UTMUN

World Health Organization

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Contents

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At its core, Model United Nations (MUN) is a simulatory exercise of diplomatically embodying, presenting, hearing, dissecting, and negotiating various perspectives in debate. Such an exercise offers opportunities for delegates to meaningfully explore possibilities for conflict resolution on various issues and their complex, even controversial dimensions – which, we recognize, may be emotionally and intellectually challenging to engage with.

As UTMUN seeks to provide an enriching educational experience that facilitates understanding of the real-world implications of issues, our committees' contents may necessarily involve sensitive or controversial subject matter strictly for academic purposes. We ask for delegates to be respectful, professional, tactful, and diplomatic when engaging with all committee content, representing their assigned country's or character's position, communicating with staff and other delegates, and responding to opposing viewpoints.

The below content warning is meant to warn you of potentially sensitive or triggering topics that are present in the formal content of this background guide, as well as content that may appear in other aspects of committee (e.g., debate, crisis updates, directives), so that you can either prepare yourself before reading this background guide or opt-out of reading it entirely:

The World Health Organization discusses policy to promote global health initiatives. As such, the implications of inaction in epidemics and healthcare crises are often linked to death. The issues discussed in this guide and the committee, including vaccination, vaping, and water sanitation, impact real people around today's world. Since these are topics that demand sensitivity, the dais asks delegates to remain respectful of the subject matter throughout the course of debate.

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b) an individual delegate, please email our Equity Officer at equity@utmun.org with a brief explanation of your concerns based on this committee's content warning and your request to switch. You will be contacted shortly regarding your request

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Throughout the conference, please note that delegates shall only:

1. Wear Western Business Attire (i.e., no costumes, no casual wear)
2. Embody their assigned country's/character's position, not their mannerisms (e.g., no accents, no props)
3. Use laptops or electronic devices during unmoderated caucuses to draft paperless resolutions/directives (subject to their committee director's permission)
4. Opt for diplomatic, respectful, and tactful speech and phrasing of ideas, including notes (e.g., no foul language, suggestive remarks, or obscene body language)
5. Make decisions that contribute to a professional, safe, inclusive, and educational space for debate

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A Letter from Your Director

Dear Delegates,

Welcome to the World Health Organization (WHO)! My name is Isha Sharma and I am excited to be your director. I am currently a first-year student in Life Sciences, aiming to major in Cell and Molecular Biology and Computer Science, and this will be my fifth year in MUN.

The topics for this year are: vaccines, the vaping epidemic, and water sanitation. Some of the sub-issues presented under these topics are the anti-vaccination movement, the health problems associated with vaping, and sanitary conditions in health-care facilities.

The dais has prepared this background guide as a general overview of the topics As delegates, you should use this background guide simply as a starting point for your research and to gain an idea as to what other sub-issues may be present under each of these topics. In addition to the information presented in this guide, delegates will also be expected to conduct their own research on each of the issues. It is important to note that when doing research into the topic and when proposing solutions, delegates must do so in accordance with their country policy and not based on their personal views on any of the topics.

As some of these topics may be controversial, please remember to be respectful towards everyone in committee, regardless of their country's stance on certain issues, while also using diplomacy skills to have meaningful discussions about each of the topics. Additional tips and advice are also provided towards the end of this background guide.

The dais wishes you the best of luck in researching and preparing for the conference. We look forward to hearing your innovative solutions and to meeting all of you in February. Please feel free to email me if you have any questions!

Sincerely,

Isha Sharma
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Topic A: Vaccines

Vaccines were invented in 1796 by a scientist named Edward Jenner[1]; this invention was not brand new or radical, as it followed decades of preliminary attempts at immunizing children against common diseases by exposing them to the disease itself[2]. The principle of vaccination is quite similar. While the invention wasn't brand new, the implications of vaccination's invention were far-reaching and continue to be felt today. Vaccination allowed for a palpable attempt at eradicating common illnesses, and improving the quality of life for children and adults worldwide.

Vaccines exist for many common diseases; polio, measles, mumps, rubella, pertussis, diphtheria, smallpox, tetanus, meningitis, hepatitis, and HPV are all diseases for which vaccines exist and have been proven to be effective[3]. Many of these diseases have been eradicated and forgotten in most parts of the world, owing largely to the effectiveness of vaccines. Statistically speaking, the WHO estimates that the majority of vaccines have an 85-98% effectiveness rate (that is, at granting immunity)[4]. Although no vaccine is 100% effective, it is clear that the overwhelming majority of vaccines are paediatric staples for a reason - they work.

Yet, issues involving vaccines continue to exist. Some of these include vaccine access and vaccine hesitancy (including its implications in terms of eradicable diseases). These issues will be further discussed and will be the focus of this committee's proceedings on vaccines.

UN Involvement

Global health agencies such as the WHO, other UN agencies, and the American CDC, NIH, and NHS have been heavily involved in vaccination over the past decades. An early example of agency involvement is the CDC's campaign in the 1960s to tighten school entry requirements with respect to vaccination[5]. This push has led to the necessity to be vaccinated in order to enter the public schooling system in the United States, Canada, and the EU. Such a campaign by the CDC laid the foundation for more global vaccination campaigns to be led by the UN.

A very prominent vaccination campaign in progress since 1988 is the Global Polio

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1 "Vaccine History Timeline." History of Vaccines. College of Physicians of Philadelphia, 2019. https://www.historyofvaccines.org/timeline/all.

2 Ibid.

3 "Diseases & Vaccines." Immunize Canada. Government of Canada. Accessed November 1, 2019. https://immunize.ca/diseases-vaccines.

4 "Six Common Misconceptions about Immunization," World Health Organization (World Health Organization, February 19, 2013), https://www.who.int/vaccine_safety/initiative/detection/immunization_misconceptions/en/index2.html.

5 "Celebrating 50 Years of Global Immunization Success at CDC," Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, April 19, 2016), https://www.cdc.gov/globalhealth/immunization/worldimmunization/default.htm.

Eradication Initiative (GPEI). This campaign was spearheaded by the WHO, as well as UNICEF, the Rotary Foundation, and the CDC[6]. Note that eradication, a term frequently used in this background guide, refers to when the number of people in the world affected by the disease drops to 0[7]. The GPEI, which is discussed later on, is one of the best examples of UN involvement and global cooperation in the realm of vaccination and public health. The GPEI, however, isn't just a campaign for eradicating polio; it's a campaign that strives to increase the accessibility of vaccines in rural and remote regions[8]. Although polio has been eliminated (a term like eradication, but only in a regional sense) in most regions of the world, some rural and underdeveloped regions of the world, like Pakistan and Afghanistan, remain hotspots of the disease[9].

The UN continues to play a role in promoting vaccination education to populations worldwide. Although their focus remains on less developed regions of the world, the WHO provides many resources and stages various events to promote the safety and efficacy of vaccines to the worldwide public[10].

Resurgence of Eradicable Diseases

In the past few years, cases of diseases that had been previously eliminated from certain countries have reappeared, and countries who had significantly reduced transmission of a certain disease have also seen a growing number of cases.

One disease that has reemerged is poliomyelitis, commonly known as polio, which is an infectious disease that mainly affects children under the age of 5. It is known for invading the nervous system and causing paralysis in mere hours. The virus causing the disease is transmitted from person-to person via the fecal-oral route or by a common channel, such as contaminated water. Since 1998, the number of polio cases has decreased by 99% , from around 350,000 cases to only 33 reported cases in 2018.[11] However, in November of 2018, the World Health Organization raised concerns about an increase in wild poliovirus type 1 (WPV1) in Afghanistan and Pakistan. By November, 20 cases had been reported in Afghanistan and 8 had been reported in Pakistan, which was twice the number reported by the same time in 2017. The WHO predicts that if polio is not eliminated in the last few areas of Afghanistan and Pakistan where it is currently being transmitted, there could be as many 200,000 new cases every year, in the next 10 years, all over the world.[12]

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6 "Our Mission." GPEI. WHO/UNICEF. Accessed November 1, 2019. polioeradication.org/who-we-are/our-mission/.

7 Roser, Max, Sophie Ochmann, Hannah Behrens, and Hannah Ritchie. "Eradication of Diseases." Our World in Data. Oxford University Press, June 3, 2014. https://ourworldindata.org/eradication-of-diseases.

