Committee: Social, Humanitarian and Cultural Committee (GA3)

Issue: Measures to combat infectious diseases

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INTRODUCTION

In the 1970s, the medical world was quick to celebrate victory against infectious diseases such as cholera, malaria, whooping cough and smallpox that tormented millions and claimed so many lives in the past. The last two decades experts have witnessed the comeback of once thought eradicated diseases, becoming once more aware of the danger that might lie behind an innocent looking cough or sneeze. Despite the successes in control as a result of improved sanitation, immunization, and antimicrobial research, there are continuing threats of large epidemics of diseases long since considered under control and new diseases such as HIV/AIDS have drawn considerable attention.

Infectious diseases are responsible for 63% of childhood deaths as well as 48% of all premature deaths making it clear that their re-emergence will continue to pose a threat and their elimination must return to the top of the global health agenda.

DEFINITION OF KEY TERMS

Microorganism

There are different types of microorganisms that interact with the human body. They can be harmless, harmful or beneficial. The harmful microorganisms, also called pathogenic, are the ones able to cause diseases under specific conditions. They can either be bacteria, viruses, fungi, parasites or protozoa. The ability of a microorganism to cause a disease is called pathogenicity. There are 4 different categories of microorganisms concerning pathogenicity:

a) virulent microorganisms, which readily cause disease,

b) opportunistic microorganisms that may or may not cause disease,

c) avirulent microorganisms that do not cause disease

d) attenuated microorganisms with reduced ability to cause disease. [1]

Infection

Infection is the invasion and multiplication of pathogenic microorganisms in the body. When one is infected by pathogens, the body (host) fights the infection using its immune system. If the body is not able to fight the infection, one becomes sick, which means that the body stops functioning properly.[2] An infection may cause no symptoms and be subclinical, or it may cause symptoms and be clinically apparent. An infection may remain localized, or it may spread through the blood or lymphatic vessels.[3] Microorganisms that live naturally in the body are not considered infections. For example, bacteria that normally live within the mouth are not infections.

Infectious disease

Infectious disease, also known as transmissible disease or communicable disease is an illness resulting from an infection with bacteria, viruses, fungi, parasites or protozoa and can be spread from one person to another through direct or indirect contact. An infectious disease is called contagious if it is easily transmitted from one person to another.[4]

Epidemic

An epidemic is the rapid and large spread of an infectious disease in a given region or country within a short period of time.[5]

Pandemic

A pandemic is an epidemic of global proportions, as it covers a much wider geographical area, often worldwide. When the infection takes place in several countries at the same time and generally causes much higher numbers of deaths than an epidemic, then the outbreak starts turning into a pandemic.[6]

Epidemiology

Epidemiology is the study of the occurrence of a disease in a population. [7]

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[1] http://www.cas.miamioh.edu/~stevenjr/mbi107/diseaseconcepts107.html
[2] http://www.skwirk.com/p-c_s-4_u-92_t-212_c-711/pathogenic-microorganisms/nsw/pathogenic-microorganisms/small-world-microbiology-/microorganisms-and-the-human-body
[3] http://www.medicinenet.com/script/main/art.asp?articlekey=12923
[4] http://www.metrohealth.org/what-is-infectious-disease
[5] https://en.wikipedia.org/wiki/Epidemic
[6] http://www.medicalnewstoday.com/articles/148945.php
[7] http://www.ncbi.nlm.nih.gov/books/NBK7993/

Immunity

It can either be an active acquired immunity or a passive acquired immunity. The active acquired immunity occurs when the person is exposed to pathogenic microorganism, develops the disease, and becomes immune as a result of the primary immune response.[8] When a person becomes passively immune, that means that he or she has been injected with antibodies that are not produced by the recipient's cells.

