

WHO

MITMUNC III, 2011



Committee Welcome Letter

Dear Delegates,

I welcome you to the 2011 Massachusetts Institute of Technology Model United Nations Conference (MITMUNC 2011), World Health Organization (WHO) Committee. My name is Nikita Consul and I will be your head chair throughout the conference. As a brief introduction, I am a second-year student from Plymouth-Canton, MI, pursuing Chemical Biological Engineering and Biology, with a minor in Applied International Studies and Writing. I chaired for WHO at MITMUNC 2010 last year, and I enjoyed it so much I chose to do so again this year.

I'm definitely excited to see how each of you works to solve the world's health problems for this year's committee session! I will oversee substantive debate with my assistant chairs, Vladislav Kontsevoi and James Yeung. Vlad Kontsevoi is a first-year student from Chicago, IL studying Mathematics and Economics at MIT. He has participated in Model UN conferences since 2007 and is serving as the Director of Public Relations for MITMUNC 2011. James Yeung is a first-year student from Cambridge, MA majoring in Mathematics and Biology and minoring in Linguistics at MIT. As a high school student, he attended both the HMUN and NHSMUN conferences for four years, as Secretary, Vice President, and President of his Model UN team. We will use our collective Model UN experience to ensure the accurate use of parliamentary procedure to guarantee a lovely Model United Nations experience for all of you. We have participated in Model United Nations conferences throughout high school, and we are excited to provide all of you with the same opportunity.

The conference's success will depend on whether or not the delegates are comfortable with their policies and can credibly represent their nations diplomatically. Additionally, the delegates must be comfortable with

the purpose and extent of authority of the WHO committee. We have prepared background guides on two topics we chose for you that we hope you will enjoy learning and debating. The intent of the background guides is to help you focus on relevant research and serve as an aid to prepare yourself for possible issues that could arise in debate. We strongly encourage you to research all relevant areas and formulate resolutions according to your nation's stance.

We will be available to guide you through the conference, so feel free to ask us questions regarding your national policy, parliamentary procedure, or any other concerns. The conference will be a learning process for everyone, and that will be part of what makes the conference memorable. We look forward to working with all of you in 2011!

Sincerely,

Nikita Consul

This year, our discussion topics are:

Medical Device Technologies

Growth of Antibiotic Resistance

Medical Device Technologies

Introduction

Currently, developing countries do not have low-cost medical solutions, so medical practitioners commonly are not able to make appropriate medical decisions. Medical device technology can be improved and further developed to suit the needs of developing nations if special considerations are given when designing these products. The developing world is not able to spend as much money on devices as developed nations, for which typical medical devices are produced.

Medical devices such as cardiac defibrillators, pacemakers, and electrocardiograms feature prominently in modern medicine and are essential to maintaining patient health. However, not all countries have equal access to medical devices. For instance, an ongoing WHO survey reports that computed tomography (CT) scanners devices, which are often used in preventive medicine, have an availability of one per 65,000 people in developed countries, but only one in 3.5 million people in developing countries.

There are two root causes of the lack of availability of low-cost medical solutions in developing nations. First, the low health-care expenditures of developing nations cause corresponding low expenditures on medical devices. This lack of expenditure can be very marked: for instance, some countries cannot afford to purchase or produce sterile syringes, while others may not be able to provide reliable diagnostic or life support equipment.

A related problem is that nations do not have sufficient resources for implementing whatever medical devices they may have. For instance, lack of reliable electricity and lack of adequate water quality can have a significant negative impact on the quality of medicine. Hence, the cause of a lack of medical devices in developing nations is multi-fold.

Background & Country Blocs

The United Nations World Health Organization has kept accurate statistics and records of medical device availability and functionality in developing nations. It has convened to discuss ways to make

devices more accessible for developing nations, and to set improved guidelines for donating and procuring medical devices.

As of 2010, Statistics Acquired by World Health Organization:

TABLE 1 (ALL TABLES ARE FOUND AT END)

Additional statistics recorded by the World Health Organization in 2010 detail that the majority of Sub-Saharan Africa and South East Asia do not have official nomenclature systems for medical devices, and some countries in both the Sub-Saharan Africa and Middle East regions do not have authorities responsible for implementing and enforcing medical device specific product regulations. This data, collectively combined with the data on the chart, demonstrate possible starting points for discussion and debate.

