

The logo for GatorMUN IX features the word "Gator" in blue, "MUN" in blue, and "IX" in orange. Above the "G" in "Gator" is a stylized orange graphic of a gator's head and tail.**WORLD HEALTH ORGANIZATION**

Greetings to all Delegates,

It is a pleasure to welcome you all to the World Health Organization (WHO) at Gator MUN IX. My name is John Tamariz and I will be your Director-General this year for the duration of this conference. I was born in Miami, Florida but my family is originally from Cuenca, Ecuador. I am a 4th year student, majoring in health science and minoring in chemistry. I entered the University of Florida four years ago, with no idea of what to do with my life or where to go. During my second week, I went to my first Model UN meeting, and from then on my whole adventure at the University of Florida began. It was only few months later when I discovered that I wanted to pursue medicine. At once, I felt I had to make a decision: either to follow my dream of becoming a doctor or follow what has grown to become a passion for me. Then I realized: why not do both?

With the WHO having two of my biggest passions, politics and medicine, I hope that I can convey my love into, what I hope to be, a very satisfying committee that I hope you will enjoy. It is a difficult journey when entering this political world because of the sheer amount of knowledge you must learn, the confidence to talk to room full of delegates, and to persuade them to listen to ideas offered. The skills you learn in this competition will be essential in not only in future conferences but in any professional career that you all may be pursuing.

During the conference you will meet my two assistant directors: Shuyun Xue and Cassie Hoffman. Shuyun Xue is second year sophomore majoring business management and psychology. She joined MUN to better understand international policy and improve her public speaking and writing skills. Cassie Hoffman is a fourth year student majoring in Health Education and Behavior. She plans to attend Physician Assistant School and eventually open up a non-profit clinic for low income families to promote a healthy lifestyle. She joined MUN because she was interested in different crises around the world and because her two big passions, health and politics, would be found here. She also knew that joining MUN would give her the chance to meet people in college. Both will be available to assist you as well as direct when I am unavailable.

During your time here we will be addressing three different topics that span throughout all countries: Sexually Transmitted Diseases, Water Safety, and Bioterrorism; a small crisis may also be added to keep you all on your toes, so be prepared. Position papers are a requirement; all the necessities for the being a delegate will be available online in the Gator MUN IX website. Please also take into consideration the theme of GatorMUN IX, "empowerment through information" as you research and prepare for your position. If there are any issues or questions about the committee, the research, or the topics do not hesitate to contact me at gatormun@gmail.com.

John Tamariz
Director of the World Health Organization



Committee Background

The WHO was originally based on the League of Nations' overall goals. It received not only the League of Nations' mandates, but its resources as well.¹ The idea of the WHO was conceived in 1945 during the creation of the United Nations; diplomats wanted to create an organization that could regulate global health issues. In 1948, the WHO constitution was finally established. Made up of 193 member states, the World Health Assembly meets yearly in Geneva to set up the budget, create policies, and appoint the next Director-General every five years. The executive board is made of 34 members, elected every 3 years.² Every January they come together to create the agenda and create the resolutions for the Assembly to discuss. They also meet in May for a secondary meeting for administrative purposes.³ Their function is to produce the guidelines necessary to help address health issues in countries. The WHO also encourages independent research in the health and biomedical arenas all around the world and works with over 500 different organizations to gather and publish research.⁴ As the authority of global health in the United Nations, the WHO works alongside governments to fight against international health-related issues. The board's main function is to facilitate and advise the Health Assembly's discussions.⁵

The WHO is focused to complete the eight Millennium Development Goals by 2015. These include: eliminating hunger and poverty, (2) achieving universal primary education, (3) promoting gender equality, (4) reducing child mortality rates, (5) improving maternal health, (6) combating HIV/AIDS, malaria, and other diseases, (7) ensuring environmental sustainability, and (8) promoting global partnership for development.⁶

Committee Description

The World Health Organization at GatorMUN IX will address various health related issues that are pertinent in our society today. The theme of this year will be empowerment through information, so always keep this idea in mind when working through your position papers. This position paper will be your key to your research and preparation; it will give you the insight you need to write your position paper as well as give you the preparation for the upcoming competition. After each topic description, there will be websites and questions that will help you as you prepare for the conference. The GatorMUN IX rules and guidelines are both online at the GatorMUN IX website so make sure read them and have a copy of them for review.

¹ http://whqlibdoc.who.int/hist/chronicles/health_org_1931.pdf

² <http://www.who.int/governance/en/index.html>

³ Ibid.

⁴ http://www.ehow.com/about_5402913_history-world-health-organization.html

⁵ <http://www.who.int/governance/en/index.html>

⁶ <http://www.un.org/millenniumgoals/>



Topic 1: Sexually Transmitted Diseases

Introduction

Sexually Transmitted Diseases (STDs) are ever-growing and present dangers that are of great concern to developed and developing countries. Their effects bring across pain, suffering, and paranoia in populations from all age spectrums. Their effects can lead to different consequences such as infertility, ectopic pregnancy, cancer and even death.⁷ Sexually transmitted infections (STIs) are a more commonly used term because there are a few infections that do not cause disease. Each year, WHO conducted that there are approximately 340 million new cases of syphilis, gonorrhea, chlamydia and trichomoniasis that occur in men and women ages 15-49.⁸ Economic troubles, political strife, health-care inefficiencies are just a few reasons why so levels of STDs are exponentially rising.

History

Before the development of modern medicines treatment was limited to reducing symptoms rather than the disease. The first voluntary hospital for treating venereal diseases was founded at London Lock Hospital.⁹ During the 1800s, Contagious Diseases Act was established by British government to prevent STD infections in army personnel, yet ended up harming the female population of Britain by enabling officials to inspect “any” woman under the suspicion of being infected with an STD.¹⁰ After the formulation of antibiotics and pregnancy pill, there was a huge surge of sexual activity leading to the emergence of many new and disastrous diseases, including, HIV, genital herpes, Chlamydia, and many more.