BACKGROUND INFORMATION

Key-factors

As observed during an infectious disease pandemic, communicable diseases are not limited within the borders of a country. The following key factors explain how our modern way of life can contribute to the spread of infectious diseases all around the world:

- Globalization: Urban environments have acted as the chief breeding places for diseases and epidemics since the dawn of history. The development of road and transport infrastructure as well as the ease of intercontinental travel via cruise liners or airplanes has greatly contributed to the transmission of infectious diseases as more and more people find themselves in unfamiliar surroundings making contact with new and heretofore unknown microbial habitats. The “swine flu” epidemic of 2009 with 30 countries being affected within 6 weeks and over 190 countries and other areas reporting cases over the course of a few months is a case in point. Salmonella and E.coli bacteria have also been easier to diffuse through the globalization of food supply.
- Climate change: Experts believe that global warming can be a contributing factor to the transmission of epidemics. In 1993, the United States witnessed the outbreak of hantavirus pulmonary syndrome, a lung infection caused by viruses found in the saliva. Similarly, increases in temperature and high rainfall rates can be instrumental to such outbreaks since they facilitate the increased fertility of insects and other vectors carrying diseases.
- Poverty, Migration & War: The incidence of highly infectious diseases is higher in Less Economically Developed Countries (LEDCs) where inadequate availability of clean water, cramped housing conditions, poor hygiene practices as well as

[8] Clinical Infectious Disease 2, University of Cape Town web.uct.ac.za/.../CID2_Final%20SA.pps

relocated parts of population which, along with their livestock, enhance the variety of germs and vectors are held responsible for the death of two million people a year. Diarrheal diseases are common, with 90% of all deaths attributed to them being children. A further problem is the failure of governments in LEDCs to provide health preventive policies and immunization programs for children. Overall there is a link between poverty and contagious disease.

Transmission

Microorganisms (hosts) must have a way to be transmitted, so as to ensure their species' survival.[9] Transmission can take place either through sneezing on another person (droplet contact), touching or having sexual contact with an infected person (direct physical contact) or from contaminated food or water- main transmission way in LEDCs (fecal-oral transmission). Apart from the aforementioned and most likely ways of transmission, transmission can also be achieved through indirect physical contact usually by touching a contaminated surface or soil and through airborne transmission, meaning that the pathogen can survive outside the body and remain in the air for a long period.[10]

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

Africa

Epidemics may strike in some European countries and in the United States, however Africa has a disproportionate share of infectious disease occurrence, be it malaria or the Ebola virus, due to weak public health infrastructure. Careful consideration is usually given to the appearance of new infections – namely filiovirus, monkeypox virus, Vibrio cholera, Rift Valley fever virus and penicillin-resistant Streptococcus pneumonia – but old-fashioned contagious diseases such as malaria, yellow fever and tuberculosis keep erupting from this continent. Infectious diseases that initiatives based on volunteer actions fail to address due to absence of observation and study mechanisms as well as public health infrastructure constitute a persistent problem in African countries.

[9] https://www.boundless.com/microbiology/textbooks/boundless-microbiology-textbook/pathogenicity-14/surviving-within-the-host-and-exiting-the-host-165/portals-of-exit-825-7121/

[10] https://en.wikipedia.org/wiki/Transmission_%28medicine%29

World Health Organization (WHO)

The World Health Organization is a leading authority on international health and began operation as a specialized agency of the United Nations on 7 April 1948. To mark WHO's founding, this date is used to celebrate World Health Day. There are over 7000 people from more than 150 countries working for WHO in 156 country and regional offices as well as at the headquarters of WHO in Geneva. WHO African Region, also known as WHO AFRO, addresses health issues concerning infectious diseases and problems of accessibility to health services in the continent and provides scientific and professional assistance through technical mobilization, funding, medication and care towards dealing with the issues of ill-health, impairment, and death caused by diseases which could be potentially avertable by vaccine usage.

United Nations Children's Fund (UNICEF)

UNICEF is the foremost humanitarian organization working for the past 60 years with the aim of improving children's living conditions and protecting their rights all over the world. Regarding infectious diseases, UNICEF has concentrated their efforts on children living with HIV and AIDS. It is also concerned with the prevention of mother-to-child transmission of HIV by mounting sensitization campaigns, such as "Unite for Children against AIDS", launched in 2005 with a view to fulfilling the global HIV commitments (including Millennium Development Goals), as well as contributing to the improvement of health care provision and humanitarian aid. When cholera broke out in Sudan, UNICEF was among the first organizations to rush relief supplies and set up special treatment centers for cholera patients.