Statistics gathered in 2005 by Espicom Healthcare Intelligence shed further light on the disparity between nations and country blocs on medical device technologies available for the public. We see that the United States of America, third largest in population behind China and India, has an estimated 306 USD amount available per capita in its medical equipment market for the year 2010. Meanwhile, Brazil, Russia, India, and China (BRIC) - each with a large, expanding market and population - have relatively low amounts of wealth and a lower expansion rate of GDP. The summary of medical equipment market in USD available per capita in 2005 is as follows:

TABLE 2

The summary of medical equipment market predicted for 2010 in 2005 is as follows:

TABLE 3

Committee Direction

- What importance do WHO guidelines for donation and procurement of medical devices by country play at the present?
 - How can they play a larger role?
 - Should they play a larger role?
- How can more countries be encouraged to donate medical devices?
 - Should more countries be encouraged

to donate medical devices to others?

- What motivation can be provided for countries to donate medical devices?
- What can encourage nations with poorer medical equipment markets to increase their per capita amount of medical equipment market?
- What role should the government of each country play to ensure that medical devices are available to the public as needed?
- To what extent are medical devices available for people of poorer nations?
 - To what extent should they be available, and within what time period should we see this increase?
 - To what extent are improvements in medical device technology necessary? To what extent can they be implemented to help poorer nations? How can the medical device technology be more accessible to developing nations?

Resources

- Nimunkar, Baran, Van Sickle, Webster: "Low-Cost Medical Devices for Developing Countries"
 - http://www.engr.wisc.edu/studentorgs/ewh/publications/conferences/2009/IEEE_EMBC/Medical_LowCostDevices/EEEMBS2009_v14.pdf
- WHO: "Guidelines for public health topics in crises"
 - <http://www.who.int/hac/techguidance/pt/ht/>
- United Nations Homepage: Articles
 - <http://www.un.org/>
- Espicom Business Intelligence: "Markets for Medical Devices in the BRIC Nations"
 - http://www.asianhnm.com/knowledge/bank/industryreports/medical-devices_bric-nations.htm
- WHO: "Global forum to improve developing country access to medical devices"
 - http://www.who.int/mediacentre/news/notes/2010/medical_devices_20100908/en/index.html

Growth of Antibiotic Resistance

Introduction

Antimicrobial drugs have become so common in the treatment of diseases that they have begun to produce an unwanted resistance in strains. The widespread use of first-line antimicrobial drugs has resulted in the developing resistance of some diseases to these first-line wonder drugs. The use of second-line or third-line drugs can combat resistant strains, but not if the use of first-line drugs is extensive enough to develop a strain that resists all drugs in place. Second-line and third-line drugs are also more toxic and more expensive, therefore less widely available.

Antibiotics have been used for the last 70 years to treat patients who have infectious diseases. Since the 1940s, these drugs have greatly reduced illness and death from such diseases. The use of antibiotics has been beneficial and, when prescribed and taken correctly, the value of antibiotics in patient care is enormous. However, these drugs have been used so widely and for so long that the infectious bacteria the antibiotics are designed to kill, have adapted over time, making the drugs less effective and demanding the need for more expensive, second- and even third-line drugs in the case of sufficient resistance build-up. Antibiotics are powerful tools and have been a beacon of modern medicine, but their misuse in the global infrastructure is the major cause of growing antimicrobial resistance. Furthermore, the problem strikes both developed and developing countries alike. A 2005 study indicated that at the time, the over-the counter use of antibiotics in Spain was 30%.

Because of this, patients often do not know whether or not their disease or affliction may actually be cured by antibiotics. But sometimes, even a prescription may not alleviate the issue of patient ignorance. In many developing countries, the infrastructure of hospitals is not very developed. For many, there is a scarcity of qualified doctors and major medical centers within a reasonable distance. First-line antibiotics are often very cheap and doctors in both the poorest and the wealthiest regions can prescribe them. One major aspect of antibiotic misuse is the prescription of antibiotics by doctors to cure any disease that they are not certain how to cure. If the disease is not bacterial-based, then antibiotics will often lead to the generation disease-resistant strains and give them another disease to deal with. If the disease is bacterial based, there is still a chance that antibiotic resistance will occur. This can happen for a number of reasons: Patients may feel better and halt their antibiotic course, drug supplies may run out or become scarce, or patients may neglect to take their medication from time to time.

