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A COMPARATIVE ANALYSIS OF DISTRIBUTION AND ALLOCATION OF COVID-19 VACCINES BETWEEN TWO ADMINISTRATIONS

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ABSTRACT

The pandemic of Covid-19 is a life-threatening disease that entailed all governments but especially the U.S government, to quickly prevent methods of spreading the virus while strategically putting in place a plan for biological testing for a vaccine for immunity. The purpose was to determine how effective the formulation of a Covid-19 vaccine and the distribution would impact the mortality with efficacy rates. Besides, this research paper underlines the principles for ethical and equitable distribution for mass immunization. A comparative analysis between the Trump Administration and the Biden Administration will be presented regarding the funding stream, distribution of vaccinations, and prioritization efforts against morbidity and mortality. We will determine how the resources and funding were utilized to provide Covid-19 vaccines rapidly enough for mass immunization.

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) defines "COVID-19 as an illness caused by a novel coronavirus now called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV)" (2020). The coronavirus is a newly emerging pathogen and has strong infectivity and fast propagation rates. The transmission of SARS-CoV-2 occurs through droplets and can happen through close personal contact with infected persons if effective containment measures are not maintained. China was the first country with a widespread outbreak in January 2020; South Korea, Iran, and Italy quickly followed in February 2020. Soon, the virus was in all continents and over 177 countries, with the United States the highest number of confirmed cases and deaths. The virus is extraordinarily contagious and attacks the most vulnerable, particularly those older than 60 and those with underlying conditions.

The COVID-19 pandemic is the defining global health crisis of our time and is considered the most significant challenge the world has faced since World War II. The world has reached the tragic milestone of more than two million deaths, and the human family is suffering under an almost intolerable burden of loss. The pandemic is also an unprecedented socioeconomic climacteric because it has devastated the social, economic, and political wellbeing of the whole world, leaving longstanding scars.

In the wake of the COVID-19 pandemic, the U.S. Federal government provided funds to healthcare organizations to fight against the virus. This research will explore the usage and distribution of financial resources towards acquiring protective equipment, providing adequate staffing, vaccine development, and distribution to pivot healthcare delivery. A comparative analysis between the Trump Administration and the Biden Administration will also be presented regarding how the resources were utilized under the specific administrations.

Difficulty Maintaining Adequate Staffing

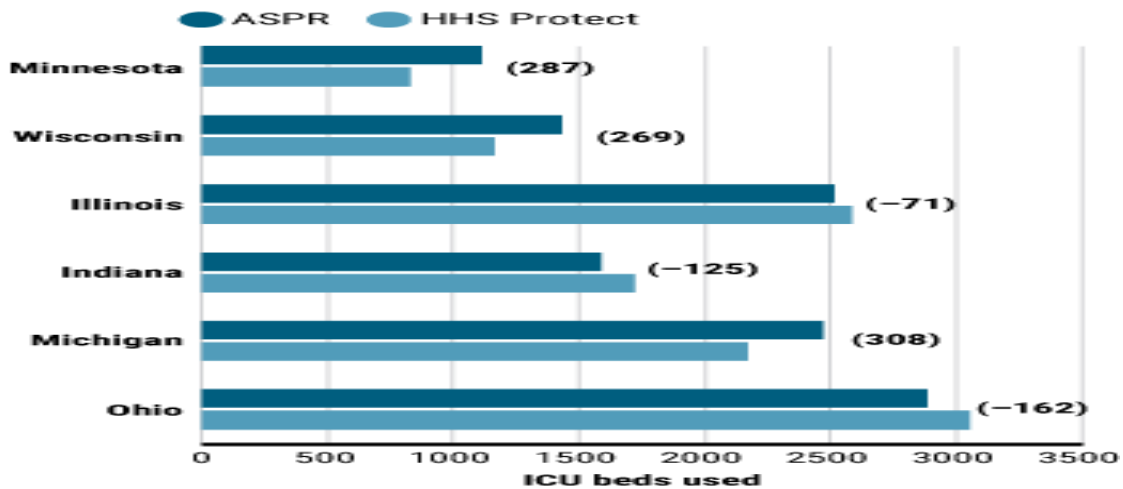
In the United States, the hospitals reported a shortage of staff support. They specialized providers to meet the anticipated patient surge and raised concerns that staff exposure to the virus may exacerbate staffing shortages. Hospital administrators also expressed concern that fear and uncertainty were taking an emotional toll on staff, both professionally and personally. The most commonly reported challenges centered on the hospital's efforts to confirm cases of COVID-19, keep health care staff safe, and provide needed services to patients requiring hospital care for a wide array of medical reasons, including COVID-19. Challenges included difficulties related to testing, lack of personal protective equipment (PPE), and staffing. Several hospitals underlined a particular need for technical staff, such as infectious disease providers, respiratory therapists, physicians, and nurses, to provide intensive and critical care of COVID-19 patients. Many hospitals also reported that they lacked trained staff to operate ventilators and treat patients who needed them.