Figure 1: A six weeks old baby was recently tested for HIV. His mother is living with HIV and is participating in PMTCT program at a local clinic in Lusaka, Zambia.[11]

[11] http://www.uefgm.org/images/ui/PageFeature/Slide_04.jpg

Médecins Sans Frontières (MSF)

MSF is an international, non-governmental, humanitarian-aid organisation founded in 1971 offering immediate assistance to populations in distress due to natural disasters, hostilities or lack of access to health services. It operates as an independent, neutral and impartial body dedicated to the improvement of health care services to all people regardless of age, gender, race or religion. The organisation was awarded the Nobel Peace Prize 1999 in recognition of its efforts to slash the price of HIV/AIDS therapy as well as its contribution through the Access Campaign towards research and development of medication for diseases such as malaria, kala azar and sleeping sickness.

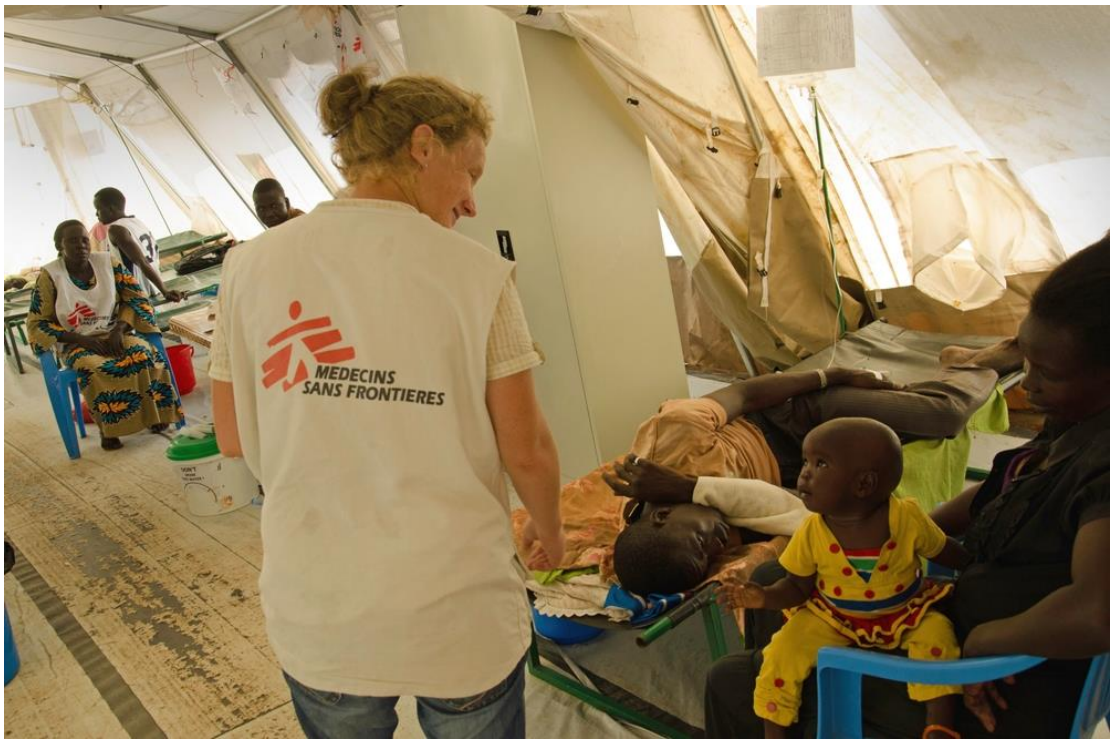


Figure 2:The Medicine Sans Frontiers was the first NGO to take action in South Sudan in order to combat cholera with a group of specially trained doctors that assisted over 3,300 severe cases to recover.[12]