Today, the WHO is still focusing on the elimination of STDs from the global populations. In 2004, the 57th World Health Assembly formulated its first Global Strategy on Reproductive Health. Of the many strategies, it specifically emphasized on the combat of STDs, the promotion of sexual health, and the improvement of family planning, and infertility services.¹¹ In 2006, the World Health Assembly authorized the Global Strategy for the Prevention and Control of STIs. This strategy was put into action to urge all countries to control the transmission of STIs by implanting a number of interventions.¹² The global strategy involves promoting safer sexual behaviors, general access to quality condoms at affordable prices, and early availability for health services in order to reduce the number of people of suffering from STDs as well as prevent future infections.

⁷ <http://www.who.int/mediacentre/factsheets/fs110/en/>

⁸ <http://www.afro.who.int/en/clusters-a-programmes/frh/sexual-and-reproductive-health/programme-components/control-of-sexually-transmitted-and-reproductive-tract-infections-and-hiv-aids.html>

⁹ <http://www.news-medical.net/health/History-of-Sexually-Transmitted-Disease.aspx>

¹⁰ <http://www.victorianweb.org/gender/contagious.html>

¹¹ http://www.who.int/reproductivehealth/about_us/en/index.html

¹² <http://www.who.int/mediacentre/factsheets/fs110/en/>



Chlamydia

Prevalence

Chlamydia causes more cases of STD infections than any other bacterial pathogen, with over 140 million infections worldwide¹³. In 1999, it was found that 50 million women were infected with the pathogen while 42 million men were infected¹⁴. Having over 43 million people, as of 1999, the largest infected population is found in South/Southeast Asia whereas Sub-Saharan Africa has 16 million infected people, and 9.5 million are found in Latin America and the Caribbean¹⁵. In some underdeveloped areas, over 90% of populations are found infected with this disease. Unfortunately, even with the established control used to moderate the levels of chlamydia infection, there are still 500 million people around the world who remain at risk of the disease and over 6 million people that are found blind in areas including Central and Southeast Asia, the Middle East, Africa, and Latin America. The more frequent areas for chlamydia proliferation continue to be underdeveloped areas, especially those where poverty, limited water, and an absence of personal hygiene are common.¹⁶

History/Description

In 1957, Chlamydia was finally isolated from embryonated eggs and by 1963, Chlamydia was identified in a cell culture¹⁷. Originally, it was difficult to recognize Chlamydia because many thought of it as a virus rather than a bacterium and its symptoms were related to other diseases^{18, 19}. Unfortunately, due to its symptoms being related to other infections, it did not receive the same recognition and focus as many graver and deadlier STDs.^{20, 21} Since then, the World Health Organization implemented the Global Strategies for Prevention and Control of STIs in March 2006 to moderate the high levels of STDs, including Chlamydia, in the global community.

Chlamydia trachomatis is an obligate intracellular parasite that only affects humans. Obligate intracellular parasites are organisms that are only able to survive inside a cell because it may lack the nutrients or mechanisms (in this case—ATP) to survive on its own; this characteristic is shared with viruses and therefore was the reason for the difficult and long overdue discovery. The bacterium has two stages in its life cycle: the elementary body and the reticulate body. The elementary body is equivalent to the form of a spore. This is the stage where the bacterium's body prevents attack from phagolysosomal attacks, allowing it to survive from inside the cell. After entering an endosome, the elementary body enters into a vegetative state,

¹³ http://www.who.int/vaccine_research/diseases/soa_std/en/index1.html

¹⁴ <http://www.avert.org/std-statistics.htm>

¹⁵ http://www.who.int/hiv/pub/sti/who_hiv_aids_2001.02.pdf

¹⁶ http://www.who.int/vaccine_research/diseases/soa_std/en/index1.html

¹⁷ http://www.tjclarkdirect.com/bacterial_diseases/chlamydia_trachomatis.htm

¹⁸ http://www.tjclarkdirect.com/bacterial_diseases/chlamydia_trachomatis.htm

¹⁹ <http://www.thesite.org/sexandrelationships/safersex/sexualhealth/chlamydia>

²⁰ <http://www.thesite.org/sexandrelationships/safersex/sexualhealth/chlamydia>

²¹ http://www.healthandnutritiontips.net/history_of_chlamydia/history_of_chlamydia.html

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the reticulate body, and uses the ATP from human cell as energy for binary fission. After binary fission, the body returns to its elementary form and is released through exocytosis.²² The bacterium is usually spread in areas where T-cells, B-cells, or phagocytes are not available. Its cell wall contains a lipopolysaccharide layer and no peptidoglycan, making it a gram negative bacterium.

Chlamydia is transmitted through secretions, usually infecting people through the mucosal membranes, including the rectum, urethra, throat, cervix, and conjunctiva.²³ The discharge is usually ranges from a milky white color and odorless smell to a yellowish color and smelly odor²⁴. Unprotected sexual intercourse, transfer of contaminated hands to eyes, and childbirth are commons way for the bacteria to transfer to another host.²⁵ Furthermore, because it is not easily spread among women, the bacteria are transferred by the male through heterosexual or homosexual contact. This disease is known for its silent and asymptomatic infection. Around 75% of women and 25% of men show no symptoms of chlamydia. The symptoms for women include abdominal pain, irregular menstrual bleeding, and abnormal vaginal bleeding, especially after sexual intercourse. Men's symptoms include non-gonococcal urethritis, abnormally colored discharges, pain and swelling in the testicular region, tingling or itching sensation, and burning or pain during urination.²⁶ Chlamydia can lead to many complications including, infertility, ectopic pregnancy, pelvic inflammatory disease, trachoma, conjunctivitis, joint inflammation, chronic pain, and pneumonia.²⁷