8 "Our Mission." GPEI. WHO/UNICEF. Accessed November 1, 2019.polioeradication.org/who-we-are/our-mission/.

9 Ahmed, Nishat. "Polio Spreads in Afghanistan and Pakistan 'Due to Unchecked Borders'." The Guardian. Guardian News and Media, February 20, 2019..

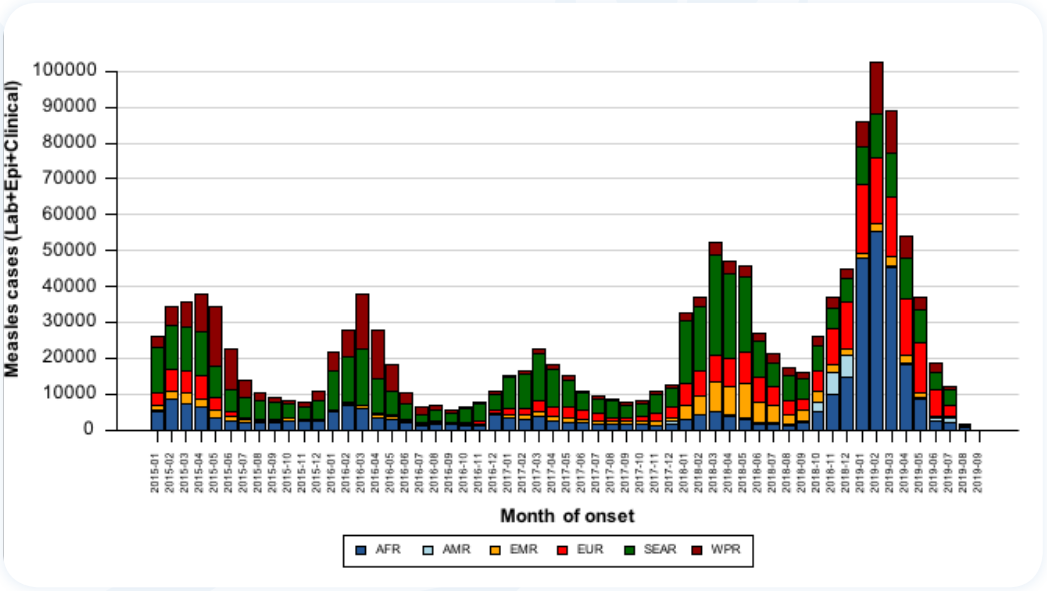
10 "Immunization." World Health Organization. World Health Organization, February 23, 2018. https://www.who.int/topics/immunization/en/.

11 "Poliomyelitis."

12 "Polio Experts Address Fears over Disease Resurgence."

A major issue that exists in eradicating polio is providing vaccines to people in hard-to-reach areas in Pakistan and Afghanistan. Often, areas that have ongoing transmission of polio in these countries are unwelcoming and hostile towards vaccination teams. As a result, if members of these unvaccinated communities, who may have the disease, travel to other cities and countries, they are likely to spread the disease, especially with the steadily increasing numbers of unvaccinated children around the world. For example, in May 2019, poliovirus was found in a sewage system in Iran, where no cases of polio have been reported since 1997. After analyzing the virus, it was discovered to have originated from someone who had contracted the disease in Pakistan and later traveled to Iran.[13]

Another disease that has seen a resurgence in its numbers is measles, a highly contagious viral disease that is transmitted via droplets from the nose, mouth, or throat of infected people. It eventually develops into a rash that starts on the neck and spreads downwards throughout the body, with complications, such as blindness, encephalitis, and pneumonia, developing over time.[14] In 2018, there were a total of 28, 124 measles cases in 163 countries, which increased by around 300% in 2019 to 112,163 cases. In the United States alone, as of September 28th, 2019, there have been a total of 1,241 cases reported; this puts the country at risk for loss of its measles elimination status for the first time in 20 years. Other countries, such as the United Kingdom and Greece, have also recently lost their measles elimination status in the last few years. In addition, the recent measles outbreak in the United States also puts those in neighboring countries, such as Canada, and even citizens around the world at risk of contracting the virus.[15]



(From "WHO | Measles and Rubella Surveillance Data.")

13 "A Resurgence of Polio?"

14 "WHO | Measles."

15 "WHO | Measles and Rubella Surveillance Data."

Similarly to polio, the recent spread of measles can largely be attributed to the lack of vaccinated people in specific communities around the world. For example, in the United States, the measles outbreak is largely centered in communities in New York who are against vaccinations, mainly Brooklyn and Rockland County, and has spread to other states from there.[16] This is also the case in Nigeria, where measles cases in Borno State have caused the spread of the disease to other regions of the country.[17]

Currently, the largest initiative that exists for the eradication of polio is the Global Polio Eradication Initiative (GPEI), which involves national government partnerships with the WHO, the U.S. Centers for Disease Control (CDC), the Bill and Melinda Gates Foundation, the United Nations' Children's Fund (UNICEF), and Rotary International. Recently, the Polio Endgame Strategy: 2019 - 2023 of the GPEI was created as the last effort to eradicate polio by 2023, with Afghanistan and Pakistan at the core of the initiative.[18] In regards to measles, although an overarching plan for this disease has been created by the WHO, many regions also have their own vaccine plans. An example of this is the European Vaccine Action Plan, which works toward eliminating both measles and rubella by 2020.[19]

Anti-Vaccination Movement

The anti-vaccination movement is driven by a social tendency known as *vaccine hesitancy*. The two terms will herein be used interchangeably. The WHO identifies vaccine hesitancy as one of the 10 greatest global health risks in 2019[20], making clear its damaging impact on the health of individuals and society as a whole.

Even before Edward Jenner introduced the first vaccine in 1798, there existed hesitancy and uncertainty against inoculation, a practice which preceded formal vaccination, even in its infant stages[21]. This rejection of vaccination originated from religious circles, although religion was never and currently is *not* the primary impetus behind the anti-vaccination movement[22]. The main causes behind vaccine hesitancy tend to be misinformation and complacency.

Misinformation has been the most predominant theme behind historical anti-vaccination movements.[23] Considering the overall lack of widespread scientific education when many vaccines were introduced (the 19th and 20th centuries), it becomes easy to see

16 "If the U.S. Loses Its Measles Elimination Status, Could Canada Be Next?"

17 "Nigeria – Measles Outbreak."

18 "GPEI-Polio Endgame Strategy."

19 "Measles in Europe."

20"Ten Health Issues WHO Will Tackle This Year." World Health Organization. World Health Organization. Accessed November 1, 2019. https://www.who.int/emergencies/ten-threats-to-global-health-in-2019.

21 Bazin, Hervé. "The Ethics of Vaccine Usage in Society: Lessons from the Past." Endeavour 25, no. 3 (2001): 104–8. https://doi.org/10.1016/s0160-9327(00)01376-4.

22 Ibid.

23 Larson, Heidi J. "The Biggest Pandemic Risk? Viral Misinformation." Nature News. Nature Publishing Group, October 16, 2018. https://www.nature.com/articles/d41586-018-07034-4.

how parents may find the idea of injecting a toxin or pathogen into *their* children rather jarring. A misinformed view regarding the safety and efficacy of vaccines drives a noticeable proportion of parents against vaccinating their children[24]. When governments introduce policies to render vaccination mandatory (such as the US attempting to pass smallpox vaccination laws in the 1870s), anti-vaccination movements tend to quickly follow, like the Anti-Vaccination Society of America[25]. Such 'societies' and 'leagues' have arisen time and time again, and in most countries of the world. Their historical prevalence correlated with the introduction of vaccination legislature, making it clear that anti-vaccination sentiment has remained prevalent in worldwide populations for centuries.[26]

What about complacency, the other aforementioned cause? By the 1980s, rigorous and successful vaccine campaigns in many developed countries of the world led to the elimination of well-known illnesses such as smallpox, chickenpox, pertussis, and diphtheria[27]. Low regional prevalence of the disease led notable proportions of parents to believe vaccination was simply unnecessary for their children, and merely an option, since their child is highly unlikely to contract any of the above diseases[28]. Complacent populations of parents furthermore contributed to vaccine hesitancy, especially in the time period approaching and including the present.

