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Vaccine Diplomacy and Deployment in Response to the COVID-19 Pandemic

Abstract

The following research paper takes a look at vaccine diplomacy and deployment as a whole and what it means in terms of the COVID-19 pandemic. First, we looked at past precedent and how the United States and other countries have deployed vaccines in the face of past pandemics. Finally, we evaluated those plans and made recommendations to better global deployment.

Introduction

The reason for this research project is to address the question of when a vaccine(temporary or permanent) for the COVID-19 pandemic is finally procured how can it be deployed on a global scale so that it is accessible to those populations that need it the most.

First, it’s important to the severity of the COVID-19 pandemic. Globally, as of August 8th 2020, there have been roughly 19.2 million confirmed cases of Coronavirus and 716,000 confirmed deaths as a result of it.[[18](https://ourworldindata.org/grapher/total-deaths-and-cases-covid-19)] In the United States alone, as of August 8th 2020, there have been 4.9 million confirmed cases and 160,000 deaths.[[2](https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/us-cases-deaths.html)] In terms of epicenters, the United States and South American countries are in the center of the worst of the pandemic. Parts of Latin America, the Middle East, South Asia, Europe and Africa are also hotspots, though to a lesser degree.[[17](https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html)]

**Domestic Immunization Infrastructure**

It is important to look at the existing immunization infrastructure in the United States and the world. In the United States, the CDC’s Section 317 Immunization Grants Program, Vaccines for Children (VFC) program, Medicare,[[7](https://doi.org/10.1086/420748)] Medicaid,[[10](https://www.vaccines.gov/get-vaccinated/pay)] and the Immunization Information Systems (IIS)[[11](https://www.cdc.gov/vaccines/programs/iis/about.html)] all provide funding and infrastructure to vaccinate the U.S. population. The section 317 immunization grants program, which was created in 1962 by the Vaccination Assistance Act, provides the core funding for the nation’s immunization programs, by providing 64 grants to different states, cities and territories. Section 317 is primarily responsible for vaccine delivery, accountability and management of public sector vaccines, support to private sector vaccination programs, monitoring effectiveness of vaccines, decreasing racial disparities and outbreak control. Section 317 is the most integral part of the United States’s immunization infrastructure, and the continuing funding of it is vital to maintain the immunization of American citizens.[[13](https://astho.org/Programs/Immunization/Immunization-Infrastructure--The-Role-of-Section-317/)] The Vaccines for Children Program (VFC), which was created by the Vaccines for Children Act in 1993, provides free vaccines to children who are uninsured, on Medicaid, or are American Indians. It also provides immunizations for those children who don't have complete vaccine coverage under their current insurance plans. Under medicare, which provides health coverage for all Americans above the age of 65, most vaccinations are covered. [[7](https://doi.org/10.1086/420748)] Under medicaid, some vaccinations are covered for adults.[[10](https://www.vaccines.gov/get-vaccinated/pay)] Finally, the Immunization Information Systems (IIS) provides computerized databases of all immunization records and tracks immunization in different areas. Additionally, it provides families with immunization reminders and shares needed information with relevant systems.[[11](https://www.cdc.gov/vaccines/programs/iis/about.html)]

Unfortunately, despite the efforts of the federal government there are still many obstacles to overall immunization in the United States. One of them being noncompliance in terms of vaccinations. Since 1980, there have been multiple outbreaks of measles, rubella, mumps, and pertussis due to refusal to vaccinate, incomplete vaccination processes, and decreased immunity. Vaccine hesitancy and refusal overall has accounted for multiple outbreaks of measles, pertussis, pneumococcus and varicella. The most prominent of them being measles. In many cases parents choose to delay or even not have their children vaccinated. This disrupts herd immunity, and leaves many communities vulnerable to an outbreak. The reasons for intentional noncompliance range from concerns about side effects to fears of autism to religious grounds. To solve this, the federal government has to work to communicate with and educate those populations who are hesitant of vaccines[[21](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4927017/)] However, another large obstacle is as a result of vaccines still being inaccessible. As a result of the weakening of the Affordable Care Act (ACA) more people have less insurance. Public health departments are underfunded and federally qualified health centers (FQHCs) lack the resources and manpower to care for the uninsured. To fix these issues immunization programs like Section 317 need to be further funded.[[6](https://www.healthaffairs.org/do/10.1377/hblog20200418.799331/full/)]