For Chlamydia, testing occurs through urine samples for men and women, swabs from the vagina or from the urethra at the tip of the penis. Antibiotics, including erythromycin and tetracyclin, chemotherapeutic interventions treatments, and eyelid surgery are the main ways to eliminate chlamydia from the system. Vaccines are being formulated by many corporations, including NIAID and Antex Biologics, to administer it before adolescence, an effective age that could inhibit disease proliferation.²⁸ Many efforts are being made to promote new prevention techniques that were previously lacking or unenforced in many areas. Behavioral change has been difficult to produce, yet a few countries, including Zambia, Uganda, and Thailand, have been more successful in creating interventions through the use of a multi-sectoral approach. Distribution of protective barriers has been difficult to promote and need to be modified depending on the population settings and geographical area. Also, there has been inefficient use or a lack of health-care service, in many underdeveloped areas, which does not help the increasing chlamydia levels.²⁹

²² http://www.tjclarkdirect.com/bacterial_diseases/chlamydia_trachomatis.htm

²³ http://www.tjclarkdirect.com/bacterial_diseases/chlamydia_trachomatis.htm

²⁴ <http://www.thesite.org/sexandrelationships/safersex/sexualhealth/chlamydia>

²⁵ <http://www.avert.org/chlamydia.htm#>

²⁶ http://www.tjclarkdirect.com/bacterial_diseases/chlamydia_trachomatis.htm

²⁷ <http://www.avert.org/chlamydia.htm#>

²⁸ http://www.who.int/vaccine_research/diseases/soa_std/en/index1.html

²⁹ http://whqlibdoc.who.int/hq/2006/WHO_RHR_06.10_eng.pdf

Gonorrhea

Prevalence

Gonorrhea is contagious bacterial infection that swept across the global community. In 1999, it was estimated to have contaminated around 62.35 million people, with women having the greater portion of cases. In the 1990s, Cambodia and Papua New Guinea had the highest prevalence rates of gonorrhea than any other country. As the years went by, the gonorrhea incidence levels began to dramatically increase, especially for Eastern European countries.³⁰ Western Europe and Australia have seen sustained increases in gonorrhea infection levels. For example, in 1998, Australia witnessed 50% increase in cases.³¹ In developing nations there have been variable increases and declines due to the effects of HIV prevention that has helped moderate gonorrhea levels, limited quality of surveillance or access to healthcare, etc.³² As of 1999, the area with highest levels of gonorrhea infections is East Asia and Pacific, with 27.20 million infected victims. Sub-Saharan Africa has 17.03 infected victims while Latin American and Caribbean have 7.27 million infected people.³³

History/Description

Gonorrhea dates back to 1256, when King Louis IX passed laws to prevent the spread of the disease. By 1611, the English Parliament also tried to inhibit the spread of gonorrhea by enacting an additional law. The Medieval Period did not fare so well either, as seen by Pope Boniface having to reverse a law that forced doctors to finish their education on Catholic priesthood before they could practice medicine.³⁴ Gonorrhea levels increased during and after World War II and began to fluctuate in the 1950s until the 1970s. The culprit of such increases may have been the sexual revolution in the 1960s and the baby boom in the 1950s. By the '80s and early '90s, gonorrhea all but disappeared in some areas, including Sweden. But by the late 1990s, the levels were on the rise once again.³⁵ Initially, gonorrhea was treated with mercury and eventually it was switched with silver nitrate. Finally, in the 1940s, penicillin was used to successfully destroy the infection. Unfortunately, by the 1970s, the sole use of penicillin was not enough to stop the infection due to the rise of bacterial resistance. From that decade on, multiple antibiotics were coupled together to cure the infection.³⁶ To make the situation worse, by 2010, gonorrhea was beginning to resist cephalosporin, the last-line drug used for treatment. As of now, the CDC and WHO are working towards an action plan to stop further spread, including finding alternative treatments, increasing awareness among the population, and improving monitoring methods.³⁷ In 2008, the CDC's Division of STD Prevention created a strategic plan

³⁰ <http://www.avert.org/std-statistics.htm>

³¹ http://www.who.int/drugresistance/Antimicrobial_resistance_in_Neisseria_gonorrhoeae.pdf

³² http://www.who.int/drugresistance/Antimicrobial_resistance_in_Neisseria_gonorrhoeae.pdf

³³ <http://www.avert.org/std-statistics.htm>

³⁴ <http://www.onlinemedicinetips.com/disease/g/gonorrhea/History-Of-Gonorrhea.html>

³⁵ http://www.who.int/drugresistance/Antimicrobial_resistance_in_Neisseria_gonorrhoeae.pdf

³⁶ <http://www.onlinemedicinetips.com/disease/g/gonorrhea/History-Of-Gonorrhea.html>

³⁷ <http://www.pbs.org/newshour/rundown/2010/04/who-gonorrhea-could-become-untreatable.html>



spanning 2008-2013 that seeks to prevent STI infertility, HIV transmission, STID related abnormalities during pregnancy, as well as reduce STD disparities and increase STD prevention capacities.³⁸ Furthermore, CDC's Gonococcal Isolate Surveillance Project currently monitors any areas with probable antibiotic resistance.

Gonorrhea, or *Neisseria gonorrhoeae*, is a bacterial infection that affects many areas in the body, including the cervix, anus, throat, blood, joints, rectum, and urethra. It is mostly spread through unprotected vaginal, anal, and oral sex. It has serious adverse effects if the infection is left untreated, most commonly pelvic inflammatory disease, infertility, epididymis, septicaemia, and meningitis. Symptoms appear 1 to 14 days after exposure. Symptoms for both men and women include irritation and/or discharge in the anus, and burning/pain in while urinating, and abnormal discharges in their sex organs.³⁹ Antibiotics are the most successful way of curing gonorrhea. The drawback is that antibiotic resistance is on the rise, making the battle against the disease a lot more difficult. Notably, Japan recently found a gonorrhea strain resistant to all antibiotic treatments currently being used. One reason for the difficulty in eradicating gonorrhea strains is that safe and protected oral sex is not very common, which makes infections in the pharynx all the more difficult to cure with antibiotics. Another reason for the antibacterial resistance is the high frequency of its utilization. The increase use of the drug by inpatient and outpatient settings only augments the chances of bacteria gaining resistance.⁴⁰