Vaccine hesitancy has persisted throughout centuries of sustained scientific rebuttal, primarily due to misinformation. The development of widely accessible media sources, such as TV and the internet, have enabled the propagation of erroneous sources on vaccines to countless parents, only further contributing to an unbalanced perspective on vaccines[29]. A famous example of the use of mass media in disseminating misinformation regarding vaccines was Andrew Wakefield's 1998 paper in *The Lancet*, seemingly linking the MMR vaccine and autism. This paper, although retracted by the journal due to its scientific inaccuracy, remains readily available online and unfortunately continues to be frequently cited[30].

Vaccine hesitancy has a marked impact on the health of individuals, and on societies worldwide as a whole. The scientific concept of 'herd immunity' is key to understanding how vaccination, or lack thereof, can profoundly impact societies as a whole[31]. As more and

24 Ibid.

25 "History of Anti-Vaccination Movements." History of Vaccines. College of Physicians of Philadelphia. Accessed November 1, 2019. https://www.historyofvaccines.org/content/articles/history-anti-vaccination-movements.

26 Ibid.

27 "'Complacency' a Factor in Stagnating Global Vaccination Rates, Warn UN Health Chiefs | UN News." United Nations. United Nations, July 15, 2019. https://news.un.org/en/story/2019/07/1042431.

28 Ibid.

29 Najera, Rene. "Social Media Strikes Back at Anti-Vaccine Misinformation." Social Media Strikes Back at Anti-Vaccine Misinformation | History of Vaccines. College of Physicians of Philadelphia, February 24, 2019. https://www.historyofvaccines.org/content/blog/social-media-strikes-back.

30 Wakefield, Aj et al. "RETRACTED: Ileal-Lymphoid-Nodular Hyperplasia, Non-Specific Colitis, and Pervasive Developmental Disorder in Children." The Lancet 351, no. 9103 (February 28, 1998): 637–41. https://doi.org/10.1016/s0140-6736(97)11096-0.

31 Sadarangani, Manish. "Herd Immunity: How Does It Work?" Oxford Vaccine Group. OUP, April 26, 2016. https://www.ovg.ox.ac.uk/news/herd-immunity-how-does-it-work.

more individuals become vaccinated, they isolate non-vaccinated individuals from infected ones, making it harder for a disease to spread in a population[32]. Yet, when fewer and fewer children in a given society are vaccinated, so-called 'pockets' of non-immune children open up, permitting the spread of infectious diseases and hence outbreaks of many of the diseases mentioned in the previous section[33]. One powerful example is the anti-vaccination movement in Romania. By 2017, the UN had determined that the measles vaccination rate in Romania was only 75%, far below the recommended rate; this resulted in over 15,000 cases of measles, unnecessarily affecting children, their families, and communities as a whole[34]. Such cases of outbreaks following anti-vaccination movements are prevalent worldwide, demonstrating the detrimental impact of vaccine hesitancy.

Research and Development

In 1798, a man named Edward Jenner became something of a celebrity when he developed the first smallpox vaccine,[35] after realizing that being previously infected with cowpox led to smallpox immunity in 1796.[36] His development would eventually lead to the eradication of smallpox worldwide in 1979,[37] and provided the scientific basis for a vaccinology[38]. Jenner's discovery is often described as the founder of vaccinology in the West.[39]

Vaccination development only grew from Jenner's time, with Louis Pasteur creating a live attenuated (a vaccine that contains a weakened version of the live virus so that it does not cause harm to a person) cholera vaccine and inactivated anthrax vaccine in 1897 and 1904, respectively.[40] In fact, we actually have Pasteur to thank for our definition of vaccine through his work on creating a rabies vaccine of sorts: "suspension of live (usually attenuated) or inactivated microorganisms (e.g., bacteria of viruses) or fractions thereof administered to induce immunity and prevent infectious disease or its sequelae".[41] The development

32 Ibid.

33 Ibid.

34 "How Anti-Vaccine Movements Threaten Global Health." BBC News. BBC, June 20, 2019. https://www.bbc.com/news/health-48585036.

35 Alexandra Minna Stern and Howard Markel, "The Evolving History of Influenza Viruses and Vaccines: Familiar Patterns, New Challenges.," Health Affairs 24, no. 3 (May/June 2005): 611-21. https://doi.org/10.1377/hlthaff.24.3.611.

36 "A Brief History of Vaccination," Immunisation Advisory Centre. September 22, 2016. https://www.immune.org.nz/vaccines/vaccine-development/brief-history-vaccination.

37 Ibid.

38 Alexandra Minna Stern and Howard Markel, "The Evolving History of Influenza Viruses and Vaccines: Familiar Patterns, New Challenges.," Health Affairs 24, no. 3 (May/June 2005): 611-21. https://doi.org/10.1377/hlthaff.24.3.611.

39 "A Brief History of Vaccination," Immunisation Advisory Centre. September 22, 2016. https://www.immune.org.nz/vaccines/vaccine-development/brief-history-vaccination.

40 Ibid.

41 Alexandra Minna Stern and Howard Markel, "The Evolving History of Influenza Viruses and Vaccines: Familiar Patterns, New Challenges.," Health Affairs 24, no. 3 (May/June 2005): 611-21. https://doi.org/10.1377/hlthaff.24.3.611.

of a plague vaccine in the 19th century was monumental in impact[42], as well as the highly anticipated vaccine for polio created in 1955 by Jonas Salk.[43] Other major vaccines have since been developed, with further research and development constantly ongoing.[44]

One of the major hindrances to vaccine development, though, is funding, and the story surrounding this subject has changed drastically over the years. When Edward Jenner formulated his smallpox vaccine, he was awarded heavily by the British Parliament with the equivalent of more than a million dollars in today's currency and multiple honours from highly established universities.[45] His success spread over Europe, and vaccination became a heavily funded and successful industry.[46]

However, the scene is very different today. To begin, there is the formation of the vaccination resistance movement, which can decrease the profitability of development[47] and thus the amount of funding vaccine development receives. This was the case in the late 1970s and 1980s, when the United States' National Vaccine Injury Compensation program was launched in 1986 and began the start of the 'anti-vax' movement[48]. Furthermore, vaccines are becoming increasingly more common today, meaning that they are losing "some of their allure, particularly to public funding agencies"[49] and subsequently the amount of funding available for development is dropping. On top of this, the cost of vaccines is becoming more expensive and higher numbers are being required to service the public; this means the governments worldwide are seeing increases in their vaccine expenditures.[50] In the United States in particular, vaccine development is also becoming extremely monopolized, with only five major companies producing vaccines in the USA market. This also makes it more difficult for new companies to enter into the market. All in all, funding is becoming more difficult to obtain, especially from governments, and thus the development of vaccines is hindered. It is worth noting, though, that governments are not the only ones funding further research and development: the polio vaccine was created in 1955 without government support, relying on

42 "A Brief History of Vaccination," Immunisation Advisory Centre. September 22, 2016. https://www.immune.org.nz/vaccines/vaccine-development/brief-history-vaccination.

43 "Vaccine History: Developments by Year," The Children's Hospital of Philadelphia. November 20, 2014. https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-history/developments-by-year.

44 "A Brief History of Vaccination," Immunisation Advisory Centre. September 22, 2016. https://www.immune.org.nz/vaccines/vaccine-development/brief-history-vaccination.

45 Alexandra Minna Stern and Howard Markel, "The Evolving History of Influenza Viruses and Vaccines: Familiar Patterns, New Challenges.," Health Affairs 24, no. 3 (May/June 2005): 611-21. https://doi.org/10.1377/hlthaff.24.3.611.

46 Ibid.

47 "A Brief History of Vaccination," Immunisation Advisory Centre. September 22, 2016. https://www.immune.org.nz/vaccines/vaccine-development/brief-history-vaccination.

48 "A Brief History of Vaccination," Immunisation Advisory Centre. September 22, 2016. https://www.immune.org.nz/vaccines/vaccine-development/brief-history-vaccination.

49 Alexandra Minna Stern and Howard Markel, "The Evolving History of Influenza Viruses and Vaccines: Familiar Patterns, New Challenges.," Health Affairs 24, no. 3 (May/June 2005): 611-21. https://doi.org/10.1377/hlthaff.24.3.611.

50 Institute of Medicine (US) Committee on the Evaluation of Vaccine Purchase Financing in the United States, Financing Vaccines in the 21st Century: Assuring Access and Availability. (Washington, DC: National Academies Press (US), 2003), https://www.ncbi.nlm.nih.gov/books/NBK221816/.

