p.735

HIV/AIDS and TB. In 2003 Sub-Saharan Africa carried 67% of the world's HIV infected individuals and 77% of all HIV/AIDS deaths occur in this region. Approximately 70% of all individuals infected by both TB and HIV/AIDS are in Sub-Saharan Africa.[15] More than any other region of the world, Sub-Saharan Africa has been hit the hardest by HIV/AIDS and as a result TB.

Also contributing to the spread of TB in Sub-Saharan Africa is poor healthcare systems. To combat TB, healthcare providers must (1) raise awareness through public health and (2) effectively treat individuals with the disease. Public health campaigns require financial and personnel resources that are often not available in impoverished countries. It is estimated that Africa carries 25% of the world's disease burden but only 1.3% of the global health workforce.[16] Simply diagnosing TB is a cost that healthcare systems in many countries cannot afford. To further treat TB is another essential step in stopping the spread of the disease, but it is very demanding on already taxed healthcare services. In order to cure TB, a patient must be under a strict drug regime that is monitored by healthcare professionals for at least 2 months.[17] Both the diagnosis and treatment of TB are difficult in areas such as Sub-Saharan Africa where healthcare services are poor, stretched or nonexistent.

[15] Ibid, p.735

[16] Linda Ogilvie, Judy E. Mill, Barbara Astle, Anne Fanning and Mary Opare, "The exodus of health professionals from sub-Saharan Africa: balancind human rights and societal needs in the twenty-first century," *Nursing Inquiry*, 14 (2007), p.115

[17] Christian Lienhardt and Jessica Ann Ogden, "Tuberculosis control in resource-poor countries: have we reached the limits of the universal paradigm?," *Tropical Medicine and International Health*, 9 (2004), p.834

Although the TB situation in developing countries is dire, there is hope of controlling the pandemic. Like all infectious diseases, the spread of TB can be maintained through effective monitoring and treatment. The WHO has been at the forefront of controlling the epidemic. In 1995 the WHO's Direct Observation Treatment Strategy (DOTS) was implemented and to date 13 million TB patients have been treated. There is also a new global alliance of organizations working together to stop TB that is entitled the Stop TB Partnership. Much positive data on monitoring the disease is emerging from those involved in such initiatives.[18]

The twentieth century was remarkable for global health as antibiotics were developed, numerous vaccines came onto the market, treatment strategies improved and our understanding of illness reached astonishing heights. Smallpox, one of the greatest killers of humankind, was eradicated in 1979 and polio is nearing extinction[19]. From the 1966 *International Covenant on Economic, Social and Cultural Rights,* the right to health is part of international law[20]. Addressing the spread of TB is critical as we continue the upward climb towards better global health.

(2) Globalization and Health

The world is becoming increasingly interconnected and something that happens on one side of the world can have a rapid and direct

[18] Broekmans, p.3

[19] Reichman, p.29

[20] Ogilvie p.115

impact on the other side. Through globalization societies and states are becoming progressively more interdependent and as a result the line between domestic and international affairs in governments and organizations around the world is blurring.[21]

From a microbiological perspective, globalization is alarming as infectious diseases are not limited by geographical barriers. With gains in technology, global travel and migration have increased and this increase in human movement has increased the spread of disease. The recent impact of severe acute respiratory syndrome or SARS is but one example. On top of the morbidity and mortality of SARS, Asian countries as well as Canada suffered economically as a result of the epidemic.[22] SARS was an example of how an infectious disease from Asia can spread to North America in a matter of hours and have a devastating outcome. As former Secretary General of the United Nations, Kofi Annan, states:

> There are no islands in the world today, and there are no domestic and international diseases. We live in a global village. We live in a shrinking world. And there are many contacts between us. No one is isolated, no one can smug and sit in his or her corner and say, 'I'm safe because it is somewhere else.'

Apart from the spread of infectious disease, globalization has other impacts on health. These impacts can be seen as either a negative or positive force. In a negative sense, global liberal norms have

[21]Theodore H. Cohn, *Global Political Economy: Theory and Practice,* 3rd Ed., (Pearson Longman, 2005).
p.411
[22] BBC News 2007 www.bbc.co.uk

decreased the role of the state. With a decrease in the state, social services have been cut and a state's capacity to provide healthcare to its citizens has decreased. In another sense, the era of globalization has seen a rise in citizen protests and this has led to numerous global civil society organizations addressing health issues. Both the negative and positive view of globalization as it relates to health need to be addressed further.

