

# **A Root-Cause Analysis of the World Health Organization System’s Response to the COVID-19 Pandemic Outbreak: Utilizing the AcciMap Framework**

By:

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“[The coronavirus pandemic has been] very severe... These threats will continue... If there’s one thing we need to take from this pandemic with all the tragedy and loss is that we need to get our act together. We need to get ready for something that may even be more severe in the future.”

(Dr. Michael Ryan, the World Health Organization’s head of emergencies program, *New York Times*, December 29, 2020)

## **Introduction**

A main objective of the World Health Organization (WHO) is to control the spread of infectious diseases. On March 11th, 2020, the WHO declared COVID-19 a pandemic reporting over 118,000 cases worldwide in over 110 countries. However, the world was not ready to handle COVID-19; even the wealthiest countries with national health capacities were greatly affected by this pandemic. In an official independent panel report released by the WHO in May 2021, they outline the mistakes of the global response by explaining, “It is glaringly obvious to the Panel that **February 2020 was a lost month**, when steps could and should have been taken to curtail the epidemic and forestall the pandemic”(emphasis in the original).<sup>1</sup>As an integral part of the global response to pandemics, this study aims to analyze the steps that were taken at the WHO level.

The WHO is a complex multilateral organization, consisting of multiple interconnected branches. Decision making and responses can be viewed under this lens, which can also apply to any other complex organization. To understand these mechanics in as scientific and impartial manner as possible, this manuscript performs a Root Cause Analysis (RCA) of the WHO’s COVID-19 pandemic response using Rasmussen’s AcciMap framework. This framework helps the analysis of the chain of events from the time the WHO Geneva headquarters was informed of a “cluster of pneumonia cases” on December 31, 2019 up until March 11, 2020. The AcciMap illustrates how higher-level factors across a multi-tiered sociotechnical system could contribute to an organizational accident or possibly unintended actions, by extending beyond immediate causes that may have contributed to the event. AcciMap has been applied extensively to analyze accidents across multiple industries and was also used to examine the 2003 SARS outbreak in Toronto.<sup>2</sup> This manuscript pioneers applying the AcciMap framework to multilateral, international governmental organization and global health organizations

The COVID-19 pandemic has not been the first and will certainly not be the last pandemic that the world has experienced. As of today (April 7, 2021, the World Health Day), according to the Center for Systems

Science and Engineering at Johns Hopkins University, there are more than 132 million global cases, and more than 2.8 million global deaths<sup>3</sup>.

There have been major “missteps” by officials at national and global levels in addressing COVID-19, which have been very costly for the world, and should certainly be avoided in the future<sup>4</sup>. According to a recent seminal article by the renowned historian, philosopher, and internationally best-selling author, Professor Noah Yuval Harari<sup>5</sup>:

“If Covid-19 nevertheless continues to spread in 2021 and kill millions, or if an even more deadly pandemic hits humankind in 2030, this will be neither an uncontrollable natural calamity nor a punishment from God. It will be a human failure and — more precisely — a political failure.”

Dr. Michael Ryan, WHO’s head of emergencies program, said that the coronavirus pandemic has been “very severe”, adding, “These threats will continue... If there’s one thing we need to take from this pandemic with all the tragedy and loss is that we need to get our act together. We need to get ready for something that may even be more severe in the future”<sup>6</sup>.

Finally, the WHO’s latest effort concerning studying the coronavirus’s origins by dispatching a mission to Wuhan, China, its composition and investigative methods have seriously been criticized by investigative reporters in mainstream media<sup>7 8</sup>, independent scientists<sup>9</sup>, and professionals<sup>10</sup>. In an official joint statement<sup>11</sup>, the Governments of the United States of America, Australia, Canada, Czechia, Denmark, Estonia, Israel, Japan, Latvia, Lithuania, Norway, the Republic of Korea, Slovenia, and the United Kingdom, expressed their “shared concerns regarding the recent WHO” study and stated:

“Going forward, there must now be a renewed commitment by WHO and all Member States to access, transparency, and timeliness. In a serious outbreak of an unknown pathogen with pandemic potential, a rapid, independent, expert-led, and unimpeded evaluation of the origins is critical to better prepare our people, our public health institutions, our industries, and our governments to respond successfully to such an outbreak and prevent future pandemics.”

The primary objective of this study is to learn lessons from the past experiences of the WHO and identify recommendations to fix its organizational system so that it will be prepared for “more severe” pandemics in the future. We use RCA to: (1) Identify patterns in past pandemic responses and compare it to the COVID-19 response (2) discuss complex and interconnected problems within the WHO (3) analyze timelines detailing WHO actions concerning key events at the early stages of the outbreak; (4) develop AcciMap as a framework to draw upon the multitude of structural weaknesses in global health governance architecture that prevented WHO from coordinating an effective response to the pandemic (5) use AcciMap findings to outline a series of recommendations for the WHO to make global health governance robust, thereby improving future pandemic preparedness.