American citizen contributions and philanthropic organizations.[51]

One other factor that plays into vaccine development is the multiple different strains of viruses that can exist and change constantly. Viruses often stray away from their ancestor strain through a process called antigenic drift, meaning that the vaccine developed for the original virus may be completely useless in a few years.[52] A prime example of this can be seen with influenza: there was initially only one strain of influenza known, and a vaccine was developed to combat it.[53] However, spontaneous modification of protein composition can change the strain, and thus the vaccine has to be changed to reflect the new strain.[54] As such, scientists have to keep in mind the ever-changing nature of viruses when developing vaccines, as well as how quickly they can alter vaccines to reflect new virus strains.[55]

Possible Solutions

One theme present throughout not only this topic of discussion, but all others, is that health is a truly global area of concern. Thus, as might already be evident from reading the introduction of this background guide, "education" alone might not be a solution at all to the issues that the world faces in terms of vaccines. While vaccine hesitancy is certainly a major contributor to the main issues pertaining to vaccination worldwide, one seldom-mentioned facet of the overall scheme of global vaccination is the need for access to vaccines in rural and underdeveloped areas. Considering the example of the GPEI, the main concern in eradicating polio is not vaccine hesitancy, but rather the lack of access to polio vaccines in rural and impoverished countries worldwide. [56]

While vaccination rates for all preventable diseases have increased substantially as a result of decades of work improving access to vaccination, there remains more that can be done. 19.4 million children in 2018 *did not* receive basic immunization, with the vast majority of this statistic originating from the lack of access to vaccines in rural and underdeveloped regions for the world[57]. It's up to WHO delegates, in this conference, to devise solutions to this pressing issue in vaccines. While there is no single solution for this issue, the general direction for a possible solution could be increasing funding for vaccination programs and research, and in particular, revisiting and reconsidering the ways in which vaccines are

51 Alexandra Minna Stern and Howard Markel, "The Evolving History of Influenza Viruses and Vaccines: Familiar Patterns, New Challenges.," Health Affairs 24, no. 3 (May/June 2005): 611-21. https://doi.org/10.1377/hlthaff.24.3.611.

52 "Viruses and Evolution," The History of Vaccines. The College of Physicians of Philadelphia, Accessed November 1, 2019. https://www.historyofvaccines.org/content/articles/viruses-and-evolution

53 Claude Hannoun, "The Evolving History of Influenza Vaccines and Vaccines," Expert Review of Vaccines (November 12, 2013). http://www.medscape.com/viewarticle/812621.

54 Ibid.

55 "Viruses and Evolution," The History of Vaccines. The College of Physicians of Philadelphia, Accessed November 1, 2019. https://www.historyofvaccines.org/content/articles/viruses-and-evolution.

56 "10 Facts on Polio Eradication." World Health Organization. World Health Organization, March 14, 2018. https://www.who.int/features/factfiles/polio/en/.

57 "Immunization Coverage." World Health Organization. World Health Organization, July 15, 2019. https://www.who.int/news-room/fact-sheets/detail/immunization-coverage.

distributed to different regions. Vaccine access is a two-sided issue; one side of it has to do with the vaccines themselves, and the other side has to do with the political and socio-economic frameworks that engender the distribution of vaccines.

Another issue is the global trend towards vaccine hesitancy. As discussed in the section on vaccine hesitancy, unvaccinated children yield a threat to the overall health and wellness of societies as a whole. As with the need for access to vaccines, there is no single solution to vaccine hesitancy. Education comes to mind, as it should, yet education shouldn't only be focused on 'convincing parents that vaccines are beneficial'. Education can apply to all parents, physicians, healthcare providers, and policymakers, not merely parents who vehemently reject vaccines[58]. Another possible solution is in setting public policy standards. While the causes of this observation may not be simple at all, Canada has among the lowest, or the lowest, vaccination rates among G7 countries.[59] Interestingly, Canada is also the only G7 country not to offer a national compensation program for vaccine-related illnesses[60]. While the reasons for Canada's low vaccination rate may be multifaceted, considering vaccine compensation programs may be another way to correct parental attitudes towards vaccines.

Questions to Consider

1. How might anti-vaccination sentiments in your country hinder its ability to directly contribute to the Global Vaccine Action Plan?
2. Which organizations in your country can help dispel vaccine hesitancy?
3. What is the most effective way to improve the access to vaccines worldwide, and what role does your country play in improving such access?
4. What strategies from previous vaccination campaigns for diseases, such as polio, can be implemented in any new solutions?
5. How can further research on the development of vaccines be conducted without adequate funding?

58 Sun, Lena. "Nurses Are Teaching Doctors How to Treat Anti-Vaccine Fears and Myths." The Washington Post. WP Company, July 21, 2019.

59 Public Health Agency of Canada. "What's Influencing Health - Immunization." Canada.ca. Government of Canada, December 15, 2016.

60 Picard, André. "No-Fault Compensation Urged for Those Injured by Vaccines." The Globe and Mail, May 3, 2018.

Topic B: Vaping Epidemic

Tobacco smoking has existed for centuries, yet, it wasn't until the latter half of the twentieth century that revelations regarding the health detriments of smoking emerged. In their wake, there has been a far greater societal effort (worldwide!) to curb smoking. One controversial facet of that effort is vaping. Introduced as early as 1963, the use of vapes (or e-cigarettes) only grew substantially in the 21st century[61].

Vapes are devices meant to mimic the action of cigarettes, as well as some chemicals therein (like nicotine), while omitting harmful and carcinogenic chemicals found in cigarettes like tar[62]. They're intended to be a cigarette replacement. Yet, the widespread use and possible detriment of vapes has led to the development of a "vaping epidemic".

While optimistically a great replacement, vapes aren't without their fair share of concern. The addictiveness of vapes and their widespread availability and promotion towards youth is one issue at hand. Another is an uncertain impact on human health. Coupled together, these issues fittingly render vapes a suitable global health topic, now up for discussion in this committee.

UN Involvement

The WHO Framework Convention on Tobacco Control (WHO FCTC) was the first international public health treaty negotiated under the WHO and was developed in response to the globalization of the tobacco epidemic. It was one of the first major steps taken towards the increase in tobacco usage around the world and has evolved over time to include regulations regarding e-cigarettes and vaping in general. In 2014, at the sixth session of the Conference of the Parties (COP6) to the WHO FCTC, the COP discussed smokeless tobacco products, electronic nicotine delivery systems (ENDS), and electronic non-nicotine delivery systems (ENNDS).[63] This was an important event because it was one of the first times that a group of world leaders discussed the increasing popularity of electronic cigarettes and how to respond to it. The COP recommended that members consider prohibiting or regulating ENDS and ENNDS due to the impacts that these products have on human health, as well as restricting advertising and promotions of ENDS, such as e-cigarettes. In addition, at the seventh session of the COP, the Global Strategy to Accelerate Tobacco Control 2019-2025 was created to reduce tobacco usage by 30% in people aged 15 years and older by 2025.[64]

In general, WHO has taken other efforts beyond passing the FCTC in relation to the vaping epidemic. For example, it released a report in 2019 on the Global Tobacco Epidemic

61 Fp-Admin. "What Is Vaping?" Center on Addiction - Addiction Science, Prevention & Treatment Research, October 1, 2018. https://www.centeronaddiction.org/e-cigarettes/recreational-vaping/what-vaping.

62 Ibid.

63 "WHO | Sixth Session of the Conference of the Parties to the WHO FCTC."

64 "WHO | Global Strategy to Accelerate Tobacco Control."

that specifically outlines the efforts taken previously regarding the issue, includes statistics on the usage of various kinds of nicotine-containing products, has guidelines for curbing tobacco usage, etc. In addition, the report includes information on a program called FCTC 2030 that will work on developing and implementing tobacco cessation programmes in the primary healthcare systems of low and middle-income countries.[65] This new project also involves a partnership with the United Nations Development Programme (UNDP) and other agencies.

A non-UN affiliated agency that has played a large part in fighting against the vaping epidemic is the Centers for Disease Control and Prevention (CDC). The CDC has recently taken many efforts to curb the increase in vaping, especially due to the emergence of multiple cases of the unidentified lung illness in the United States. For example, it has activated the Emergency Operations Center (EOC) to provide assistance to states and public health agencies across the country. The agency is also maintaining a webpage for the outbreaks of the disease and the epidemic that contains weekly updates, case numbers, death counts, etc. In addition, the CDC has begun collecting and testing lab specimens to learn more about the health impacts of vaping, as well to better establish a case definition of the disease.