[12] https://cdn.thinglink.me/api/image/566638426267320322/1024/10/scaletowidth

TIMELINE OF EVENTS

Date	Description of event
1798	Smallpox vaccine
1860	Germ theory of disease
1903	First Sanitary Convention on Infectious Diseases
1918	Influenza Pandemic/ Spanish Flu that killed around 2% of the world population
1951	International Sanitary Regulations
1976	First Ebola outbreak in Zaire
1979	Smallpox eradicated
1981	The first official reporting of what will become known as the AIDS epidemic by CDC (Centers for Control Disease and Prevention)
2004	Avian flu outbreak
2009	Swine flu outbreak in North America
2014	Cholera outbreak in South Sudan

UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

International Health Regulations (IHR)

Since the mid-19th-century, international law has been important to international infectious diseases control strategies. Treaties became, therefore, the international legal mechanism after the first Sanitary Conference was held in 1851, when the states realized the ineffectiveness of quarantine policies. The 1903 International Sanitary Convention was marked as the first comprehensive convention on infectious disease control, as it superseded the previous treaties, set forth detailed provisions on dealing with the international spread of plague and cholera, and processed to the creation of the first international organization devoted to health.

One of the earliest actions of the newly formed World Health Organization (WHO) was to consolidate all the aforementioned treaties under one piece of legislation. This was a slow process as it first involved the adoption of the International Sanitary Regulations in 1951, the replacement of the treaties in question, the amendments of the 1950s, 1960s and, finally, of the early 1980s when smallpox was removed from the list of diseases. In the meantime, in 1969, the International Sanitary Regulations were henceforth to be known as International Health Regulations (IHR). Today, the IHR represent the "only international health agreement on communicable diseases that is binding on Member States of WHO"[13]; the IHR Emergency Committees serve as a consultation body of international experts in charge of numerous activities concerning infectious diseases. Namely, informing member states on potential health risks, working closely with governments helping them to organize the appropriate agencies that will observe, monitor, announce and deal with a public health crisis, and providing member states with the necessary scientific and professional advice.

Figure 3: Core Functions of the International Health Regulations (IHR)[14]

United Nations Security Council Resolution 1308 S/RES/1308 (2000)

The first UN resolution recognizing the far-reaching and damaging effect that HIV/AIDS can have on societies across the world was passed unanimously on 17 July 2000 acknowledging, among other things, that UN peacekeeping missions must be regularly tested and trained with a view to preventing peacekeepers from contracting and transmitting the virus.

[13] http://www.birdflubook.org/resources/fidler57.pdf
[14] http://www.who.int/ihr/ihr-functions-310.jpg

View resolution:

http://www.unaids.org/sites/default/files/sub_landing/files/20000717_un_scresolution_1308_en.pdf

United Nations Security Council Resolution 2177 S/RES/2177 (2014)

