

**Southern Regional Model United Nations XXI**  
***The Global Paradigm: Enhancing Peace through Security Initiatives***  
November 18-20, 2010  
Atlanta, GA  
Email: [who@srmun.org](mailto:who@srmun.org)



Honorable Delegates,

Welcome to the Southern Regional Model United Nations (SRMUN) XXI, and the World Health Organization (WHO). I am honored to have been chosen to serve as your director for this conference. This will be my third year on staff at SRMUN, and will be Brian's first, and we are both very excited to be exploring these topics with you. For me the greatest joy in the model programs comes from engaging deeply and honestly in the conversations these subjects bring up. I expect all of us to approach this as a learning experience, and please note that I say "all of us." Learning is always a two way street. One of the most exciting parts of SRMUN is that your research and experience will give you a unique understanding of the issues we will be discussing so you will be bringing fresh perspectives into the debate.

The WHO was formed very early in the history of the United Nations because of the central importance of health as a marker of the development and progress of mankind. But development and progress may also have brought forward a change in the approaches of humanity toward medical science. While the WHO was formed to promote a proactive vision of world health, the developed world appears to have moved to a model in which we expect medical science to deliver solutions to our medical problems rather than to provide guidance on prevention. The friction between a solution-based approach versus a prevention-based approach is present in each of the topics we will be discussing:

- I. Addressing Chronic Cardiovascular and Lifestyle-Related Diseases
- II. Addressing Food Safety
- III. Accelerating Progress Against Neglected Tropical Diseases

Preparations for conference should focus first on a thorough reading of the background information that Brian and I have put together for you, a full review of the work which the United Nations and the WHO have already undertaken to address these issues, followed by consideration of the concerns and actions specific to the Member State you are representing.

Delegates should submit one position paper that covers each of the three topics. This position paper should be no longer than two single-spaced pages, and should present an argument meant to convince or persuade the committee to a course of action in keeping with the point of view of your respective Member State. Position papers should provide critical insight into the policy and position of each country and outline the steps that your delegation would take to address the issues at hand. A strong and well-developed position paper provides an excellent demonstration of conference preparation, and it is important that your position paper present a clear and concise statement that takes into consideration the multi-faceted nature of these issues. There is much more information on writing position papers can be found at the SRMUN website ([www.srmun.org](http://www.srmun.org)). Position papers must be submitted on-line via the SRMUN website and will be due by 11:59PM EST on October 22, 2010.

I look forward to working with all of you at conference this year and wish you the best of luck in your preparations. Please feel free to contact myself, Brian, or Reggie if you have any questions.

Jonathan Edman  
Director  
[who@srmun.org](mailto:who@srmun.org)

Brian Ruscher  
Assistant Director  
[who@srmun.org](mailto:who@srmun.org)

Reggie Thomas  
Deputy Director-General  
[dgsrmun@gmail.com](mailto:dgsrmun@gmail.com)

## History of the World Health Organization

The importance of a global health organization was recognized at the inception of the United Nations (UN) in 1945.<sup>1</sup> The World Health Organization (WHO) was laid out by the International Health Conference in 1946; however it was General Assembly (GA) Resolution 61 on 14 December 1946 that paved the way for the WHO to become a specialized agency of the UN.<sup>2</sup> As a specialized agency the WHO has special rights in the General Assembly as described in the Convention on Privileges and Immunities of Specialized Agencies.<sup>3</sup> The WHO was not formalized until 1948 when the organization's constitution was adopted by the International Health Conference.<sup>4</sup> The WHO, composed of 193 members, has an extensive mandate stemming from its foundational beliefs that health is a state of holistic well-being, not merely the absence of disease, and that "the health of all peoples is fundamental to the attainment of peace and security."<sup>5</sup> To address their mandate the organization has defined a six point plan for dealing with health issues through promoting development; fostering health security; strengthening health systems; harnessing research, information and evidence to set priorities and define strategies; enhancing partnerships with other UN agencies as well as other international organizations; and improving performance, efficiency, and effectiveness.<sup>6</sup>

The World Health Assembly (WHA) is the governing body of the WHO and is composed of delegations from 193 Member States of the United Nations.<sup>7</sup> Membership in WHO is open to any UN Member State that accepts the WHO Constitution.<sup>8</sup> The WHA, which meets each May in Geneva, determines policies of the organization, determines the budget of the organization and, when necessary, elect the Director General who supervises the budget and approves proposed budget programs.<sup>9</sup> The Governing Council of the WHO is elected by the WHA and its primary function is to "give effect to the decisions and policies of the Health Assembly, to advise it and generally to facilitate its work," as well as determining the agenda for the WHA. The Governing Council is a 34 seat body elected by the WHA. The Director General is nominated by the Governing Council and then appointed by the WHA.

The WHO, like most other UN bodies, drafts decisions in the form of resolutions and votes on them depending on their content. Important questions of the Assembly must be passed by two thirds majority of the members present. Some examples of decisions which would be considered important questions are, "adoption of conventions or agreements; the approval of agreements bringing the Organization into relation with the United Nations and with intergovernmental organizations and agencies in accordance with Articles 69, 70 and 72 of the Constitution."<sup>10</sup> Associate members of the WHA and UN members may participate in discussions of the WHA, however they cannot participate in substantial voting.<sup>11</sup>

The WHO deals extensively with the UN regarding health issues, and has been integral in building health infrastructure and fighting disease. Composed of over 8,000 public health experts, including doctors and administrators, Six Regional Offices, and 147 Country offices, the organization has an extensive infrastructure suiting the breadth of its work.<sup>12</sup> WHA resolution A62/40 states collaboration with the UN

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<sup>1</sup> "History of WHO." World Health Organization. <http://www.who.int/about/history/en/>

<sup>2</sup> A-Res-61(1). "Establishment of The World Health Organization." United Nations General Assembly. 14 December 1946. <http://www.undemocracy.com/A-RES-61%28I%29.pdf>

<sup>3</sup> "Agreements with other International Organizations." World Health Organization. 30 June 1949. <http://apps.who.int/gb/bd/PDF/bd47/EN/agreements-with-other-inter-en.pdf>

<sup>4</sup> "Constitution of the World Health Organization." International Health Conference. 22 July, 1946. <http://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf>

<sup>5</sup> Ibid.

<sup>6</sup> "The WHO Agenda." World Health Organization. <http://www.who.int/about/agenda/en/index.html>

<sup>7</sup> "World Health Organization: Governance of WHO." World Health Organization. <http://www.who.int/about/governance/en/index.html>

<sup>8</sup> "World Health Organization: Countries." World Health Organization. <http://www.who.int/countries/en/>

<sup>9</sup> "The WHO Agenda." World Health Organization. <http://www.who.int/about/agenda/en/index.html>

<sup>10</sup> "Rules and Procedures of the WHA." WHO. <http://apps.who.int/gb/bd/PDF/bd47/EN/rules-of-procedure-en.pdf>

<sup>11</sup> Ibid.

<sup>12</sup> "Working for Health: An Introduction to the WHO." World Health Organization. 2007.

and other international organizations should be on 3 distinct levels: intergovernmental, interagency, and country.<sup>13</sup> The organization places a particular emphasis on partnering with other organizations such as the United Nations Development Program (UNDP), United Nations Population Fund (UNFPA), and the United Nations Children's Fund (UNICEF).<sup>14</sup> An example of a specific plan of action for increasing health security across the international spectrum is the Draft Strategic Midterm Action Plan 2008-2013.<sup>15</sup> This plan was undertaken to use strong political will, integrated policies and broad participation to address the four main gaps in health: knowledge; implementation, responsibility, and social justice.<sup>16</sup>

Recently, the UN has passed resolutions and initiated cooperative programs through actions such as GA Resolution A/res/63/33 which contains multiple measures across the UN System dealing with health and foreign policy.<sup>17</sup> The WHO is recognized as the leading specialized agency to deal with health, and deals extensively with conferences ranging from the Group of Eight on health, and High Level Meetings dealing with the Health Millennium Development Goals (MDGs).<sup>18</sup>

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[http://www.who.int/about/brochure\\_en.pdf](http://www.who.int/about/brochure_en.pdf)  
<sup>13</sup> A62/40. "Collaboration within the United Nations system and with other intergovernmental organizations." World Health Assembly. 7 May 2009. [http://apps.who.int/gb/ebwha/pdf\\_files/A62/A62\\_40-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/A62/A62_40-en.pdf)

<sup>14</sup> Ibid.

<sup>15</sup> MTSP/2008-2013. "Draft Medium-Term Strategic plan 2008–2013." World Health Organization. [http://apps.who.int/gb/ebwha/pdf\\_files/MTSP-PPB/en\\_mtsp\\_p1.pdf](http://apps.who.int/gb/ebwha/pdf_files/MTSP-PPB/en_mtsp_p1.pdf)

<sup>16</sup> Ibid.

<sup>17</sup> A/RES/63/33. "Foreign Policy and Global Health." United Nations General Assembly. 27 January 2009. [http://www.who.int/trade/events/UNGA\\_RESOLUTION\\_GHFP\\_63\\_33.pdf](http://www.who.int/trade/events/UNGA_RESOLUTION_GHFP_63_33.pdf)

<sup>18</sup> Ibid.

## Topic I: Addressing Chronic Cardiovascular and Lifestyle-Related Diseases

### Introduction

While much attention has been focused on HIV/AIDS and other communicable or vector-borne diseases, the single largest killer in the world for at least the last 20 years has been cardiovascular disease (CVD) which has been deemed a global health threat.<sup>19</sup> CVD is just one of a number of chronic non-communicable diseases such as obesity and overweight (OO), type 2 diabetes (T2D), and cancer which all share one other characteristic: incidence rates for all of these diseases are growing at an alarming pace. Although these diseases are often considered to be related to the affluence of high-income developed countries, they are rising rapidly in low- and middle-income countries as well. In 2005 the WHO estimated that 80% of all deaths in the developing world would be due to these diseases.<sup>20</sup>

One concern over the threat these diseases stems from the rapid increase in their incidence rate or morbidity, a term used to measure the rate of a disease in a specified area. The increasing morbidity of CVD and T2D in most high-income countries occurred over much of the 20th century; however, the time frame for the development of these diseases has been highly compressed in the developing world.<sup>21</sup> This rapid increase in prevalence is also alarming because these diseases will have a dramatic financial impact on those countries.<sup>22</sup> The costs of treatment include not only medicines, but delivery of care, and ever-escalating levels of intervention, but these aren't the only costs of this epidemic. In the developing world these diseases are striking the population at younger ages than were largely seen in high-income countries, meaning that more of the otherwise productive population is removed from the workforce, either for long-term periods of care, or permanently because of death.<sup>23</sup>

The costs of these diseases must also be weighed against the cost of prevention, and, in this case, the evidence points to a clear and urgent message. The cost of prevention is very low and it is imperative that action be taken now to keep the epidemic of chronic diseases from getting any worse.<sup>24</sup>

### The Epidemiologic Transition

The incidence rate of CVD provides an excellent example of the epidemic nature of chronic diseases in the developing world today as it differs from history. In the United States CVD did not become the leading cause of death until 1911, and at that point was only responsible for 10% of all deaths.<sup>25</sup> It was not until 1938 that heart disease became responsible for 25% of all deaths in the United States, and it would be another 7 years before it topped 30%.<sup>26</sup> By comparison, CVD is estimated to have been responsible for 11% of all deaths in low and middle-income countries in 2001,<sup>27</sup> and is expected to top 40% by 2020.<sup>28</sup>

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<sup>19</sup> Mike Mitka. "Heart Disease a Global Health Threat." *Journal of the American Medical Association*. Vol. 291, no. 21. June 2, 2004. p. 2533. <http://jama.ama-assn.org/cgi/content/full/291/21/2533>

<sup>20</sup> *Preventing Chronic Disease: A Vital Investment*. The World Health Organization. Geneva. United Nations. 2005. [http://www.who.int/chp/chronic\\_disease\\_report/en/](http://www.who.int/chp/chronic_disease_report/en/)

<sup>21</sup> Thomas Gaziano, K. Srinath Reddy, Fred Paccaud, and others. "Cardiovascular Disease." *Disease Control Priorities in Developing Countries*. The International Bank for Reconstruction and Development / The World Bank. 2006. <http://www.dcp2.org/pubs/DCP>

<sup>22</sup> *Preventing Chronic Disease: A Vital Investment*. The World Health Organization. Geneva. United Nations. 2005. [http://www.who.int/chp/chronic\\_disease\\_report/en/](http://www.who.int/chp/chronic_disease_report/en/)

<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

<sup>25</sup> "Leading Causes of Death, 1900-1998." National Center for Health Statistics. Centers for Disease Control. [http://www.cdc.gov/nchs/data/dvs/lead1900\\_98.pdf](http://www.cdc.gov/nchs/data/dvs/lead1900_98.pdf)

<sup>26</sup> Ibid.

<sup>27</sup> Colin D. Mathers, Alan D. Lopez, and Christopher J. L. Murray. "The Burden of Disease and Mortality by Condition: Data, Methods, and Results for 2001." *Global Burden of Disease and Risk Factors*. The International Bank for Reconstruction and Development / The World Bank. 2001. <http://www.dcp2.org/pubs/GBD>

<sup>28</sup> *Preventing Chronic Disease: A Vital Investment*. The World Health Organization. Geneva. United Nations. 2005.

The difference may appear troubling but not dramatic until it is considered that approximately one third of the world's population lives in low-income countries<sup>29</sup> meaning that rapid advances in morbidity rates affect a significantly larger population than similar increases in, say, the United States which represents only 4% of the population of the world.<sup>30</sup>

This example is important because it helps form a reference point to consider an important framework that speaks to the causes behind the rise of chronic disease morbidity: epidemiologic transition or the change in prevailing causes of death and disease over time. At the turn of the twentieth century the prevailing causes of death worldwide were infectious disease and malnutrition.<sup>31</sup> Improvements in medical care, public health measures, and increasing availability and quality of foodstuffs in the industrialized nations changed that, and CVD and cancer eventually became the leading causes of death.<sup>32</sup> According to one important theory about the demographic influence of disease, this transition can be divided into three stages: the age of pestilence and famine; the age of receding pandemics; and the age of degenerative and man-made diseases.<sup>33</sup> But it is important to note that these changes do not happen independently. Advancement through these stages is accompanied by social change because "mortality is a fundamental factor in population dynamics."<sup>34</sup>

In his ground-breaking work on this premise, Abdel Omran points out not only that these transitions over long periods of time likely had an impact on the social pressure to procreate, but that the most profound changes in mortality and health directly affect children and women of child-bearing age.<sup>35</sup> In other words, over time improvements in infant and maternal health increase a society's rate of population growth and decrease the social pressure to have more children. But Omran pointed out that several factors could impact these social patterns, and one of these is the pace of the epidemiologic transition.<sup>36</sup>

The World Bank estimates that 38% of the world's population is currently in stage 2, and another 11% are still in stage 1,<sup>37</sup> but they point out that "where development has occurred it has been at a more compressed rate than in the high-income countries."<sup>38</sup> This increased pace of transition has led to alarming escalations in the rates of OO, the WHO estimates that 1 billion adults are overweight, and "disturbing increases in childhood obesity that have led to large increases in diabetes and hypertension."<sup>39</sup> It should be pointed out that this is referring to increases in cases of T2D, commonly referred to as "adult onset diabetes" because it is only in the last several years that it has become commonly diagnosed in children.<sup>40</sup> In Asia cases of T2D now greatly outnumber cases of type 1 diabetes in adolescents and children.<sup>41</sup>

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[http://www.who.int/chp/chronic\\_disease\\_report/en/](http://www.who.int/chp/chronic_disease_report/en/)

<sup>29</sup> Anup Shah. "Poverty Facts and Stats." Global Issues. 28 March, 2010.

