



BACKGROUND PAPER:

UN Commission on Vaccine Resistant Diseases (UNCWHO)
**Vaccines for Parasitic Diseases in Tropical Third World
Countries**

Introduction:

For many centuries, especially the past decade, parasitic diseases have been affecting billions of people all around the world, and these parasitic diseases have been extremely prevalent in tropical third world countries. In fact, the global annual death toll of parasitic diseases in children and young adults has risen to 13 million deaths a year, and in some third world countries, parasitic deaths have accounted for fifty percent of their overall deaths. Most young children of third world countries are not given the opportunity to be properly immunized from deadly diseases due to the fact that their family is making up to one dollar a day. These families do not have the money or the resources to provide their family the right immunizations that will help make them immune to deadly diseases. For example, most families in tropical third world countries do not have the necessities that they need to provide their family with the correct vaccines that will prevent their children from obtaining parasitic disease. There are vaccines that have been somewhat effective; however, these vaccines are beginning to become ineffective due to the fact that these parasites are adapting to the vaccines. Because they are adapting to the vaccines, many of these diseases are becoming vaccine resistant because they have found a way to adapt to these vaccines; hence, leading to a rise in deaths due to parasitic diseases.

As of right now, there is a dying urge for a development of cheap, and effective vaccines that will help millions, perhaps billions of families recover from these parasitic diseases. The UN wants to encourage developed countries around the world to devote money and time to help find these effective yet cheap vaccines that will be available to people across the world. Some countries are starting to devote their time to finding efficient vaccines that will help prevent parasitic diseases.

Background and History:

Today third world countries contain about two-thirds of the global population, and most of these third world countries are been greatly affected by parasitic diseases. Some of these parasitic diseases do have vaccines that will prevent people from obtaining this disease; however, there are many diseases that are vaccine resistant diseases. Vaccines that used to cure and prevent people from obtaining diseases are now becoming unsuccessful due to the fact that many parasitic diseases are adapting to these vaccines; therefore, making it very difficult to relieve these people from the hindrance of these



diseases. There are many diseases that are vaccine resistant, and two main ones are hookworm disease, and leishmaniasis.

Firstly, according to World Health Organization, hookworm disease has been affecting more than 740 million people in tropical third world areas, for example: South-East Asia, China, sub-Saharan Africa, and Latin America. These hookworm diseases are very serious because they are affecting a lot of young children around the world. These diseases first come in contact with these children, and once the hookworm is inside the child it will impair their physical and intellectual development, and reduce school performance. Hookworm disease also has a large effect on the adult population, and especially for women who are or will be becoming pregnant. For example, if a pregnant woman has hookworm, the risk factors for this pregnant woman and her baby are that there could be low birth weight, impaired milk production, and lastly a high risk of death for the mother or the infant. There have been many efforts to curing and preventing hookworm disease, and these efforts range from testing with hamsters, and dogs, to individuals with low intensity hookworm infection and a leading cure called Ancylostoma-secreted protein is somewhat effective; however, there needs to be more research done for this vaccine to become a large-scale vaccine. Also, there are more studies that are need to be done for when the hookworm becomes an adult because when the hookworm become an adult there will need to be another vaccine to remove it from a person.

In addition to hookworm disease, another example of a parasitic disease that is a vaccine resistant disease is Leishmaniasis. According to World Health Organization, this disease is caused by flagellated protozoan parasites that are found in Africa, Latin America, South and Central Asia, the Mediterranean basin and the Middle East. When this disease becomes sever it can cause serious disfigurement as well as death. It has been calculated that in these infested areas, there has been approximately 12 million cases where people have been affected by this disease and with an annual mortality of 60,000. It is known that about 350 million people are at risk of being killed by this disease. Even until now there has not been an effective vaccine for this disease; hence, if there is not an effective vaccine for this disease the death rates are going to increase throughout the world.

Bloc Position:

Since there are many nations that are being affected by these parasitic diseases that are vaccine resistant, many countries have either been involved, or are getting involved. For examples, whole continents are being affected by these diseases; therefore, many countries around the whole world are taking action to discover vaccines that will help cure many people around the world.