Availability of Nicotine Products

With the current vaping epidemic, questions of vaping products are available in cities all over the world is being addressed more frequently and more seriously.

One of the most dangerous and unfortunately common sources of vape products is the black market.66 Products sold in the black market are often cheap counterfeits, and thus even more dangerous than regular vaping products.[67] In fact, the recent increase in vaping-related lung illness is thought to be directly related to products obtained from the black market, as they often contain highly dangerous amounts of THC - the psychoactive component of marijuana.[68] Generally black markets are formed when a product is banned or not readily available. However, that is clearly not the case with vaping products, especially in North America. A Google search for 'existence of vape shops' quickly returns hundreds of results, indicative of a serious issue with the amount of demand and thus supply for products.[69]

Quantity demanded is high, and thus quantity supplied will be too: it is a basic economic principle. Part of the problem that leads to widespread availability is extremely lax regulations by governments. Vape products are often advertised quite openly and

65 "WHO | WHO Report on the Global Tobacco Epidemic 2019."

66 Rob Kunzia and Lena H. Sun, "Potential culprits in mystery lung illness: Black-market vaping products," The Washington Post, September 25, 2019, https://www.washingtonpost.com/health/potential-culprits-in-mystery-lung-illnesses-black-market-vaping-products/2019/09/24/cb5b708e-d98d-11e9-ac63-3016711543fe_story.html.

67 Ibid.

68 Ibid.

69 "Existence of Vape Shops," Google, Accessed November 1, 2019.

displayed prominently in frequented locations like corner stores.[70] Many states in the USA have begun to tackle this issue, with some even going as far as to ban certain vaping products.[71] Delegates should consider though whether bans are the best way to diminish the supply of vape products, as they can often just unintentionally worsen the problem by creating new black markets and supporting the current ones' business.[72]

Targeted Advertising

One of the most highly discussed and poignant issues related to the vaping epidemic is major companies' use of targeting advertising, specifically towards youth. Juul, a major e-cigarette company based in the United States is one of the biggest perpetrators of this, with most of the conversation around the topic being based off of their extremely controversial marketing model.[73]

Juul has always maintained the message that their products are made explicitly to help adult smokers quit and are not intended for teens; however, a white paper done by researchers with the Stanford Research Into the Impact of Tobacco Advertising shows otherwise.[74] Instead of focussing on their supposed audience of adult smokers, Juul's marketing campaign was found to be primarily youth oriented, often choosing to emphasize bright colours and depict young adults having fun while simultaneously holding their Juul products.[75] Similarities have also been drawn between Juul's early ads and tobacco marketing, with similar colours, taglines, and styles being used to draw in a young audience.[76] Moreover, Juul's discreet product design, as well as the flavouring for the Juul Pods, appeal directly to a youth based audience, not the adult population trying to quit smoking.[77]

The medium of promotion is also quite relevant. Most e-cigarette companies choose to advertise on social media - which is primarily used by the age range these companies claim they are trying not to reach.[78] In particular, Juul has often used 'influencers' - social media

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70 Madeline Smith, "As health officials consider vaping regulations, here's what you need to know about e-cigarettes," Star Calgary, The Star, October 2, 2019. https://www.thestar.com/calgary/2019/10/02/as-health-officials-consider-vaping-regulations-heres-what-you-need-to-know-about-e-cigarettes.html

71 Will Stone, "Some States With Legal Weed Embrace Vaping Bans, Warn Of Black Market Risks," NPR, October 26, 2019. https://www.npr.org/sections/health-shots/2019/10/26/770377080/some-states-with-legal-weed-embrace-vaping-bans-warn-of-black-market-risks.

72 Duncan McCue, "E-cigarette ban would create a vaping black market: Public health expert," CBC Radio: Cross Country Checkup, CBC News, September 8, 2019. https://www.cbc.ca/radio/checkup/e-cigarette-ban-would-create-a-vaping-black-market-public-health-expert-1.5274794

73 "Juul," Wikipedia, November 1, 2019. https://en.wikipedia.org/wiki/Juul;

74 Julia Belluz, "The vape company Juul said it doesn't target teens. Its early ads tell a different story," Vox, January 25, 2019. https://www.vox.com/2019/1/25/18194953/vape-juul-e-cigarette-marketing

75 Ibid.

76 Ibid.

77 Ibid.

78 Ibid.

stars with high teenager followings - to promote their products.[79] Furthermore, e-cigarette companies are able to also advertise on other platforms such as television, which has raised controversy as cigarette ads are often banned from TV. [80]

It seems as if every aspect of Juul's marketing is targeted towards youth. The Food and Drug Administration (FDA) in the United States took notice, and has recently begun to restrict advertising for e-cigarette companies.[81] Juul was forced to shut down its Instagram and Facebook accounts, and had to turn its marketing focus to adult smokers - the age range it had supposedly being 'targeting' the whole time.[82] However, it is worth noting that not everyone believes e-cigarette ads with big warnings signs and 'ADULT ONLY' printed on the box may not be the best route to take: a Stanford professor of pediatrics, Bonnie Halpern-Felsher, explains that "When you say that a product is for an adult, the message is not, 'Don't use'".[83] Instead, it is "'Use these products and you'll appear to be adult or mature'".[84]

Delegates should consider how the methods of marketing and lax regulations are allowing companies like Juul to target specific and vulnerable audiences, and how changes might be made to the system.

Case Study: Unidentified Lung Illness

In London, Ontario, a high-school age teen was sent to hospital and put in intensive care as a result of an unknown lung condition (unnamed). The teen had vaped no later than a day before hospitalization. In following with the overall trends of ULI, the teen's condition had no known cause when evaluated by physicians[85]. Countless cases like these occurred repeatedly in the US, Canada, and Europe in 2019. This case along with countless others are known as cases of 'unidentified lung illness' (abbreviated to ULI); ULI is a blanket term used for any lung condition or injury that has no known cause as of yet[86]. This term has been most closely used in conjunction with vaping in the developed world. It's important to keep in mind that, throughout the discussion of this case study, ULI does not refer to a specific

79 Ibid.

80 Michelle Andrews, "Cigarettes Can't Be Advertised On TV. Should Juul Ads Be Permitted?" NPR, NPR, August 20, 2019. https://www.npr.org/sections/health-shots/2019/08/20/752553108/cigarettes-cant-be-advertised-on-tv-should-juul-ads-be-permitted

81 Julia Belluz, "The vape company Juul said it doesn't target teens. Its early ads tell a different story," Vox. January 25, 2019. https://www.vox.com/2019/1/25/18194953/vape-juul-e-cigarette-marketing

82 Ibid.

83 Michelle Andrews, "Cigarettes Can't Be Advertised On TV. Should Juul Ads Be Permitted?" NPR, NPR, August 20, 2019. https://www.npr.org/sections/health-shots/2019/08/20/752553108/cigarettes-cant-be-advertised-on-tv-should-juul-ads-be-permitted

84 Ibid.

85 Thompson, Brian. "Local Teen Suffers 'Severe Respiratory Illness' Linked to Vaping: Health Officials." The London Free Press, September 19, 2019. https://lfpress.com/news/local-news/local-teen-suffers-respiratory-illness-linked-to-vaping-public-health-officials.

86 "Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, October 31, 2019. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html.

medical condition, but rather a broad range.

As vaping is most common in the developed world (North America, and to a lesser extent Europe), these are areas where the incidence of ULI is especially high, and the root causes are puzzling to medical professionals. Over 1,604 cases of ULI have been recorded in the US to date, with 34 deaths[87]. A meta-analysis of CDC clinical records resulted in the conclusion that all 1,604 US cases of ULI aforementioned were associated with past use of cigarettes or vaping[88]. This is a correlative relationship, wherein ULI tends to follow vape usage. However, to state that ULI is a result of vape usage is scientifically incorrect.