**Global Immunization Infrastructure**

On a global scale, immunization infrastructure is centered around different programs, organisations, plans and foundations. These include the United Nations Children’s Fund (UNICEF), World Health Organization (WHO), the Global Alliance for Vaccines and Immunization (GAVI), and the Bill and Melinda Gates Foundation.[[3](https://www.prb.org/challengestoglobalimmunizationprograms/)] UNICEF provides children immunization and vaccines in disadvantaged and vulnerable areas. They effectively deliver vaccines to communities in need, specifically tailoring plans to address different needs and factors.[[12](https://www.unicef.org/immunization#:~:text=UNICEF's%20immunization%20programme%20helps%20identify,did%20not%20receive%20any%20vaccines.)] The WHO in May of 2012 drafted their Global Vaccine Action Plan(GVAP) that would help coordinate their global immunization efforts. GVAP laid out principles, goals, objectives, and actions that the WHO and other organizations and countries abide by in their global immunization efforts.[[23](http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/)] GAVI is another global immunization organisation, who helps to combine the efforts of UNICEF, WHO, The World Bank, the Bill and Melinda Gates Foundation, research agencies, manufacturers, the private sector, and donor and implementing countries. Their partnerships span the globe and allow them to aid and abet the immunization of the globe.[[1](https://www.gavi.org/our-alliance/about)] Finally, a good example of a private foundation in global immunization efforts is the Bill & Melinda Gates Foundation. The foundation funds vaccine research, production and delivery in order to provide disadvantaged communities across the globe with proper vaccination.[[19](https://www.gatesfoundation.org/what-we-do/global-health/vaccine-development-and-surveillance)]

**Vaccine Diplomacy**

Finally, we must look at what vaccine diplomacy is. Vaccine diplomacy is a subset of global health foreign policy that uses the delivery and innovation of vaccines to further geopolitical goals and strengthen ties with adversarial and allying nations.[[1](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4072536/)] Vaccine diplomacy has been used throughout history. When the smallpox vaccine was first created by British doctor Edward Jenner in 1798, the British government permitted the shipping of these vaccines across the English channel to be deployed in France despite the two countries being in the midst of military conflicts that sprang from the French Revolutionary and Napoleonic Wars. In the early 1950s in the midst of the Cold War, when the polio epidemic had decimated both sides of the Iron Curtain, soviet virologists assisted U.S. doctor Albert Sabin to develop an improved version of the polio vaccine. Consequently, this cooperation was able to soften Soivet-U.S. relations temporarily.[[8](https://foreignpolicy.com/2009/11/19/vaccine-diplomacy/)] Most recently, in 2005 the American and Indonesian governments cooperated to combat an outbreak of avian influenza in Indonesia.[[15](https://www.wired.com/story/the-dire-diplomacy-of-the-global-race-for-a-vaccine/)] In most cases, vaccine diplomacy is used to better ties and connections with other nations. However, it can be argued that the SARS-CoV-2COVID-19 pandemic has turned that ideology on its head as countries are working together out of a necessity to get a vaccine out as quickly as possible rather than out of a desire of furthering geopolitical ambitions. The best example of this for the SARS-CoV-2 pandemic Coronavirus is the Coalition for Epidemic Preparedness Innovations (CEPI), which is a multilateral initiative that was founded by India, Norway, the UK-based Wellcome Trust, the Gates Foundation, and the World Economic Forum.[[22](https://www.cfr.org/backgrounder/what-world-doing-create-covid-19-vaccine)]

While there are clear multilateral initiatives for the development of vaccines for the COVID-19 pandemic, the plans to deploy the vaccines in a multilateral sense still remain hazy. As a result the question must be asked: Taking past precedent into account, how will vaccines for the COVID-19 pandemic be deployed on a global scale, and what steps can be taken to better this process?