HIV/AIDS

Prevalence

At the end of 2009, USAIDS estimated that over 30.8 million adults and 2.5 million children were living with the HIV virus (or Human Immunodeficiency Virus) around the world. 2009 was also the year where 1.8 million people died due to AIDS (Acquired Immunodeficiency Syndrome) and left over 16.6 million children (ages 18 or younger) orphaned. Over half of the people who contract HIV are younger than 25. In addition, 95% of people who are infected with HIV live in developing countries.⁴¹ Sub-Saharan Africa has two-thirds of the portion of HIV infections, with 22.5 million infected people residing there, while East, South, and South-East Asia and North American have 4.1 million and 1.5 million infected people, respectively.⁴² Eastern Europe is seeing a huge surge of HIV infections, mainly due to injecting drug use.⁴³ Although male-to-women ratios are relatively equal around the world, there are specific countries where the ratios are largely skewed. For example, 40% of the total HIV female HIV infections come from South Africa. In addition, recent data shows an increase of infection rates

³⁸ <http://www.cdc.gov/std/general/DSTDP-Strategic-Plan-2008.pdf>

³⁹ <http://www.avert.org/gonorrhea.htm>

⁴⁰ <http://www.cbc.ca/news/world/story/2011/07/11/gonorrhea-resistant.html>

⁴¹ http://www.who.int/vaccine_research/diseases/soa_std/en/index4.html

⁴² <http://www.avert.org/worldstatinfo.htm>

⁴³ http://www.who.int/vaccine_research/diseases/soa_std/en/index4.html



among male-with-male sexual activity, especially in higher income nations.⁴⁴ The largest levels of infections occur in commercial sex workers, seasonal migrant workers, and truck drivers.⁴⁵

History/Description

HIV is said to be closely related to the Simian Immunodeficiency Virus (SIV). Many theories exist on how the virus was transferred. One example is the hunter theory, where a chimp's blood was transferred through the cuts of a hunter, the virus adapted to become HIV-1. HIV-2 cases were rare, usually more confined to African countries. Studies show that the first case of HIV was between 1884 and 1924. Studies also found that HIV-2's two subtypes, A and B, passed to humans around the 1940 and 1945, respectively. AIDS finally identified in the summer of 1981 as a result of an elevated amount of Kaposi's sarcoma incidents by eight young gay men living in New York. In 1982, the syndrome was officially named as AIDS and by 1984, a scientist identified HIV as the culprit.⁴⁶

The spread of the HIV only grew worse through international and national travel. One major factor may have been the gay sexual revolution in the 1970s and 80s.⁴⁷ One controversy that emerged during the 1980s was that Haitians were included as part of the risk group, causing much stigmatization against the Haitian community.⁴⁸ After the whole world realized the catastrophic impact that HIV was imposing, many countries and supranational organizations began to take action. In 1987, UK began to raise awareness of AIDS and U.S. followed soon behind in 1988. World AIDS Day was created in 1988 by health ministers to spread the public awareness. Moreover, the Joint United Nations Programme on AIDS (UNAIDS) was established in 1995 to improve universal access on HIV treatment, prevention, care, and support.⁴⁹ In an attempt to support resources used to fight infectious diseases, including HIV, many organizations, including WHO and G8, joined forces to create what is now known as the Global Fund to Fight AIDS, Tuberculosis and Malaria. Through the Global Fund, over 600 programs in 150 countries were funded; since commencing in 2002, the fund has saved 6.5 million people with AIDS.⁵⁰

HIV is now known to be a retrovirus. A retrovirus is a type of virus that contains RNA and transmits it to cellular organisms. As the HIV enters the cell body, it utilizes a reverse transcriptase that it brings along to morph the RNA into DNA genetic material. From there, the DNA is transported into the cell's genome (the cell's overall genetic material) and is integrated into the genome (through the use of an integrase protein). Like all viruses, a retrovirus will undergo two stages: a lysogenic and lytic stage. During the lysogenic stage, the virus is keeps multiplying until a trigger forces it to enter the lytic stage. In the lytic stage, the virus accumulates until it ruptures the cell and spreads to neighboring cells. HIV is also found to become dormant in many cases. HIV is infamous for destroying the immune system. Specifically

⁴⁴ <http://www.avert.org/worldstatinfo.htm>

⁴⁵ http://www.who.int/vaccine_research/diseases/soa_std/en/index4.html

⁴⁶ <http://www.avert.org/aids-timeline.htm>

⁴⁷ <http://www.avert.org/origin-aids-hiv.htm>

⁴⁸ <http://www.avert.org/aids-history-86.htm>

⁴⁹ <http://www.unaids.org/en/aboutunaids/>

⁵⁰ <http://www.theglobalfund.org/en/about/secretariat/>


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it targets the CD4 T-Cells, a kind of T-helper cell that helps in maximizing immune response during infections. It can become dormant for as long as 5-10 years. During its dormancy, the virus slowly diminishes the levels of CD4 T-Cells.⁵¹

As for symptoms, HIV will cause flu-like symptoms in the first two to four weeks since the transmission. These include: fever, headache, swollen lymph glands, sore throat, and rashes. After a few years, the symptoms may grow worse, due to the diminishing levels of T-helper cells. The symptoms include, but are not limited to, diarrhea, weight loss, fever, coughs, and more. AIDS develops after enough damage to the immune system occurs. From then on, the individual is susceptible of being contaminated by opportunistic infections. Some infections include Herpes zoster, Kaposi's sarcoma, non-Hodgkin's lymphoma, etc.⁵²