On the topic of causality, scientific research is needed to properly understand the relationship between the chemicals in vapes and specific health outcomes. That being said, research conducted by the CDC indicated that vitamin E acetate, a contaminant found in THC and other vaping products, was likely to blame for the deaths linked to vape usage and these specific cases of ULI. Research is ongoing to determine whether this contaminant the greatest threat from vaping, or whether other chemicals may also prove to be damaging to human health in the long term. As of the present moment, researchers have not reached any sort of scientific consensus about the health consequences of vapes[89]. Therefore, the most that can be said about vapes and health risks is that we don't know. Whether vapes are truly a 'safer' alternative to cigarettes and drugs as they're advertised remains a matter of scientific debate. Nonetheless, one certain matter to be gleaned out of this is that more research is needed to properly understand the causes of ULI. The WHO may be in part responsible for engendering such research.

Possible Solutions

Action has already begun to be taken by major world players on combating the vaping epidemic. Delegates should consider three potential solutions - increased government regulation, attitude change, and outright bans - with the reality in mind that probably a combination of these solutions would be the most effective, and that each has its own negative side effects to be considered and weighed.

Increasing government regulations is quite a broad subject: it could entail restricting advertising, regulating access, or establishing vaping-free zones. A professor of public health at the University of Waterloo, David Hammond, spoke to the subject, suggesting that vaping's popularity needs to be curbed.[90] Actions such as toughening regulations on packaging and

87 Ibid.

88 Ibid.

89 Kaisar, Mohammad Abul, Shikha Prasad, Tylor Liles, and Luca Cucullo. "A Decade of e-Cigarettes: Limited Research & Unresolved Safety Concerns." Toxicology 365 (July 15, 2016): 67–75. https://doi.org/10.1016/j.tox.2016.07.020.

90 Duncan McCue, "E-cigarette ban would create a vaping black market: Public health expert," CBC Radio: Cross Country Checkup, CBC News, September 8, 2019. https://www.cbc.ca/radio/checkup/e-cigarette-ban-would-create-a-vaping-black-market-public-health-expert-1.5274794

marketing could be used as well.[91]

On that note, as discussed earlier, restricting advertising of vaping products like the Food and Drug Association (FDA) in the United States did can help to limit the audience e-cigarette companies reach.[92] Thus, it stands to reason that the total number of vapers would stagnate, as less people would 'discover' the products through advertising and start using vape products. However, this solution does not account for advertising done through word of mouth: thus regulations could prove useless.[93]

Another major area governments could step in to regulate is the creation of vaping-free zones: these could be used in schools (where vaping is a major issue amongst teens) and public places where vaping is of irritance to civilians. This would require massive regulation from the global to municipal level for it to be effective though, and delegates must consider the feasibility of such an action.

A very common solution proposed is an outright ban - in fact, this is the route Donald Trump in the United States seems to be taking, with his recent plan to ban flavoured e-cigarettes as a response to the vaping epidemic.[94] Many states in the United States have already called for a ban themselves or have recently followed suite of the President's actions.[95] The benefit of a ban is largely obvious: it basically can limit accessibility, and thus theoretically lower the number of vapers. Many have warned though that a ban may not be the most effective solution. One of whom is Professor David Hammond, who teaches public health at the University of Waterloo.[96] He warns that a ban on e-cigarettes could just create a black market,[97] where we know products are far more dangerous.[98]

However, probably one of the most important topics delegates should focus on solving is the attitude people currently have towards vaping. People do not understand how big the issue of vaping is in the first place[99] - especially youth. One of the main places where attitudes can be changed is in schools. Comprehensive school policies that are explicitly anti-vaping

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91 Ibid.

92 Julia Belluz, "The vape company Juul said it doesn't target teens. Its early ads tell a different story," Vox, January 25, 2019. https://www.vox.com/2019/1/25/18194953/vape-juul-e-cigarette-marketing

93 Michelle Andrews, "Cigarettes Can't Be Advertised On TV. Should Juul Ads Be Permitted?" NPR, NPR, August 20, 2019. https://www.npr.org/sections/health-shots/2019/08/20/752553108/cigarettes-cant-be-advertised-on-tv-should-juul-ads-be-permitted

94 Sheila Kaplan, "Trump Administration Plans to Ban Flavoured E-Cigarettes," The New York Times, The New York Times Company, September 19, 2019. https://www.nytimes.com/2019/09/11/health/trump-vaping.html

95 Ibid.

96 Duncan McCue, "E-cigarette ban would create a vaping black market: Public health expert," CBC Radio: Cross Country Checkup, CBC News, September 8, 2019. https://www.cbc.ca/radio/checkup/e-cigarette-ban-would-create-a-vaping-black-market-public-health-expert-1.5274794

97 Ibid.

98 Rob Kunzia and Lena H. Sun, "Potential culprits in mystery lung illness: Black-market vaping products," The Washington Post, September 25, 2019, https://www.washingtonpost.com/health/potential-culprits-in-mystery-lung-illnesses-black-market-vaping-products/2019/09/24/cb5b708e-d98d-11e9-ac63-3016711543fe_story.html.

99 American Heart Association News, "Amid an 'epidemic' of school vaping, a search for solutions," American Heart Association, Inc. August 16, 2019. https://www.heart.org/en/news/2019/08/16/amid-an-epidemic-of-school-vaping-a-search-for-solutions

are one suggestion from Kansas Department of Health and Environment youth smoking prevention program manager Jordan Roberts.[100] It is extremely important to shift attitudes towards vaping - people do not seem to realize they are inhaling dangerous chemicals, and that needs to change.[101] With more knowledge and an attitude change, people can make rational and informed decisions about what choice to make when it comes to vaping.

Whatever solutions delegates choose to approach, it would be beneficial to remember the issue of national sovereignty and the barriers within which the World Health Organization can act in.

Questions to Consider

1. How do you impose regulations on vaping when there is little information on the issue at present?
2. What actions can be taken regarding the sale of vaping products on the black market?
3. How does your country feel about an outright ban on vaping products?
4. What efforts can countries make in order to learn more about the health effects associated with vaping?
5. How does your country feel about advertising of vaping products and how does this impact the youth of your country who are often the targets of such advertising?

100 Ibid.
101 Ibid.

Topic C: Water Sanitation

The first sanitation systems can be dated back to the Neolithic era and the Indus Valley Civilizations, where wells and sewage systems were available to provide proper drinking water and to dispose of waste. In ancient Rome, sewers were created to drain water around 800 B.C. Around 500 years later, aqueducts were built by the Romans to provide clean drinking water to families, as well as for irrigation, public fountains, etc. Although these water sanitation systems did not reach all homes they laid a strong foundation for sanitation systems in more modern times.

Concern for public health became prominent in the late 19th century after the Industrial Revolution, with many cities constructing sewage systems to prevent the spread of typhoid and cholera. In addition, in the United States, the first sewage treatment plant was created in 1890, paving the way for similar plants to appear in Europe and other parts of the world. Even with such systems in place, many cities still faced rapid transmission of diseases associated with unsanitary conditions, indicating a need for a better system.

UN Involvement

The United Nations (UN) has long taken a stance in fighting for adequate water sanitation globally. One of the most prominent forms of action they have taken is creating Goal 6 of the UN Sustainable Development Goals (SDGs): "Ensure access to water and sanitation for all".[102] Essentially, this goal entails pushing for the creation and development of local "freshwater ecosystems and sanitation facilities" in multiple developing nations.[103] Under this overarching target, the UN has subsequently broken down the target into six smaller goals to reach by 2030.[104] The importance of water sanitation's inclusion in the SDGs cannot be overstated: just the publicity the issue gained alone is momentous.

A major issue that can be seen though is the lack of data on access to clean drinking water, especially in low developed countries in Africa.[105] North America is sitting at 99% access though, with South America and Mexico in the 60% to 80% range.[106] Much of the monitoring is done through the UN Water Global Analysis and Assessment of Sanitation and Drinking Water, TrackFin, and WHO/UNICEF Joint Monitoring Programme.[107] Nevertheless, delegates should the issue with data access in mind when they make their decisions regarding how to

102 "Goal 6: Ensure access to water and sanitation for all," Sustainable Development Goals, United Nations, Accessed November 1, 2019. https://www.un.org/sustainabledevelopment/water-and-sanitation/

103 Ibid.

104 Ibid.

105 "Sustainable Development Goal 6: Ensure access to water and sanitation for all," SDG Tracker, Accessed November 1, 2019. https://sdg-tracker.org/water-and-sanitation

106 "Sustainable Development Goal 6: Ensure access to water and sanitation for all," SDG Tracker, Accessed November 1, 2019. https://sdg-tracker.org/water-and-sanitation

107 "Monitoring and evidence," Water sanitation hygiene, World Health Organization, Accessed November 1, 2019. https://www.who.int/water_sanitation_health/monitoring/en/

proceed with water and sanitation issues.