### **Background and Past History**

The World Health Organization is a multilateral governmental organization that, as an specialized agency of the United Nations, acts as the directing authority on global health issues. The WHO’s structure is highly decentralized, unlike other UN agencies. It is formed by 194 member states, headquartered in Geneva, Switzerland and represented globally by six regional offices, 150 country offices.<sup>12</sup>

### **International Health Regulations and Emergency Response**

The 2005 International Health Regulations (IHR) serve as the legally-binding governing legislation for the World Health Organization. The IHR outlines the rights and obligations for member states, including the stipulation to report public health events and have adequate health infrastructure to combat emergencies.<sup>13</sup>

One of the WHO's main functions during public health emergencies is to give guidance and recommendations on health protocols during infectious disease outbreaks. However, the WHO cannot impose policies on governments. In alignment with the IHR's Risk Communication core capacity, the WHO aspires to maintain communication within national governments in order to announce potential health threats, and informing at-risk populations. Importantly, the data the WHO collates, publishes and disseminates, and its recommendations, is as accurate as the information it receives from member state's governments and from non-member state sources. The Director-General has the responsibility of determining whether or not an event constitutes a public health emergency of international concern (PHEIC) by considering the information received from the state party, the decision-making instrument in Annex 2, available scientific information, advice from the Emergency Committee and the risk of international spread of disease as outlined in Article 12.<sup>14</sup>

## **21<sup>st</sup> Century Disease Responses by the WHO Case Studies**

### **SARS 2003:**

Under the leadership of Director-General G.H. Brundtland, the WHO initiated its most successful 21st century virus response against the 2003 SARS outbreak in south east China. Brundtland spearheaded furthering a scientific understanding of the disease, initiated public health tactics to slow disease spread, and developed patient treatment protocols.<sup>15</sup> She prioritized global health over national sovereignty by confronting China over its outbreak and issuing travel warnings to affected regions without permission from the countries it pertained to.<sup>16</sup> This outbreak occurred prior to the 2005 IHR amendment.

### **H1N1 2009:**

The 2009 H1N1 pandemic was the first major health emergency since the 2005 IHR amendment. The swift international proliferation of H1N1 highlighted shortcomings in the WHO's response and an international unpreparedness for global health threats. One such shortcoming was the WHO's removal of influenza pandemic guidelines from its website, which outlined an assessment of disease severity when declaring a pandemic and immunization recommendations.<sup>17</sup> It is conceivable that the removal of these procedures corresponded with the WHO admitting later that it had inaccurately assessed the seriousness of the virus. It also showed how underprepared countries hindered the WHO from effectively responding to the outbreak. Epidemiological data showed most infected patients only experienced mild symptoms, and when the pandemic concluded, billions of doses of vaccines were unconsumed.<sup>18</sup>

In an assessment of its own performance and the role of the IHR during the pandemic, by Director-General Margaret Chan, the WHO acknowledged that its response distorted the gravity of the virus.<sup>19</sup> Furthermore, it revealed that the most significant drawback was IHR compliance and that many countries lacked the core capacities to report, detect, and assess public health threats as mandated by the IHR. This is largely because the IHR lacks enforceable sanctions.<sup>20</sup> Member states have an obligation to notify the WHO of public health risks and abide by WHO guidance, but there is no assurance that countries adhere to said regulations. Since the WHO does not have the authority to impose any action from individual member states, the IHR can become ineffectual, and the organization cannot coordinate a constructive international response. This led a worrying WHO to conclude in 2011 that, despite IHR revisions, "the world is ill-prepared to respond to a severe influenza pandemic or to any similarly global, sustained and threatening public health emergency."<sup>21</sup>

### **Ebola 2014 & 2018:**

The West African Ebola epidemic began in December 2013 with outbreaks in Guinea, but the disease was not detected until March 2014.<sup>22</sup> Inadequate disease surveillance and reporting infrastructure allowed the virus to spread unnoticed to Liberia and Sierra Leone. Not only did countries undermine their commitment under the IHR to invest in health infrastructure, but the WHO did not arrange the proper communication procedures for sharing, validating, and acting swiftly on outbreak information, leading to an insufficient supply of protective equipment for healthcare workers and an incomplete understanding of the virus to effectively care for patients.<sup>23</sup>