HIV is mainly spread through sexual fluids and blood. Hence, all forms of unprotected sex, using contaminated needles or syringes, blood transfer during birth and breastfeeding are common ways for HIV to be transmitted. Currently there is no cure for HIV/AIDS, but it can be inhibited. Powerful antiretroviral drugs are used to interfere with HIV's ability to enter a cell or to integrate itself into the genome. One major drug is the highly active antiretroviral therapy (HAART). The HAART is a three-drug process—including nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), and protease inhibitors—that is used in various combinations to kill HIV and to prevent resistance. In 2004, fusion inhibitor, a new type of drug, was approved for treatment. In addition, in 2011 studies from Kenya, Uganda, and Botswana found that taking a daily antiretroviral tablet by people uninfected by HIV can lower risk of HIV transmission by 73%. Currently, the WHO and UNAIDS are working hard to formulate a pre-exposure prophylaxis (or vaccine) that can be used to decrease HIV levels. Success in providing treatment has varied in many areas. For example, Senegal has one of the lowest HIV prevalence levels in Sub-Saharan Africa by responding early to HIV problem and utilizing strong political and community leadership. Other countries, including South Africa, have failed to respond efficiently enough, which led disastrous levels of HIV infections.⁵³ Areas that need improvement are in the health, communication, and education systems, decreasing stigmatization, and greater government spending on health programs, especially in developing countries. Improvements have been made in international support, such as the creation of the President's Emergency Plan For AIDS Relief (PEPFAR), a U.S. program that focuses on allocating money to many developing countries in need.⁵⁴

Research Questions

1. What are the prevalence rates and incidence rates of the most prevalent STDs in your country? What are the factors that affect these rates?
2. How has your country been affected by the outbreaks?
3. What sort of steps has your country taken to decrease the outbreaks? If there are no current outbreaks, what steps has your country taken to ensure that it stays that way?

⁵¹ http://www.lef.org/protocols/infections/hiv_aids_01.htm

⁵² http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001620/#adam_000594.disease.symptoms

⁵³ <http://www.avert.org/hiv-aids-africa.htm#contentTable2>

⁵⁴ <http://www.avert.org/hiv-aids-africa.htm#contentTable4>



4. What does your country currently need to help improve its situation?
5. What are your country's overall goals and positions towards inhibiting STDs?
6. What new/ongoing treatments has your country implemented?
7. How can the WHO improve the country's situation?

Helpful Websites

- http://www.who.int/topics/sexually_transmitted_infections/en/
- www.avert.org
- www.web.worldbank.org
- www.unicef.org
- www.cdi.org
- <http://www.paho.org/>
- www.cdc.gov
- http://www.iusti.org/newsletter/IUSTI_Global_Update_2009_2.pdf
- <http://web.worldbank.org/>

Topic 2: Water Safety

Prevalence

About 2.5 billion people do not have improved sanitation facilities and over 884 million people are still using unsafe drinking water sources.⁵⁵ Due to inadequate access to safe water and sanitation services thousands of children die or become gravely ill each day.⁵⁶ With no private and decent sanitation facilities in schools, children, particularly girls, are not receiving the education they need.

Although the global community is now on track to meet the goal for 2015, it is still dangerously behind in terms of sanitation. 1.2 billion people have no facilities and are forced to use hazardous and demeaning practices of open defecation to survive.⁵⁷ In South Asia and sub-Saharan Africa, two-thirds of the population lack access to improved sanitation. In Sub-Saharan Africa and Oceania water coverage remains below 60%, in all other regions the rates are 80% or higher. Studies found that the poor and those who reside in rural areas are less likely to have access to improved water and sanitation facilities than their richer and their urban neighbors.⁵⁸ Fortunately, for the first time the number of people without an improved water source has dropped below one billion.

Since 1990, 1.8 billion people have received access to safe drinking water. The data

⁵⁵ <http://www.unicef.org/wash/>

⁵⁶ Ibid.

⁵⁷ http://www.unicef.org/wash/index_statistics.html

⁵⁸ Ibid.


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provided the UN in 2010 presents that global coverage has advanced from 77% to 87% between 1990 and 2008--very close to the 88% that is targeted by 2015. Unfortunately, according to the 2010 UNEP report, only 26 of 53 countries in Africa will reach the MDG target for drinking water.⁵⁹

China is prone to chemical pollution or other natural contamination; due to its regional risk, which concerns water sector specialists because of the lack of qualitative indicators to support the measure of coverage.⁶⁰ The situation has become so grave that Africans and Indians have more access to mobile phones and nuclear weapons than toilets despite MDGs Cinderella effect to allocating 10% of available funds to water and sanitation programs.⁶¹

Inefficient water sanitation is a major component for the dwindling health of the global community. At this time, the WHO is working to help countries produce cleaner and more plentiful water through the Water Sanitation and Health (WSH). The WSH works on aspects of water sanitation and hygiene, especially where the health burden is high. Currently, the organization is working on an intervention that can make a difference especially where water safety knowledge is poor. Water Sanitation and Health has divided its work into six core activities that involve: Drinking-water quality management, cholera surveillance and prevention, water supply and sanitation monitoring, water and sanitation in different settings, and water resources management.⁶² The main objective of WSH is to optimize health benefits of sustainable water and waste management and reduce water and waste related diseases.⁶³ In order to obtain this goal, the WSH plans to support the health sector and encourage others to reduce water/waste disease burden. In addition, they plan to help non-health sectors to be conscientious on the health impacts of their actions.⁶⁴ The WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) keep a data base containing sanitation coverage estimates, water supply, and data from household surveys. Water Law and Standards is a joint project of WHO and the United Nations Food and Agriculture Organization (FAO) to inform people on the national water legislation.⁶⁵ Also, UNICEF and many other partners are working in over 90 countries to improve water supplies and sanitation facilities in schools and communities. In emergencies they provide relief to communities and nations threatened by disrupted water supplies and disease. Each UNICEF WASH program is designed to aid the Millennium Development Goals associated with water and sanitation.⁶⁶ The goal is to diminish the proportion of people without access to safe water and basic sanitation in half by 2015.⁶⁷

⁵⁹ <http://uk.oneworld.net/guides/water>.