As globalization and technology have advanced the rate of communication, physical barriers no longer limit global interactions and the world market has increased dramatically. Typically wealthy western countries dominate this global market. In dominating the market they have left poorer countries behind and these countries fall more and more into debt. In 2006 it was estimated that the global south debt was over 2 trillion USD. In order to service debts, the International Monetary Fund (IMF) has imposed adjustment policies on debtor governments. These policies require that governments with outstanding debts cut social service spending. These cuts have harmed healthcare services as already limited resources for health are being depleted.[23]

Yet, as briefly mentioned earlier, there are positive aspects to globalization. One of these positives is that global civil society has increased dramatically in recent years. Communication has increased and with it a rise in awareness of global issues. Turning on the television or going online means exposure to global events and as a result the last decade of the twentieth century saw an explosion of

[23] Marsha J. Tyson Darling, "Who really rules the world? ," in Srilatha Batliwala and L. David Brown Bloomfield, ed., *Transnational Civil Society,* (Bloomfield, Kumarian Press, 2006) p.39

civic activism[24]. Individuals everywhere are exposed to the plight of those in harsher circumstances and as a result in the space between the family, the State, and the market[25], thousands of individuals are dedicating their time, resources and sometimes lives to fighting for various causes[26]. Activism, non-government organizations, social groups, religious charities and more are on the rise, targeting issues such as the open market, privatization, health, education, international law, disaster relief and more. Although some of these global civil society issues may be considered contestable, health is not one of them. The right to health is embedded in the Universal Declaration of Human Rights[27]. Global health disparities are at the forefront of many civil society movements and the attention that health is receiving on an international scale can be seen as a positive aspect to globalization.

Another positive aspect to globalization and health is the rise of intergovernmental organizations addressing global health issues. The World Health Organization and World Bank are at the forefront of global health management and they are the largest players in the network of global organizations focused on health. In recent years the World Bank has become the largest external financier of health

[24] Kumi Naidoo, "The rise of civic transnationalism," in Srilatha Batliwala and L. David Brown Bloomfield, ed., *Transnational Civil Society*, (Bloomfield, Kumarian Press, 2006p.51
[25] Ibid, p.52
[26] Fiona Terry, *Condemned to Repeat?* (Ithaca, Cornell University Press, 2002) p.216
[27] Solomon R. Benatar, Abdallah S. Daar and Peter A. Singer., "Global health ethics: the rationale for mutual caring," *International Affairs*, 79 (2003), p.107

activities in low- and middle-income countries. On top of financing health activities, the World Bank also contributes to health research and policy debates[28]. While the World Bank provides financial backing to address global health issues, the WHO provides medical and technical expertise in the global health struggle. Founded in 1948 as an arm of the United Nations, the WHO is responsible for "the attainment by all peoples of the highest level of health"[29]. Since its founding, the WHO has been most active in the area of infectious disease prevention. With the support of various governments, the WHO coordinates global efforts to prevent the spread of diseases such as TB.

In 1993 TB was declared a global health emergency and as a result was put at the forefront of the WHO's agenda[30]. The UN Millennium Project Working Group on TB was subsequently established and acts as a liaison between various groups working to stop TB. Together the WHO and UN Millennium Project Working Group join with civil society and government organizations in order meet global TB prevention and treatment goals. These organizations range from local grassroots groups to highly organized international NGOs such as Médecins Sans Frontières. Together these organizations and governments play a significant role in global health. Often when a government cannot provide primary care to its citizens, other groups such as the civil society groups mentioned above, care for the population in need. In many situations they replace the state as the major healthcare provider[31]. Therefore both

[28] Ibid p.399
[29] Ibid p.398
[30] Broekmans p.1
[31] Ibid p.400

intergovernmental and civil society groups play a role in global health and their recent rise has the potential to be seen as a positive outcome of globalization.