<http://www.globalissues.org/article/26/poverty-facts-and-stats>

<sup>30</sup> "US Population Clock." U.S. Census Bureau. August 31, 2009.

<http://www.census.gov/population/www/popclockus.html>

<sup>31</sup> Thomas Gaziano, K. Srinath Reddy, Fred Paccaud, and others. "Cardiovascular Disease." *Disease Control Priorities in Developing Countries*. The International Bank for Reconstruction and Development / The World Bank. 2006. <http://www.dcp2.org/pubs/DCP>

<sup>32</sup> Ibid.

<sup>33</sup> Abdel R. Omran. "The Epidemiologic Transition: A Theory of the Epidemiology of Population Change." *The Milbank Memorial Fund Quarterly*. Vol. 49, no. 4. 1971. pp. 509-538.

<http://www.milbank.org/quarterly/830418omran.pdf>

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

<sup>37</sup> Thomas Gaziano, K. Srinath Reddy, Fred Paccaud, and others. "Cardiovascular Disease." *Disease Control Priorities in Developing Countries*. The International Bank for Reconstruction and Development / The World Bank. 2006. <http://www.dcp2.org/pubs/DCP>

<sup>38</sup> Ibid.

<sup>39</sup> Ibid.

<sup>40</sup> *Preventing Chronic Disease: A Vital Investment*. The World Health Organization. Geneva. United Nations. 2005. [http://www.who.int/chp/chronic\\_disease\\_report/en/](http://www.who.int/chp/chronic_disease_report/en/)

<sup>41</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. "Epidemic obesity and type 2 diabetes in Asia." *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

## ***Root Causes***

The epidemiologic transition is also important to consider because it suggests that the current path of development in much of the world is very much a part of the reason for the alarming increase in the prevalence of these diseases. This is borne out by a consideration of several factors surrounding the increase in OO in the developing world. Urbanization prompts a shift away from a diet made up largely of indigenous staples to an “industrialized” diet made up of processed and packaged foods and dramatically more animal products.<sup>42</sup> Modernization prompts a transition from physical labor to more sedentary occupations.<sup>43</sup> Of course, it is possible to look at these changes and see them as providing a net positive benefit, but there are some significant and sometimes unseen downsides as well.

For most living in highly-urbanized developing countries, it is not healthy to spend time outdoors. Chronic pollution makes the air toxic, and crime, or conflict, makes it difficult or impossible to safely engage in physical activity outdoors.<sup>44</sup> Similarly urban sprawl often necessitates the use of motorized vehicles for transportation in place of walking or bicycling.<sup>45</sup> Along with these issues, in urban areas processed low-quality calorie-dense foods are not only significantly cheaper, but fresh fruits and vegetables are often not available.<sup>46</sup>

For people living in rural areas the problems are somewhat different. Economic globalization has transformed agriculture in most developing countries from small farms focused on providing a variety of indigenous crops,<sup>47</sup> to larger proto-industrial farms focused on a cash-crop monoculture.<sup>48</sup> With this change comes a change in the focus of agriculture away from feeding the indigenous population and toward selling a commodity, which also drives a change in the foodstuffs available to the rural population. Just as in urban areas, that shift is away from a largely plant-based diet, toward a broader diet which includes significantly higher levels of fats, animal products, fried goods, and sodium.

This points to an important semantic issue that needs clarification. When considering the word “lifestyle,” many people think we are talking about choices, and when they think of choices they think of rational choices, in the same way that you choose which car you buy, or what neighborhood you live in. Yes, those choices may be somewhat constrained by, say, your budget or where you work, but there are still options, and you could make a different choice. When talking about CVD this issue comes quickly to the front of the discussion. According to the WHO, CVD is largely preventable as 80% of all cases are due to “behavioral risk factors” including tobacco use, physical inactivity and unhealthy diet.<sup>49</sup>

To some extent, when we are talking about lifestyle-related diseases there is some element of choice involved. For instance, cigarette smoking is “the most powerful risk factor for recurrent cardiovascular

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<sup>42</sup> Barry M. Popkin, Sue Horton, and Soowon Kim. “The Nutritional Transition and Diet-Related Chronic Disease in Asia: Implications for Prevention.” International Food Policy Research Institute. Washington, D.C. March 2001. <http://www.ifpri.org/publication/nutritional-transition-and-diet-related-chronic-diseases-asia>

<sup>43</sup> Ibid.

<sup>44</sup> *Preventing Chronic Disease: A Vital Investment*. The World Health Organization. Geneva. United Nations. 2005. [http://www.who.int/chp/chronic\\_disease\\_report/en/](http://www.who.int/chp/chronic_disease_report/en/)

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> Barry M. Popkin, Sue Horton, and Soowon Kim. “The Nutritional Transition and Diet-Related Chronic Disease in Asia: Implications for Prevention.” International Food Policy Research Institute. Washington, D.C. March 2001. <http://www.ifpri.org/publication/nutritional-transition-and-diet-related-chronic-diseases-asia>

<sup>48</sup> Alejandro Nadal. “Corn and NAFTA: An Unhappy Alliance.” *Seedling: The Quarterly Newsletter of Genetic Resources Action International*. June, 2000. <http://www.grain.org/seedling/?id=14>; “Down on the Farm: NAFTA’s Seven-Years War on Farmers and Ranchers in the U.S., Canada and Mexico.” Public Citizen’s Global Trade Watch. 26 June, 2001. <http://www.citizen.org/publications/release.cfm?ID=6788>

<sup>49</sup> “Cardiovascular diseases (CVDs).” The World Health Organization. Media Center. September 2009. <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>

events.”<sup>50</sup> There can be no doubt that smoking cigarettes is a choice, even though it is a choice complicated by nicotine addiction. And, while there is evidence indicating that nicotine has greater effect on dark-skinned people which suggests they may suffer a stronger addiction,<sup>51</sup> this does not rule out the fact that nicotine addiction can be overcome. In fact, it is estimated that between 66% and 75% of all people who successfully quit smoking do so without any cessation aids.<sup>52</sup>

There are also many issues of lifestyle which may be choices in developed high-income countries, but are matters of necessity in developing countries, and it is extremely important that we recognize them. Activity level is an excellent example. As stated previously, in a dense urban area with high levels of air pollution, no sidewalks, and/or increased violent crime rates, going for a walk or a run to get physical exercise is no longer an option while you are still relatively healthy, and becomes even less of one once you begin to suffer from chronic obstructive pulmonary disease (COPD) or CVD

Diet, as has been pointed out is an issue that may appear to straddle the line between choice and necessity, but consider the plight of someone working long hours or multiple jobs who has a long commute through dense urban sprawl. With little or no time to dedicate to cooking a meal supporting a primarily plant-based diet, let alone being able to afford fresh fruits and vegetables, her choices become dramatically constrained, and processed or fried calorie-dense foods become a necessity. For these reasons, it is very important that we consider carefully the different connotations that the word “lifestyle” carries.

These issues are doubly important because of the importance of lifestyle in the treatment of chronic diseases, particularly CVD and T2D. Effective long-term management of these diseases calls for pharmacotherapy combined with lifestyle and behavioral changes.<sup>53</sup> In situations where patients are unable to effect necessary lifestyle changes, care becomes more dependent upon the use of expensive pharmacotherapy or invasive interventions, and will more often result in repeated cardiovascular events, further debilitating the patient and rendering him more dependent upon ever-more expensive interventions.<sup>54</sup>

### ***Case Study: The Diabetes Epidemic in Asia***

All of these issues provide a complex backdrop against which we must consider specific chronic diseases in specific places and populations. An excellent example of this is the epidemic of T2D in Asia. Diabetes refers to a condition in which the body fails to correctly regulate the level of sugar in the bloodstream.<sup>55</sup> The primary hormone responsible for this regulation is insulin, which carries glucose from the bloodstream into body cells.<sup>56</sup> In type 1 diabetes the body simply fails to produce insulin.<sup>57</sup> In T2D the body either stops producing sufficient insulin, or the cells ignore it, a condition known as insulin resistance.<sup>58</sup> The

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<sup>50</sup> Alan Cheng, Joel B. Braunstein, Cheryl Dennison and others. "Reducing Global Risk for Cardiovascular Disease: Using Lifestyle Changes and Pharmacotherapy." *Clinical Cardiology*. Vol. 25. Issue 5. pp. 205-212.

<sup>51</sup> Gary King, Valerie B. Yerger, Guy-Lucien Whembolua, and others. "Link between facultative melanin and tobacco use among African Americans." *Pharmacology Biochemistry and Behavior*. Vol. 92, Iss. 4. June 2009. pp. 589-596

<sup>52</sup> Simon Chapman, and Ross MacKenzie. "The Global Research Neglect of Unassisted Smoking Cessation: Causes and Consequences." *PLOS Medicine*. The Public Library of Science. February 9, 2010. <http://www.plosmedicine.org/article/info:doi%2F10.1371%2Fjournal.pmed.1000216>

<sup>53</sup> Alan Cheng, Joel B. Braunstein, Cheryl Dennison and others. "Reducing Global Risk for Cardiovascular Disease: Using Lifestyle Changes and Pharmacotherapy." *Clinical Cardiology*. Vol. 25. Issue 5. pp. 205-212.

<sup>54</sup> Ibid

<sup>55</sup> "Diabetes Basics: Type 2." American Diabetes Association.

<http://www.diabetes.org/diabetes-basics/type-2/>

<sup>56</sup> "Insulin Resistance and Pre-diabetes." National Diabetes Information Clearinghouse. October 2008.

<http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/>

<sup>57</sup> "Diabetes Basics: Type 1." American Diabetes Association.

<http://www.diabetes.org/diabetes-basics/type-1/>

<sup>58</sup> "Insulin Resistance and Pre-diabetes." National Diabetes Information Clearinghouse. October 2008.

<http://diabetes.niddk.nih.gov/dm/pubs/insulinresistance/>

failure to regulate blood sugar levels leads to a condition where blood sugar is too high, or hyperglycemia.<sup>59</sup> Increased blood glucose levels over time cause damage to nerve cells, retinal cells (leading to blindness), and can significantly increase the risk for CVD.<sup>60</sup>

As has been noted, T2D is on the rise throughout the world, but the morbidity increase in Asia is particularly worrisome. While the incidence rate of T2D in the United States has doubled in the last 40 years, it tripled amongst Chinese adults in the sixteen years between 1980 and 1996, and prevalence rates "in Korea, Indonesia, and Thailand have also increased three-fold to five-fold during the past 30 years."<sup>61</sup> The fact that the prevalence of T2D in Asian countries is currently similar to or only slightly higher than that in the United States masks the alarming nature of the increase of prevalence of the disease in the region. The International Diabetes Federation (IDF) has reported that "the prevalence of adult diabetes in developing countries is expected to increase by 170% between 1995 and 2025" versus 41% in the developed world."<sup>62</sup> It is also important to bear in mind that Asia includes two of the most populous countries in the world, China and India.<sup>63</sup>

But this is not the only aspect of the diabetes epidemic in Asia which is so troubling. Research clearly demonstrates that "people in Asia tend to develop diabetes with a lesser degree of obesity at younger ages, suffer longer with complications of diabetes, and die sooner than people in other regions."<sup>64</sup> This fact has two primary concerns attached with significant financial and social ramifications. The first is that providing primary care for the huge numbers of people suffering from this disease for protracted periods of time will severely tax health-care systems throughout the region, if not completely overwhelm them.<sup>65</sup> Health care budgets are already tight, and there is a broad perception that there are other "more serious" diseases which need more attention.<sup>66</sup>

The second concerns the loss of societal productivity. In developed countries T2D occurs primarily in persons older than 65, but in developing countries it strikes primarily persons who are between 45 and 64, and incidence rates for those between 30 and 50 are also markedly higher in the developing world.<sup>67</sup> This is particularly important to consider because it points to a significant difference that may not be immediately apparent. In the developed world T2D primarily affects people who are approaching or just passed what is generally considered to be retirement age, suggesting that the disease has limited impact on the working population; but this is not the case in Asia where the disease strikes broadly across all ages, not only creating a tremendous social cost burden for treatment, but also a dramatic decrease in the productivity potential of entire peoples.

This concern is multiplied when it is considered that, in Asia in particular, this trend in the reduction of the age of onset continues through younger and younger age ranges.<sup>68</sup> The decrease in the average age of onset

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<sup>59</sup> Ibid

<sup>60</sup> "Living with Diabetes: Complications." American Diabetes Association.  
<http://www.diabetes.org/living-with-diabetes/complications/>

<sup>61</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. "Epidemic obesity and type 2 diabetes in Asia." *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>62</sup> Phil Zabriskie. "Silent Killer." *Time asia*. December 9, 2002.  
<http://www.time.com/time/asia/covers/1101021209/story.html>

<sup>63</sup> "Current World Population." NationsOnline.org. 12 March 2010.  
[http://www.nationsonline.org/oneworld/world\\_population.htm](http://www.nationsonline.org/oneworld/world_population.htm)

<sup>64</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. "Epidemic obesity and type 2 diabetes in Asia." *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>65</sup> Ibid

<sup>66</sup> Phil Zabriskie. "Silent Killer." *Time asia*. December 9, 2002.  
<http://www.time.com/time/asia/covers/1101021209/story.html>

<sup>67</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. "Epidemic obesity and type 2 diabetes in Asia." *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>68</sup> Phil Zabriskie. "Silent Killer." *Time asia*. December 9, 2002.  
<http://www.time.com/time/asia/covers/1101021209/story.html>



of T2D is a clear indication that the disease is occurring in significant numbers of children and adolescents, to the point where cases of T2D now outnumber cases of type 1 diabetes in both children and adolescents.<sup>69</sup>

As with many of the chronic diseases, the diabetes epidemic in Asia is driven largely by lifestyle.<sup>70</sup> Some claim this is largely due to the introduction of “western” diets and technology,<sup>71</sup> but there is also clear evidence that genetics plays a role.<sup>72</sup> Research indicates that Asian peoples have a higher predisposition to insulin resistance at lower body-mass index (BMI) levels than do peoples of Europeans or African descent,<sup>73</sup> and it has been theorized that all humans share a genetic anomaly, the “thrifty” gene, which aims to help us survive periodic famines by storing excess body fat during times of plenty.<sup>74</sup> In our modern world, where food scarcity is becoming rare, our own bodies may be working against us.<sup>75</sup>

The T2D epidemic in Asia also brings to light another important aspect of the lifestyle component of such diseases. In much of Asia a stigma is developing around the disease, such that children are ostracized and young women with diabetes have trouble finding men willing to marry them.<sup>76</sup> This kind of social pressure risks individuals, who take extreme and sometimes life-threatening measures to hide their disease, or fail to seek treatment.<sup>77</sup> It also severely limits the public space to discuss the importance of preventative measures, and may even discourage that kind of public discourse in much the same way that some countries have, in the past, downplayed the prevalence of AIDS due to social or economic pressures.<sup>78</sup>

The fact that lifestyle is “notoriously resistant to change,”<sup>79</sup> makes addressing these issues extremely complex. Yoon concludes that what is needed are “strong public actions, supported by well-targeted government policies and very clear action plans.”<sup>80</sup> One such bright spot in the response to this epidemic can be found in Singapore which has instituted a program to strike directly at the leading risk factor for diabetes.<sup>81</sup> As previously mentioned, increased BMI is a strong risk indicator for T2D because any excess body fat can negatively affect the regulation of blood sugar, a factor that Dr. Paul Zimmet of the International Diabetes Institute refers to as “diabesity.”<sup>82</sup> So school children in Singapore are carefully observed, and those deemed overweight are placed in exercise classes.<sup>83</sup> The government has also encouraged the establishment of specialized departments in several hospitals to treat the disease, and has even gone so far as to put significant pressure on street vendors and fast-food restaurants.<sup>84</sup> These tactics may seem heavy-handed, but they are showing some positive results. Morbidity rates for diabetes in Singapore have slowed.<sup>85</sup>

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<sup>69</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. “Epidemic obesity and type 2 diabetes in Asia.” *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>70</sup> Ibid

<sup>71</sup> Phil Zabriskie. “Silent Killer.” *Time asia*. December 9, 2002.