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² http://www.who.int/water_sanitation_health/en/

⁶³ optimize health benefits of sustainable water and waste management

⁶⁴ http://www.who.int/water_sanitation_health/about/en/index.html

⁶⁵ http://www.who.int/water_sanitation_health/database/en/index.html

⁶⁶ <http://www.unicef.org/wash/>

⁶⁷ Ibid.



Improving and Monitoring Water Quality

Water monitoring provides important information of the condition of streams, lakes, estuaries, and coastal waters. The information provided determines if the water is safe enough to swim in, fish from, and use for drinking. There are many ways to monitor water conditions. One way to monitor water conditions is by sampling the chemical condition of water, sediments, and fish tissue to determine levels of key constituents such as dissolved nutrients, oxygen, oils, metals, and pesticides. Water specialists also monitor physical conditions such as temperature, flow, sediments, and the erosion potential of stream banks and lakeshores. Monitoring can be conducted in temporary, random, selected, or regular sites depending on the situation.⁶⁸

Monitoring is conducted for many reasons including characterizing waters, identifying trends in water quality over time, finding existing or emerging water quality issues, gathering data to design specific programs, determining program efficiency, and responding to emergencies.⁶⁹ Water quality is determined by comparing the physical and chemical characteristics of water samples with water quality standards. Many agencies and organizations use the data to help meet water quality standards. Drinking water guidelines are also designed to improve the condition of clean and safe water for human consumption.

Currently, efforts are being made to improve how monitoring is conducted, shared, and used.⁷⁰ A major global issue is the decline of water quality as the human population continues to grow. Declining water quality has become a global issue of concern as industrial and agricultural activities expand and climate threatens to cause major alterations to the hydrological cycle. Globally, the leading water quality problem is eutrophication, a result of high-nutrient loads, which impairs beneficial uses of water. In addition, personal care products and pharmaceuticals such as birth control pills, painkillers and antibiotics, also affect the water quality of aquatic ecosystems.⁷¹ Poor water quality has a direct correlation on water quantity. Contaminated water originates from local pumps, unsanitary containers or storage, or dirty hands and cannot be used for drinking, bathing, industry or agriculture. Unfortunately, taking contaminated water out of the picture limits the amount of useable water in a given area for people to use.⁷² Another issue is that the criteria used to assess water quality vary from location to location. For some more developed countries higher standards of purity are required for drinking water, whereas more underdeveloped nations use water of less quality.

To improve water quality, communities must establish environmental management solutions that may be incorporated in water management ideas. In doing so, nations may be able to not only give solutions on how to improve the quality of water, but also to assess the situation of different environmental disasters, including droughts and floods. Improving water quality

⁶⁸ <http://water.epa.gov/type/watersheds/monitoring/monintr.cfm>

⁶⁹ <http://water.epa.gov/type/watersheds/monitoring/monintr.cfm>

⁷⁰ <http://water.epa.gov/type/watersheds/monitoring/monintr.cfm>

⁷¹ <http://www.un.org/waterforlifedecade/quality.shtml>

⁷² http://www.unicef.org/wash/index_53133.html



means that an estimated 20 to 50 liters of uncontaminated water are needed.⁷³ The Safe Drinking Water Project functions to inform people about the dangers of unsafe water and how to clean their daily supply of water with inexpensive products. Treating water at the household level has shown great results and it one of the most effective and cost-effective approaches to preventing waterborne disease in normal and emergency circumstances.⁷⁴ The Safe Drinking Water Project and similar projects promote household water treatment and safe storage, a role that is important to ensure that water is safe when being in use.⁷⁵

Preventing Water-Borne Diseases

Two million people— most being children—die each year from waterborne diseases and billions more suffer from illness.⁷⁶ Everyday people drink unsafe or contaminated water, even though steps to prevent this contamination lie within our reach. For example, 80 percent of deaths in Nepal are due to poor sanitation.⁷⁷ A Nepalese report blamed diarrhea for the death of 28,000 children every year. It is believed that promoting awareness and education about waterborne diseases and their prevention can improve public health. These diseases are largely caused by microorganisms that are found in human or animal waste (feces), which eventually find their way into humans via the mouth.⁷⁸ Fecal-oral diseases are also spread through other routes, such as hands, clothes, food, or material use for cooking, eating or drinking. The germs in the feces can cause the diseases by slight contact and transfer. One gramme of human or animal waste contains 1,000 parasite cysts, 1,000,000 bacteria, 10,000,000 viruses, and 100 parasite eggs.⁷⁹ These diseases are typically infectious with the main water-borne/fecal oral diseases being Typhoid fever, Giardia, Polio, Dysentery, Diarrhoea, Hepatitis, Cholera, and Worms. These diseases are extremely harmful to a person's health and their productivity, as well as the welfare of the community as a whole. The diseases can also lead to severe illness, death, decrease productivity, limit the body's immune resistance, limit nourishment intake, increase malnutrition (especially in children), increase health expenditure, diminish education, and inhibit human resource development.⁸⁰

The WHO Guidelines for Drinking-Water Quality addressed this issue and calls on governments to strengthen their management of drinking-water quality by adopting a “water safety planning” approach. If individual countries implement this approach, it can yield significant and sustainable improvements to public health. The approach would require a shift in drinking-water management in many countries. The guidelines compel water suppliers to systematically assess the potential risk of contaminants that enter water.⁸¹ According to Dr.