At the 67th World Health Assembly (WHA) in May, controversy arose when WHO stood by the Guinean health minister's assertion that the outbreak was under control. This was contrary to the claims made by non-governmental organizations such as Médecins Sans Frontières, which warned of the unprecedented scope of the disease.<sup>24</sup> Ignoring independent organizations proved to be a serious error in judgement as infections rapidly increased, and the situation spiraled out of control. With rising cases and overwhelmed regional health capacities, global attention grew, along with panic and hysteria. It was not until August that the WHO convened the IHR Emergency Committee (EC) and declared a PHEIC.<sup>25</sup> With the WHO unable to control the spread of the disease, the UN Secretary General coordinated an impromptu emergency response effort known as the UN Mission for Ebola Emergency Response.<sup>26</sup> This, along with logistical support from the World Bank, the International Monetary Fund, and countries around the world brought the epidemic to an end, but not without a lost sense of confidence in national and global institutions to initiate an effective response to health threats. It was also clear that the WHO had done little to meet their own goals, following the H1N1 pandemic, to strengthen the IHR and bolster the health capacities of member states.

One of the next major health emergencies was the 2018 Ebola outbreak in the Democratic Republic of the Congo. The WHO's resistance to declare a PHEIC cast doubt on the effectiveness of the IHR and the process the Director-General should take when assessing the severity of health threats. During the epidemic, the EC convened four times, deciding not to declare a PHEIC in October 2018, April 2019, and June 2019, despite consensus among global health experts that such a declaration met all IHR criteria and would be useful for response efforts, finally declaring one in July 2019.<sup>27</sup> The purpose of declaring a PHEIC is to reinforce health regulations, raise public awareness, and ensure the countries strengthen their health capacities. The EC reasoned that a declaration would add no benefit to the response effort and that it would in fact harm procedures by provoking unnecessary trade and travel restrictions.<sup>28</sup> This, despite the EC noting a high risk of international spread and the need for nearby countries to enhance preparedness efforts. The idea that a PHEIC should be held off because of the risk of unnecessary trade and travel restrictions contradicts the reliance on the IHR to handle such actions and the need to reinforce key principles of the IHR. Characterizing a critical tool in global health governance as useless and potentially damaging makes the PHEIC authority impaired under the jurisdiction of the WHO.

### **The AcciMap Framework and Why is the AcciMap Framework is Most Suitable to Analyze WHO COVID Response**

In 1997, renowned human factors expert Jens Rasmussen introduced a 6-layer, hierarchical multi-layered framework known as AcciMap, with each level representing a main group of involved decision-makers, players, or stakeholders, and other causal factors in a studied system.<sup>29</sup> These six levels are, from top to bottom: government, regulators and associations, company, management, staff, and work. An analysis using this framework not only considers the activities of players in each level but more importantly, captures the associated socio-technical factors, as well as the interactions between them, which take the form of decisions propagating downward and information propagating upward.<sup>30 31 32</sup> Adapting this framework to analyze the WHO's systemic failures not only considers activities of players in each level but more importantly, captures the associated socio-technical interactions, in the form of decisions

propagating downward and information propagating upward, which impeded the WHO machinery from effectively responding to the pandemic in early 2020.