Hospitals reported shortages of critical supplies, such as materials, logistic support, beds, PPEs, etc. Also, the hospitals reported needing items that support a patient's room, such as intravenous therapy (IV) poles, medical gas, linens, toilet paper, and food. Others reported shortages of no-touch infrared thermometers, disinfectants, and cleaning supplies. Isolated and smaller hospitals faced unique challenges maintaining the supplies they needed and restocking when they ran out. The ventilator is very important for COVID-19 patients, but shortages of ventilators were identified as a big challenge for hospitals. Hospitals mentioned an uncertain supply of standard, full-feature ventilators and, in some cases, used alternatives to support patients, including adapting anesthesia machines and using single-use emergency transport ventilators. The ventilator shortages posed difficult decisions about ethical allocation and liability.

Figure 1

Looking for a bed

Two Department of Health and Human Services (HHS) sections collect hospital patient data to battle the COVID-19 pandemic—HHS Protect and the Office of the Assistant Secretary for Preparedness and Response (ASPR). Their data sometimes conflict sharply, as shown in this 16 November summary of intensive care unit (ICU) beds used in six hard-hit Midwestern states. The difference noted parenthetically is ASPR's bed total minus HHS Protect's.



During the pandemic, capacity concerns emerged as hospitals anticipated being overwhelmed if they experienced a surge of patients requiring unique beds and rooms to treat and contain the infection. Many hospitals said that post-acute-care facilities were requiring negative COVID-19 tests before accepting patients discharged from hospitals. This means that some patients who no longer required acute care took up valuable bed space while waiting to be released. With the hospital's short of ICU beds due to COVID-19 infected patients, some people were denied care from the hospital if they have mild symptoms.

Literature Review

The purpose of this literature review was to describe the relevant studies of a comparative analysis between the COVID -19 vaccine distribution, allocation, and utilization under the Trump administration versus the COVID-19 vaccine distribution, allocation, and utilization under the incoming Biden administration. Specifically, the review asked to differentiate both administrations' measurable outcomes throughout the pandemic and the strategies used to prepare for mass immunizations readily. Consequently, this study included existing literature relative to equitable distribution and principles for allocating the vaccine and the operation used to create the vaccine.

This study's scope was to research the development plan, vaccine distribution, and allocation within the United States of America. When the term is "mass immunization" is implied, it is a reference within our study's scope. The literature review did not include research for a global plan amongst foreign governments for distribution and utilization. However, there is existing literature that emphasizes global herd immunity. "Countries will have to ensure that they have the

infrastructure for mass immunization campaigns. Those without experience in distributing influenza vaccines must learn how to establish platforms for adult vaccination. Vaccine hesitancy will have to be overcome (Burki, 2021).