⁷³ http://www.unesco.org/water/wwap/facts_figures/basic_needs.shtml

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ http://www.who.int/water_sanitation_health/events/press_backgrounder/en/index.html

⁷⁷ <http://www.irc.nl/page/8904>

⁷⁸ <http://www.irc.nl/page/8904>

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ http://www.who.int/water_sanitation_health/events/press_backgrounder/en/index.html

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Maria Neira, WHO director for Public Health and Environment, “Countries have an opportunity to make substantial public health progress by setting and applying effective and appropriate standards for ensuring safe water.” She further explains that a primary prevention approach may be more cost effective and efficient and gives flexibility to deal with new pressures threatening water safety, including climate change and urbanization. Globally, these guidelines are regarded as the most authoritative framework on drinking-water quality and are used as a template for national laws and regulations.⁸²

The new guideline includes, but is not limited to, recommendations for drinking water safety, including minimum procedures and specific guidelines values; microbial hazards; chemical contaminants in drinking-water such as data on chemicals not previously considered; and key chemicals responsible for large-scale health effects through drinking-water exposure. Robert Bos, the WHO Coordinator for Water, Sanitation, Hygiene, and Health, pointed out that the most recent waterborne disease outbreaks in both developing and developed countries could have been prevented by implementing more water safety plans.⁸³ Specific guidelines have also been set on emerging contaminants of concern in drinking water. These guidelines are crucial in addressing widespread concerns over potential human health risks arising from traces of pharmaceuticals detected in drinking water. The provision of safe drinking water is crucial for public health. The new Guidelines are a preventive and holistic approach in safe management of drinking water quality for the merging challenges that the world faces.⁸⁴

Studies show that improving the quality of drinking water at the source, tap, or storage vessel may help fight contamination of water-borne and fecal-oral diseases. Interrupting the routes of transmission is a way to prevent diseases; for example, protecting food from flies interrupts the feces-flies food route. In addition, changing hygiene behavior, proper use of latrines by adults and children, good food hygiene, and care in disposing of feces are all safe and protective measures that should be taken to avoided contamination.⁸⁵

The Nepal Water for Health has learned some important lessons from the last ten years that will help in implementing water sanitation. Advocacy is the most important thing to promote sanitation at the community level. Also, it is important to organize exchange visits at a community level to good projects to help encourage people to learn new safe behaviors. Reinforcement, as well as giving lots of time and effort, is imperative for health programs to be successful and enforced. More home visits and encouraging the use of children toilets and proper feces disposal are also good ways to reduce contamination.⁸⁶ Lastly, social marketing may be an essential tool for the promotion of good hygiene and sanitation.

⁸² Ibid.

⁸³ http://www.who.int/water_sanitation_health/events/press_backgrounder/en/index.html

⁸⁴ http://www.who.int/water_sanitation_health/events/press_backgrounder/en/index.html

⁸⁵ <http://www.irc.nl/page/8904>

⁸⁶ <http://www.irc.nl/page/8904>



Research Questions

1. What are the major factors affecting the water crisis in your nation? What treaties have been implemented to?
2. How has the crises affected your nation? What are the incidence rates or prevalence rates for the situations occurring in your country?
3. What are your country's overall goals and positions towards inhibiting STDs?
4. How can the WHO improve the country's situation?

Helpful Websites

- www.crc.uri.edu
- www.who.int/
- www.indexmundi.com
- <http://www.source.irc.nl>
- www.mediaglobal.org
- allafrica.com/
- www.israeleconomy.org/strategic/water.htm
- www.unicef.or/
- www.iamat.org/
- wikitravel.org/
- www.mdtravelhealth.com/destinations/asia/

Topic 3: Bioterrorism

Introduction

Recent advancements in sciences, especially in molecular biology, allowed scientists to manipulate viruses and naturally occurring bacteria in ways that provide them with resistance to conventional treatments. These alterations of the broad spectrum of such biological substances often led to the misuse of biological weapons. But what exactly is bioterrorism? As defined by the Centers for Disease Control, it is the “intentional or threatened use of bacteria, fungi, or toxins from living organisms to produce death or disease in humans, animals, and plants,” and involves the “intimidation of nations or people to accomplish political or social ends.”⁸⁷

History

Throughout history, efforts to conquer and fight were largely accomplished through the use of long-range and short-range weapons. In the 6th century, however, nations began to supplement their method of attack with natural biological agents. One of the earliest warfare aided by such biological agents was in Mesopotamia, where Assyrians used a natural fungus to

⁸⁷ <http://www.bt.cdc.gov/bioterrorism/overview.asp>


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poison the wells and other water sources of their enemies.⁸⁸ A similar method was also used by the Greeks during a siege of the city of Krissa.⁸⁹ In 1850, British used biological agents by selling smallpox infected blankets and handkerchiefs to American Indians.⁹⁰ Even with all the records of biological warfare in history, World War I kicked off a new era of biological warfare. Many battles fought then involved direct assaults with chemical agents such as nitrogen mustard and chlorine gas, both inflicted high morbidity and mortality during the war. World War II brought another wave of interest in biological weapons. The Japanese tested several agents, including anthrax, cholera, plague, and typhoid, on their prisoners held in Manchuria during that time period.⁹¹ Interestingly, Adolf Hitler prohibited the use of biological weapons by the German Arsenal, due to his personal experience, and injury, in the WWI by a gas attack from the British force⁹².

After President Nixon signed the executive order in 1969, all offensive biological warfare programs in the U.S. were terminated while stockpiles were destroyed⁹³. However, that did not end the research on biological weapons and agents. What the executive order did was simply switch the research focus from offensive to defensive. In 1972, with the help of the Biological and Toxin Weapons Convention, nations around the world worked together to develop vaccines and better detection methods. The Soviet program was eventually terminated after the collapse of the Soviet Union in 1992, when Boris Yeltsin banned all offensive biological weapons related activities.⁹⁴

As biological weapon development moved from offensive warfare to defensive warfare, researchers and scientists also looked for better ways to create vaccines for the various known agents. Rather than introducing the entire organism in order to activate the immune system, researchers started using fragments of the DNA to reduce or even eliminate the risk of infection. While vaccine helps to protect the population, better detection allows for swift action in order to control the spread of the biological agents. Currently, researchers use the fact that every agent has a unique DNA fingerprint to positively identify the actual biological agent.

While the Geneva Protocol prohibited the use of biological and chemical weapons, the Biological Weapons Convention (BWC) was the first multilateral disarmament treaty banning the production of an entire category of weapons. This served as a supplement for the Geneva Protocol. The BWC was opened for signature on April 10, 1972 and entered into force March 26, 1975 when twenty-two governments had deposited their instruments of ratification. It currently has 163 states committed to the prohibition of development, production, and stockpile of

⁸⁸ http://www.emedicinehealth.com/biological_warfare/article_em.htm

⁸⁹ <http://library.thinkquest.org/27393/dreamwvr/warfare/timeline1.htm>

⁹⁰ Ibid.