Thus, civil society and intergovernmental groups have risen up and are addressing global health issues. In fighting world health inequalities, providing the 'aid' described above to developing world healthcare systems is currently seen as an operational way to deal with poor healthcare services. Humanitarian assistance or 'aid' is considered necessary when governments are unwilling or unable to provide needed care for their civilians[32]. The concept of 'aid' however is highly contested as it is often seen as a distortion from a country's local development. Therefore in addressing urgent humanitarian needs, 'aid' does not require that a government deal with internal problems and care for its civilians. This makes the sustainability of aid questionable and in a global context feelings toward 'aid' are often hostile. Although humanitarian assistance provides life-saving interventions for the innocent civilians caught in tragic circumstances, it can also be viewed as negative aspect of global civil society as it is considered short-sited and a deterrent from building up the state. Thus considering the rise of global civil society as a positive aspect of globalization is contestable.

In an era of globalization, addressing health issues such as TB is urgent but the global context does not make this task an easy one. Infectious diseases spread more rapidly with increased human mobilization and the diminishing healthcare systems in impoverished countries only add to control problems. Global civil society and

[32] Terry p.17

intergovernmental groups are addressing many of these issues but these movements can also be considered contestable. Although globalization is changing the face of global health, a further analysis of the situation on the ground in Sub-Saharan Africa is required to better understand how to threat a disease such as TB in this region of the world.

(3) Sub-Saharan African Context

The ability of the Sub-Saharan African state health sector to adequately address problems of public health, such as TB, is generally very limited. In the dialogue of development this problem is commonly referred to as 'capacity'. Underlying diminishing state capacity is a host of issues to contend with and these issues often stem from historical roots. Therefore, an analysis of the state capacity of Sub-Saharan African countries involves an understanding of (1) the history if this region of the world, (2) current state situations, particularly regarding the culture of administration in Sub-Saharan African governments, (3) civilian views of the state, and (4) international intervention.

As a region Sub-Saharan Africa has been pillaged and the institution of slavery, the colonial era, and the Cold War have all contributed to the current situation. Until approximately the 17th century, Sub-Saharan Africa is documented to have been in line with Europe as trade flourished and technology was developing at the

same rate[33]. However, from 1441 to 1870 it is estimated that between 12 and 15 million Africans were taken by the Atlantic slave trade. Using African labour was highly profitable for Europe and the Americas; however it devastated Sub-Saharan Africa as the long-lasting political and psychological effects continued into the colonial era. As the slave trade ended the Europeans colonized Sub-Saharan Africa. In 1886, at a conference in Berlin, Sub-Saharan Africa was divided between Portugal, England, France, Italy, Belgium and Spain. With colonialism, the Sub-Saharan African land and people were divided as the Europeans selected tribes and individuals to serve as elites. New racial lines such as the Rwandan Tutsi and Hutu tribes are but one example of a racism imposed by colonial powers. In the 1960s the majority of African countries became independent of their colonial power, however, just as the African slave trade proceeded into colonial rule, so colonialism proceeded into the Cold War. When the Sub-Saharan African states became independent, the United States and the Soviet Union moved in with imperial power and a new type of control over Africa emerged. Through neo-colonialism Sub-Saharan African economies were controlled by foreign states.

With all this external influence, the capacity of the Sub-Saharan African state was depleted and subsequently the culture of administration has suffered from corruption. Commonly leaders grab hold of power in Sub-Saharan Africa and formulate single-party governments and military regimes. Political survival is a way to

[33] Severine M. Rugumamu, *Globalization demystified : Africa's possible development futures*, (Dar es Salaam, Dar es Salaam University Press Ltd., 2005), p.27

wealth and power in a region of the world where there is virtually no middle-class. As a result of the lack of accountability in single-party governments and military regimes, leaders often abuse power and plunder the state by taking resources that rightfully belong to civilians[34]. This corruption begins at the highest point in the political chain and extends to the lowest and has a huge impact on daily government operations[35]. Even state employees are documented to be involved in corruption. It is common for state employees to have very low salaries in Sub-Saharan African countries and with low salaries employees are unable to satisfy their basic needs. They face limited options and can (1) engage in corruption and embezzle from the state, (2) take up a second job or (3) leave employment[36]. Each of these options further debilitates the state and social services such as healthcare suffer as a result.