The review of literature has three parts. The first part involved the development plan of the vaccine under the previous administration. Examination of on-time effectiveness and efficiency was fundamental for the production of the vaccine. The second part involved a comparison of two governmental administrations throughout the pandemic and the distribution plans. The third part focused on the principles of ethical and equitable distribution and allocation of the vaccines for COVID-19.

Vaccine Development Under Trump's Administration

As doctors and scientists learned more about the COVID-19, they discovered that although wearing masks, social distancing and isolation, lockdowns, handwashing, contact tracing, and quarantine measures were necessary to control the spread, they were not going to eliminate the threat of people getting infected. The only safe solution was to develop a vaccine that will provide immunity to this air-borne deadly virus. Vaccines work by training our immune system to create antibodies that fight the present virus while also creating memory cells to recognize the invader in future infections (WHO, 2020).

Development Plan: Operation Warp Speed

By April of 2020, just two months into the COVID-19 virus reaching the U.S, 72,251 people had died as a result (CDC, 2021). There was a lot of pressure on Trump, the current President, to share his plan of action with the American people. On May 15, 2020, Trump's Administration announced Operation Warp Speed (OWS), an ambitious research and manufacturing effort designed to facilitate and accelerate the development, manufacturing, and distribution of COVID-19 vaccinations. According to the U.S Department of Defense, OWS's focus areas include developing and testing vaccines and therapeutics, developing and testing diagnostics, and supplying and distributing vaccines (2020).

Under normal circumstances, vaccine development and its approval are complex processes that take about 5-10 years, complete with multiple clinical trials on both humans and animals. OWS authorized an accelerated vaccine development process that would take 14 months to complete compared to the typical 73 months (see Figure 1). Through OWS, a total amount of roughly \$30 billion was made available for necessary expenses related to vaccine development, manufacturing, and purchase (Sekar, 2021). Two private pharmaceutical companies, Pfizer/BioNTech, and Moderna were authorized by the U.S Food and Drug Administration (FDA) to develop vaccinations for emergency use by Spring 2021.

The reality of OWS Vaccine Development Reality

Scientists had predicted that vaccine development would take 14-18 months. However, by mid-summer, both Pfizer (August 12, 2020) and Moderna (July 14, 2020) published Phase I/II clinical trial data that demonstrated reasonable safety measures on animals (Brothers, 2020). On December 11, the FDA authorized the Pfizer-BioNTech COVID-19 vaccine to be distributed in the U.S to individuals above 16 years old. On December 18, the FDA also

approved the Moderna COVID-19 vaccine to be distributed in the U.S for use in individuals 18 years of age and older (FDA, 2021). OWS was very successful regarding vaccine development because its aggressive plans were realized. With over a 90% efficacy rate, vaccines were developed and approved by the FDA in eight months. The vaccine development process is usually very costly and time-consuming; however, in this case, the process was expedited because the U.S government-funded these pharmaceutical companies and also granted Emergency Use Authorization through the FDA.

COMPARISON OF ADMINISTRATIONS

Trump's Administration

The Trump Administration, in conjunction with the U.S. Department of Health and Human Services (HHS) and Department of Defense (DoD), released two documents with a detailed strategy to deliver a safe and effective COVID-19 vaccine to the American people as quickly and reliably as possible. The documents, developed by HHS, DoD, and the CDC, provide a strategic distribution overview along with an interim playbook for state, tribal, territorial, and local public health programs and their partners on how to plan and operationalize a vaccination response to COVID-19 within their respective jurisdictions. Under the Trump administration, once a vaccine had been approved and authorized by the FDA, four critical tasks were established to distribute and achieve the primary objective. This would ensure that the American people would readily have access to the vaccine. On September 16, 2020, the Department of Health and Human Services released the four objectives to facilitate vaccine distribution. These include:

1. Continue engaging with state, tribal, territorial, and local partners, other stakeholders, and the public to communicate public health information, before and after distribution begins, around the vaccine and promote vaccine confidence and uptake.
2. Distribute vaccines immediately upon granting Emergency Use Authorization/Biologics License Application, using a transparently developed phased allocation methodology.
3. Ensure safe administration of the vaccine and availability of administration supplies.
4. Monitor necessary data from the vaccination program through an information technology (I.T.) system capable of supporting and tracking distribution, administration, and other necessary data.