Methods

All research was conducted through analysis and synthesis of reports and articles from various sources. These sources themselves conducted quantitative research that was not conducted in this report.

Information was gathered from various sources. Initially, using Google, Google Scholar, and Advanced Google Search a primary list of sources was gathered. Basic information was then gathered. Furthermore, using the initial list of sources key terms were made to gather more information. Using these terms, more sources were gathered.

For this literature review, the key terms and phrases used to gather information were: *COVID 19 vaccine deployment, Global Immunization, vaccine diplomacy, U.S. Immunization, and vaccine deployment global pandemics*. Some Sources were also found by looking at the reference section of other sources.

Sources were chosen through several criteria. First, the sources must be from a credible source. Second, research articles that were similar to my research topic were focused and valued more in this literature review. Third, articles that were written recently were more valuable as the COVID 19 crisis is constantly evolving.

For examining data, we analyzed the relevance and way it was gathered. For qualitative data, information was analyzed and was then evaluated on its relevance in the context of the research question.

Knowing the proper background knowledge, we were able to draw upon the following hypothesis before conducting our full research review:

Looking at past precedent, if the global community wants to be able to deploy vaccines in a manner that will stem the pandemic, they should initially deploy the vaccine at the epicenters of the pandemic and in disadvantaged resource-strapped areas.

Results

It is important to examine past precedent. How has the United States and the international community in general, worked together to deploy vaccines for past pandemics?

**U.S.**

As stated above, the United States has a comprehensive immunization infrastructure, but it is important to look at how the United States has deployed vaccines in pandemics and outbreaks specifically.

Polio

The peak of polio was from 1916-1955, affecting hundreds of thousands of Americans.[[16](https://www.healthline.com/health/worst-disease-outbreaks-history#typhoid-mary)] However, in 1955 the polio vaccination was made available in the United States and through the U.S. government’s efforts, the country has been polio-free since 1979. Continued vaccination for polio still exists today.[[20](https://www.cdc.gov/vaccines/vpd/polio/index.html)]

Pertussis

In 2010 and 2014 pertussis, better known as whooping cough, made resurgences.[[16](https://www.healthline.com/health/worst-disease-outbreaks-history#typhoid-mary)]  The U.S. government controlled these outbreaks and strengthened immunization programs for pregnant women, newborns, preschool children, adolescents, and adults.[[21](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3623740/)]

Influenza

One of the most common vaccinations is for the flu virus, or influenza. The most recent influenza outbreak dates back to 2009.[[16](https://www.healthline.com/health/worst-disease-outbreaks-history#typhoid-mary)] However, as a result of the threat and relevance of the flu virus, the United States has multiple plans in place to track, counteract and deal with a potential influenza pandemic.[[14](https://fas.org/sgp/crs/natsec/R40619.pdf)]

**Global Community**

Ebola

In 2014-2016 the largest Ebola outbreak in history occurred in West Africa. As a result of this, the Ebola Vaccine Deployment, Acceptance and Compliance (EBODAC) program was launched in an attempt to counteract the virus. The program first supported the swift creation of a proper vaccine in an area where it was hard to find even clinical trial patients. The program also improved readiness for another outbreak and the deployment of the vaccine. This produced the Mobile Training Support System (MOTS) which enables health workers in the region to be better prepared for future outbreaks. These training modules enable better preparedness and education about the ebola virus ensuring that the region won't be faced with the same problems in the event of another outbreak.[[5](https://www.efpia.eu/news-events/the-efpia-view/blog-articles/03092018-ebola-vaccine-deployment-acceptance-and-compliance-ebodac-the-simple-story-guest-blog/)]