<http://www.time.com/time/asia/covers/1101021209/story.html>

<sup>72</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. “Epidemic obesity and type 2 diabetes in Asia.” *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>73</sup> Ibid

<sup>74</sup> Phil Zabriskie. “Silent Killer.” *Time asia*. December 9, 2002.

<http://www.time.com/time/asia/covers/1101021209/story.html>

<sup>75</sup> Ibid

<sup>76</sup> Ibid

<sup>77</sup> Ibid

<sup>78</sup> “Policy Profile: HIV/AIDS Policy Lessons: Learning from Thailand.” Family Health International.

<http://www.fhi.org/en/HIVAIDS/pub/Archive/articles/AIDScaptions/volume3no3/LearnFromThailand.htm>

<sup>79</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. “Epidemic obesity and type 2 diabetes in Asia.” *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>80</sup> Ibid

<sup>81</sup> Phil Zabriskie. “Silent Killer.” *Time asia*. December 9, 2002.

<http://www.time.com/time/asia/covers/1101021209/story.html>

<sup>82</sup> Ibid

<sup>83</sup> Ibid

<sup>84</sup> Ibid

<sup>85</sup> Ibid

### *Case Study: Chronic Obstructive Pulmonary Disease*

COPD is not a specific disease but, rather, an umbrella classification for any of several diseases that limit airflow to the lungs including the diseases formerly known as chronic bronchitis and emphysema.<sup>86</sup> It is under-diagnosed, mostly because it is a slow-onset disease that is often not recognized until the victim is age 40 or over.<sup>87</sup> In 2005, COPD was responsible for 5% of all deaths globally, 90% of which occurred in middle- and low-income countries, but it is expected to rise to be the third leading cause of death globally within the next 20 years.<sup>88</sup> While the primary cause of COPD world-wide is tobacco smoke, including second-hand smoke, in low-income countries the primary cause of COPD is indoor air pollution.<sup>89</sup> Such pollution is primarily caused by the use of solid fuels such as wood and dung for cooking and heating.<sup>90</sup>

The statistics behind COPD morbidity between the sexes is a point of some contention. While it is generally reported that COPD strikes men and women more or less equally, there are clear indications that incidence rates of COPD are growing faster among women than among men.<sup>91</sup> There are many possible reasons for this, including the prevalence of COPD risk factors connected to female-dominated industries such as textiles, the possibility that women are more susceptible to COPD, and, as previously mentioned, indoor air pollution connected with traditional gender roles.<sup>92</sup>

It is important to consider however, that the fact that COPD is still regarded as a disease of people and not clarified as a disease that is increasingly striking at women, has an impact on the ways in which the disease is perceived.<sup>93</sup> Evidence indicates that, even in technologically advanced countries, COPD is under-diagnosed in women; men and women react to acute COPD symptoms differently; women self medicate less; women wait longer before seeking medical care for COPD; and women and men display very different coping and self-management strategies after being diagnosed with COPD.<sup>94</sup> This also has an important bearing on how the disease is treated by public health organizations, advocacy groups, and policy makers. Without a proper understanding of the changing morbidity of this disease, national health services are unable to correctly estimate the impact of the disease, to develop appropriate prevention strategies, or even gauge the true impact of important risk factors.<sup>95</sup>

In order to decrease the global burden of respiratory diseases, the WHO has fostered the Global Alliance against Chronic Respiratory Diseases (GARD).<sup>96</sup> The organization is a voluntary alliance of nations, non-governmental organizations (NGOs), and other agencies and institutes working to improve diagnostic standards, access to essential medications, and medical care for the populations suffering from these under-diagnosed diseases.<sup>97</sup> The WHO also drove the ratification of the WHO Framework Convention on Tobacco Control (WHO FCTC) which was adopted by the World Health Assembly (WHA) in May of 2003 and entered into force in February of 2005.<sup>98</sup>

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<sup>86</sup> “Chronic respiratory diseases: Chronic obstructive pulmonary disease (COPD).” World Health Organization. <http://www.who.int/respiratory/copd/en/>

<sup>87</sup> “Fact Sheet: Chronic obstructive pulmonary disease (COPD).” World Health Organization. November 2009. <http://www.who.int/mediacentre/factsheets/fs315/en/index.html>

<sup>88</sup> Ibid.

<sup>89</sup> Ibid.

<sup>90</sup> Ibid.

<sup>91</sup> Ann P. Pederson, Kristy A. K. Hoyak, Sue Mills, and other. “Reflecting the Changing Face of Chronic Obstructive Pulmonary Disease.” *Proceedings of the American Thoracic Society*. Volume 4. 2007. Pp. 683 - 685. <http://pats.atsjournals.org/cgi/content/abstract/4/8/683>

<sup>92</sup> Ibid.

<sup>93</sup> Ibid.

<sup>94</sup> Ibid.

<sup>95</sup> Ibid.

<sup>96</sup> “Global Alliance against Chronic Respiratory Diseases.” World Health Organization. <http://www.who.int/gard/en/index.html>

<sup>97</sup> Ibid.

<sup>98</sup> “WHO Framework Convention on Tobacco Control.” World Health Organization. <http://www.who.int/fctc/en/index.html>

### *Tobacco: The First Cause of COPD*

The WHO FCTC is the first treaty negotiated by the WHO, and has become one of the most widely supported treaties in UN history.<sup>99</sup> Its core provisions include: price and tax measures to reduce the demand for tobacco products; the provision of smoke-free areas and other protections from exposure to tobacco smoke; regulation and disclosure regarding the contents of tobacco products; controls on tobacco advertising; requirements on packaging and labeling of tobacco products; and provisions to limit the illicit trade of tobacco products and sales of such products to minors.<sup>100</sup>

Unfortunately, action in support of the WHO FCTC has been slow to start. In its 2009 summary report, the WHO advised that almost 40% of the convention's signers either responded that they had not yet implemented comprehensive national tobacco control policies, or simply ignored the question.<sup>101</sup> Fewer than half had "taken steps to prevent the tobacco industry from interfering with their tobacco-control policies," 45% had not introduced comprehensive bans on tobacco advertising, and only 28% had developed implementation plans for such bans.<sup>102</sup> On the positive side, almost all states-party to the convention reported the imposition of taxes of some sort on tobacco products, and most had implemented smoke-free regulations regarding work and public places.<sup>103</sup> Unfortunately, much of these policy instruments are aimed primarily at cigarettes and smokeless tobacco products because these are the primary tobacco products used in most industrialized countries.<sup>104</sup>

It is important to note that the difference in incidence rate of COPD between low-income and middle- to high-income countries is significant, primarily because in many developing countries tobacco consumption is lower than in industrialized countries.<sup>105</sup> The smoking of tobacco, which is estimated to be responsible for 75% of all cases of COPD, is expected to continue to rise dramatically in Africa, which may soon be the leading consumer of tobacco products.<sup>106</sup> Particularly troubling in this regard, is the increase in the consumption of tobacco products using waterpipes, especially because their use crosses age and sex boundaries.<sup>107</sup>

The waterpipe is called by many names, including hubble-bubble, narghile, hookah, and shisha.<sup>108</sup> The device is made up of a head, body, waterbowl, and hose and used with a special kind of tobacco which is often flavored and sweetened with honey or molasses.<sup>109</sup> The tobacco is burned at low temperatures by a charcoal, and the smoke is drawn through the water, cooling it and making it less harsh on the mouth and lungs.<sup>110</sup> The use of waterpipes is centuries old, spanning from China, through India and Pakistan, into the Middle East and the eastern Mediterranean region.<sup>111</sup>

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<sup>99</sup> Ibid.

<sup>100</sup> "FCTC: WHO Framework Convention on Tobacco Control: Overview." World Health Organization. [http://www.who.int/fctc/text\\_download/en/index.html](http://www.who.int/fctc/text_download/en/index.html)

<sup>101</sup> "2009 Summary Report on global progress in implementation of the WHO Framework Convention on Tobacco Control." WHO FCTC Convention Secretariat. 14 December, 2009. <http://www.who.int/fctc/FCTC-2009-1-en.pdf>

<sup>102</sup> Ibid.

<sup>103</sup> Ibid.

<sup>104</sup> Wasiam Maziak, K D Ward, R A Afifi Soweid, and other. "Tobacco smoking using a waterpipe: a re-emerging strain in a global epidemic." *Tobacco Control*. Volume 13 Is. 4. 2004. pp. 327.333 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1747964/pdf/v013p00327.pdf>

<sup>105</sup> Nadia Ait-Khaled, Donald Enarson, and Jean Bousquet. "Chronic respiratory diseases in developing countries: the burden and strategies for prevention and management." *Bulletin of the World Health Organization*. Vol. 79, Iss 10. 2001. pp 971- 979. <http://whqlibdoc.who.int/bulletin/2001/issue10/79%2810%29971-979.pdf>

<sup>106</sup> Ibid.

<sup>107</sup> Wasiam Maziak, K D Ward, R A Afifi Soweid, and other. "Tobacco smoking using a waterpipe: a re-emerging strain in a global epidemic." *Tobacco Control*. Volume 13 Is. 4. 2004. pp. 327.333 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1747964/pdf/v013p00327.pdf>

<sup>108</sup> Ibid.

<sup>109</sup> Ibid.

<sup>110</sup> Ibid.

<sup>111</sup> Ibid.

Usage of waterpipes had been diminishing in the Mediterranean as recently as 30 years ago, however they have become fashionable among college students, as well as among younger children.<sup>112</sup> Only limited research has been done on the prevalence of use and effects of waterpipe use, but what data exists is troubling. A nationwide survey in Kuwait found that 57% of men and 69% of women had smoked using a waterpipe at least once.<sup>113</sup> In Syria, almost half of college students reported having used waterpipe, and in Lebanon a study found that, among college students, 30% of males and 23% of females used a waterpipe at least weekly.<sup>114</sup> The numbers for adolescents are equally troubling. Throughout the eastern Mediterranean, an estimated 10 to 18% of children aged 13 to 15 reported using tobacco products other than cigarettes and a survey of Egyptian teenagers found that 19% had used a waterpipe, and 22% of Israeli teens reported using a waterpipe every weekend.<sup>115</sup> Research also indicates that waterpipe usage encourages tobacco use and full inhalation of smoke at earlier ages, and that the advent of moistened and sweetened tobacco has encouraged the adoption of waterpipe usage in much the same way that single-use smokeless tobacco packaging is thought to be recruiting new tobacco users in countries such as the United States.<sup>116</sup>

There are anecdotal reports suggesting that waterpipe usage is considered to be less risky than cigarette smoking, but the evidence suggests otherwise.<sup>117</sup> The levels of carbon monoxide (CO) in waterpipe smoke are, at best, similar to that of cigarettes.<sup>118</sup> Additionally, waterpipe smoke has been found to contain several other toxins, including heavy metals such as arsenic, cobalt, chromium, and lead.<sup>119</sup> Finally, waterpipe smoke has been found to elevate nicotine levels in the blood three times that of cigarette smoke, and waterpipe smoke appears to have a significantly greater negative impact on lung function than does cigarette smoke.<sup>120</sup>

### ***Conclusion***

The problems causing and surrounding the epidemic of chronic diseases in the world are many, and challenging. Development, industrialization, and the need for large urban labor forces are all driving factors in changing the lifestyles of peoples around the world, and with many of these changes have come several co-morbid diseases which threaten to thoroughly undo the social benefits of modernization while bankrupting our medical systems. These challenges are also particularly difficult because they get directly to the heart of two important notions, the connection of personal choice and personal responsibility versus the question of societal responsibility for addressing and ensuring healthy living options for individuals. These two extremes can be seen clearly in the “lifestyle” choices surrounding CVD, OO, and T2D, and to a lesser extent in those choices surrounding the use of tobacco products. National and international efforts to address these challenges have met with mixed results, but what is clear is that we are losing the battle to prevent chronic diseases and, even in developed countries, are relying more heavily on treating the symptoms rather than addressing the causes. It is also clear that the economics of that course of action are not tenable. If we do not slow the growth of chronic diseases there simply will not be enough money, hospital beds, or medical staff to treat all of the victims.

### ***Committee Directive***

As stated, there are a number of tangled issues here, but there are also clear lines of important steps that can be taken. Quoting Yoon again, there is a clear need for “strong public actions, supported by well-targeted

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<sup>112</sup> Ibid.

<sup>113</sup> Ibid.

<sup>114</sup> Ibid.

<sup>115</sup> Ibid.

<sup>116</sup> Ibid.

<sup>117</sup> Ibid.

<sup>118</sup> Ibid.

<sup>119</sup> Ibid.

<sup>120</sup> Ibid.

government policies and very clear action plans.”<sup>121</sup> But this is not to say that social or legal pressures are enough by themselves. Initiatives such as those undertaken by the Singaporean government to address diabetes in children, or by the WHO to stem tobacco, use can be nominally considered to be successes, but if they are merely limiting personal choice rather than giving people reasons to freely make better choices, there is a question of just how lasting those changes can be. Are there ways to promote healthier living choices and to motivate people to make meaningful lifestyle changes? Are there ways to promote development and urbanization models that don't compromise the ability of people to live traditional or healthy lifestyles?

It is also important to consider how the social climate affects the prevention and treatment of chronic disease. People who live in communities that deny the presence of a disease, or who live in societies that shun or ostracize the victims of chronic disease are unlikely to seek treatment for their diseases at early stages when minimal interventions might change the course of the disease dramatically. This points to the importance of education and understanding about the causes of diseases such as T2D and COPD. There is also room to consider ways to address root causes of some of these diseases with technology and innovation. Several programs have sought to replace open cooking fires in traditional homes with low-cost high-efficiency wood or alternative-fuel-based cook stoves, dramatically lowering indoor air-pollution and possibly lowering the incidence rate of COPD in women. What roadblocks did they face, and are there other ways that technology might be used to address the problems of chronic disease?

Finally, there are many areas where more research is clearly needed. For example, Maziak clearly demonstrates that there is very little known about the usage patterns and epidemiology of tobacco products outside of cigarettes and smokeless tobacco, and that because of this the international community is ill-prepared to deal with addressing waterpipe usage. What other questions do we need to investigate?

## **Topic II: Addressing Food Safety**

### ***Introduction***

Food is one of the basic necessities of life, yet for many people, reliable access to safe food is a grave concern. Since the inception of the UN, members have taken a firm stance on fighting food insecurities.<sup>122</sup> While the WHO works substantially with organizations, states, and localities on health, they also deal with food safety standards in a number of ways. The work of addressing food safety standards comprehensively includes a number of activities to protect people against food borne illnesses, ensure food accessibility during times of crisis, prevent terrorist acts involving food, and monitor Genetically Modified Foods (GMFs). The WHO and Member State policy makers debate this issue in conjunction with a number of UN Specialized Agencies, such as the Food and Agriculture Organization of the UN (FAO), World Trade Organization (WTO) and World Food Program (WFP). Even though the world has made progress on hunger, food safety is not being satisfied for the nearly 2 billion who are malnourished. This issue is important enough that it was highlighted as the first of the Millennium Development Goals (MDGs), yet still is not on track to being achieved in many countries.<sup>123</sup> For example, in South Asia, children are overweight in over 50% of the region.<sup>124</sup> However, it is not enough to simply send available foodstuffs to needy populations. These items must be prepared and transported safely, and must reach their destination in a condition internationally regarded as safe to eat. This is why the WHO, WFP, Member States, concerned consumers, and food producers established an international food code. The Codex Alimentarius

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<sup>121</sup> Kun-Ho Yoon, Jin-Hee Lee, Ji-Won Kim and others. “Epidemic obesity and type 2 diabetes in Asia.” *The Lancet*. Vol. 368. November 11, 2006. pp. 1681-1688.