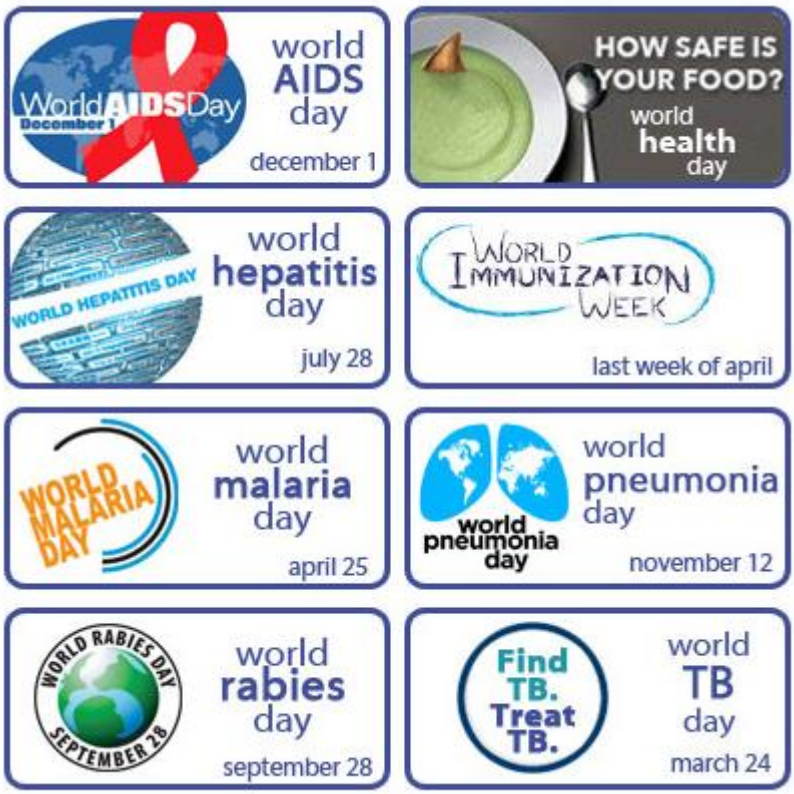
In view of the grave danger posed by the Ebola outbreak facing the international community, the UNSC Resolution 2177 was voted on by all members of the UN Security Council on 18th September 2014, whereby the Secretary General is to coordinate action between UN departments towards tackling the crisis as well as encourage WHO to bolster economic and humanitarian aid to the afflicted areas. Neighboring countries were advised to relax border controls and afflicted states, such as Sierra Leone and Liberia, were urged to speed up the process by which health service mechanisms for diagnosis and care are established.

View resolution:

https://www.ifrc.org/docs/IDRL/UN%20SC%20Res.pdf

United Nations International Health Days

In the context of the need for global public awareness on the spread of various infectious diseases all around our world, the United Nations has marked the 7th of April as the International World Health Day. Apart from that day, the following international days have been established by WHO outlining the importance of the respective infectious disease:[15]



[15] http://wwwnc.cdc.gov/eid/page/world-health-days

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

In the last decades our world has seen many global outbreaks of diseases varying from the 2004 Avian flu's to the 2012 MERS (Middle East respiratory syndrome coronavirus) and Ebola in 2013 in Western Africa. However, the international response is very slow –if not irresponsible. Today, only a handful of international actors are engaged in the fight against infectious diseases. Measures to prevent further outbreaks were met with limited success. An example would be the fact that Swine flu cases are occurring in India daily despite of the fact that this disease came to media attention in 2009 after an outbreak in North America.

There can be numerous approaches in dealing with the threat of an epidemic; non-governmental organizations and global understanding of the problem can help towards impeding the spread of infectious diseases. In fact, over the last 100 years the medical world has successfully dealt with their containment and eradication, employing various ways with the Millennium Development Goal 6 being one of them. Close cooperation with countries towards the implementation of the Global Health Sector Strategy on HIV/AIDS for 2011-2015 has resulted in setting 6 targets for 2014-2015 to actively assist states in meeting global HIV objectives. Substantial progress has been observed with the number of new HIV infections per 100 adults falling by 44% between 2001 and 2012 and with the number of children dying from AIDS-related causes dropping from 320,000 in 2005 to 210,000 in 2012. In addition, more than 900,000 HIV-positive pregnant women all over the world had received some form of treatment – including antiretroviral prophylaxis – by the end of 2012.

Joint efforts by the WHO and CDC (Centers for Disease Control and Prevention), who provided expanded financial help and demonstrated strong commitment, successfully contributed to a global 42% fall in malaria death rate. Three million children and 22 million lives overall were saved in 10 years due to successful treatment provision for tuberculosis. In the 2007 UN resolution, the World Health Assembly requested that there be a 75% decline in malaria cases by 2015 and that afflicted countries be assisted in their efforts to fight the disease. Indeed, one has to extol WHO's readiness and prompt actions. Upon outbreak confirmation, immediate reaction is produced with the arrival of special technical and humanitarian personnel on the scene within 24 hours. Their objective is the appraisal of the epidemiologic situation, introduction of emergency measures and assistance in the preparation for a larger response if necessary.