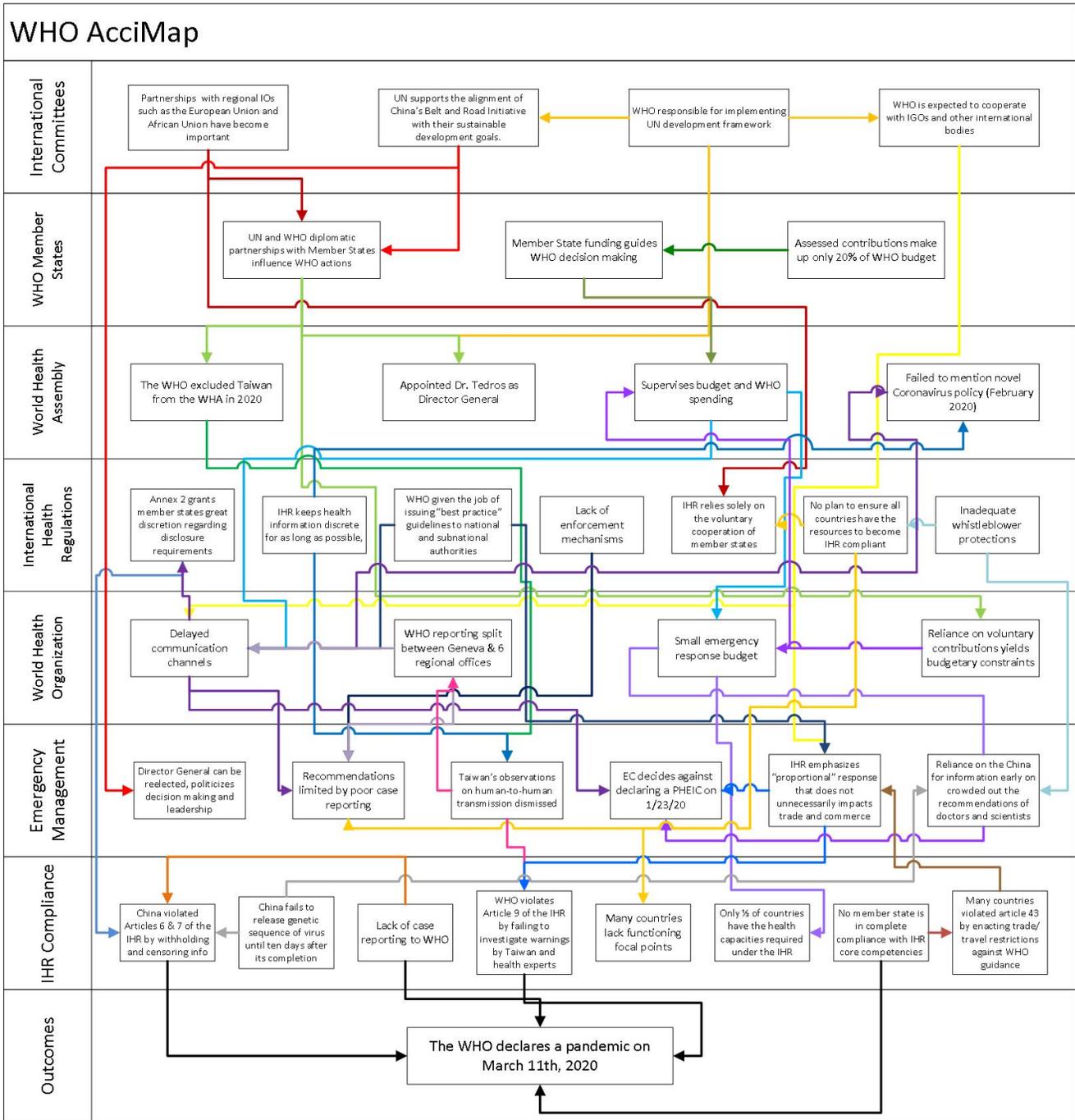
The AcciMap framework, which probably is the most systematic and exhaustive tool for major system analysis, including failure and catastrophic accidents, has been utilized in different domains. These applications include chemical processing<sup>33 34</sup>, transportation<sup>35 36 37 38 39</sup> aviation<sup>40 41</sup>, public health<sup>42 43 44</sup>, anti-terrorism<sup>45</sup>, oil and gas drilling<sup>46 47</sup>, gas production<sup>48</sup>, massive gas leak<sup>49</sup>, SARS outbreak in Toronto<sup>50</sup>, and other systems' performance (and failure) analyses.<sup>51</sup> A common characteristic of these type of failures is that they take place in complex socio-technical system with "multiple [contributing] causes involving many people operating at different levels of their respected"<sup>52</sup> organizations or units which can result in damage to people, assets or the environment.<sup>53</sup>

### **WHO COVID Response AcciMap**

The COVID-19 Emergency Committee first met on January 22 and 23. Following its second meeting on January 30, 2020, the DG declared that the COVID-19 outbreak constituted a PHEIC. After over 118,000 cases and 4,291 deaths in 114 countries, the WHO took the increasing infection and death rates, disease severity and the "alarming levels of inaction" into account to declare COVID-19 a pandemic on March 11, 2020.<sup>54</sup> Despite having no legal meaning under the IHR, the late pandemic declaration led to increased controversy and confusion regarding preparedness among Member States.<sup>55</sup>

As mentioned before, the following AcciMap framework analyzes the chain of events from the time the WHO Geneva headquarters was informed of a "cluster of pneumonia cases" on December 31, 2019 up until March 11, 2020. The AcciMap illustrates how higher-level factors across a multi-tiered sociotechnical system could influence, contribute or affect series of decisions, actions or inactions on the lower levels, in a cascading fashion, which could lead to an organizational accident or possibly unintended actions, by extending beyond immediate causes that may have contributed to the event.

Description of each layer of the WHO AcciMap, which is developed by utilizing an AcciMap template<sup>56</sup>, with its noteworthy events, actions or decisions that correspond to the "boxes" on the graphical representation are provided in the following sections.