<sup>122</sup> 45 (I). “World Shortage of Cereals and Other Food Stuffs”. UNGA. 14 February 1946.  
<http://daccess-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/032/96/IMG/NR003296.pdf?OpenElement>

<sup>123</sup> MDG 1 Factsheet. UN. 25 September 2008.  
<http://www.un.org/millenniumgoals/2008highlevel/pdf/newsroom/Goal%201%20FINAL.pdf>

<sup>124</sup> Ibid.

frames food hygienic safety standards, and lays framework for implementation of said standards in all member states.<sup>125</sup>

Food safety was set as a strategic objective for the WHO from 2008 to 2013.<sup>126</sup> While this set a precedent “to improve nutrition, food safety and food security, throughout the life-course, and in support of public health and sustainable development”, much work still needs to be done. The WHA agreed that in order to improve the lives of those who are living in famine; hunger; and poverty, food quality and safety must be improved. These are also important steps to addressing both the first and fourth MDGs.<sup>127</sup> The UN General Assembly also has taken a stance against food insecurity by addressing the right to food in its 63<sup>rd</sup> annual session.<sup>128</sup> The WHO has established a list of their major concerns for food safety. One aspect of WHO’s food safety standards schemes includes microbiological hazards and chemical hazards entering our food source. The WHO monitors food borne diseases through new, modern day technologies. These technologies are important to developing countries because they promote advancement of diversity and competition, while advancing food monitoring regimes capabilities. The WHO also works to have a positive effect on food and necessary capacity building in developing states by initiating various programs.<sup>129</sup> The WHO has published a wide array of materials for establishing and strengthening prevention and response systems against terrorist acts by the means of food.<sup>130</sup>

### ***Food Industrialization and Market Divisions***

The global food industry has changed significantly since the commencement of the UN’s work on this issue. An industrial revolution led to different strategies being used by developing and developed states to produce food.<sup>131</sup> Developing countries look to developed countries to move away from holistic farms and production schemes. Developing countries continually widen the gap in three areas of advancement: enhancing classical genetics,<sup>132</sup> adoption of molecular biology in plant production, and the spread of information technology.<sup>133</sup> These three development goals hope to close the gap between waning consumer-producer information exchange and making the developing world’s agriculture market more competitive. The European Union (EU) Common Agriculture Policy (CAP) sees the third step of this kind of production as vital to a farmer’s complex lifestyle, and this strategy has placed the EU among the top players in the agriculture field.<sup>134</sup>

Developing states must deal with food security in another way. Poor farmers simply cannot afford to experiment on their land with new foods, while poverty and hunger stricken communities look to rebuild infrastructure.<sup>135</sup> Developing countries have a number of options to turn to with agriculture development, but none reflect the complexity or possible outcomes of developed states. Some of those strategies are

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<sup>125</sup> “Understanding the Codex Alimentarius: Third Edition”. WHO/FAO.  
[http://ftp.fao.org/codex/Publications/understanding/Understanding\\_EN.pdf](http://ftp.fao.org/codex/Publications/understanding/Understanding_EN.pdf)

<sup>126</sup> “Proposed Program Budget 2010-2011”. World Health Organization.  
[http://apps.who.int/gb/ebwha/pdf\\_files/MTSP2009/PPB4-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/MTSP2009/PPB4-en.pdf)

<sup>127</sup> A63/11. “Food Safety” WHA. WHO. 25 March 2010.  
[http://apps.who.int/gb/ebwha/pdf\\_files/WHA63/A63\\_11-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA63/A63_11-en.pdf)

<sup>128</sup> A/RES/64/159. “The Right to Food”. UNGA. 10 March 2010.  
<http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N09/471/37/PDF/N0947137.pdf?OpenElement>

<sup>129</sup> “Food Safety Issues: WHO Global Strategy for Food Safety: Safer Food for Better Health.” WHO. 2002.  
[http://www.who.int/foodsafety/publications/general/en/strategy\\_en.pdf](http://www.who.int/foodsafety/publications/general/en/strategy_en.pdf)

<sup>130</sup> “Food Safety Issues: Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems. World Health Organization. 2002.  
<http://www.who.int/foodsafety/publications/general/en/terrorist.pdf>

<sup>131</sup> Thomas N. Urban. “The Industrialization of Agriculture”. *The Emerging Global Food System*. New York. John Wiley & Sons, Inc. 1993. Pp. 25-30.

<sup>132</sup> Ibid.

<sup>133</sup> Ibid.

<sup>134</sup> “The Common Agriculture Policy Explained”. European Commission: Agriculture and Rural Development.  
[http://ec.europa.eu/agriculture/publi/capexplained/cap\\_en.pdf](http://ec.europa.eu/agriculture/publi/capexplained/cap_en.pdf)

<sup>135</sup> “Our Work: Food for Assets”. World Food Program. 2010. <http://www.wfp.org/food-assets>

irrigation, war torn countries involving ex combatants in exchange for skills training, agriculture information, halting land degradation, school food voucher programs, and home gardening businesses.<sup>136</sup>

The disparity between farmers' ability to produce in developing and developed countries is vast. Agricultural economic sectors play a large role in development. The disparity of food safety in developed and developing countries is also disturbing. Developed countries' primary concern is food safety, while developing countries cannot meet rising expectations and global competition. Developing countries problems are widespread, many cannot eat, and producers have a hard time selling their products due to market equity, raising questions on how to combat the problem.<sup>137</sup> This definitive difference in agriculture sectors finds that under-developed states continue to fall behind, and spending disparities are widespread.<sup>138</sup> The World Bank released a report entitled *Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Country Exports* in 2005 which emphasizes the needs of developing countries and gives multiple strategies to overcome these issues.<sup>139</sup> For example, the report talks about the importance of the World Bank in the role of development as well as emphasizing new sectors.<sup>140</sup> Some of the problems developing countries face are grave. They believe that food and agriculture safety standards will be applied in a discriminatory manner. The stringent requirements on food safety mean that developing countries are much less likely to keep up with the market, and will find difficulty in moving upward. These requirements not only affect the markets, but farmers and families. Subsidized food leads to the inability to cope with developed countries' effectiveness in making their safer products more readily available. This means that a farmer's family might not receive basic services because he cannot sell his product. Some argue the cost incurred by developing states to upgrade safety measures inhibits states ability to make profit on against developed agriculture.<sup>141</sup>

Even though there is an institutional weakness, lack of competitiveness, and hardships in developing safety standards, international organizations say otherwise. The World Bank argues that though the cost of developing food safety standards seems high, the benefits are actually quite high especially when compared to the relative cost of exports.<sup>142</sup> Dealing with the issue of diversity between food safety standards is quite complex, and the WHO and WFP responded by publishing the *Guidelines for Strengthening National Food Control Systems*.<sup>143</sup> The guidelines establish that there is a definitive issue in the current trade because of the food safety divisions. Through developing food safety, consumers will feel more protected, farmers groups, and trade organizations will see a more consumer driven need for food.<sup>144</sup>

States have developed multiple commissions which are supposed to deal with this issue; however issues arising with the development in these commissions and agencies of government regulators have led to a number of disjointed efforts on food borne illnesses and the protection of human health.<sup>145</sup> In response to this, developing countries have taken the lead in developing the WHO's Food Safety and Zoonoses initiative, which works to promote technology transfer to advancing food safety from production-to-consumption and

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<sup>136</sup> Ibid.

<sup>137</sup> "Improving Efficiency and Transparency in Food Safety Systems". Sharing Experiences FAO/WHO Global Forum of Food Safety Regulators. WHO/WFP. 28 - 30 January 2002  
[http://www.fao.org/docrep/meeting/004/Y3680E/Y3680E06.htm#P394\\_84038](http://www.fao.org/docrep/meeting/004/Y3680E/Y3680E06.htm#P394_84038)

<sup>138</sup> Ibid.

<sup>139</sup> Report No. 31207. "Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Country Exports". World Bank: Poverty Reduction & Economic Management Trade Unit and Agriculture and Rural Development Department. 10 January 2005.  
[http://siteresources.worldbank.org/INTRANETTRADE/Resources/Topics/Standards/standards\\_challenges\\_synthesisreport.pdf](http://siteresources.worldbank.org/INTRANETTRADE/Resources/Topics/Standards/standards_challenges_synthesisreport.pdf)

<sup>140</sup> Ibid.

<sup>141</sup> Ibid.

<sup>142</sup> Ibid.

<sup>143</sup> "Assuring Food Safety and Quality: Guidelines For Strengthening National Food Control Systems." World Health Organization. [http://www.who.int/foodsafety/publications/capacity/en/Englsh\\_Guidelines\\_Food\\_control.pdf](http://www.who.int/foodsafety/publications/capacity/en/Englsh_Guidelines_Food_control.pdf)

<sup>144</sup> Ibid.

<sup>145</sup> "Food production to consumption". World Health Organization.. 2010.  
[http://www.who.int/foodsafety/fs\\_management/en/](http://www.who.int/foodsafety/fs_management/en/)

prevent zoonotic diseases, which are diseases transmissible from animals to humans.<sup>146</sup> Even though many initiatives are currently ongoing, many countries, particularly in the developing world, still suffer.<sup>147</sup> Initiatives working in this issue such as the Global Early Warning System for Major Animal Diseases, including zoonoses (GLEWS) provide warning of possible outbreaks of said diseases.<sup>148</sup> The issue still remains that there is a significant gap between developing and developed countries to deal with emergency food situations.

Another international response to the issue at hand has been the International Food Safety Authorities Network (INFOSAN). INFOSAN's mandate is "to promote the exchange of food safety information and to improve collaboration among food safety authorities at national and international levels..."<sup>149</sup> INFOSAN's network of 177 countries also takes requests for new projects and inputs information to the WHO Global Food borne Infections Network, the Global Outbreak Alert and Response Network, and the GLEWS.<sup>150</sup> The coordination of these networks led to different sectors dealing with different priorities. GLEWS has established a priorities list for zoonotic and non zoonotic diseases which trigger analysis and trend forecasting by all actors involved.<sup>151</sup> Furthermore, GLEWS also works to establish the priorities during crises, hoping to decrease the possibility of high death rates, analyzing if the event is unusual, and seeing if it will inhibit international travel.<sup>152</sup> The INFOSAN also has a high level forum which recently concluded a meeting in the PRC in 2007. The 2007 outcome called for cooperation from the international food community in monitoring diseases in order to foster the advancement of healthy diets free of disease.<sup>153</sup>

### ***The Economics of Food Safety***

While the market plays an important role in defining the ability to develop, the World Bank also notes there is a disparity between food safety standards and the food market being strained.<sup>154</sup> Food safety and distribution (FSD) should be a major concern, because improper FSD planning coupled with urbanization will be a major issue for malnutrition and full workforce development for growing cities. Proper FSD policy will lead to economic, social, and environmental solutions.

Economic FSD solutions ensure local municipalities use growth focused management; ensure low prices, stabilize supplies, and review urban consumption. As the WB has argued, these strategies are vital to the future for up and coming agriculture sectors. Social FSD maintains equality in food distribution, meaning that low income houses have access to proper nutrition, while maintaining close ties to the local government. Finally Environmental FSD requires that waste which contributes to food borne illness is properly disposed of and reducing transportation cost and commuting distances. The development of agriculture and other sources of food stuffs are also highly necessary to achieving the millennium development goals.

The recent economic crisis left the poor population of the world in a frightening state.<sup>155</sup> Over 923 million people were undernourished before the crisis hit 2 years ago, and 130 million - 155 million entering

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<sup>146</sup> Ibid.

<sup>147</sup> Ibid.

<sup>148</sup> "GLEWS." World Health Organization. 2010. <http://www.who.int/zoonoses/outbreaks/glews/en/index.html>

<sup>149</sup> INFOSAN. WHO/WFP: INFOSAN. October 2007.

[http://www.who.int/foodsafety/fs\\_management/infosan\\_1007\\_en.pdf](http://www.who.int/foodsafety/fs_management/infosan_1007_en.pdf)

<sup>150</sup> "INFOSAN." World Health Organization.. 2010.

[http://www.who.int/foodsafety/fs\\_management/infosan/en/index.html](http://www.who.int/foodsafety/fs_management/infosan/en/index.html)

<sup>151</sup> INFOSAN. Triggers and GLEWS Diseases. WHO. 2010.

<http://www.who.int/zoonoses/outbreaks/glews/en/index2.html>

<sup>152</sup> Ibid.

<sup>153</sup> Beijing Declaration on Food Safety. World Health Organization. 27 November 2007.

[http://www.who.int/foodsafety/fs\\_management/meetings/Beijing\\_decl.pdf](http://www.who.int/foodsafety/fs_management/meetings/Beijing_decl.pdf)

<sup>154</sup> Improving Urban Food Supply and Distribution in Developing Countries. Onumah, Gideon and Hubbard, Michael. The World Bank. 2010 <http://go.worldbank.org/PWU0FIDURO>

<sup>155</sup> "Topics in Development: Food Crisis." World Bank. 2010. <http://www.worldbank.org/foodcrisis/>



poverty because of high food prices; this shows high food prices can lead to lower food quality among the poor, and increasing malnutrition.<sup>156</sup> International food prices have fallen, however in many localized food regions, they have remained the same. Ultimately the food crisis has left proper nutrition in shambles all over the world and should be addressed through “short-term emergency measures to meet urgent critical needs and avert starvation...” and “also a significant increase in long-term productivity in food grain production.”<sup>157</sup>

One of the major concerns of the international community is food price volatility. Without a stable market for food prices to reduce and remain affordable, goals such as poverty reduction, and many of the medical related goals cannot be achieved.<sup>158</sup> Secretary General Ban Ki Moon proposed the launching of the *Comprehensive Framework for Action*, comprised of 20 key UN members to specifically target food prices and assist in achieving MDGs that are impacted by the crisis.<sup>159</sup> The main target of the program is in vulnerable populations and entails partnerships which assist to achieve their goals.<sup>160</sup>

One of the more important aspects of developing agriculture sectors is the World Trade Organization’s (WTO) most recent Doha Round. The most recent meeting in 2008 was intended to act as a “stepping stone to concluding” the round.<sup>161</sup> One of the Doha Development Agenda items placed agriculture on its list of targets for allowing developing countries into the global trading scheme.<sup>162</sup> The specific targets the WTO in 2001 agreed to commit themselves to comprehensive negotiations aimed at giving developing countries market access and domestic support; while asking developed countries move towards a phase out of all export related subsidies, possibly distorting markets.<sup>163</sup> These targets are far reaching and are finding difficulty being reached, leaving room for much discussion by the WTO on the issue.

The WTO will have a large role in making the agriculture market work for developing states. Upon completion of the round and achieving its goal, the agriculture sector is going to be more open and gratifying for the needs of developing countries, allowing for development to occur. The Doha Round follows some of the premises of the previous agreement on agriculture and will also help to make the trade sector and in return food prices less volatile and more predictable.<sup>164</sup>

The World Bank has criticized the current status quo for agriculture. In a 2003 Document, *International Trade in Agriculture: a Developing Country Perspective*, the World Bank stated that many objectives should be met by both developed and developing countries to adjust markets to help the poor.<sup>165</sup> In 2002, the International Cotton Advisory Committee estimated that US subsidies cost West African countries \$250 million dollars.<sup>166</sup> The World Bank also estimates that developing countries can gain \$30 Billion by reducing borders to trade.<sup>167</sup>

The WHO and WTO released a joint study on International Health issues entitled *WTO Agreements and Public Health: a Joint Study by the WHO and WTO Secretariat* which entails a special section on food

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<sup>156</sup> Ibid.