In regards to the hookworm disease there have been many contributions to the research and development of a vaccine that will reduce the amount of people being affected by the hookworm disease. For example, according to the World Health Organization, George Washington University, the Oswaldo Cruz Foundation of Brazil,



the Chinese Institute of Parasitic Diseases, the Queensland Institute of Medical Research of Australia, and the London School of Hygiene and Tropical Medicine of England have all corroborated together with the Human Hookworm Vaccine Initiative program of the Sabin Vaccine Institute and found a vaccine that gave a major improvement to the vaccine problem in countries that are being affected by hookworm disease. This vaccine is going to completely remove hookworm disease from lives of the people who have been affected by this; however, it is one large step to finding the vaccine to this disease.

Now in regards to Leishmaniasis disease there have not been an adequate amount of contributions to finding a cure to this disease. For example, there have been some contributions from charitable organizations such as the Bill and Melinda Gates Foundation that has funded the development of a chimeric vaccine that is made of three recombinant leishmanial antigens that will have a large effect on finding a vaccine for this disease. Many trials of this vaccine were completed by USA volunteers; however, a vaccine for this disease still has not been found.

The Problem:

Since certain disease are resistant to vaccines, such as leishmaniasis and hookworm, the problem becomes the method that should be used in order to treat them. Research is done to discover a vaccine that will get rid of these diseases, but the process is taking an extended period of time during which thousands of lives are affected.

These parasitic diseases are resistant to vaccines because the human body is becoming immune to medicine and vaccines since so many medications are taken for other reasons. As a result of this, it is difficult for specialists to find the necessary combination of drugs to put in a vaccine in order to fight a certain disease. If the vaccine includes drugs to which the human body is resistant, then it will be ineffective in combating the disease for which it was created.

Another problem is that it is difficult to make a vaccine that is effective against all strains of a disease. Research shows that vaccines will provide better protection against some strains of a disease than others; consequently, vaccine effectiveness is not the same for every strain. This means that some strains of a disease can be resistant to the vaccine while others are not.

Lastly, a problem with vaccine resistant diseases is that they can be caused by a previous vaccine. Research shows that viruses from a previous vaccine can mutate causing a disease that will be resistant to any other known form of vaccines. This in turn leads to another problem: the fact that a new vaccine has to be invented. If the specialists will be swift to come up with a vaccine, there can be uncertainties as to how it will react with the body and whether it will be effective or not.



Committee Mission:

In attempting to develop a resolution to the topic of vaccine resistant diseases, the committee is to take into consideration the research process, effectiveness of vaccines and the different types of disease. The committee must be aware of what countries are putting forth the effort to provide resources for further research to development of effective vaccines and also recognize the countries that are in desperate need of them. Countries that are in great need of the vaccines might want them to be available instantly; however, delegates must consider the costs and benefits of this method. The opposite is also true: costs and benefits of an extended research process should be taken into consideration.

The delegates are also encouraged to debate about how important the UN's involvement on the topic is and the extent to which the United Nations should be responsible. The committee is to establish what actions the UN already committed to in regards to the topic of vaccine resistant diseases and if they should continue at this pace or become more involved in the topic. It is important to recognize that the problem of vaccine resistant diseases is widespread throughout the world and does need an immediate resolution. Whether the UN is providing proper responses, or whether it needs to take a more demanding stance is up for the delegates to determine.

Questions to Consider:

1. What countries are mostly affected by parasitic disease which are resistant to vaccines?
2. Which countries are taking an active stand in trying to solve this widespread issue?
3. Is the UN taking the appropriate actions to resolve this problem?
4. What are the numerous reasons that diseases are becoming resistant to vaccines? Is there any way to prevent diseases from becoming resistant to vaccines in the future?
5. Is this problem going to be solved in the near future? If yes, how? If no, what still needs to be done in order for this to not be such a widespread issue?

Sources for Further research:

- <http://bmb.oxfordjournals.org/content/54/3/545.full.pdf>
- <http://apps.who.int/tdr/svc/news-events/news/ntd-elimination>
- http://www.who.int/vaccine_research/diseases/soa_parasitic/en/index.html



- <http://vaccinenewsdaily.com/news/240525-chinas-health-ministry-warns-of-rise-of-drug-resistant-diseases>
- <http://www.who.int/en/>
- <http://www.ncbi.nlm.nih.gov/pubmed/19361532>