WHO AcciMap outlining critical events leading to their declaration of a pandemic

### **International Committees**

The World Health Organization works with a broad network of international organizations. As a specialized agency of the United Nations, the WHO works closely with UN decision-making bodies and other intergovernmental organizations. The WHO is expected to support countries in working towards fulfillment of UN Sustainable Development Goals, and interact with regional international organizations, a requirement under Article 14 of the International Health Regulations. By organizing their agenda based on UN development goals, the WHO forms diplomatic partnerships with Member States, influencing decision-making and resource allocation.

### **WHO Member States**

The World Health Organization, consisting of 194 Member States, is reliant on each of its members to provide funding in the form of assessed and voluntary contributions. Assessed contributions make up less than 20% of the organization's budget, leaving over 80% of its funding up to donations from countries or private institutions.<sup>57</sup> This reliance yields budgetary constraints and leaves the WHO with earmarked funds that must be spent at the discretion of the donor. Member States who provide large voluntary contributions will thus have greater influence on the decision-making of the organization. Member States can also influence decision making through UN initiatives.

### **World Health Assembly (WHA)**

The annual World Health Assembly's main functions are to determine the policies and agenda for the upcoming year, appoint the director-general, establish the WHO's budget and instruct the DG and executive board to bring pressing global health issues to the attention of member states. The executive board prepares the WHA agenda, gives effect to the decisions and policies of the WHA and to take emergency measures within the financial and legal capacities of the WHO. For the fourth year in a row, the WHO excluded Taiwan from the 2020 WHA even after they had shown to be one of the most successful countries in handling COVID-19. Taiwan's isolation from the critical governing body of the WHA represents the WHO's failed commitment to encouraging an inclusive method of international health cooperation. Even though the organizing principle of the WHA has always been to advance public health, politics continues to play a role in blurring that focus.

### **IHR**

The International Health Regulations served as the governing instrument of international law for the WHO throughout the COVID-19 response. Annex 2 of the IHR grants member states great discretion over what they choose to disclose to the WHO. For example, the first question posed to member states by this instrument reads "Is the public health impact of the event serious?"<sup>58</sup>. Although vague questions like this encourage flexibility in decision making, they make the enforcement of disclosure standards very difficult. Another drawback of the IHR is its attempt to keep health information discrete for as long as possible in order to bolster member state relationships. The IHR states that "If the State Party does not accept the offer of collaboration, WHO may, when justified by the magnitude of the public health risk, share with other States Parties the information available to it."<sup>59</sup> This default to confidentiality might serve the interests of the member states in certain situations, but it could lead to the dangerous withholding of information, particularly from neighboring countries who could be heavily impacted. Enforcement mechanisms are also something that are nearly absent from the WHO, and while it is clear that this is characteristic of nearly all international organizations, it makes it very difficult for the WHO to take decisive action. For example, the IHR asserts that in the event a country denies cooperation from the WHO they must "[encourage] the State Party to accept the offer of collaboration by WHO, taking into account the views of the State Party concerned."<sup>60</sup> This language forces the WHO to rely on the cooperation of member states and could set a dangerous precedent for countries being against the WHO when cooperation is not required. The IHR also has no plan to ensure funding for developing member

states to become compliant with the health surveillance standards put forth in the legislation. The WHO has since made recommendations for how countries can raise these funds but current IHR compliance scores elucidate that without legislative reconsideration, these goals may not be achieved. Lastly, while the IHR grants great discretion to member states, Section 9 of the IHR provides inadequate whistleblower protections in the context of a pandemic, reading “WHO shall make the information received available to the States Parties and only where it is duly justified may WHO maintain the confidentiality of the source”<sup>61</sup>. Non-governmental sources are crucial to effectively respond to health crises and by denying them basic anonymity, they will cut themselves off from many potential resources.

### **World Health Organization**

The WHO is not financially equipped to handle a global disease outbreak. In late 2019, the Global Preparedness Monitoring Board reported that, “The WHO lacks the predictable, flexible and sustainable funding it needs to play its critical role in coordinating preparedness and response and supporting country health systems. Nearly 80% of the WHO budget is voluntary and highly earmarked, precluding holistic preparedness efforts and hindering WHO’s ability to provide a global safety net.” The control costs completely overwhelm the current financing measures of an adequate emergency response. The WHO’s reliance on voluntary contributions, and small emergency budget are insufficient to provide fully cohesive support for broad capacity strengthening for global outbreak response.

### **Emergency Management**

Miscommunication between nations and multilateral organizations as well as the disjointed approach in combating the early spread of COVID-19 has led to millions of preventable deaths worldwide. In its earliest stages, the release of critical information about the virus was disorganized. China was initially slow in releasing important information such as the genetic sequence of the virus, and accurate caseloads.<sup>62</sup> The WHO’s reliance on China for this information early on crowded out the recommendations of doctors and scientists. Additionally, the WHO failed to act numerous times on information from Taiwan that suggested human-to-human transmission of the virus.