<sup>157</sup> “Ban Ki-Moon Urges Immediate And Long-Term Steps To Fight Escalating Food Crisis.” UN News Centre. 14 April 2008. <http://www.un.org/apps/news/story.asp?NewsID=26310&Cr=food&Cr1=prices>

<sup>158</sup> A/Res/63/235. Agriculture Development and Food Safety. 17 March 2009. UN General Assembly. <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N08/484/89/PDF/N0848489.pdf?OpenElement>

<sup>159</sup> “Global Issues: Food.” The United Nations. 2010. <http://www.un.org/en/globalissues/food/index.shtml>

<sup>160</sup> Ibid.

<sup>161</sup> “The July 2008 Package. Doha Development Round.” World Trade Organization. 2010. [http://www.wto.org/english/tratop\\_e/dda\\_e/meet08\\_e.htm](http://www.wto.org/english/tratop_e/dda_e/meet08_e.htm)

<sup>162</sup> “Doha Declaration Explained. Agriculture.” World Trade Organization. [http://www.wto.org/english/tratop\\_e/dda\\_e/dohaexplained\\_e.htm#agriculture](http://www.wto.org/english/tratop_e/dda_e/dohaexplained_e.htm#agriculture)

<sup>163</sup> Ibid.

<sup>164</sup> “Legal Text: the WTO Agreements.” 2010. [http://www.wto.org/english/docs\\_e/legal\\_e/ursum\\_e.htm#aAgreement](http://www.wto.org/english/docs_e/legal_e/ursum_e.htm#aAgreement)

<sup>165</sup> “International Trade in Agriculture: a Developing Country Perspective.” September 2003. The World Bank. <http://siteresources.worldbank.org/INTARD/214576-1112347900561/20424230/agtr.pdf>

<sup>166</sup> Ibid.

<sup>167</sup> Ibid.

safety with recommendations and information on this issue. The study found that only one issue has gone entirely through the WTO dispute process, that being the so-called hormone dispute between Canada, USA, and the EU, hardly any developing countries.<sup>168</sup> The study also emphasized the importance of cooperation between agencies in dealing with economic and trade issues, as far as making recommendations and contributing standards especially to developing international standards to genetically modified foods (GMOs).<sup>169</sup>

### ***Genetically Modified Foods; Additives and Biotechnology***

Genetically modified foods have made a significant change in the international food market and food safety standards. There are a number of GMOs currently on the market, with some with distinct traits such as insect resistance, resistance to viral infections, and tolerance towards certain herbicides.<sup>170</sup> Others might include biotechnologically modified foods to affect molecular biology through gene manipulation or reproductive productivity.<sup>171</sup> Foods which have been eaten for thousands of years by humans are typically considered safe, and any alteration to produced stuffs might result by governmental authorities.<sup>172</sup> Member States and Regional organizations have taken approaches which differ from region to region, or state to state. The United States has taken a rather vast approach to adopting GMOs in food. Corn is a prime example in this case. United States herbicide and insect resistant corn have grown in popularity at high rates since their introduction in 1996, and are only expected to continue in popularity among farmers.<sup>173</sup> South Africa has also developed research and development capabilities for GMOs, it was estimated in 2005 that 75% of the cotton crop was GM with trials on going in 24 African countries.<sup>174</sup>

The UN system has taken a very specific approach to GMOs. The WHO and FAO agree that GMOs should be evaluated on a case by case basis. The WHO and FAO have also agreed that they should help to promote evaluation capacity by governments of GMOs.<sup>175</sup> The UN General Assembly recently took a stance to “increase productivity, including the review, approval and adoption of biotechnology and other new technologies and innovations that are safe, effective and environmentally sustainable”.<sup>176</sup> The WTO recognized a number of other issues to be dealt with such as GMO foods containing “traceability” aspects. Traceability allows for countries to see where the food was produced and what it contains. Another WTO solution to this issue is developing a global standard for pre-market approval, going against the standard restrictions of mandating requirements and prohibiting currently in place.<sup>177</sup>

Because GMOs are widespread and can have many benefits or hindrances, countries have taken many different approaches to evaluate human risk. Countries might lack the necessary capacity to evaluate the toxicity of GMOs which are either used domestically or exported. The WHA has worked to increase involvement and participation on GMOs through the Codex Alimentarius (Codex).<sup>178</sup> Codex historically worked along with WHO and FAO to make non-GMO food safety standards align from country to country.

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<sup>168</sup> “WTO Agreements and Public Health: A Joint Study by the WHO and the WTO Secretariat.” 2002. World Trade Organization and World Health Organization. Page 66.

[http://www.who.int/media/homepage/en/who\\_wto\\_e.pdf](http://www.who.int/media/homepage/en/who_wto_e.pdf)

<sup>169</sup> Ibid., p.70.

<sup>170</sup> “Food Safety: 20 Questions On Food Safety.” World Health Organization. 2010.

<http://www.who.int/foodsafety/publications/biotech/20questions/en/>

<sup>171</sup> “Biotechnology in Food and Agriculture: FAO Statement on Biotechnology.” Food and Agriculture Organization.

<http://www.fao.org/biotech/stat.asp?lang=en>

<sup>172</sup> Ibid.

<sup>173</sup> Adoption of Genetically Engineered Crops in the US. US Department of Agriculture. 1 July 2009.

<http://www.ers.usda.gov/data/biotechcrops/>

<sup>174</sup> “Africa Environmental Outlook 2: Our Environment, Our Wealth.” Makoni, Nathaniel and Mohamed-Katerere, Jennifer. p.303. [http://www.unep.org/dewa/africa/docs/en/aeo-2/chapters/aeo-2\\_ch09\\_GENETICALLY\\_MODIFIED\\_CROPS.pdf](http://www.unep.org/dewa/africa/docs/en/aeo-2/chapters/aeo-2_ch09_GENETICALLY_MODIFIED_CROPS.pdf)

<sup>175</sup> Ibid.

<sup>176</sup> A/RES/64/224. Agriculture Development and Food Security. UN General Assembly. 31 March 2010.

<sup>177</sup> Ibid.

<sup>178</sup> WHA53.15. *Food Safety*. World Health Assembly. 20 May 2000.

<http://www.who.int/foodsafety/publications/biotech/WHA53.15.pdf>

More recently Codex was commissioned to assist the global community develop a standard for GMOs. At the 27<sup>th</sup> session of the Codex Commission, states agreed to form an Inter-Governmental Task Force On Foods Derived From Biotechnology; this task force reported on a number of issues relevant to GMOs and cross transfer of food to animals and humans and was disbanded at the 31<sup>st</sup> session in 2007.<sup>179</sup>

On a larger scale, the Convention on Biological Diversity (CBD) adopted a supplementary agreement in 2000 to regulate the transboundary movement of Living Modified Organisms.<sup>180</sup> The Cartagena Protocol on Biological Safety is a legally binding that is only applicable to GM foods if they are capable of replicating or transferring genetic material. The protocol sees many issues; however the main problems are interrelated with other UN bodies' focal points. The Codex and the protocol both see Handling, Transport, Packaging, and Identification as an issue; while the WTO and protocol both see capacity building, compliance, and financial mechanisms as critical points.<sup>181</sup> UN collaboration has been enshrined in the 2010 Target "to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth." All actors will need to collaborate to find a balance to biodiversity and GMOs to maintain an ecologically diverse planet, and the necessary steps must be taken to link IGOS, NGOS, and States to make the goal of GMO collaboration prominent on actors list of priorities.

There are a growing number of debates on the future of GMOs which are both supportive and degrading. Some concern of the issue relates to the humanitarian crisis in 2002 in southern Africa.<sup>182</sup> Because GMOs were considered to be acceptable donations of aid and were approved by the WFP as safe, they were distributed.<sup>183</sup> At the time, a UN statement involved the states to consider the limits of food at the time, and pressed them to accept whatever stuffs they could, accepting food on a case by case basis. The statement also testified that "The United Nations agencies involved will seek to establish a long-term policy for food aid involving GM foods or foods derived from biotechnology."<sup>184</sup>

#### ***Case Study: Green Peace and USAID***

The debate on GMOs use continues on specifically regarding in crops and humanitarian aid. An organization for the benefit of the planet has taken a firm stance against GMOs in all of its forms because it lacks scientific understanding.<sup>185</sup> They oppose all forms of Genetic Engineering, and are campaigning vigorously to fight for natural biodiversity, not human induced.<sup>186</sup> On the other hand, a very large humanitarian aid organization works vehemently to develop agriculture industry using biotechnology; increasing crop yields and helping farmers mitigate climate change through sustainable farm planning.<sup>187</sup> This is an issue that will occur throughout the development of the debate of industry and protecting the environment in regards to food safety as they can find vigorous opponents on both sides. As NGOs or private interest fight for what they believe, the international community will continue to listen and hopefully find a medium to using aid that has been genetically engineered, or traditional foodstuffs.

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<sup>179</sup> "Codex Works on Food Derived from Biotechnology." World Health Organization. 15 January 2010.

[http://www.who.int/foodsafety/biotech/codex\\_taskforce/en/index.html](http://www.who.int/foodsafety/biotech/codex_taskforce/en/index.html)

<sup>180</sup> "Cartagena Protocol on Biosafety." Convention on Biological Diversity. 17 December 2007.

<http://www.cbd.int/biosafety/background/>

<sup>181</sup> "Cartagena Protocol on Biosafety." 14 October 2008. <http://www.cbd.int/biosafety/issues/>

<sup>182</sup> Ibid.

<sup>183</sup> "UN Statement Regarding The Use Of GM Foods As Food Aid In Southern Africa." United Nations. 23

August 2002. <http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp076534.pdf>

<sup>184</sup> Ibid.

<sup>185</sup> What's Wrong with Genetic Engineering? Greenpeace. 2010.

<http://www.greenpeace.org/international/en/campaigns/agriculture/problem/genetic-engineering/>

<sup>186</sup> Ibid.

<sup>187</sup> "Agriculture: Biotechnology." USAID. 25 May 2010. [http://www.usaid.gov/our\\_work/agriculture/biotechnology/](http://www.usaid.gov/our_work/agriculture/biotechnology/)

## *Terrorism and Food Safety Standards*

Terrorism has many forms, and to illustrate this, scientists have been conducting studies to see what the implications of terrorism on populations through food would be. Charles D. Ferguson believes that an international attack using biological weapons or dirty bombs is going to happen, and states should prepare the necessary response measures to prepare populations for contamination efforts.<sup>188</sup> While some see this as a far reaching effort the WHO took another approach in 2002, and revised that approach in 2008.

*Food Safety Issues: Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response System* now has many core points for governments and private producers on preventing terrorism through food safety. The report specifically states that ignorance on this issue will cause death and human harm, and “responsible governments and private companies cannot ignore the possibility that terrorists, criminals and other antisocial groups may target the safety of the food supply.”<sup>189</sup>

In the past, the WHO has focused on giving guidance and supporting programs. More specifically the WHO has worked to strengthen capacity on food safety management programs, public health disease alerts, and response systems. These programs will need to be expanded on, as events are ever increasing and responses will be necessary in the future.<sup>190</sup> The report noted various cases of contamination of different diseases of all types resulting in over 720,000 unintentional infections globally from 1985 through 1996. Thus illustrating that by means of deliberate attacks, many more people may be affected.<sup>191</sup>

The affects from a terrorist attack on food will not just result in death and disease but many different issues which will have worldwide effects. The economic and trade impact will be diverse, with many different countries fearing imports of that certain type of food, or possibly limiting trade from that particular country. All foods are exported or moved in some way shape or form either domestically or internationally, and as the global food crisis continues to occur, a slowdown in the food sector will only hinder the poorest nation’s ability to cope and feed their population.<sup>192</sup>

An attack would also result in an adverse affect on public health services. Recent swine flu responses by the international community have been vast, however many countries lack the care necessary to deal with this issue on their own.<sup>193</sup> Depending on the vastness of the attack, many regions might be affected, with the problem that no state can fully predict when the next attack will occur. Public health may not be seen as a relation to food safety, however they are directly intertwined and must be addressed together, in particular in expanding response capabilities and education on hazardous materials contamination on food.

As a result of the prediction of deliberate attacks countries have become more adapt in preparing strategies. Nevertheless, there is still a disparity between developing nations and developed nations response strategies. The WHO focuses on many aspects of response, including preparedness, predictions, and evaluating hazardous materials. The Center for Disease Control of the USA has developed a very comprehensive list of response preparedness strategies encompassing different parts of the United States.<sup>194</sup> To the contrary, some developing states are relying on systems such as INSOFAN and current international health regulations to provide them with adequate information on how to fight food terrorism.<sup>195</sup> Countries, consumers, and producers have been encouraged to review documents and look to all actors to provide

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<sup>188</sup> Charles D. Ferguson. “Combating and Preparing for Radiological Terrorism: The International Dimension.” UN Secretary General Advisory Board on Disarmament Affairs. 5 February 2004.

[http://www.un.org/disarmament/HomePage/AdvisoryBoard/42nd\\_Session/PDF/Ferguson\\_5Feb2004.pdf](http://www.un.org/disarmament/HomePage/AdvisoryBoard/42nd_Session/PDF/Ferguson_5Feb2004.pdf)

<sup>189</sup> “Food Safety Issues: Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems.” World Health Organization. 2002.

<http://www.who.int/foodsafety/publications/general/en/terrorist.pdf>

<sup>190</sup> Ibid., p.3.

<sup>191</sup> Ibid., p.6.

<sup>192</sup> Ibid.

<sup>193</sup> “The World Health Report 2008: Primary Healthcare: Now More than Ever.” World Health Organization. 2008.

[http://www.who.int/entity/whr/2008/whr08\\_en.pdf](http://www.who.int/entity/whr/2008/whr08_en.pdf)

<sup>194</sup> Ibid., p.9.

<sup>195</sup> Ibid., p.11.

innovative solutions; conversely, states should bear in mind that their safety and well being are self determined.

The many strategies to curb terrorism are various and cover many ranges. Aversion Strategies are similar to those previously set in place by the WHO, and can be enhanced by reducing access to hazardous material. Radioactive, biological, chemical waste or even pesticides reaching terrorist hands can cause a massive outbreak in many different regions and be quite deadly. These agents should also not be able to have access to entry points for food such as distribution centers, inspection agencies, or even restaurants. Finally, useful resource material to governments and people are highly effective in preventing outbreaks of agro terrorism, and all actors have been asked to prepare necessary strategies and spread education on the issues of terrorism and food safety.<sup>196</sup>

### ***Conclusion***

Food safety standards have no one solution. As the world continues to change economically, socially, and technologically, food will change, populations will either adjust or resist adjustment. The international market is complicated in this regard, as cultures continue to mix they will require massive amounts of how food should be regulated and permitted in certain areas. The disparity between developed and developing nations is widespread on many characteristics of food safety standards, and the disparity continues to grow. Developing nations farmers are struggling to compete with farmers in developed states which are subsidized, and are lacking agriculture innovation to provide continual competition. Politics are deeply involved in making promises tangible, and making more organizations involved in developing nation's efforts to develop will be pivotal to establishing a fair and safe food market. Efforts in new forms of food safety will need to be made to adjust to new threats; and IGOs, NGOs, and States will have to make food safety a priority to establish primary health, social equality, and economic prominence.

### ***Committee Directive***

The WHO through the WHA has set a strategic range of goals. Although considered far-reaching, they are realistic if they are achieved to promote social and economic welfare. How are current programs working and how effective are they to achieve these goals? Do programs need revision? Delegates should be knowledgeable of WHO related activities in regards to food safety, and be willing to encourage new plans that do not repeat ongoing or failed efforts. An understanding of the UN system as it was mentioned above would be highly beneficial, particularly the WHO's connection to Other UN agencies and specialized bodies. Delegates are strongly encouraged to review materials from both NGOs and IGOs. A strong understanding of prior UN Resolutions or WHA resolutions and other important documents are necessary for committee. Most importantly, knowledge of your country's stance on freeing markets, GMOs, and on subsidized agriculture will be essential to having fruitful discussions in committee. Ask yourselves the following: Does my country's culture permit GMOs? Does my country subsidize farming? What is our position on the foreign subsidization of farmers? Are market restrictions prohibiting development in my country? What are the limitations of agreements that we can look to? What innovative solutions have been overlooked in making developing food safety standards better?