More information on the specifics of the SDGs, and specifically Goal 6 of Water Sanitation, can be found in the Additional Resources section located at the end of this Background Guide.

Moving on, most of the work the UN has been taken has been through UN Water, which is the UN's overarching coordinator of their work on water and sanitation.[108] UN Water has undertaken significant research into the impacts and benefits better water sanitation would have: from better health to education, the effects would be instrumental in improving the livelihoods of communities around the world.[109] Furthermore, many of the UN's bodies have taken to supporting SDG 6, including the United Nations Development Programme, UN Women, the UN Environment Programme, and the WHO itself.[110]

Neglected Tropical Diseases

Neglected tropical diseases (NTDs) are a diverse group of communicable diseases that affect people in tropical climates in over 149 countries around the world.[111] Preventive chemotherapy has often been considered as a possible treatment method for NTDs, which involves the administration of a single drug, or one in combination with a few others, as a public health response to NTDs. It can be implemented through mass drug administration or selective chemotherapy based on the characteristics of the disease and its mode of transmission.[112] However, many NTDs do not have any proper vaccines or medications to either prevent the disease or alleviate the problems caused by them.

An important component in the fight against NTDs was the creation of an NTD Roadmap by the WHO, in 2012, that involved the reduction, elimination, or eradication of 17 NTDs by 2020. This roadmap included two prominent diseases, dracunculiasis and lymphatic filariasis, of which the former is targeted for eradication and the latter is targeted for reduction as a public health problem. The WHO NTD roadmap also included details on the implementation of water, sanitation, and hygiene (WASH) and how this can be applied to

108 "Water, Sanitation and Hygiene," UN Water, United Nations, Accessed November 1, 2019. https://www.unwater.org/water-facts/water-sanitation-and-hygiene/

109 Ibid.

110 "Monitoring and evidence," Water sanitation hygiene, World Health Organization, Accessed November 1, 2019. https://www.who.int/water_sanitation_health/monitoring/en/;
"SDG 6: Ensure availability and sustainable management of water and sanitation for all," UN Women, UN Women, Accessed November 1, 2019. https://www.unwomen.org/en/news/in-focus/women-and-the-sdgs/sdg-6-clean-water-sanitation;
"GOAL 6: Clean water and sanitation," UN Environment Programme, United Nations Environment Programme, Accessed November 1, 2019. https://www.unenvironment.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-6;
"Goal 6: Clean water and sanitation," United Nations Development Programme. Accessed November 1, 2019. https://undp.org/content/undp/en/home/sustainable-development-goals/goal-6-clean-water-and-sanitation.html

111 "WHO | World Health Organization."

112 "WHO | Integrated Preventive Chemotherapy for Neglected Tropical Diseases."

neglected tropical diseases.[113]

Dracunculiasis, also known as Guinea-worm disease, is a parasitic disease that is transmitted when a person consumes stagnant water contaminated with parasite-infected water fleas. It is rarely fatal, but can render infected people non-functional for many weeks, mainly affecting those in rural communities where people depend on open water sources, such as ponds. As of June 2019, there were only 19 cases of the disease in the world, indicating that the disease is on the verge of eradication.[114]

The transmission of the disease involves understanding the life-cycle of the worms and the incubation period of the disease. After a year of infection, a large, painful blister forms on the lower leg of an infected person. One or multiple worms may emerge from this blister, accompanied by a burning sensation. This often results in infected patients immersing the infected body part into another open source of water, which causes the larvae of the worms to be released into the water and thereby, propagates the continued transmission of the disease once the larvae reach the worm stage. Therefore, the issue of water sanitation plays a large part in not only in the transmission of the disease, but also the eradication of the disease.

Another disease that can be greatly eliminated from many countries around the world via the improvement of water sanitation is lymphatic filariasis. This NTD is also known as elephantiasis, due to the large swelling of the leg that it causes, and it occurs when filarial parasites, i.e. roundworms, are transmitted to humans via mosquitoes. Mosquitoes spread this disease when they transmit the blood of an infected host to another person. Once a person is infected by a mosquito, the larvae of the nematodes migrate to the lymphatic vessels from the blood, where they develop into adult worms, continuing the cycle of transmission.[115] Transmission of the disease relates to water sanitation because most mosquitoes are found near or on open water sources and when people in rural areas gather water from these open sources, they are likely to be infected by the mosquitoes. In addition, there are many other diseases, besides NTDs, that are also water-borne and it is important to consider how water sanitation contributes to stopping the transmission of these diseases, as well as how it plays into global disease eradication.

Conditions in Health-Care Facilities

The term "health-care facilities" refers to formally recognized facilities that provide health care, such as health clinics, national hospitals, private clinics, and emergency response centers. The WHO has established certain standards for these facilities, called WASH, which refers to the availability of water, general sanitation, waste management, and hygienic

113 "WHO Roadmap on Neglected Tropical Diseases."

114 "Dracunculiasis (Guinea-Worm Disease)."

115 "Lymphatic Filariasis."

cleaning infrastructure in every part of a healthcare facility.[116] Across all parts of the world, WASH services in these facilities does not meet the WHO guidelines or national standards, especially in maternity and primary-care centers.

A major programme that works towards improving WASH around the world is the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene (JMP). The JMP has a global database of statistics on the implementation of WASH. For example, a JMP global report found that around 26% of healthcare facilities lacked basic water services, while around 21% had no sanitation services at all.[117] In addition, JMP also has many strategies/ guidelines for how to work towards better conditions in not only health-care facilities, but other community settings as well.

A country that has significant problems with water services and sanitation in rural healthcare facilities is Kazakhstan. The country has a limited supply of freshwater and much of this water is contaminated due to rapid industrial production and lack of environmental protection. Kazakhstan also lacks proper infrastructure in rural areas for transporting water to facilities, making it significantly harder to implement WASH in health-care facilities. In addition, there is very limited information available on sanitation in rural areas of Kazakhstan, emphasizing the need for surveys and guidelines regarding WASH to be implemented in the country.[118]

Similarly, Cambodia also has significant problems with WASH and although there has been some progress made, Cambodia still has the highest rate of open defecation, one in two rural healthcare facilities in Cambodia lacks sufficient water all year long, and seven out of ten schools do not have access to WASH.[119] In general, people in rural areas in Cambodia also have a limited understanding of the importance of proper sanitation and hygiene. Many countries around the world face similar problems with sanitation and as a result, strategies that can be implemented in Kazakhstan and Cambodia can also be applied to other countries.

Emergencies and Disasters

Aside from the factors already mentioned, one type of event that starkly elucidates lapses in the development of safe and effective water sanitation infrastructure is a natural disaster. As should be known, when disasters strike anywhere in the world, they place significant strain on infrastructure; this occurs in developed and less developed countries, although the effects are more pronounced. One type of infrastructure almost universally affected, and posing among the greatest risk to societal health when damaged, is water sanitation[120]. In particular, the already poorly-developed water sanitation systems of poorer

116 “WHO | WASH in Health Care Facilities.”

117 “Health Care Facilities | JMP.”

118 Tussupova, Hjorth, and Berndtsson, “Access to Drinking Water and Sanitation in Rural Kazakhstan.”

119 “Water, Sanitation and Hygiene.”

120 UN-Water. “Disasters: UN-Water.” UN. Accessed November 3, 2019. https://www.unwater.org/water-facts/disasters/.

countries are effectively completely crippled by natural disasters (such as hurricanes, tornadoes, earthquakes, and floods), leaving the door open to the spread of waterborne illnesses - the most common being cholera[121]. Several examples are examined below to demonstrate the points made above.

Haiti is one of the least developed countries in the Western hemisphere, having long possessed an ailing water sanitation system[122]. When the disastrous earthquake struck the country in 2010, its water sanitation system was crippled. Access to potable water declined sharply (approaching a mere half of the country)[123]. As predicted above, a cholera outbreak ensued, in fact being the first modern outbreak of cholera (a disease once thought to be eradicated due to more effective hygiene practices)[124]. The outbreak resulted in over 800,000 cases in 9,000 deaths in the country, spreading to other countries - becoming a multinational epidemic[125]. The epidemic continues as of nowadays. Presently, under 20% of Haitians have access to water sanitation facilities and resources, demonstrating how pressing of an issue it is[126].