Furthermore, the COVID-19 vaccine and ancillary supplies were procured and distributed by the federal government at no cost to enrolled COVID-19 vaccination providers. CDC used its current centralized distribution contract to fulfill orders for most COVID-19 vaccine products as approved by jurisdiction immunization programs (CDC, 2021). It is imperative to note that the Trump administration had a plan on hand to ensure that vaccine providers report COVID – vaccine stock each time a vaccine was placed so as for accountability and transparency.

Biden's Administration

On the other hand, on January 21, 2021, Biden signed ten executive orders to jump-start his national strategy to prevent the spread of COVID-19 and enhance the vaccine distribution, which is part of a broader stimulus package of \$1.9 trillion. According to The Associated Press, the actions established a framework for the federal government to:

- Increase the production and purchasing of vaccines through the Defense Production Act and ensure the availability of glass vials, syringes, and other supplies.
- Accelerate vaccinations by ending a policy to hold back large amounts of vaccines while also giving states clearer projections on vaccine availability to help them plan their rollouts.
- Partner with states to create more vaccine centers at locations including stadiums, convention centers, and pharmacies.
- Direct federal health agencies to consider raising pay for those who administer vaccines.
- Identify communities that have been hit hardest by the pandemic and make sure vaccine doses reach them at no out-of-pocket cost to residents.
- Launch a national campaign to educate Americans about vaccines and encourage them to get shots.

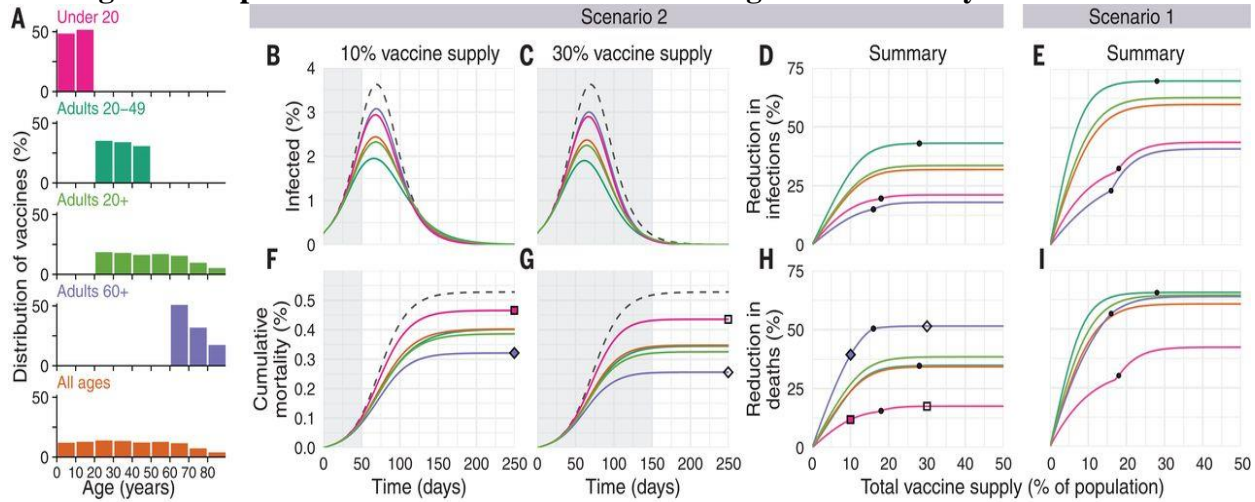
In summary, the Biden administration promised to restore the country's strategy for immunizing Americans and has contributed immensely to expedite the distribution of the Covid-19 vaccine. It is also imperative to allude that the Trump administration has also contributed greatly to jump-start the distribution process to reduce the pandemic's spread. All in all, both administrations have worked hard to provide a strategy to deliver a safe and effective COVID-19 vaccine to the American people as quickly and reliably as possible.