A report released in October of 2019 by the Global Health Security Index listed 195 countries that were not prepared for a pandemic or epidemic.<sup>63</sup> One of their findings was that “most countries lack foundational health systems capacities vital for epidemic and pandemic response”. Along with allowing the WHO to have financial independence, certain countries are failing to meet core competencies of preparedness because they do not have the financial resources to do so. This leaves these countries vulnerable to epidemics and diseases spreading, which can transform into a much larger, international problem. The IHR maps out core capacities that member states should set out to achieve in order to prepare for PHEIC and subsequent rapid detection and response. By 2015, only 64 state parties had met these core capacities. After this pandemic is declared to be over, the WHO’s number one priority must be to work with these state parties in order to achieve these core capacities.

### **IHR Compliance**

The same failures on behalf of the organization to fulfill obligations under the IHR, and countries’ lack of compliance with IHR triggered a global crisis. First, the organization failed to investigate reports from multiple sources at the start of the outbreak including Taiwan, an obligation under Article 9 of the IHR. Reports from Taiwan and experts within China, notifying the organization of SARS-like cases and the possibility of human-to-human transmission were disregarded. In fact, the WHO issued multiple statements up until mid-January claiming there was minimal evidence of human-to-human transmission. Instead of using power under the IHR to demand the CCP respond to assertions made by Taiwan and deliver warnings to Member States, Director-General Tedros defended the leadership of President Xi Jinping and praised them for their control efforts and their transparency. This non-confrontational approach may have been taken because the WHO relies on funding and cooperation from China. In

addition, the WHO was condemned for resisting to declare a PHEIC on January 23rd despite the outbreak meeting IHR criteria for such a declaration. By January 23rd, the Emergency Committee had evidence of human-to-human transmission from the Taiwan CDC, the University of Hong Kong, and the National Health Commission of the PRC.<sup>64</sup> The WHO also received information of confirmed cases among healthcare workers, and identification of a novel coronavirus as the cause of COVID-19. Tedros said it was too early to make the call, but decided to declare a PHEIC a week later after the EC reconvened on January 30th. Worries about how the PRC and other countries would respond was the reason why the declaration was initially held off. And, in disregarding the language of the health regulations, not only does the EC lose legitimacy, but the IHR loses legitimacy in failing to constrain the committee and the processes outlined in the legislation.

### **Outcome**

The World Health Organization declared the COVID-19 outbreak a pandemic on March 11, 2020.

### **A Synthesis and Summary of WHO AcciMap Framework**

The following figure is a synthesis of the above WHO detailed AcciMap framework which includes the essence of actions and activities at each causal layer. It should be noted, however, that the top-down sequential process, as depicted by the arrows, represents only one important feature of the detailed AcciMap. Other equally important aspects of the detailed AcciMap, include direct influence of an action or decision at a higher level, which could bypass the immediate lower one(s) and directly affect and contribute to the outcome.

### **Level 1: International Committees**

The WHO has two conflicting priorities at the onset of the COVID-19 pandemic:

1. Implementing UN SDG which set ambitious expectations
2. Supporting Belt and Road Initiative: China's flagship geopolitical endeavor



### **Level 2: WHO Member States**

Operating on a funding structure reliant on member-states, the WHO bureaucracy is compelled to commit to both these conflicting priorities.



### **Level 3: World Health Assembly**

The apex governing body of WHO makes a series of heavily politicized lapses in decision-making, days after first COVID-19 cases are reported in Wuhan.



### **Level 4: International Health Regulations**

At the onset of the pandemic, global health is governed by a variety of flawed IHRs.



### **Level 5: World Health Organization**

Poor decision making and flawed IHRs have a cascading effect on planning of response by WHO machinery.



### **Level 6: Emergency Management**

As COVID-19 begins spreading across different geographies, WHO responds in a haphazard manner, unlike previous 21<sup>st</sup> century pandemics.



### **Level 7: IHR Compliance**

Unable to prevent lapses in IHR violation, the global health governance system collapses.



### **Outcome: Systems Failure**

The WHO declares COVID-19 a pandemic, later than expected, on March 11<sup>th</sup> 2020, and is unable to contain spread of the pandemic across all continents.

## **Discussion and Conclusion**

### **A Serious Problem - Limitations of WHO's Current Funding Model**

The Core Voluntary Contributions CVC and Assessed contributions make up the WHO's flexible resources since they are the only funding sources where the WHO has full discretion over the fund disbursement according to the Biennium Budget. CVC and assessed contributions account for less than 25% of the annual budget and the proportion of the program budget financed from assessed contributions has declined over time, indicating that the WHO is losing control of its budget and therefore its agenda.<sup>65</sup> This problem is magnified by heavily earmarked voluntary contributions, which don't necessarily align with the WHO's priorities set by the budget and General Programme of Work (GWP). The greater reliance on voluntary contributions gives the WHO less flexibility with its fund allocation and limits the WHO's ability to follow its own agenda and budget.