The greater degree to which antibiotics are used, the higher the risk of resistance. The spread of resistant strains is propagated because the new resistant bacteria are transferred via the same vector as the original bacteria. In the case of airborne diseases such as tuberculosis (TB), the ease of transport for the disease makes it even more dangerous and costly because the more dangerous disease will spread rapidly, requiring more second- and third-line drugs and extended hospital visits to deal with them. This leads to more death in a situation dealing with fairly easy pathogens. Outside of the field of public health, the use of antibiotics can still be detrimental. The increased use of antibiotics by the food industry can lead to the further emergence of resistant bacteria and genes that threaten human health. Loss of public confidence will also affect demand for such products, with potentially serious effects for the farming sector.

Therefore our pressing need in this committee and in your papers should revolve around the following areas: the education of patients, prescribers, and the general population, the regulation of hospitals and government health systems, both national and international. Antibiotic resistance is a major public health problem worldwide, and international efforts are needed to counteract its proliferation.

Background

Following the Resolution on Antimicrobial Resistance in 1998, WHO has worked with many partners to develop the WHO Global Strategy for Containment of Antimicrobial Resistance. The global strategy by the WHO reports, "Deaths from acute respiratory infections, diarrheal diseases, measles, AIDS, malaria and tuberculosis account for more than 85% of the mortality from infection worldwide. Resistance to first-line drugs in most of the pathogens causing these diseases ranges from zero to almost 100%."

A very important pathogen the WHO has been attempting to deal with is tuberculosis, where through its Stop TB Strategy and its support of the Global Plan to Stop TB, the WHO has been working to halve TB deaths and prevalence by 2015. At the core of this program is its DOTS (Directly Observed Therapy – Short Course) program. In 1989, the WHO and the World Bank began investigating expansion of the program. After phenomenal success in the early 1990s, the WHO worked in 1995 to develop a promotion strategy for the implementation of the program. Now, approximately 60% of TB patients are being detected and cured by DOTS. Since then, the WHO has actively been attempting to revisit the issue of antimicrobial and antibiotic resistance, and attempt to get implementation of proper programs in place to effectively deal with this global issue.

In an effort to bring the issue back to the front of the world's gaze, the WHO has made antimicrobial and antibacterial resistance the theme of World Health Day on 7 April 2011. There is great confidence that you will be manufacture creative solutions to educate, implement, and help solve this ever-pressing issue.

Country Blocs

High-income countries have the highest rate of use of antibiotics, due to the greater accessibility of these drugs to the population. So, the problem of antibiotics is often only recognized and prioritized in these high-income countries. However, the problem certainly exists in low- and middle-income countries. The problem in these countries exists due to a higher prevalence of infectious disease coupled with patients who cannot afford the expensive alternative proper antibiotic drugs to widely available drugs.

Low-income countries where the economies are rapidly developing are experiencing the sharp increase in the use of antibiotics. For example, in India, China, and Brazil, the rising income is fueling increased access to antibiotics. However, infrastructure has not been adequately improved, so where there is still poor water and sanitation, disease spread continues, no different from how it was before economic gains. The increased use of antibiotics by a large population concentrated in the same area can contribute to the emergence and spread of resistant strains at a relatively quick rate.

A study was conducted to examine the prevalence of antibiotic resistance in the countries China, Kuwait, and the U.S.A. China was found to have the highest level of antibiotic resistance, followed by Kuwait, and lastly the U.S.A. In China, the mean prevalence of resistance among hospital-acquired infections was as high as 41% between 1999 and 2001. In a study conducted between 1994 and 2000, China was found to have the most rapid growth rate of resistance, at about 22% average growth per year. Kuwait held a 17% average annual growth rate of resistance between 1999 and 2003, while U.S.A. held a 6% growth rate between 1999 and 2002.

China and the U.S.A. are both major consumers of antibiotics, with the U.S.A. being a leading producer of new antibiotic drugs.