Considerable progress has been made towards the prevention and treatment of infectious diseases with the elimination of smallpox in 1977, due to the development of the

relevant vaccine, being hailed as a great victory. Nevertheless, interventions often fail to reach affected populations. Such was the case of the Ebola patients in West Africa, where WHO admitted failure in their attempts to terminate the outbreak blaming it on the lack of sufficient information and staff inefficiency. It remains true, however, that over the past decades, there is growing realization on the part of international organizations of the significant threat infectious diseases pose resulting in their efforts to address the problem by implementing various measures ranging from prompt interventions to the introduction of appropriate legislation that will serve as a legal basis for the future.

POSSIBLE SOLUTIONS

Infectious diseases may be an unavoidable fact of life, but there are many ways, through which they can be eliminated or at least treated once they have developed. Measures to eliminate infectious diseases include measures that individuals can take or national and worldwide strategies of detection, prevention, and treatment. Even the simple act of washing hands is considered the most important way to prevent disease transmission, however, sanitary standards are not kept in LEDCs where the infectious diseases spread the most. Therefore, MSF should continue educating people in LEDCs as far as proper sanitation is concerned and continue distributing soaps and toiletries as it did before. Apart from this, healthcare facilities and infrastructure in LEDCs should be improved through various voluntarily programs, so that possible infectious diseases can be prevented or treated properly.

Transmission of harmful microorganisms among animals and food contamination which can cause food poisoning as well as other illnesses resulting from consumption of contaminated foods can be hampered by applying good agricultural and manufacturing methods while precautions during sex and regular testing for STD can contribute to the elimination of HIV/AIDS.

Immunization is the key in the battle to control infectious diseases, many of which are now eliminated, such as smallpox, or effectively controlled thanks to vaccination. The more people are vaccinated, the more difficulty a pathogen has in spreading from person to person as a “wall of protection” is built even around those who are not vaccinated. This is why international collaborative research ought to be sought for the development of new vaccines and medication especially since drug-resistant infections call for the creation of a new generation of antibiotics and antivirals. Most drugs with antiviral properties are used

for HIV; however other medicines need to be developed to fight epidemics such as hepatitis B and C as well as influenza.

Careful and systematic monitoring is crucial for dealing with the emergence of a communicable disease. An electronic system reporting on the appearance of such a disease at an international level should be developed and the international community has to be creative in the implementation of automated laboratory reporting systems, even in MEDCs by improving their health care system. Generally, governments are in a way responsible for monitoring the spread of infectious disease. In war-torn areas, especially in LEDCs, living standards are even harder than normally and governments fail to focus on a possible infectious disease epidemic in their country or in other cases, opponent parties use it as a weapon of war in order to fight the country, which will have to face thousands of deaths from infections alongside. Therefore, there should be a fundamental legislation for treatment of infectious diseases and obligatory vaccinations for everyone.

Treaties such as the United Nations Convention on the rights of the Child, should be urged to be ratified by every single country, because -as in the case of South Sudan- countries that haven't signed such conventions and are currently undergoing conflict and an infectious disease epidemic, are not included in the standards about the protection of children and therefore can have minimal support from UN forces when it comes to combatting such issues. Therefore, it is of utmost importance for countries to implement UN resolutions passed, ratify existing conventions and implement the International Health Regulations. NGOs can then continue their successful work collaborating with countries and voluntarily assisting them in combating and treating infectious diseases mostly in LEDCs.

Finally, rapid identification and successful diagnosis of an infectious disease are a decisive factor in its handling and eradication allowing prompt action and successful dealing. Treatment techniques and ways of stopping the spread of a disease are also crucial. In the past, quarantine was widely used to interrupt the transmission of a communicable disease, however, this method is now considered inhumane and abandoned in favor of more modern techniques.

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Pictures' and Graphs' Bibliography

Figure 1: http://www.uefgm.org/images/ui/PageFeature/Slide_04.jpg

Figure 2: https://cdn.thinglink.me/api/image/566638426267320322/1024/10/scaletowidth

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