This current funding model leaves the WHO vulnerable to fluctuations in voluntary funding, which accounts for over 80% of its budget.<sup>66</sup> Unsatisfied donors turn to other health organizations that pursue different, or more specialized agendas, than the WHO. This leads to the proliferation of global health organizations that decentralize the WHO's role as the central global health authority such as the Global Alliance for Vaccines and Immunization (now the GAVI Alliance) and the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the Medicines for Malaria Venture. The financial vulnerability of the WHO was revealed when the Trump Administration announced in late May 2020 that the United States would formally be withdrawing from the WHO. In the 2018 fiscal year, the U.S.'s voluntary and assessed contributions accounted for about 16% of the WHO's total budget, therefore if the U.S. was to officially withdraw from the WHO, its organizational capacity would be cut down by almost one fifth and hinder the WHO's ability to progress on the thirteenth General Programme of Work 2019–2023 (GPW 13)<sup>67</sup>, which defines WHO's strategy for the five-year period, 2019-2023.

This paper applied the AcciMap methodology to analyze the systemic limitations contributing to the World Health Organization's COVID-19 response. The AcciMap framework enabled the identification of high-level contributing factors relating to the organizational, governmental, and regulatory practices as well as the direct factors leading to the declaration of a pandemic. Modelling a broader socio-technical context revealed that the WHO is fundamentally ill-equipped to handle future pandemics of equal or greater magnitude unless deep-seated shortcomings are rectified. In the case of COVID-19, the WHO's poor response was a result of longstanding problems that have inhibited the organization for years. The primary layers of the AcciMap framework reveal that inadequate regulations, a flawed funding model, a lack of authority, and weak emergency response led to their failure in handling the outbreak. These failures could have been avoided if the organization acted on their own suggestions. In an interim report from the WHO, it was noted that "that the failure to enact fundamental change despite the warnings issued has left the world dangerously exposed, as the COVID-19 pandemic proves."<sup>68</sup>

## **Recommendations**

### **Improve Emergency Preparedness**

The WHO and its member states should adopt timelines to promote the sharing of sequence data and early outbreak information such as estimated case data to ensure transparency. This would allow for greater efficiency when it comes to coordinating a global response and declaring PHEIC's. The WHO should also adopt new communication measures to ensure that alerts from other countries or organizations are properly recognized. This would ensure that critical information is not overlooked, and that information gathered by the WHO is from multiple sources.

Additionally, as per the recommendation of the Global Health Preparedness Monitoring Board, the WHO should develop a mechanism for sustainable financing of global health security, which mobilizes resources on the scale and within the timeframe that is required, and also recognizes preparedness as a global common good and not an economic hurdle.<sup>69</sup>

### **Amending the IHR**

To address these issues the IHR should be updated after every PHEIC - the organization learns as a whole after every emergency and it's critical that these regulations be updated if we want to be prepared for the next one.

Article 9 of the IHR states that “WHO shall make the information received available to the States Parties and only where it is duly justified may WHO maintain the confidentiality of the source.” This language and article sets a dangerous precedent for the WHO - the organization is potentially cutting itself off from receiving crucial information regarding PHEIC or any health emergencies. Providing legal protections to whistleblowers isn't the WHO's responsibility nor its scope but protecting the anonymity of sources is important - especially in holding member states accountable.

Annex 2 of the IHR poses problems in response and communication, in the event of health emergencies. Annex 2 outlines a decision instrument that countries should use to notify the WHO regarding public health. With questions like, “is the public health impact of the event serious?” or “is the event unusual or unexpected?,” events that the WHO should know about can be kept from them because of one country's interpretation of the word “serious” or its interest in keeping events like this private. The structure of communication laid out in Annex 2 poses issues because it relies on a country's definition of certain terms but also allows for numerous potential events to remain under the radar of the WHO. Annex 2 should be revised so that the WHO is notified regarding any major public health event, regardless of seriousness or expectations. The events can be categorized by various levels of priorities, the higher the priority relating to the level of communication one country should have with the WHO. For example, level I events could be the common flu and level V events could be smallpox or diseases that were previously not found in the country or had origins in another country.

### **Increase Assessed Contributions**

One of the most obvious hindrances to the WHO's ability to effectively implement health policy is their budgetary limitations. Assessed contributions, or the mandatory contributions made by the member states, account for only 20% of the WHO's budget.

