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Case report

Digital vaccine passports and digital health diplomacy: an online model WHO simulation

Myron Anthony Godinho [ID][1], **Siaw-Teng Liaw** [ID][1], **Chipo Kanjo**[2], **Heimar F. Marin**[3], **Henrique Martins**[4,5], **and Yuri Quintana** [ID][6,7]

[1]WHO Collaborating Centre for eHealth, School of Population Health, UNSW Sydney, Sydney, Australia, [2]Department of Computer Science, University of Malawi, Zomba, Malawi, [3]Federal University of São Paulo, São Paulo, Brazil, [4]ISCTE Business School, ISCTE-IUL, Lisbon, Portugal, [5]Faculty of Health Sciences, Universidade da Beira Interior, Covilhã, Portugal, [6]Division of Clinical Informatics, Beth Israel Deaconess Medical Center, Boston, Massachusetts, USA, and [7]Harvard Medical School, Boston, MA, USA

Corresponding Author: Myron Anthony Godinho, Scientia PhD Candidate, WHO Collaborating Centre for eHealth, School of Population Health, Faculty of Medicine, UNSW, Sydney, NSW 2052, Australia; m.godinho@unsw.edu.au

ABSTRACT

In the wake of Coronavirus disease 2019 (COVID-19), several nations have sought to implement digital vaccine passports (DVPs) to enable the resumption of international travel. Comprising a minimum dataset for each unique individual, DVPs have the makings of a global electronic health record, broaching key issues involved in building a global digital health ecosystem. Debate simulations offer a safe, interactive space to foster participatory policy discussions for advancing digital health diplomacy. This study used an online simulation of a Model World Health Assembly to critically analyze the sociotechnical issues associated with the global implementation of DVPs, and to generate useful insights and questions about the role of diplomacy in global digital health. The debate arguments addressed and provided insights into the technological, scientific, ethical, legal, policy, and societal aspects of DVPs. Reflecting on the simulation, we discuss its opportunities and challenges for the digitalization, decolonization, decentralization, and democratization of participatory policymaking.

Key words: global health informatics, global health diplomacy, Model World Health Organization, WHO simulation

INTRODUCTION

Digital vaccine passports (DVPs) are electronically documented verifications that someone has tested negative for, or has been protected against, certain infections.[1] They provide a means for immigration authorities to determine who qualifies for entry into their borders based on disease or vaccination status. The curtailment of international travel to slow the spread of Coronavirus disease 2019 (COVID-19) hindered freedom of movement and stifled travel-dependant economic sectors. As COVID-19 vaccines became available, countries sought to certify vaccinated individuals for international travel, turning the discourse toward DVPs. Several nations are already implementing DVPs.[2] However, with limited legal/technical

standardization between the various technological approaches in use, they may not be interoperable, resulting in the fragmentation of certification systems.

To address this fragmentation, the World Health Organization (WHO) convened a Smart Vaccination Certificate Working Group to provide technical guidance on "key standards" for DVPs.[3] Enacting this global DVP requires international governments to cooperate and agree on (1) universal standards, (2) a minimum dataset (eg, of vaccination details and basic health status), and (3) a unique personal ID system for DVPs, eventually associated with a unique ID for each person.[4] This could build upon the International Patient Summary developed by the Joint Council for Global Health Infor-

matics,[5] and serve as an initial step toward a Global Electronic Health Record (G-EHR).

DVPs as a stepping-stone to a Global Electronic Health Record?

Achieving international consensus on DVPs could set a diplomatic precedent and lay the foundation for the future establishment of a G-EHR system, and guide the development of a governance mechanism for an interoperable global digital health ecosystem.[6] Advancing this "sociotechnical" agenda would involve a multi-sectoral stakeholder discussion with relevant UN bodies, Standards Development Organizations, the WHO, and other interested parties. Diplomatic simulations offer a safe means to better prepare for this.