Influenza(H1N1)

Similar to in the United States, Influenza is a threat to global health. As a result, the WHO has a H1N1 Vaccine Deployment Initiative. In the 2009 H1N1 influenza pandemic vaccines, syringes and safety boxes were donated immediately by the international community to countries in need. Additionally, member nations of the WHO pledged millions of dollars to combat the pandemic. In order to deploy vaccines efficiently and quickly, the WHO shipped out vaccines as soon as donation agreements were finalized. Often, the shipments were made straight from manufacturer to the countries in need. The WHO also assigned countries to different groups(A, B, or C) in order to prioritize those countries who were the most vulnerable or were facing the worst of the pandemic. This made sure that those poorer countries, and the countries at the epicenters of the pandemic were the first to receive proper vaccines. Additionally, those countries ready to actually deploy the vaccines they received were also given higher priority.[[24](https://www.who.int/influenza_vaccines_plan/resources/h1n1_deployment_report.pdf)]

Conclusion

The COVID-19 pandemic is unlike anything that the world has ever seen. There is no preexisting vaccine for the virus, nor is it easy to create one as we’re still trying to understand the most effective biological mechanisms of strengthening immune response and reducing morbidity and mortality in diverse populations. There is also a risk that the SARS-CoV-2 may evolve its nature in a second wave expected to hit the globe this Fall and Winter. constantly mutating and changing. In recent history, viruses with similar challenges in vaccine development have lacked the high level of transmissibility. For those viruses that have similar community spread, we have generally had a vaccine ready to counteract it. Rarely in modern history, history has there been a virus that has impacted the entire world at the same time to such a degree. That is why it is more important than ever to be ready to deploy a vaccine effectively and efficiently when one is created.

When the global community does deploy the vaccine, it would be advantageous to use the same system that the WHO used in 2009 in the face of the H1N1 pandemic. Countries, after deploying the vaccines in their own nations should pledge vaccines, ancillary products, and money for countries in need. A similar system of prioritizing vaccine shipments and deployment readiness should be used to enable an effective eradication of the disease. If the only vaccine ends up being temporary the international community may have to continue the process of pledging, prioritizing, and deploying until a permanent vaccine can be made. In that case, it would be important to also develop the health infrastructure of these vulnerable nations so that they would be able to maintain proper immunization of their population without too much assistance from the global community. Finally, it would be wise to set up lasting training and education programs for healthcare workers and officials in these vulnerable nations, like the EBODAC program, so that they know what to do in the case of another COVID-19 outbreak or pandemic.

In terms of the United States specifically, it is a necessity that the COVID-19 vaccine be provided to everyone, free of charge. The government can do this by expanding funding to Section 317 and the VFC program. The government should work with private manufacturers and insurers to ensure the swift deployment of vaccines to everyone. Additionally, the federal government should fund current public health departments and FQHCs and explore the options of setting up vaccination clinics so that everyone has access to the vaccine.

For drawbacks and limitations in this report, more research can be done into past precedent for vaccine deployment for COVID-19. Additionally, as the COVID-19 situation is always evolving and changing, the observations and data in this report could become outdated quickly. Also, since this was purely qualitative research, there are no certainties in the conclusions/recommendations that were drawn.

For future directions for research, I would explore the private sector’s role in vaccine deployment further, examine the financial constraints on any potential vaccine deployment plans, look at vaccine manufacturing and its effect on vaccine deployment, assess the demographics of vaccine clinical trial development in terms of global health populations (in other words, what’s the point of deploying a vaccine if its only built for the wealthiest among us who are more likely to contribute to clinical trials, and therefore not effective for the most vulnerable communities where SARS-CoV-2 is most prevalent) and look at the efficacy of introducing global immunization databases in terms of vaccine deployment

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