Principles for Ethical and Equitable Distribution of Covid-19 Vaccines

Throughout the pandemic of Covid-19, the entire world has also experienced a change in political parties' regime, including the United States of America. When considering the strategic plans that Trump Administration and Staff executed with OWS and the approved vaccines, the sense of urgency relied on distribution prioritization. This is notwithstanding the general population's concern of the efficacy rates for the FDA-approved vaccines, Pfizer-BioNtech and Moderna, but rather the equitable and ethical principles for distributing the vaccines.

The U.S. Government highly anticipated a reserved supply of the vaccine once approved. The focus was to prioritize and target vaccinating the most vulnerable populations and critical professional groups (essential workers). Bubar, K. et al. (2021) used criteria that included, "considering whether the rankings of prioritization strategies to minimize mortality would change if a vaccine were to block COVID-19 symptoms and mortality with 90% efficacy but with variable impact on SARS-CoV-2 infection and transmissions. We found that direct vaccination of adults aged 60 years and older minimized mortality for all vaccine supplies and transmission-blocking effects under scenario two and for all vaccine supplies when up to 50% of transmission was blocked in scenario 1" (pg. 917).

Figure 2. Impacts of Vaccine Prioritization Strategies on Mortality and Infections.



Emphasis on the vaccination's allocation is just as severe as when the world faced detrimental outcomes of the virus beginning November 2019. When accessing the ethics of vaccine allocation for COVID-19, we must consider the endeavor's intended goal. Gupta et al. (2020) suggest, "The first is the reduction of morbidity and mortality. The second is to minimize the pandemic's effects on societal infrastructure and the economy. The third is to narrow unjust health inequalities, consistent with the view that the moral foundation of public health is social justice and, therefore, the reduction of inequalities by systematically disadvantaged groups" (pg. 136,137).

Although this research paper has not made it an objective to conduct a comparative analysis of ethical and moral responsibility between the Trump and Biden Administrations, it cannot be disregarded that if equitable allocation throughout development, negotiations, and distribution of vaccines were not taken seriously, that herd immunization could create another dilemma if not appropriated proportionally.

Areas for Further Research

This research paper leaves room for several areas where further research is warranted to continue investigating how federal resources were managed to handle the COVID-19 pandemic. Such sites include the following:

- A more comprehensive investigation into how federal resources were distributed between states. This would entail exploring the criteria used to conclude what percentage of the national resources each state received.
- An investigation into how the different states distributed the federal resources to the different healthcare organizations should also be conducted.
- An analysis of how the diverse healthcare organizations that received funds to support the fight against COVID-19 utilized those funds. Were these funds used to purchase PPEs, hire more staff, provide more ICU beds, etc., or where they used to balance their

accounts? This would require the federal government to conduct an audit that would be analyzed.

CONCLUSION

Our research's measurable outcomes demonstrate that although plans for development, distribution, and allocation have already been executed, there is still an emphasis on utilization that should not be dismissed. How does the Biden Administration face the next hurdle of operational management to achieve high acceptance and uptake of COVID-19 vaccines of minimizing vaccine hesitancy and misinformation? According to the American Society of Health-System Pharmacists, "Hesitancy and misinformation surrounding the administration of a COVID-19 vaccine are significant barriers to vaccination rates. Ensuring a coordinated, transparent nationwide education campaign that is culturally and health-literacy sensitive by public health experts, community organizers, and the healthcare community will be vital in gaining and maintaining trust within the community."

The COVID-19 pandemic has critically strained nearly every aspect of society within the USA and across the globe, but there are still obstacles that lay ahead. Evaluation of vaccine prioritization strategies and the significance of the vaccine's utilization are each essential to combat this fatal disease that has changed the way we view immunization for ages to come.

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