Diplomatic simulations for global digital health

Diplomacy is an increasingly essential aspect of global digital health.[7] The WHO Global Strategy for Digital Health (2020–25) calls for "*mechanisms for more effective public participation and transparency in national and international digital health decision-making processes, such as through international consultation processes or a stakeholder forum*". In a previous paper, we recognized the concept of Digital Health Diplomacy (DHD) as a type of Science diplomacy,[7] we can relate to the Madrid Declaration for Science diplomacy which recommends (1) creating interactive spaces, (2) promoting bi-directional science and diplomacy fluency; (3) engaging the full spectrum of science; (4) ensuring open and interpretable science for diplomacy; and (5) exerting bold values-based leadership.[8] These recommendations mirror those made by the WHO Global Strategy for Digital Health (2020–25), highlighting the need for interactive spaces to advance DHD. Parliamentary policy debates might offer such an "interactive space" for public participation, bi-directional fluency in digital health and diplomacy, where digital health can find application in diplomacy, and "bold values-based leadership" can be fostered.

Simulations are "a tool that reproduces the real-life characteristics of an event or situation",[9] and diplomatic simulations are well recognized to enable participants "to experience and more fully understand theories, issues and concepts within international relations".[10] As a type of diplomatic simulation, Model WHO (MWHO) simulations reenact the procedures of the WHO's policy-making committee, the World Health Assembly.[11] Following the "The Mercury Game", which simulated policymaking to address an environmental health crisis, policymaking simulations in health science education have gained credence.[12] Our prior simulations debated the health relevance of climate change,[13] the built environment, and medicolegal issues of international relevance.[13–18] Through active and experiential learning,[10] policymaking simulations offer the participants an opportunity to gain substantive (ie, content-based) knowledge regarding the debate topic itself (2) process-based knowledge (ie, on debate procedure, and the science-policy interactions) and (3) communication knowledge (ie, knowledge translation).[19,20] They also develop social learning and collaborative capacity, essential for negotiation, teamwork, and leadership.[17] Online environments are increasingly being used to facilitate such policymaking simulations.[21]

Building on our previous work regarding debate simulations for cultivating digital health policymaking,[22] this article reports on a pilot study of a simulated online debate on DVPs. This study sought to use a participatory policy simulation to critically analyze the sociotechnical issues associated with the global implementation of DVPs, and to generate useful insights and questions about the role of diplomacy in global digital health.

METHODS

Debate preparation

The Asia-Pacific Model United Nations Conference (AMUNC) is a traveling conference held annually in different countries within the Asia-Pacific region. It attracts participation from university students based within the region and beyond. AMUNC 2021 was held as an online conference owing to COVID-19-related restrictions on international travel. Through a competitive process, MAG was selected as director and chairperson of the MWHO simulation at AMUNC 2021. He proposed the debate topic and developed a policy brief to prepare participants for the debate (Table 1).[23] This document outlined key considerations regarding DVPs for participating delegates to research with respect to their assigned nation's policy stance, including technological, ethical, legal, scientific, and societal considerations. It referred to salient technical reports, policy documents, and peer-reviewed research. It outlined the current status of international health policy on travel, including the International Health Regulations and recent WHO publications.[24] Delegates were given the policy brief 1 week before the debate to research the country they were assigned to represent in the MWHO council.

Debate process and context

Debate on the issue lasted 3 days (October 1–4, 2021), beginning with opening statements to present nation's policy positions, followed by a general speakers list. Delegates them motioned for moderated caucuses on specific topics where delegates each presented and rebutted arguments for up to 2 min each. Unmoderated caucuses (upto 1 h each) were permitted to enable lobbying and merging between delegates for negotiation, bloc formation and drafting working papers. An outline of the parliamentary procedure used is presented in Figure 1, and procedural details may be found elsewhere.[38]

The conference timing coincided with media discourse on the Australian vaccine passport, and with a diplomatic issue on vaccine recognition for inclusion in a DVP between the United Kingdom and India, which illustrated the debate topic's timeliness.[39]

Participants

The 6 participants were self-selected respondents to public advertising about the debate via social media platforms. They included law, development studies, medicine, and dentistry students from Australia, Indonesia, the Philippines, and the United States.

FINDINGS AND DISCUSSION

The findings reaffirmed the capacity of simulated debates to facilitate a critical discursive analysis of arguments in a safe, collegial setting. The debate provided insights into the practical, technical, and social challenges that countries may have when implementing DVPs and offered practical suggestions on the role of DHD in this process. Most arguments reflected the themes presented in the policy brief (Table 1).