⁹¹ <http://www.ww2pacific.com/unit731.html>

⁹² <http://www.worldwar1.com/arm006.htm>

⁹³ <https://hsdl.org/?view&doc=114173&coll=limited>

⁹⁴ <http://www.fas.org/nuke/control/bwc/chron.htm>



biological weapons. However, there is no formal verification system to monitor the compliance.⁹⁵

Furthermore, as a direct result of World War I, the Geneva Protocol was signed on June 17, 1925. The treaty prohibits the use, but not the research or production, of chemical and biological weapons. 38 countries originally signed the Protocol, France was the first signatory to ratify the treaty, on 10 May 1926. El Salvador, the final signatory to ratify the treaty did so on 26 February 2008. As of November 2010, 137 states have ratified, acceded to, or succeeded to the treaty.⁹⁶

Types of Agents

The origin of biological warfare can be traced back to the warring states and governmental programs. However, military leaders found that biological warfare has severe limitations, especially since it is difficult for the agent to only affect the enemy and not friendly forces. With the fall of federal supported use of biological agents in most countries, small factions began to advance their own interests with biological weapons. There are several reasons why biological weapons, rather than traditional physical weapons, are advantageous to a terrorist. First, they are easy to obtain and inexpensive to produce, unlike nuclear and physical weapons.⁹⁷ Secondly, agents may be disseminated over a large geographic area can affect thousands of individuals with a small amount of compound.⁹⁸ Finally, the unusual occurrence of diseases produced by biological agents and the large number of casualties may overwhelm medical services and therefore creating panic among those under attack⁹⁹.

Because biological agents have the “potential to pose a severe threat to public health and safety,” the Center for Disease Control categorizes them into three levels (A, B, or C) and administers the Select Agent Program, which regulated the labs which may possess, use, or transfer those agents with the United States.¹⁰⁰ In Category A, the agents are high-priority and pose a risk to national security, can easily proliferate throughout a population and bring in high mortality. They can drastically affect the public health of a society, inducing panic from people and governments as well as require special action from public health preparedness. Some examples include anthrax, smallpox, and the plague.¹⁰¹ Agents in Category B are moderately easy to disseminate and have low mortality rates. The agents include Salmonella, Rosary peas, and *E.Coli*, One recent outbreak occurred in Germany in early 2011. The *E.Coli* bacteria disseminated throughout the country leading to 22 deaths and more than 2200 infected.¹⁰² Finally, Category C agents are emerging pathogens engineered for mass distribution due to their

⁹⁵ <http://www.opbw.org/>

⁹⁶ <http://www.un.org/disarmament/WMD/Bio/1925GenevaProtocol.shtml>

⁹⁷ <http://www.immed.org/illness/bioterrorism.html>

⁹⁸ <http://www.immed.org/illness/bioterrorism.html>

⁹⁹ Ibid.

¹⁰⁰ <http://www.bt.cdc.gov/agent/agentlist-category.asp>

¹⁰¹ Ibid.

¹⁰² <http://www.thenhf.com/article.php?id=2904>

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availability, production feasibility, high mortality rate, and ability to cause major health impacts. Some examples of a category agent include SARS, H1N1, HIV/AIDS and several others.¹⁰³

There have been new biosurveillance programs and systems implemented to help prevent further attacks. For example, the first automated bioterrorism detection system, RODS (Real-Time Outbreak Disease Surveillance) was developed by the University of Pittsburgh in 1999. RODS was designed to collect data from many sources and use them to perform signal detection, and therefore detect bioterrorism events at the earliest possible moment.¹⁰⁴

Prior to 2000, RODS only collected data from sources that are health-care related (ie. clinics, laboratories). RODS eventually helped with the establishment of the National Retail Data Monitor, a program that collects data from over 20,000 retail locations. Because RODS collects data from multiple sources, it is more accurate and less prone to false alarms.¹⁰⁵

Other than research, several programs have been designed to allow a rapid response to the terrorist use of biological weapons. For example, the National Pharmaceutical Stockpile Program (NPS) has an available supply of various medical treatments including antibiotic and vaccine for rapid deployment during emergencies. However, the use of some vaccines, especially smallpox and anthrax, has remained highly controversial. In fact CDC has adopted a position that, in the absence of those two bacteria, the risk of using the vaccines outweighs the benefits.¹⁰⁶

Research Questions

1. How has bioterrorism affected your nation?
2. What precautions have been implemented to hinder biological attacks?
3. What are the major biological agents used to injure your nation's population?
4. Who are the involved in these attacks?
5. Are groups in your population been the caused in other nations? How has this affected the relationship between your country and other nations?

Helpful Websites

- www.terrorismwatch.org/
- www.interpol.int/Public/BioTerrorism/
- www.fas.org/bwc/agr/agwhole.htm
- www.who.int/
- www.bioterrorism.cme.uab.edu

¹⁰³ <http://www.bt.cdc.gov/bioterrorism/overview.asp>

¹⁰⁴ <https://www.rods.pitt.edu/site/content/view/14/77/>

¹⁰⁵ <https://www.rods.pitt.edu/site/content/view/14/77/>

¹⁰⁶ <http://www.enotes.com/microbiology-encyclopedia/bioterrorism-protective-measures>

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- <http://www.unidir.org/pdf/articles/pdf-art2511.pdf>
- <http://www.bt.cdc.gov/agent/agentlist.asp>
- <http://www.globalsecurity.org/wmd/intro/bio-countryagents.htm>
- <http://www.cdc.gov/ncidod/eid/vol5no4/kortepeter.htm>
- <http://www.armscontrol.org/factsheets/cbwprolif>
- <http://cns.miis.edu/cbw/possess.htm>