## **Topic III: Accelerating Progress Against Neglected Tropical Diseases**

### ***Introduction***

The neglected tropical diseases are a set of fourteen ailments which primarily affect the poorest people on earth.<sup>197</sup> They largely are also ancient diseases which have a low profile because they are the source of social stigma.<sup>198</sup> For instance, leprosy, lymphatic filariasis (LF), leishmaniasis, and others, cause dramatic

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<sup>196</sup> Ibid., p.19.

<sup>197</sup> "WHO: Control of Neglected Tropical Diseases." WHO. [http://www.who.int/neglected\\_diseases/en/](http://www.who.int/neglected_diseases/en/)

<sup>198</sup> "Intensified Control of Neglected Diseases: Report of an International Workshop." World Health Organization. Geneva. 2004. [http://whqlibdoc.who.int/hq/2004/WHO\\_CDS\\_CPE\\_CEE\\_2004.45.pdf](http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_CEE_2004.45.pdf)

physical disfigurement which lead to social isolation, making women unmarriageable and sometimes to the extent of making it taboo for an infected mother to touch her own children.<sup>199</sup> In many countries these diseases can be grounds for divorce.<sup>200</sup> They are considered neglected because, until very recently, there has been little effort made or money spent to research, or to develop and improve medicines for these illnesses. For instance, little is known about how the bacteria responsible for Buruli ulcers infects humans,<sup>201</sup> no one knows why children have a higher intestinal worm burden than adults,<sup>202</sup> and there is little incentive for pharmaceutical companies to develop new antihelminthic drugs, which are used to treat parasitic worm infestations, when the target populations for these drugs have no money to pay for them.<sup>203</sup> Because these diseases affect the poor; because they are endemic in very remote areas or in urban slums; and because, unlike HIV/AIDS and malaria they do not carry a high mortality index, they command little attention. It should be pointed out that the count of NTDs is somewhat arbitrary. There are good arguments for adding several other diseases to the list, and the list of “diseases” covered by the WHO’s NTD department includes snakebite which clearly is not a disease. There is also an important argument to be made that adding diseases to the list of “officially recognized NTDs” is problematic because it risks diluting the resources and emphasis being placed on those which have the greatest impact.

Despite their low profile, these diseases have a staggering reach and impact. Worldwide, 800 million people have intestinal roundworms, 600 million have whipworms, and 570 million have hookworms.<sup>204</sup> And these are not different groups of people. Almost all of the 1.4 billion people living in extreme poverty have one, and most have two or more parasitic infections.<sup>205</sup> Dr. Peter Hotez says that essentially every child living on less than \$1.25 a day is poly-parasitized.<sup>206</sup> Given that intestinal worm infestations in children are known to cause stunted growth,<sup>207</sup> as well as an estimated 40% decrease in adult income capacity,<sup>208</sup> it is commonly held that these diseases not only thrive in the midst of poverty, but promote it.

Dr. Hotez has presented compelling evidence suggesting that NTDs not only promote poverty and thrive in conflict and post-conflict zones, but that they might be a causative agent in developing conflict.<sup>209</sup> He also points out that these diseases are largely endemic in regions in which other global security concerns arise.<sup>210</sup> NTDs are highly prevalent in non-developed nuclear states, or states thought to be pursuing nuclear programs, including India, China, Pakistan, the Democratic People’s Republic of Korea, Syria, and Iran.<sup>211</sup> These states carry between 25% and 30% of the global burden of hookworm, ascariasis, and LF,

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<sup>199</sup> Peter J. Hotez. “Rescuing the Bottom Billion Through Control of Neglected Tropical Diseases.” Speech given before the National Institute of Allergy and Infectious Diseases. April 27, 2010.

This speech is available in audio and video (with keynote slides) through iTunesU.

<sup>200</sup> Ibid.

<sup>201</sup> “WHO: Buruli Ulcers.” WHO. <http://www.who.int/buruli/en/>

<sup>202</sup> Peter J. Hotez. “Rescuing the Bottom Billion Through Control of Neglected Tropical Diseases.” Speech given before the National Institute of Allergy and Infectious Diseases. April 27, 2010.

<sup>203</sup> Ibid.

<sup>204</sup> Peter J. Hotez, David H. Molyneux, Alan Fenwick, and others. “Control of Neglected Tropical Diseases.” *New England Journal of Medicine*. Vol. 357 No. 10. September 6, 2007. <http://content.nejm.org/cgi/reprint/357/10/1018.pdf>

<sup>205</sup> Peter J. Hotez, Alan Fenwick, Lorenzo Savioli, and other. “Rescuing the bottom billion through control of neglected tropical diseases.” *Lancet*. Vol. 373. pp. 1570-1575.

<sup>206</sup> Peter J. Hotez. “Rescuing the Bottom Billion Through Control of Neglected Tropical Diseases.” Speech given before the National Institute of Allergy and Infectious Diseases. April 27, 2010.

<sup>207</sup> Peter J. Hotez, David H. Molyneux, Alan Fenwick, and others. “Control of Neglected Tropical Diseases.” *New England Journal of Medicine*. Vol. 357 No. 10. September 6, 2007. <http://content.nejm.org/cgi/reprint/357/10/1018.pdf>

<sup>208</sup> Hoyt Bleakely. “The Economics of Malaria: Economic Effects of Childhood Exposure to Tropical Disease.” *American Economic Review*. Vol. 99 No. 2. Pp. 218-223. 2009. <http://www.aeaweb.org/articles.php?doi=10.1257/aer.99.2.218>

<sup>209</sup> Peter J. Hotez. “Rescuing the Bottom Billion Through Control of Neglected Tropical Diseases.” Speech given before the National Institute of Allergy and Infectious Diseases. April 27, 2010.

<sup>210</sup> Ibid.

<sup>211</sup> Ibid.

and carry half the global burden of leishmaniasis, leprosy, and trachoma.<sup>212</sup> Hotez points out that this should be seen as an opportunity for an important kind of back-channel diplomacy.<sup>213</sup> Iran has been working toward development of a leishmaniasis vaccine but is struggling to make progress and 40% of the NTD burden is carried by Member States of the Organization of the Islamic Conference.<sup>214</sup>

Although several advocacy groups and public-private partnerships have begun to work on providing funding for research as well as material and medicines for interventions, there is still a great deal more need than there is resource.<sup>215</sup> Although very safe and stable treatment regimens exist for many of these diseases, they still need to be delivered regularly by persons with some training; health baselines, treatment, and outcomes need to be monitored; and the tools and guidelines for most of those items need to be developed.<sup>216</sup> Several of the diseases on the list do not have safe or stable medicines ready to be delivered to infected or at-risk populations.<sup>217</sup> For these diseases there is a need for research towards developing better control methods, better tools for identification and treatment of these diseases, and for understanding the burden of these diseases.<sup>218</sup>

### *History*

It is difficult to find a distinct point at which the notion of neglected diseases emerged. The WHA Resolution calling for an intensification of research in tropical parasitic diseases, which led to the formation of the Special Programme for Research and Training in Tropical Diseases (TDR), was passed in 1974.<sup>219</sup> This resolution clearly describes the conditions of neglect, but never uses the words neglect or neglected. The concept was clearly present, and perhaps commonplace in the medical community as early as 1985 when Lawrence Altman, writing for the *New York Times* about a new treatment for Human African Trypanosomiasis (HAT) or African sleeping sickness, described it as one of the tropical diseases that “have also come to be known as neglected diseases because of the very limited financial contributions that developed countries have made to fight this scourge.”<sup>220</sup> Seven years later Dr. Jean Pape, a professor of Medicine at Cornell and an early advocate for HIV/AIDS research, expressed his deep concern that AIDS was on track to becoming “another neglected tropical disease.”<sup>221</sup>

From that point forward it is easy to find references referring to tropical diseases as being neglected, and to see the outlines of a specific set of diseases being formed. This set of diseases was focused largely on the parasitic diseases, but included infectious diseases such as HIV/AIDS and tuberculosis. The trend began to come to a head with the decision by Doctors Without Borders (MSF) to use the proceeds from their 1999 Nobel Peace Prize to establish the “Neglected Diseases Fund” to promote access to essential medicines for populations in danger.<sup>222</sup>

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<sup>212</sup> Ibid.

<sup>213</sup> Ibid.

<sup>214</sup> Ibid.

<sup>215</sup> “A turning point 2007: Report of the Global Partners’ Meeting on Neglected Tropical Diseases.” WHO. 2007. [http://whqlibdoc.who.int/hq/2007/WHO\\_CDS\\_NTD\\_2007.4\\_eng.pdf](http://whqlibdoc.who.int/hq/2007/WHO_CDS_NTD_2007.4_eng.pdf)

<sup>216</sup> “WHO: Preventive Chemotherapy and Transmission Control (PCT).” WHO. [http://www.who.int/neglected\\_diseases/preventive\\_chemotherapy/en/index.html](http://www.who.int/neglected_diseases/preventive_chemotherapy/en/index.html)

<sup>217</sup> “WHO: Innovative and Intensified Disease Management (IDM).” WHO. [http://www.who.int/neglected\\_diseases/disease\\_management/en/](http://www.who.int/neglected_diseases/disease_management/en/)

<sup>218</sup> Ibid.

<sup>219</sup> World Health Assembly. WHA27.52. May 1974. <http://apps.who.int/tdr/svc/about/governance/documents/wha27-52>

<sup>220</sup> Lawrence K. Altman. “The Doctor’s World; New Drug for Sleeping Sickness.” *New York Times*. July 16, 1985. <http://www.nytimes.com/1985/07/16/science/the-doctor-s-world-new-drug-for-sleeping-sickness.html?sec=health&spon=&pagewanted=all>

<sup>221</sup> Sarah Henley. “Conference Heightened AIDS Debate Travel Restrictions For Victims Is Targeted For Harsh Criticism.” *St. Louis Post-Dispatch*. July 26, 1992

<sup>222</sup> “MSF: Nobel funds allocated to neglected diseases.” *Médecines Sans Frontières*. [http://www.msf.org/msfinternational/invoke.cfm?component=article&objectid=C7922C74-18F8-4205-93DD6E5FCCA4B2FE&method=full\\_html](http://www.msf.org/msfinternational/invoke.cfm?component=article&objectid=C7922C74-18F8-4205-93DD6E5FCCA4B2FE&method=full_html)

However, there was a dramatic shift following the adoption of the Millennium Development Goals (MDGs) because of the text of goal 6, “Combat HIV/AIDS, malaria, and other diseases.”<sup>223</sup> This goal led to a dramatic outpouring of economic, political, and research support in the fights against HIV/AIDS, malaria, and even tuberculosis which was added to the list of high-profile diseases because of its rate of co-morbidity with HIV/AIDS in Africa.<sup>224</sup> Thus were formed the “big three” high-profile infectious diseases afflicting the developing world and gaining the spotlight when it came to research and relief funding through efforts like the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), founded in 2002.<sup>225</sup> Although they were encouraged by the progresses made in institutional development, the researchers and advocates for those “other” diseases realized that they were being left out when it came to setting goals and developing initiatives to improve the health and life standards of those people who live in dire poverty.<sup>226</sup> That segment of the population, those who live on less than US\$1.25 per day, are what Oxford economist Paul Collier calls “the bottom billion,” an estimated 1.4 billion people, or one sixth of the world’s population.

Certainly part of the problem of addressing those “other diseases” comes from the simple problem of trying to effectively address several very different target diseases at the same time. In December of 2003 the WHO held a workshop in Berlin on intensifying the control of neglected diseases and pointed out several similarities between them, among the most notable, the fact that some of these diseases have not always been neglected, but have been widely studied and effectively treated or eliminated in the developed areas of the world.<sup>227</sup> They also pointed to other similarities, such as geographic distribution, the fact that most neglected diseases have high morbidity but low mortality indexes, and that many are the subject of social stigma.<sup>228</sup> However, despite the breadth of considerations given to the reasons why the status of these diseases should be elevated, the workshop never gave a definitive list of diseases considered neglected. Eleven diseases are mentioned in the follow-on publication, and only some of those are discussed at all extensively. Based upon the work of the Berlin conference, the WHO established the Department of Control of Neglected Tropical Diseases (DCNTD) in 2005 to develop and implement action plans which would build upon those similarities to achieve broader coverage and higher impact.<sup>229</sup>

A group of researchers, including two who had been present at the Berlin workshop, published a paper in 2005 advocating just such an integrated approach for addressing these multiple diseases. Not only did they provide an important set of integrated interventions (which will be discussed later), they also provided the first formal list of those diseases which they considered to be the Neglected Tropical Diseases (NTDs).<sup>230</sup> The thirteen diseases on their list are all now on the DCNTD list with the addition of yaws and the inclusion of the non-disease snakebite.

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<sup>223</sup> “United Nations Millennium Development Goals: Goal 6.” United Nations.

<http://www.un.org/millenniumgoals/aids.shtml>

<sup>224</sup> Peter J. Hotez. “The ‘Biblical Diseases’ and US Vaccine Diplomacy.” *Brown Journal of World Affairs*. Volume XII, Iss. 2. 2006. <http://www.watsonblogs.org/bjwa/Hotez%20Updated.pdf>

<sup>225</sup> “About the Global Fund: Who We Are.” The Global Fund.

<http://www.theglobalfund.org/en/about/>

<sup>226</sup> Peter J. Hotez. “Rescuing the Bottom Billion Through Control of Neglected Tropical Diseases.” Speech given before the National Institute of Allergy and Infectious Diseases. April 27, 2010.

<sup>227</sup> “Intensified Control of Neglected Diseases: Report of an International Workshop.” World Health Organization. Geneva. 2004. [http://whqlibdoc.who.int/hq/2004/WHO\\_CDS\\_CPE\\_CEE\\_2004.45.pdf](http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_CEE_2004.45.pdf)

<sup>228</sup> Ibid.

<sup>229</sup> “Neglected Tropical Diseases: Hidden Successes, Emerging Opportunities.” World Health Organization. Geneva. 2006. [http://whqlibdoc.who.int/hq/2006/WHO\\_CDS\\_NTD\\_2006.2\\_eng.pdf](http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_2006.2_eng.pdf)

<sup>230</sup> David H. Molyneux, Peter J. Hotez, and Alan Fenwick. “‘Rapid-Impact Interventions’: How a Policy of Integrated Control for Africa’s Neglected Tropical Diseases Could Benefit the Poor.” *PLoS Medicine*. Public Library of Science. November 2005. <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.0020336#pmed-0020336-b3> The article provides a graphic labeled “The Thirteen Neglected...”, but lists only 10 diseases. The other three, which are assumed to be consistent between the two lists, are Chagas disease, dengue, and fascioliasis.



### *Neglected Tropical Diseases (NTDs)*

The easiest way to separate the diseases for the purposes of initial description is by cause also called etiology. In the case of the NTDs currently recognized by the DCNTD, there are four etiologic groups. The largest of these groups are the helminthic diseases, which are parasitic infections of some type of worm or fluke. These include the soil-transmitted helminth (STH) infections, schistosomiasis, lymphatic filariasis, onchocerciasis, dracunculiasis, and fascioliasis. The second etiologic group is also caused by a parasitic agent, but in this case the agent is a protozoan. These diseases are HAT, Chagas disease, or American Trypanosomiasis, and leishmaniasis. The third etiologic group is made up of bacterial infections: trachoma, leprosy, Buruli ulcer, and yaws. Finally we have the only viral disease on the list: dengue, or dengue hemorrhagic fever. Etiology is important to remember because diseases in the same etiological group can often be treated in very similar or identical manners, although this is not always true.