This absence of financial support from member states forces the WHO to rely largely on voluntary contributions; this dependency gives these voluntary contributors immense power over the WHO's agenda, especially when considering that these donors have great discretion over where their donations are spent.

This overreliance on donor relations can be evidenced by the rhetoric surrounding the selection of the new Director General. Julio Frenk, President of the University of Miami, states that “Without the Bill and Melinda Gates Foundation (the second largest contributor to the agency), I don't know what would happen to WHO” (Global Health Centre).

This organizational need for private donations will prevent the WHO from taking necessary but potentially unpopular action in pursuit of enhanced global health. In order to serve as effective and impartial leaders of public health the WHO must have financial autonomy and complete discretion over their budget. To do this, it would be wise to increase assessed contributions for member states as to have these mandated contributions cover a larger portion of the WHO's operational budget. Voluntary

contributions will still be accepted to pursue even loftier goals, but for the WHO to function properly, its member states must give it the financial resources to do so.

Along with allowing the WHO to have financial independence, certain countries are failing to meet core competencies of preparedness because they do not have the financial resources to do so. This leaves these countries vulnerable to epidemics and diseases spreading, which can transform into a much larger, international problem. The WHO should strengthen core capacity implementation by including a periodic external review mechanism for compliance.

Outside of increasing assessed contributions, the WHO should continue to foster global partnerships by working with public health-focused non-profit organizations in its member states. By increasing the role that non-state actors have in the WHO, this would increase accountability beyond just the Member States. Non-profit organizations already have infrastructures in place within their communities and they have sponsors as well. If the WHO and member states were to partner with these organizations, and develop around a focus of public health and safety, it could help to close the funding gap that many of these countries are facing.

### **Reimagine the United States' Key Role in Supporting and Enabling WHO System**

While a US President and his administration can decide to start the withdrawal [from the WHO] process, it is Congress who controls the funding allocated to the WHO. When the Trump administration announced that the country would be leaving the WHO, there was great concern as the US contributed 22% of funding to the WHO, all while COVID-19 was spreading. If any future administration deems it necessary to leave the WHO, there should be a hearing with the House Foreign Affairs Committee. This would require the administration to tell Congress exactly why they deem it necessary to leave. Congress can step in and block the administration's exit if they come to the conclusion that the US should not leave.

The World Health Organization and its constituent member states must look to implement broad internal reform in order to be adequately prepared for the next pandemic. As the WHO's biggest donor, the United States must play an active role to lead, initiate and implement said changes in global health governance.<sup>70</sup> As Samantha Power, former U.S. ambassador to the UN, who led an unprecedented UN Security Council resolution that declared the Ebola crisis a "threat to international peace and security" in 2014, has observed in the context of COVID-19<sup>71</sup>:

"Neither the U.N. secretary general nor the director general of the WHO has the convening power or the leverage to perform this role unless the United States gets behind the effort... The pandemic's disregard for national borders should be the wake-up call he [President Trump] needs that walls won't protect us. Unless the United States exerts leadership to prevent Covid-19 from raging out of control abroad, the crisis will not end at home."

### **Reinvigorate Science, Engineering, and Health Diplomacy**

The recent global challenges that transcend borders, such as climate change and pandemics, necessitate new mindsets and approaches<sup>72</sup>. Successfully handling these challenges require new thought processes to understand and analyze multiple interconnected systems of systems. One such avenue includes bolstering International Health Regulations through cooperative bio-engagement.<sup>73</sup> Broadly, international collaboration through science<sup>74 75 76</sup>, engineering<sup>77</sup>, and health<sup>78 79 80</sup> diplomacy provide legitimate and systematic tools for collaboration of fighting pandemic, they especially become even more important in situations when there are no official, formal, "warm" or any bi-lateral diplomatic relations among countries.

And finally, as the aforementioned scholar Professor Noah Yuval Harari has recently perceptively observed and boldly recommended<sup>81</sup>:

“[W]e should establish a powerful global system to monitor and prevent pandemics. In the age-old war between humans and pathogens, the frontline passes through the body of each and every human being. If this line is breached anywhere on the planet, it puts all of us in danger. Even the richest people in the most developed countries have a personal interest to protect the poorest people in the least developed countries. If a new virus jumps from a bat to a human in a poor village in some remote jungle, within a few days that virus can take a walk down Wall Street... The skeleton of such a global anti-plague system already exists in the shape of the World Health Organization and several other institutions. But the budgets supporting this system are meagre, and it has almost no political teeth. We need to give this system some political clout and a lot more money, so that it won't be entirely dependent on the whims of self-serving politicians.”

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