Committee Direction

- Rank and prioritize among possible solutions to the problem:
 - Further research into new antibiotics
 - Further research into causes for

resistance growth in certain regions versus others

- Increasing capability of water sanitation facilities in developing areas
- Implementing surveillance programs
- Implementing susceptibility testing worldwide
- Increasing government controls on importing, manufacturing, developing vaccines
- How can we control the overuse of cheap antibiotics that yield to growth of resistant strains?
- To what extent is antibiotic resistance spread present in urban areas? rural areas? developing regions? developed regions? How can each region play its part in helping to control the growth of antibiotic resistance?
- How is the growth of antimicrobial resistance related to increasing globalization?
- How important is it to standardize how antibiotics are developed, regulated, and managed across the world?
- What is the future for antibiotic availability, accessibility, and cost?

How can global cooperation play a role in slowing and monitoring the use of antibiotics and the growth of antibiotic resistance?

Resources

- University of Antwerp, Belgium and Leiden University, Netherlands: "Outpatient antibiotic use in Europe and association with resistance: a cross-national database study"
 - http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T1B-4FFX4C2-15&user=501045&coverDate=02/18/2005&rdoc=1&fmt=high&orig=search&origin=search&sort=d&docanchor=&view=c&acct=C000022659&version=1&urlVersion=0&userid=501045&md5=5c3e7327fd87ae87baa306698c8934d6&searchtype=a
- WHO: "WHO Global Strategy for Containment of Antimicrobial Resistance"
 - http://www.who.int/csr/resources/publications/drugresist/en/EGlobal_Strat.pdf
- WHO: "A World Free of TB"
 - <http://www.who.int/tb/en/>
- WHO Europe: "Antibiotic Resistance, Developing strategy on antibacterial resistance"
 - <http://www.euro.who.int/en/what-we-do/health-topics/disease-prevention/antibiotic-resistance/news2/news/2011/11/developing-strategy-on-antibacterial-resistance>
- The Center for Disease Dynamics, Economics and Policy: "Global Antibiotic Resistance Partnership"
 - http://www.cddep.org/projects/global_antibiotic_resistance_partnership
- Goldman Sachs International, Tufts University, Kuwait University, and Harvard University: "Antibiotic resistance as a global threat: Evidence from China, Kuwait and the United States"
 - <http://www.globalizationandhealth.com/content/2/1/6>
- UN System-Wide Earthwatch: "Antibiotic Resistance from Environmental Pollution"
 - <http://earthwatch.unep.ch/emergingissues/health/antibioticresistance.php>
- The American Academy of Microbiology: "Antibiotic Resistance: An Ecological Perspective on an Old Problem, September 2009"
 - http://academy.asm.org/index.php?option=com_content&view=article&id=232:antibiotic-resistance-an-ecological-perspective-on-an-old-problem-september-2009-&catid=40:browse-all&Itemid=79

Regional Country Blocs	Does country have Health Technology National Policy?			Does country follow WHO guidelines for medical device donations?			Has country made technical specifications of medical devices that will be procured/donated?		
	No Policy at all	Not part of National Policy	Yes, exactly	No	Follows national guidelines	Follows WHO guidelines	No	Yes, not publically available	Yes
USA	All of the region			All of the region			All of the region		
China			All of the region		All of the region		All of the region		
Russia			All of the region		All of the region			All of the region	
Canada		All of the region		All of the region			All of the region		
Australia & New Zealand	All of the region						Some of the region		
Western Europe			Most of the region	Most of the region					Most of the region
Eastern Europe	Most of the region					Some of the region	Most of the region		
Central America	Some of the region			Some of the region	Most of the region	Some of the region	Most of the region		Some of the region
South America	Some of the region		Most of the region	Some of the region			Most of the region		Some of the region
Middle East	Most of the region							Some of the region	
North Africa			Some of the region					Some of the region	
Sub- Saharan Africa	Most of the region		Some of the region	Most of the region	Some of the region	Some of the region	Most of the region	Some of the region	
Southeast Asia & Pacific Islands	Some of the region		Some of the region	Some of the region	Some of the region	Most of the region	Some of the region		

TABLE 1



Country	Market Available per capita (\$US)
Brazil	15.6
Russia	13.0
India	1.2
China	2.0
BRIC, average	3.1

TABLE 2

Country	Market Available per capita (\$US)
Brazil	18.8
Russia	21.2
India	1.4
China	2.6
BRIC, average	4.1
USA	306

TABLE 3