### *Case Study: The Helminthic Diseases*

Helminthic diseases are all parasitic worm diseases. The STH diseases: ascariasis or roundworms, trichuriasis or whipworms, and hookworms, are all intestinal worms which are transmitted to humans through soils contaminated by fecal matter of infected hosts.<sup>231 232 233</sup> Ascaris and trichuris worms are transmitted through ingestion of eggs that have matured in the soil.<sup>234 235</sup> Hookworm transmission happens primarily through larval penetration of the skin, but can also occur following ingestion of larvae.<sup>236</sup> As stated previously, it is estimated that almost every person among the bottom billion are infected with at least one, and probably more of these parasites. Roundworms and whipworms live in the intestines and take nourishment from food ingested by the host. Hookworms live in the small intestine, but take their nourishment from blood they extract from the intestinal walls. Infestations of all three worms lead to malnutrition and anemia and heavy worm loads cause stunting of growth and decreased cognitive function along with distention of the belly and intestinal obstruction. Children with STH infections fall completely off of the standardized growth charts within three months.<sup>237</sup>

Schistosomiasis and fascioliasis are both caused by parasitic trematodes, or flukes. Schistosomiasis is the second largest NTD in terms of prevalence (following the STHs) with an estimated 207 million persons infected.<sup>238</sup> The infection is acquired from physical contact with fresh water which is contaminated with larval forms of the fluke known as cercariae.<sup>239</sup> These blood flukes live primarily in the large veins draining the urinary system and intestines.<sup>240</sup> The females lay eggs in venules, and those eggs move progressively toward the intestines, bladder, or ureters to be excreted in the feces or the urine causing significant damage and disability.<sup>241</sup> The eggs hatch in fresh water and infect snails, where they develop into cercariae which in turn infect the fresh water supply.<sup>242</sup>

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<sup>231</sup> "Parasitic Disease Information: Ascaris Infection." Centers for Disease Control. September 2008.

[http://www.cdc.gov/ncidod/dpd/parasites/ascaris/factsht\\_ascaris.htm](http://www.cdc.gov/ncidod/dpd/parasites/ascaris/factsht_ascaris.htm)

<sup>232</sup> "Trichuriasis." Institute for International Cooperation in Animal Biologics. Iowa State University.

<http://www.cfsph.iastate.edu/Factsheets/pdfs/trichuriasis.pdf> ;

<sup>233</sup> "Hookworm." Institute for International Cooperation in Animal Biologics. Iowa State University.

<http://www.cfsph.iastate.edu/Factsheets/pdfs/hookworms.pdf>.

Soil-transmitted helminthes are primarily human only and not zoonotic. There are some zoonotic species of STH worms, but they are rare and even more rarely develop as intestinal infestations in humans.

<sup>234</sup> "Parasitic Disease Information: Ascaris Infection." Centers for Disease Control. September 2008.

[http://www.cdc.gov/ncidod/dpd/parasites/ascaris/factsht\\_ascaris.htm](http://www.cdc.gov/ncidod/dpd/parasites/ascaris/factsht_ascaris.htm)

<sup>235</sup> "Trichuriasis." Institute for International Cooperation in Animal Biologics. Iowa State University.

<http://www.cfsph.iastate.edu/Factsheets/pdfs/trichuriasis.pdf>

<sup>236</sup> "Hookworm." Institute for International Cooperation in Animal Biologics. Iowa State University.

<http://www.cfsph.iastate.edu/Factsheets/pdfs/hookworms.pdf>.

<sup>237</sup> Peter J. Hotez. "Rescuing the Bottom Billion Through Control of Neglected Tropical Diseases." Speech given before the National Institute of Allergy and Infectious Diseases. April 27, 2010.

<sup>238</sup> Ibid

<sup>239</sup> "WHO: Schistosomiasis." WHO. <http://www.who.int/schistosomiasis/en/index.html>

<sup>240</sup> Ibid.

<sup>241</sup> "Parasites and Health: Schistosomiasis." Centers for Disease Control.

Fascioliasis is one of the small group of NTDs that is truly zoonotic.<sup>243</sup> The primary host for these liver flukes are domestic animals such as cattle and sheep, though they may also be found in other animals such as rabbits and rodents.<sup>244</sup> The disease cycle is very similar to that of schistosomiasis in that the eggs of the fluke hatch in fresh water and infect snails and then the mature larvae encyst on vegetation. Human infection occurs when those cysts are consumed, either with vegetation they are attached to or when free-floating cysts are consumed on utensils or food washed in or prepared on surfaces washed with contaminated water.<sup>245</sup> Because this is a parasite of domestic animals it grows to a considerable size and causes significant damage and severe symptoms as the immature worms migrate through the liver.<sup>246</sup> Because of poor reporting the prevalence of fascioliasis has a wide estimate of between 2.4 and 17 million infections.<sup>247</sup>

LF and onchocerciasis are both caused by filarial worms, parasites which are delivered to the host by biting insects carrying larvae.<sup>248</sup> LF is also known as elephantiasis because of the severe disfiguration and enlargement of affected limbs and genitals which can occur in victims.<sup>249</sup> Filarial worms live in the lymphatic system or subcutaneous regions of the host's body and produce microfilariae which circulate in the victim's blood providing the return path to the vector insect.<sup>250</sup> Onchocerciasis, or river blindness, is transmitted by blackflies which are found near fast-flowing rivers.<sup>251</sup> The larvae form nodules in subcutaneous tissue where they mature.<sup>252</sup> Adult females then release as many as 1,000 microfilariae per day which circulate through the blood stream causing intense symptoms including rashes, lesions, and blindness when they die in the host.<sup>253</sup> There are scattered reports of zoonotic filarial infections,<sup>254 255</sup> but they are extremely rare and the details of initial host and transmission method are not clear. LF infects an estimated 120 million people worldwide, and it is estimated that 37 million are infected with onchocerciasis.<sup>256</sup>

The treatments for these diseases are varied. The proposed treatment regimen for STH infections are identical: single doses of one of two anti-helminthic drugs -- albendazole or mebendazole.<sup>257</sup> These treatments are limited mostly by availability of the medicines or other factors, such as the fact that there is a growing rate of mebendazole-resistant hookworm infections, or that de-worming must be repeated more than twice per year due to re-infection.<sup>258</sup> Albendazole is also used as an adjunct in treating LF along with either ivermectin, another anti-helminth which is also used to treat onchocerciasis, or diethylcarbamazine

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- <http://www.dpd.cdc.gov/dpdx/html/Schistosomiasis.htm>
- <sup>242</sup>“WHO: Epidemiological situation.” WHO. <http://www.who.int/schistosomiasis/epidemiology/en/>
- <sup>243</sup>“WHO: Fascioliasis.” WHO. [http://www.who.int/neglected\\_diseases/diseases/fascioliasis/en/index.html](http://www.who.int/neglected_diseases/diseases/fascioliasis/en/index.html)
- <sup>244</sup> Ibid.
- <sup>245</sup> Ibid.
- <sup>246</sup> Ibid.
- <sup>247</sup> Tiffany M. Doan. “Fascioliasis Control Program: What is Fascioliasis.” Central Connecticut State University. [http://www.biology.ccsu.edu/doan/FCP/fcp\\_fascioliasis.htm](http://www.biology.ccsu.edu/doan/FCP/fcp_fascioliasis.htm)
- <sup>248</sup> “Parasites and Health: Filariasis.” Centers for Disease Control. <http://www.dpd.cdc.gov/dpdx/html/filariasis.htm>
- <sup>249</sup> “Lymphatic filariasis: Clinical manifestations.” WHO. [http://www.who.int/lymphatic\\_filariasis/epidemiology/epidemiology\\_manifestations/en/index.html](http://www.who.int/lymphatic_filariasis/epidemiology/epidemiology_manifestations/en/index.html)
- <sup>250</sup> Parasites and Health: Filariasis.” Centers for Disease Control. <http://www.dpd.cdc.gov/dpdx/html/filariasis.htm>
- <sup>251</sup> “WHO: Onchocerciasis.” WHO. <http://www.who.int/topics/onchocerciasis/en/>
- <sup>252</sup> Ibid.
- <sup>253</sup> Ibid.
- <sup>254</sup> Parasites and Health: Filariasis.” Centers for Disease Control. <http://www.dpd.cdc.gov/dpdx/html/filariasis.htm>
- <sup>255</sup> PR Hira, A. Al-Buloushi, N. Khalid, and others. “Zoonotic filariasis in the Arabian Peninsula: autochthonous onchocerciasis and dirofilariasis.” *American Journal of Tropical Medicine and Hygiene*. Vol. 79 No. 5. 2008. Pp 739-741. <http://www.ajtmh.org/cgi/content/full/79/5/739>
- <sup>256</sup> Peter J. Hotez, David H. Molyneux, Alan Fenwick, and others. “Control of Neglected Tropical Diseases.” *New England Journal of Medicine*. Vol. 357 No. 10. September 6, 2007.
- <sup>257</sup> Peter J. Hotez, David H. Molyneux, Alan Fenwick, and others. “Control of Neglected Tropical Diseases.” *New England Journal of Medicine*. Vol. 357 No. 10. September 6, 2007. <http://content.nejm.org/cgi/reprint/357/10/1018.pdf>
- <sup>258</sup> Ibid.

citrate.<sup>259</sup> LF treatment is currently limited to breaking the lifecycle chain of the worm by killing microfilariae in the host which, in turn, prevents the spread of the disease. Schistosomiasis is treated solely with praziquantel, one of the most expensive anti-helminthic drugs used by WHO,<sup>260</sup> and fascioliasis is treated with triclabendazole.

### *Alternative Frameworks*

There are other ways to divide these diseases. As an example, many of these diseases are vector-borne, meaning that they are transmitted from an infected host to another individual through an arthropod or other animal.<sup>261</sup> This is important because an important step in controlling or eliminating vector-borne diseases may include controlling the vector, especially when dealing with diseases that are also zoonotic in nature. Zoonotic diseases are diseases that can be transmitted directly between animals and humans.<sup>262</sup> The distinction between vector-borne zoonoses and non-zoonotic vector-borne diseases is also important because, in the case of non-zoonotic vector-borne diseases, effectively treating the human population can serve to remove the disease as a public-health risk, whereas, with zoonotic diseases, vector control is a centrally important step in disease control.

But perhaps the most important way to group these diseases is based upon the distinction between “tool ready” and “tool deficient” diseases. Tool ready diseases are those for which there are effective medications available in forms that can be easily delivered and administered, even in large-scale operations.<sup>263</sup> In contrast, “tool deficient” diseases are those for which effective treatments either have not been developed, involve medications that are dangerous and/or toxic, or require early detection in order for treatment to be effective.<sup>264</sup> Tool-ready diseases include STH, LF, onchocerciasis, schistosomiasis, trachoma, and leprosy.<sup>265</sup> Tool-deficient diseases include HAT, Chagas, Buruli ulcer, and leishmaniasis.<sup>266</sup> This division is particularly important because it points out one of the problems of approaching NTDs using an individual or vertical strategy. First, one can see that the tool-ready diseases cover several different etiological groups, but also that a couple of tool-ready diseases are targets for elimination as public health problems, such as leprosy,<sup>267</sup> LF,<sup>268</sup> and dracunculiasis or guinea worm disease which we have not discussed.<sup>269</sup>

Given that many of these diseases are co-endemic, it would seem a logical step to build upon the successes of these programs to rapidly deploy the ready tools against other tool-ready diseases instead of building several redundant structures to treat each disease independently. Through combining programs, fostering private-public partnerships, and partnering with NGOs, the Global Network for Neglected Tropical Diseases has developed a “Rapid-Impact Package” to treat seven different diseases at a cost of 50 cents per person per year.<sup>270</sup> Dovetailing such solutions with existing infrastructure available for delivery to

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<sup>259</sup> Ibid.

<sup>260</sup> “Preventive Chemotherapy in Human Helminthiasis.” WHO. 2006.

[http://whqlibdoc.who.int/publications/2006/9241547103\\_eng.pdf](http://whqlibdoc.who.int/publications/2006/9241547103_eng.pdf)

<sup>261</sup> “CIESIN Thematic Guides: Vector-borne Diseases.” Columbia University Center for International Earth Science Information Network. <http://www.ciesin.columbia.edu/TG/HH/veclev2.html>

<sup>262</sup> “Zoonoses and veterinary public health (VPH).” WHO. <http://www.who.int/zoonoses/en/>

<sup>263</sup> “Integrated control of the neglected tropical diseases.” WHO and The Carter Center. May 2008. [http://www.who.int/neglected\\_diseases/WHO\\_HTM\\_NTD\\_2008.1\\_OK.pdf](http://www.who.int/neglected_diseases/WHO_HTM_NTD_2008.1_OK.pdf)

<sup>264</sup> Ibid.

<sup>265</sup> “Neglected Tropical Diseases: Preventive Chemotherapy and Transmission Control (PCT).” WHO. [http://www.who.int/neglected\\_diseases/preventive\\_chemotherapy/en/](http://www.who.int/neglected_diseases/preventive_chemotherapy/en/)

<sup>266</sup> “Neglected Tropical Diseases: Innovative and Intensified Disease Management (IDM).” WHO. [http://www.who.int/neglected\\_diseases/disease\\_management/en/](http://www.who.int/neglected_diseases/disease_management/en/)

<sup>267</sup> “WHO: Leprosy Elimination.” WHO. <http://www.who.int/lep/en/>

<sup>268</sup> “WHO: The Global Programme to Eliminate Lymphatic Filariasis.” WHO. [http://www.who.int/lymphatic\\_filariasis/disease/en/](http://www.who.int/lymphatic_filariasis/disease/en/)

<sup>269</sup> “WHO: Dracunculiasis Eradication.” WHO. <http://www.who.int/dracunculiasis/en/>

<sup>270</sup> “Treatment Tools.” Global Network for Neglected Tropical Diseases. <http://www.globalnetwork.org/what-we-do/treatment-tools>

otherwise difficult-to-reach areas can only lower the total cost associated with such mass drug-administration solutions.

Of course, none of these solutions can address the problems of tool-deficient diseases. Despite the efforts of NGOs to spur development of new medicines, there are still only two drugs approved for the treatment of Chagas disease, and one being prepared for a proof-of-concept study.<sup>271</sup> And though the argument that the relatively small investment in such research and development has tremendous payoffs in terms of agricultural and industrial productivity,<sup>272</sup> it is difficult to figure out ways to capture those payoffs directly, leading to the common opinion that the lack of effective medicines represents a classic market failure.<sup>273</sup> It should also be pointed out that pharmaceutical development is not the only stumbling block to treating tool-deficient diseases. Effective clinical practices, diagnostic tools, and comprehensive understandings of the epidemiology and mechanisms of these diseases are also lacking.

There are, however, arguments made that such solutions represent an “over medicalization” of the problem, and distracts from the larger social and development problems.<sup>274</sup> The argument goes that inexpensive medicines and repeated treatments mask the real problems, and that providing effective infrastructure for clean water, appropriate sanitation, and delivery of comprehensive medical care are the true long-term solutions to these issues.<sup>275</sup> Finally, there is one other perspective which must be considered. All of this discussion is couched in a comfortably developed-world frame of reference, which shares little with the life-experience of those who live with these diseases. In a radio interview discussing the eradication of dracunculiasis, former President Jimmy Carter described the difficulty in explaining to the people of a small African village why they must filter the water from their local pond, which they consider a sacred gift.<sup>276</sup> The cultural sensitivity necessary to be able to explain that filtering the water is not insulting that sacred gift but that the guinea worm eggs are particularly important. None of the solutions we might develop will be successful if they are rejected by the populations suffering from these diseases.