Therefore, the institution of slavery, the colonial era, the Cold War legacies, and ongoing state corruption have all led to a general mistrust among Sub-Saharan African citizens of their home state[37]. A state's changes in government and corruption lead to uneven state service provision and states cannot provide for their citizens. Basic needs are not met and as a result two things occur. Firstly, civil activism increases. Individuals and groups become frustrated with the system and where there is opportunity, civilians protest. Secondly, civilians begin to look outside of the public sector

[34] Ibid, p.30
[35] Peter Schwab, *Africa: A Continent Self-Destructs*, (New York, Palgrave, 2001), p.30
[36] G Blundo and J-P Olivier de Sardan with NB Arifari and MT Alou, *Everyday Corruption and the State*, (South Africa, David Philip), p.63
[37] Basil Davidson, *Modern Africa: A Social and Political History*, 3rd Ed., (London and New York: Longman, 1994)

to service basic needs and this can have a couple of results. One result is that individuals turn to private sources for healthcare provision and pay a cost for these services. In many instances payment is difficult and loans are taken to pay for life-saving procedures. Indebtedness of impoverished individuals can be a result of seeking private medical services. In another situation, the individual can turn to civil society groups. These groups will provide the service on the ground or financially subsidize other services. In either situation, citizens turn away from the state as a result of a general mistrust and the state's role is further depleted.

As discussed earlier, in regards to globalization and health, there is much debate about the merits international intervention in the form of 'aid'. When groups provide primary social services to populations they decrease the role of the home state. It is hard for individual groups to provide uniform service provision and often they can only target particular populations instead of an entire region. The sustainability of these groups is therefore questionable and thus 'aid' and international intervention may not be the solution for targeting long-term problems, such as tuberculosis. However to build up strong healthcare systems often requires international 'aid'. In any case, it is uniform health provision, with or without 'aid', that is ultimately able to deal with health issues such as tuberculosis.

Disease prevention is the best in Sub-Saharan African countries where healthcare provision is the strongest and Uganda is one example. East Africa is one of the worst hit TB regions of the world, yet Uganda is doing surprisingly well in comparison. Historically in Uganda, the government charged health system users and fees from patrons went to support the poorly funded and ill functioning health system. However, things began to change in the

1990s as the government exempted poor and vulnerable groups from health service user fees. This was the first step in a positive direction towards making healthcare accessible to everyone. In the mid to late 1990s studies showed that this was not as effective as initially thought and that the poorest sections of the population were still marginalized from healthcare. The government then supported community-based health insurance scheme but this also did not help the poor as those in the lowest economic section of the population could not afford to buy into them. Finally in 2001, in addressing an election issue and popular concern, President Museveni dropped user fees for government health services. As a result the poorest population groups in Uganda are now using government health services more than any other group[38]. Access to life saving health services is decreasing the impact of infectious disease. Compared to its neighbouring countries, Uganda's HIV/AIDS is well controlled and its TB incidence rate is substantially lower than surrounding countries. In 2004 Uganda's TB incidence rate was 2.2%[39] compared to the 4% Sub-Saharan African average. The provision of uniform government healthcare services has made a remarkable difference in Uganda.

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[38] Jenny Yates, Ros Cooper and Jeremy Holland, "Social Protection and Health: Experiences in Uganda," *Development Policy Review*, 24 (2006), p.339-356

[39] WHO Global Tuberculosis Control Country Profile – Uganda 2004 http://www.who.int/tb/publications/global_report/2006/pdf/uga.pdf

(4) Conclusions

The challenges to treating tuberculosis in Sub-Saharan Africa in an era of globalization are multi-faceted as many factors contribute to the spread and control of the disease. Once thought to be under control, TB is again on the rise, compounded by the emergence of multi-drug resistant TB strains as well as the HIV/AIDS epidemic. In order to consider controlling TB in Sub-Saharan Africa, many factors need to be considered and addressed.