Hurricane Maria struck Puerto Rico in 2017, resulting in severe damage to infrastructure across multiple departments. Although no water-borne infectious disease or NTD outbreak followed the disaster, millions of Puerto Ricans remain without access to clean water; this demonstrates the destructive potential of natural disasters with respect to water sanitation[127]. The water sanitation situation in Puerto Rico, especially considering the relationship between the territory and the American federal government, is also a testament to the increasingly sociopolitical nature of global health[128]; this is a key idea to consider herein.

In 2013, a multiplicity of natural disasters struck the Philippines. Three in particular (the Luzon flood, the Bohol earthquake, and typhoon Haiyan) were of note. Via a study in the peer-reviewed journal Global Health Action, all three disasters, along with others that struck the country, affected the country's already weak water sanitation infrastructure[129]. In turn, precisely as expected, the country experienced a host of water-borne illnesses, vector-borne illnesses, NTDs, and other infectious diseases that could be prevented by an effective water sanitation system130. Also of note in the Philippines is the commonality of infected

121 Ibid.

122 Denis, Pierre Charles. "Haiti: The Impacts of the 2010 Earthquake on Water and Sanitation in Port-Au-Prince (#469)." GWP, October 8, 2015.

123 Ibid.

124 Ibid.

125 Ibid.

126 Ibid.

127 Milman, Oliver. "Another Flint? Why Puerto Ricans No Longer Trust Water after the Hurricane." The Guardian. Guardian News and Media, August 8, 2018.

128 Ibid.

129 Salazar, Miguel Antonio, Arturo Pesigan, Ronald Law, and Volker Winkler. "Post-Disaster Health Impact of Natural Hazards in the Philippines in 2013." Global Health Action 9, no. 1 (May 17, 2016): 31320. https://doi.org/10.3402/gha.v9.31320.

130 Ibid.

open wounds following the disasters[131]. Clean water, along with other healthcare staples (like isopropyl alcohol), is an absolute necessity to the cleaning of wounds; without it, or if wounds are cleaned with unclean water, the risk of infection substantially rises. This effect was profoundly visible in the Philippines.

In all of the above cases mentioned, several common themes are present. One that hasn't been discussed so far is the recovery effort. The impact of disaster on sanitation systems and community health is clear; the effect on the recovery and rehabilitation effort is quite similar. With a clear plethora of diseases spreading throughout communities and societies following a disaster, the recovery effort needs to shift its resources to dealing with the conditions at hand, as opposed to actually rehabilitating damaged infrastructure. This has the possibility of creating a feedback loop of sorts, where an unaddressed water sanitation system leads to a sustained prevalence of illnesses, further preventing rehabilitation of sanitation infrastructure. This has been most profoundly observed in Haiti, clearly indicating that breaking this cycle is a priority for the WHO.

Possible Solutions

When proposing solutions for the topic of water sanitation, it is important to acknowledge the various sub-issues that exist under the issue of water sanitation, such as how to prevent contamination of the water supply, collecting data on the issue in rural areas, how to supply clean water to rural areas, how to implement policies in relation to WASH, etc. Solutions proposed by delegates should address the various sub-issues that come under the topic. For example, in regards to how to supply clean water to rural areas, a solution to this issue would be working with national governments and UN agencies to establish small water supply systems in rural areas. Another example would be establishing different classification levels, such as basic, intermediate, and advanced for each component of WASH to allow for better implementation of any sanitary guidelines that are created.

The subtopics highlighted in this topic are also important when considering solutions for improving water sanitation around the world. For neglected tropical diseases, water sanitation plays a significant role in how these diseases are transmitted. As a result, it is not only necessary to consider how to establish new water sanitation infrastructure in rural areas, but to also develop solutions that work towards eliminating standing water, which would help prevent NTDs, as well as many other water-borne diseases. This could potentially be done through teaching homeowners in impoverished areas about how to prevent standing water in their homes. In regards to water sanitation during emergencies and disasters, a possible solution could be to have stricter guidelines on sanitation in temporary mobile health clinics that aid in the recovery from such a disaster.

131 Ibid.

Questions to Consider

1. How do you ensure water sanitation is implemented in rural areas that lack infrastructure?
2. What measures can be taken to ensure WASH is implemented in rehabilitation after emergencies and natural disasters?
3. Has your country taken any previous efforts to improve water sanitation?
4. Can a certain baseline be created for the different aspects of WASH and if so, how can these baselines be standardized across countries?
5. What strategies from previous sanitation efforts can be applied to any new efforts and how will they be improved upon to ensure their effectiveness?

Advice for Research and Preparation

As mentioned earlier, it is important to note that this background guide is simply a starting point for your research in order to gain a broad overview of each of the issues. Delegates will be expected to conduct their own research on the topics, as well as country policy, to formulate solutions. Research on country policy should include how your country has previously felt towards these issues, what actions your country has taken, etc. It should also include general information about your country, such as common trading partners, political system, internal problems, etc. A great resource for finding general information about a country is the CIA World Factbook.

For each topic, it is also necessary to look into past action taken by the UN and other foreign organizations, which can help formulate solutions that are effective and will not succumb to past pitfalls with similar solutions. In addition, case studies on specific countries are also informative for understanding how a country has reacted to a specific situation, as well as the stance other countries may take on providing aid.

When discussing any of these topics, it is crucial that delegates understand the terminology that they are using and various nuances between certain words. For example, in regards to diseases, it is important to note the distinction between eliminated and eradicated. Eliminated refers to the ending of transmission of a certain disease in one country or region, whereas eradicated refers to zero transmission of a disease in every part of the world. Understanding the nuances in terminology, such as the one presented, is crucial to gaining a thorough knowledge of each of the topics and in creating cohesive, multi-faceted solutions. We wish you good luck in all of your research!

Vaccines Key Resources

"Polio Endgame Strategy 2019-2023." Global Eradication Initiative, Accessed October 5, 2019. http://polioeradication.org/wp-content/uploads/2019/06/english-polio-endgame-strategy.pdf

Delegates can use this resource to learn more about the polio eradication initiative and how the strategies implemented for the eradication, such as the polio vaccination campaign, can be applied to the broader topic of vaccines.

"WHO Department on Immunization, Vaccines and Biologicals." World Health Organization. United Nations, October 24, 2019. https://www.who.int/immunization/en/.

Delegates can use this resource to keep up-to-date on global vaccination news as they occur, and to look further into UN and country-specific programs and data regarding vaccination.

Vaping Epidemic Key Resources

Blaha, Michael Joseph. "5 Vaping Facts You Need To Know." Johns Hopkins Medicine. The Johns Hopkins University, Accessed November 8, 2019. https://www.hopkinsmedicine.org/health/wellness-and-prevention/5-truths-you-need-to-know-about-vaping

Delegates can use this resource as a starting point for understanding the negative effects of vaping, and to begin to look further into how attitudes and lack of knowledge fuel the vaping epidemic.

Jones, Lora. "Vaping: How popular are e-cigarettes?" BBC News. BBC, September 15, 2019. https://www.bbc.com/news/business-44295336

Delegates can use this source to find statistics about vaping, and can thus use this information in conjugation with the previous resource to make connections to the attitude around vaping.

Sanitation Key Resources

"Global Baseline Report 2019." WASH in Health-Care Facilities. The World Health Organization, Accessed October 5, 2019. https://www.who.int/water_sanitation_health/publications/wash-in-health-care-facilities-global-report/en/

Delegates can use this resource to gain a thorough understanding of WASH and all of the various aspects associated with the initiative, such as the creation of baselines, upcoming goals/strategies, etc.

"Goal 6: Ensure access to water and sanitation for all." Sustainable Development Goals. United Nations, Accessed November 1, 2019. https://www.un.org/sustainabledevelopment/water-and-sanitation/

Delegates can use this source to delve deeper into Goal 6 of the United Nations Sustainable Development Goals, in order to gain a better understanding of how the UN has been involved with water sanitation in the past and the work that is currently being done by bodies of the UN.

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