### **Conclusion**

The neglected tropical diseases, which have long been the hidden and shame-filled plight of the very poorest peoples on earth, are finally being recognized as important pieces in the global poverty puzzle. They appear to promote not only poverty, but social decline and conflict as well. Unfortunately, because they affect mostly poor people who live on the margins or in hard-to-reach areas, these diseases usually are not the first targets for national health programs, nor are they targets for pharmaceutical research and development. Still, great strides have been taken in addressing them, and some are on the verge of being eliminated as public health problems. Advocates for a broad-spectrum-mass-drug strategy say that the success of vertical programs, such as the drives to eradicate leprosy, LF, and dracunculiasis, are proof that we can drastically change the fate of the peoples who are co-infected or poly-parasitized with these diseases. Others are concerned that the use of a chemotherapy-based solution overlooks the root social problems, such as a lack of effective public infrastructure to deliver clean water, sanitization, and medical care.

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<sup>271</sup> Alanna Shaikh. “New Drug for Chagas Disease?” *End The Neglect*. July 8, 2010.

<http://endtheneglect.org/2010/07/new-drug-for-chagas-disease/>

<sup>272</sup> David Canning. “Neglected diseases – the health economics perspective.” From *Intensified Control of Neglected Diseases*. WHO. 2004. [http://whqlibdoc.who.int/hq/2004/WHO\\_CDS\\_CPE\\_CEE\\_2004.45.pdf](http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_CEE_2004.45.pdf)

<sup>273</sup> Aarthi Rao and Robert Hecht. “R&D Policy and Financing Options to Help End the Neglect.” *End The Neglect*. July 6, 2010. <http://endtheneglect.org/2010/07/rd-policy-and-financing-options-to-help-end-the-neglect/>

<sup>274</sup> Jerry Spiegel, Shafik Dharamsi, Kishor Wassan, and other. “Which New Approaches to Tackling Neglected Tropical Diseases Show Promise?” *Public Library of Science. PLoS Medicine*. May 18, 2010.

<http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000255>

<sup>275</sup> *Ibid*.

<sup>276</sup> Public Radio International. “The World: Eradicating Guinea Worm Disease in Southern Sudan.” April 2, 2010. <http://www.theworld.org/2010/03/29/eradicating-guinea-worm-disease/>

### *Committee Directive*

Because much work has already been done to bring these diseases out of the shadows, it will be the role of this committee to dig deeper into the topic and develop ways to speak directly to the topic and accelerate the progress that the WHO, its partner organizations, and the national health ministries of its Member States are making against these diseases. This will mean developing a clearer understanding of the challenges faced in delivering rapid impact package medications to the areas where organizations such as the Global Network have not been able to penetrate, or the reasons why pharmaceutical companies have pledged specific medicines for free for the elimination of certain diseases, but will not make the same pledge for the same medication for other diseases.

Because we have so many diseases to discuss, and the problems facing their control and elimination are so many, there is a lot of room for creativity in the ways we can address them. For instance, there is an important conversation that could be formed around the economics at hand. In his section of *Intensified Control of Neglected Diseases*, David Canning points to the common contention that the free market will never solve NTDs and tries to point out that there is a tremendous return on investment (ROI) in public health.<sup>277</sup> What he does not suggest is a means for capturing that return. Is there some room to stimulate private investment by providing ways to access that ROI, and what mechanisms could be used in order to do that? As another example, Dr. Hotez has pointed out the connection between NTDs and the Islamic world, particularly Iran. In what ways could international cooperation on work towards a leishmaniasis vaccine be used as a bridge to other peaceful and peace-building initiatives?

Finally, connected to the contentious conversation between the proponents of mass drug administration and the proponents of social-infrastructure development, is the question of whether or not we, by separating out groups of NTDs for rapid elimination, are not simply recreating the circumstances by which the NTDs became the “other diseases” of the MDGs. If we eliminate leprosy; LF; and dracunculiasis, and through PCT we effectively eliminate the STH; onchocerciasis; trachoma; and schistosomiasis, what guarantees can we make that we will then still be resolved to continue pressing for progress against leishmaniasis; HAT; Chagas; Buruli ulcer; and so on.

## **Technical Appendix Guide**

### ***Topic I. Addressing Chronic Cardiovascular and Lifestyle-Related Diseases***

Institute of Development Studies. <http://www.eldis.org/go/topics/resource-guides/health/chronic-disease>

This is an excellent set of resources and research on the impact and management of chronic diseases worldwide. This page keeps an updated list of recommended readings on policy issues surrounding chronic diseases.

C. J. Lin, J. T. Liu, C. H. Chang, and others. “Association of Obesity and Chronic Diseases in Taiwan.” <http://myais.fsktm.um.edu.my/4872/>

The full text of this article is not available via MyAIS. The two specific items that are available are the abstract and bibliography. However, both the abstract and the bibliography are extensive, especially with regards to the issues of obesity and chronic disease in Asia.

James Davis, Jessica Busch, Zoë Hammat, and others. “The Relationship Between Ethnicity and Obesity in Asian and Pacific Islander Populations: A Literature Review.” <http://www.ishib.org/journal/ethn-14-01-111.pdf>

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<sup>277</sup> David Canning. “Neglected diseases – the health economics perspective.” From *Intensified Control of Neglected Diseases*. WHO. 2004. [http://whqlibdoc.who.int/hq/2004/WHO\\_CDS\\_CPE\\_CEE\\_2004.45.pdf](http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_CEE_2004.45.pdf)

This article provides an excellent roundup of the research considering the links to obesity in Asian populations. It is particularly important because it considers population groups of Asians living within other cultures as well.

Reed Abelson. "An Insurer's New Approach to Diabetes." *New York Times*. April 13, 2010. Discusses the strategy being adopted by United Health to combat type 2 diabetes. The insurance company is teaming up with YMCAs and local pharmacies to provide local advice and encouragement to its customers who are pre-diabetic.

Holger J. Schünemann, Mark Woodhead, Antonio Anzueto, and others. "A vision statement on guideline development for respiratory disease: the example of COPD."  
<http://www.lumc.nl/rep/1070/att/91028021319455/91102035054452.pdf>

Provides an excellent overview of the ways in which international bodies need to rework the processes behind the development of treatment guidelines. Several striking points are made, and the discussion on the need for more uniformity in data reporting echoes clearly the concerns voiced by the Pederson article on the changing face of COPD with regards to the use of the words gender and sex.

Tim J. Cole, Mary C. Bellizzi, Katherine M. Flegal, and others. "Establishing a standard definition for child overweight and obesity worldwide: International survey."  
<http://www.bmj.com/cgi/content/full/320/7244/1240>

Brings to the fore the challenge of using existing standards as a measure of obesity especially given differences in epidemiologic response due to heredity.

James W. Levenson, Patrick J. Skerrett, and Michael Gaziano. "Reducing the Global Burden of Cardiovascular Disease: The Role of Risk Factors." *Preventive Cardiology*. Volume 5, No. 4. Fall 2002. pp 188-199.

This article provides an excellent review of the interactions between cardiovascular disease risk factors and the growth of the disease across economic regions and sectors. It also provides an important discussion of the challenges facing developed and developing countries in addressing these risk factors.

Edward H. Wagner, Brian T. Austin, Connie Davis, and others. "Improving Chronic Illness Care: Translating Evidence into Action." <http://healthaff.hiwire.org/cgi/reprint/20/6/64>

The article provides a practical discussion of ways to improve care delivery for patients struggling with chronic diseases within the context of a system designed to deliver care for acute illnesses. Although this article is centered on care delivery in advanced systems, some of the lessons can be applied to developing health systems.

Thomas Bodenheimer, Kate Lorig, Halsted Holman, and other. "Patient Self-Management of Chronic Disease in Primary Care."  
[http://www.impactbc.ca/files/documents/LS4 - PSM in Chronic Disease - JAMA article.pdf](http://www.impactbc.ca/files/documents/LS4-PSM%20in%20Chronic%20Disease-JAMA%20article.pdf)

The article presents case studies making it clear that a cultivated "care partnership" between care provider and patient empowers the patient to make important self-care decisions. This strategy is far more effective than education-only programs in promoting healthy living.

Arliss Anderson Rothman and Edward H. Wagner. "Chronic Illness Management: What is the Role of Primary Care?" <http://www.annals.org/content/138/3/256.full.pdf+html>

This article is squarely set in the context of the primary-care paradigm of the United States, but provides an important consideration of the question: what is the role of the primary health-care system in dealing with the epidemic of chronic illness?

## ***Topic II. Addressing Food Safety***

Braun, Joachim von and Brown, Mary Ashby. Ethical Questions of Equitable Worldwide Food Production Systems The American Society for Plant Biologists. *Plant Physiology*. Vol. 133. 2006. Pp. 1040-1045.

Braun and Brown make very interesting points about the ethics of the current food system. They argue that human rights are being violated in the current system by child exploitation, natural resources, and technology. They concluded the article with recommendations on how to solve these issues. The case is also made for humans to have access to land, and adequate farm space.

Codex Secretariat. *Understanding the Codex Alimentarius*. Third Edition. 2006.

The Codex Alimentarius is the international food code. This extensive introductory guide gives you a history of development of food safety standards, the codex commission workings, how the codex works for consumers and on science and finally, codex and international participants. The guide goes through the steps to understanding food safety standards, and how foods are evaluated. The future of codex is also discussed within the guide as well.

Eckart, Nancy A. *The Future of Science: Food and Water for Life*. The American Society for Plant Biologists. Vol. 21 (2) 2009. Pp. 368-372.

This article covers many issues on food safety; ranging from food security, accessibility, modifications and developmental issues. The author makes a case for sustainable and new innovation in food crops, via means of technological development. The author also advocates that Africa will be greatly affected by climate change, particularly on food issues and provides ways alternatives to the status quo.

High Level Task Force on the Global Food Security Crisis. *Comprehensive Framework for Action*. 2008.

This report of the task force on the global food crisis illustrates the UNs current framework for action, and provides many detailed issues of the problems populations are facing. The Food crisis contains immediate needs as well as long term issues which are both addressed, and should be understood to find a comprehensive resolution to the issues at hand. The report also illustrates Global Partnership opportunities and financial implications of achieving the Comprehensive Frameworks for Actions plans

Johnson, Toni, (2009). *The World Health Organization*. The Council of Foreign Relations.

The author puts the view of what the WHO can do into perspective. It goes over many of the issues discussed on the topic, not specifically touching on the issue of food safety standards, but helps to clarify some terms and definitions of the international spectrum. The article also deals with specifics on how the WHO has to compete financially with other actors in the international community.

The Public Library of Science Medicine Editors. (2008). *Public Library of Science. Scaling Up International Food Aid: Food Delivery Alone Cannot Solve the Malnutrition Crisis*. Vol. 5. (11). Pp. 1525-1527.

Hunger is seen as the world's greatest threat to public health as seen by the contributors. The issue of food aid is that it does not provide a long term solution. This article covers many topics such as stepping up programs to increase food production in developing countries, as well as humanitarian agencies working in the field in emergency situations.

Rollins, Nigel. *Food Insecurity: A Risk Factor for HIV Infection*. Public Library of Science. Vol. 4(10). 2007. Pp. 1576-1577.

Rollins makes an intriguing argument into nutrition and HIVs connection. The finding was that if humans lacked basic vitamins, they would be more susceptible to HIV transmission. The article also argues that

HIV risk behavior can be associated with food insufficiency, meaning that people whom lack food are more than likely to engage in unprotected sex, sex exchange, intergenerational sex, and lack of control in sexual relationships. Major implications associated with this issue can easily point to the MDGs, specifically 1,4,5, and 6, because of the link that health and food have to poverty.

Sekitoleko, Victoria. Trade in Food and Food Products in Africa. The African Journal of Food and Nutritional Security. Vol. 1. (1). 2001. Pp. 12-25.

This article provides for issues regarding trade of the least developed region on the planet. The author notes the change in sub Saharan Africa, and how they are quickly increasing production, but on an international level, are still not competitive enough to enter the market. A number of reasons can be attributed to this, environmental disasters such as draught, and human disasters such as war cause food emergencies and a virtual demolition of previous progress. The prospects for increasing food productivity are vast and can reach the expectations of the region, but have many more goals to accomplish before that particular one is obtainable.

Smith, David. Dushoff, Johnathon. And Morris, JG Jr. (2005). Public Library of Science. Agricultural Antibiotics and Human Health. Vol. 2. (8). PP. 731-735.

This article provides another account of GMOs, and explains the issues of antibiotics in plants and how they affect ability of human antibiotics in fighting disease. He makes a case that horizontal transmission can be negative and that community resistance to GM foods will have positive effects, and suggest using natural supplements as opposed to human engineered.

The World Bank. Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Country Exports. Report No. 31207. 2005.

This report by the WB emphasizes the needs and opportunities of developing countries. The study encourages many different strategies for development and allows for a broad discussion on food safety standards. Public health, food standards, international compliance, and learning from donor assisted projects are all discussed in the report and acts as a clearing house for ideas on the topic. The report also discusses important implications for the WB, which can be easily applicable to IGOs.

### ***Topic III: Accelerating Progress Against Neglected Tropical Diseases***

“African Programme for Onchocerciasis Control.” World Health Organization. <http://www.who.int/apoc/en/>

The African Programme for Onchocerciasis Control website is an excellent opportunity for delegates to research in detail the policy issues surround this disease. Delegates should especially pay close attention to the community-directed treatment section. This section explains the community outreach efforts that are being made to educate and empower individuals on ivermectrin treatment.

“Dedicated to eliminating the world’s leading cause of preventable blindness.” International Trachoma Initiative. <http://www.trachoma.org/core/>

This website is especially important for delegates to review as it gives the most recent news on Trachoma and NTDs. The International Trachoma Initiative specifically highlights work done in specific countries that are plagued with this disease and recent statistics that will help delegates with research. Another area that delegates should review on this site is the special report entitled, “*Blinding Trachoma Special 10<sup>th</sup> Anniversary Report: 1998-2008.*” In addition to the background guide, this report offers additional information on efforts over the past decade in addressing this disease.



*Public Library of Science – Neglected Tropical Disease Open Journal.*

<http://www.plosntds.org/home.action>

Although this specific resource has been noted within the background guide, it is essential for delegates to review this as they research this topic. This Open Journal contains an extensive and diverse set of research papers on neglected tropical diseases. If delegates are unsure where to start, they should begin by looking at the “featured editorial” that highlights a new policy issue that is being given major attention. The site is updated every month with new research papers and editorials.

The Sabin Vaccine Institute. <http://www.sabin.org/>

The Sabin Vaccine Institute is a non-profit that is focused on preventing and curing infectious diseases tropical diseases around the world. This resource will be helpful to delegates in two main areas. The first relates to the digital library that can be found on this website. The library contains a diverse set of resources including brochures, lists of outside resources, fact sheets, editorials and more. Additionally, the Sabin Vaccine Institute is a leading advocate for addressing a wide array of tropical diseases. Delegates should familiarize themselves with the advocacy meetings, Pneumococcal Awareness Council of Experts (PACE), and the Sustainable Immunization Financing initiative.

“Our Approach: Neglected Diseases.” The Bill and Melinda Gates Foundation.

<http://www.gatesfoundation.org/topics/Pages/neglected-diseases.aspx>

This resource will be helpful to delegates to review how a leading non-profit is addressing this issue through investment in high-risk areas. Delegates should review the world map of neglected diseases grants to see how targeted investments through grants have been able to make a difference. As delegates begin to prepare for discussion at the conference, they should review the more than 20 strategies this non-profit has put into place to effectively combat neglected diseases.

“Bringing the World’s Best Biology to You.” iBio Seminars. <http://www.ibioseminars.org/>

This website serves as an example of the wealth of excellent audio and video materials available on medical issues in general and NTDs in particular. This site contains lectures especially on global health. Delegates will most likely be interested in the lecture given by Norma Andrews who gives an excellent presentation on *Trypanosoma cruzi* and Chagas disease.