With globalization has come an increased fear of the spread of infectious diseases and rightly so; the world is increasingly interconnected and infectious diseases know no physical boundaries. Many governmental, intergovernmental and civil society groups have set out to control infectious diseases. Due to the ongoing lack of public health care capacity in the sub-Saharan African context, some international organizations such as the World Health Organization and the World Bank are at the forefront of political efforts to correct the problem. Their broader approach to the problem can be seen in such efforts as the United Nation's Millennium Development Goals of 2000, where disease has been pushed to the forefront of global development agendas. One of the Millennium Development goals is to halve the prevalence of HIV, malaria and other infectious disease by 2015. In response, the Stop TB Partnership was established and many individuals infected with the disease have been impacted by these programs. Often in partnership with donor state funding and activities, a great many local and international NGOs have joined in the fight. Local efforts are often handicapped by the many administrative hurdles that are put in place by donor states, international NGOs and their own state governments. There remains

a large disconnect between local resources, knowledge, efforts and international actors of all kinds (donor states, international NGOs and international development organizations). One cannot simply conclude that structures are in place to handle the problem of TB in sub-Saharan Africa; globalization has aided in the overall awareness of the problem, and there are new international efforts in place, but there is still a long way to go. Globalization may lead to increased awareness but it does not necessarily translate into effective policy.

In fact, globalization has not had an entirely positive impact on global health. With an increase in liberal economic policies, developing countries' state sectors have often been adversely impacted. Further, since the 1980s many southern countries have been burdened with chronic levels of debt and in order to relieve debt burden, the International Monetary Fund and World Bank have imposed structural adjustment polices. These structural adjustments often force countries to cut social services and as a result developing health systems, particularly in Sub-Saharan African countries, have been cut. These cuts to health systems only contribute to the spread of disease as disease threats are not adequately addressed.

The situation in Sub-Saharan Africa is also impacted by the history of the region. While not the focus of this article, many colonized African states have a history of centralized governance. Efforts to decentralize, which started with some donor-backed vigour in the 1990s, have been wrought with difficulties, including a chronic lack of resources and capacity at the local government level. Clearly, an all out policy of decentralization cannot be considered appropriate policy; careful attention to local strengths and weaknesses will always be necessary. Further, current political circumstances in much of sub-Saharan Africa do not currently lead to

much faith or support of central government leaders. In fact, this has been the case throughout much of sub-Saharan African history: local citizens did all in their power to avoid their political leaders. For centuries, local citizens have been placed in a disadvantaged position vis-à-vis their states: consider, for example, the hundreds of years of slavery, the colonial era, the Cold War context and single-party governments. Further, in all too many Sub-Saharan African countries today, corruption extends from top leadership to lowest government employees. This corrupt culture of administration cripples governments and takes public resources away from civilians. This is yet another ongoing reason that the public no longer trusts in the state to provide for basic public sector needs. Instead many are obliged to turn to humanitarian intervention or 'aid'. But even this 'aid' is contested and can often only provide short-term solutions. Local public health care providers are always aware of this and have understandable difficulties with longer-term planning. With all the variables involved in addressing public health in Sub-Saharan Africa, solutions to existing problems, such as tuberculosis, are not easy.

In this regard, the case of Uganda stands out as a sub-Saharan country that has progressed in recent years and is now better able to provide health services to a majority of its population. It is often said that improvement in Uganda's public health sector is a direct result of stable leadership under President Museveni. Indeed, Museveni identified public health as a major public concern and reformed the state health system in 2001. Working in tandem with public health care providers at all levels, local and international NGOs, donor states, and international organizations, these state-wide reforms have led to improvements in basic health and a decrease in the incidence of diseases such as HIV/AIDS and TB. Might Uganda

provide a longer-term model for public health care reform? Only time will tell. While many have been anxious to hail the success of Uganda, there have been recent concerns regarding political instability and conflict in the region.[40]

What is certain is that tuberculosis and other health issues need to be addressed throughout the Sub-Saharan African region, as do their underlying causes. For now the continued assistance of global civil society and improvements in state accountability seem to provide the best hope for the future of disease control in this region.

[40] At the time of writing, Northern Uganda is still in turmoil as a result of the 19 year war against the Lord's Resistance Army. This region is an exception to the positive growth witnessed by the rest of the country.