Technological considerations

Delegates emphasized the importance of knowledge sharing between countries, especially to benefit those lacking the technology for

Table 1. Thematic summary of key considerations regarding DVPs presented in the Policy brief

Themes	Issues
Technological considerations	• Technological requirements include a minimum data set, standards for interoperability and governance, basic digital infrastructure, and systems architecture.[4,25] This necessitates widespread adoption of open interoperability standards for secure data access and exchange. • The emerging **government-led** DVP initiative with the greatest level of trans-border standardization is the "EU Digital Covid Certificate".[26] Knowledge sharing between countries is essential for ensuring equitable technological development and interoperability. • **Non-state actors** possess the expertise that governments lack in digital health implementation, and several are developing DVPs independently using blockchain technology for decentralized DVP systems.[2,26–29] In some cases, DVPs are being developed in public–private partnerships between governments and tech companies.[2,26]
Ethical considerations	• There is limited access to COVID-19 vaccines worldwide (particularly in lower-income countries),[30] raising the risk that the introduction of DVPs may hinder global travel equity.[30] • Economic and social benefits should be weighed against the public health risks. While some assert that DVPs do not increase inequality,[31] questions remain regarding the freedom of movement.[32,33]
Legal considerations	• The 6th meeting of the International Health Regulations Emergency Committee regarding the coronavirus disease (COVID-19) pandemic cautioned against proof of vaccination for international travel.[34] Nonetheless, IHR Annex 7 and IHR Articles 12, 15, 18, and 53 do permit countries to require proof of vaccination as a condition of entry or exit. • Nations are divided on the approaches to be taken. Some independently develop legal frameworks for federalized DVP systems,[35] while others recommend that the IHR be revised.[36] • The legal implications of digitizing DVPs should also be considered,[37] including (1) the regulation of collecting, storing, sharing, using, and accessing personal data and health information, and (2) the regulation of data sharing and intellectual property by private technology providers.
Scientific considerations	• There are persisting scientific unknowns around vaccine efficacy and their capacity to prevent disease, limit transmission, prevent asymptomatic infection, and the duration of these effects. • Not all vaccines are equally effective, and deciding which vaccines are eligible for certification by a DVP system will have implications for the vaccine diplomacy efforts of the nations espousing them.
Public Policy & Societal Concerns	• The committee emphasized improving public health education and messaging to combat the ongoing "infodemic" of misinformation and disinformation.

implementing DVPs (aka "**knowledge diplomacy**").[40] Recognizing that DVPs can only be as reliable as the data maintained by governments' record-keeping, delegates emphasized the need to establish minimum standards and hardware for data quality and security to ensure that once standardized, all nations accept the validity of DVPs, to avoid the risk of future challenges to their credibility.

Scientific considerations

For those unable to receive the COVID vaccine, delegations noted that DVPs should also record the traveler's most recent negative test (and test type). Additionally, delegations recognized that not all vaccines are equally efficacious and that DVPs should include details of the vaccination received by the traveler. It was also noted that some countries might tend to recognize (and derecognize) vaccines based on their country of origin rather than their scientific properties (eg, efficacy, safety). Vaccines are also used as a form of humanitarian aid, giving rise to the phenomenon of **vaccine diplomacy**.[41] Prejudice toward or against a vaccine can introduce political biases into what should be an objective, transparent, scientific process.[39]

Ethical considerations

While diplomacy has historically been the domain of international policymakers, this is rapidly changing as we become increasingly dependent on privately-owned, multi-national technology companies to provide the innovation required. The importance of non-state actors in providing the technology for implementing DVPs highlights the potential role of **innovation diplomacy**.[42] This represents a

changing configuration of actors in diplomacy and a shifting of the balance of power between these actors. It also highlights the importance of ensuring that essential digital public goods remain freely available for public use to avoid being beholden to private actors and their profit motives.

Legal considerations

The legal considerations included issues around collecting, storing, sharing, using and accessing personal health information. The participants recommended that DVP data not be held by the WHO but by the individuals' home country. Instead, the WHO could be the accreditor of the certification system, ensuring its' legitimacy. The decision suggested that countries lack trust in a centralized DVP system and have ongoing concerns about security breaches. This highlights the concerns of **data diplomacy** and related issues of international data security, privacy, and ownership.[43] Data decentralization through blockchain technology was discussed as a potential solution to foster the trust required to help transition health systems toward virtual models of integrated care.[44–47]

Public policy and societal concerns

While certifiable medical exemptions were broadly considered legitimate, some nations raised concerns about the validity of religious exemptions. The discussion centered around the risk that they might offer an unquestionable label behind which anti-vaccination communities could disguise a misinformed agenda.
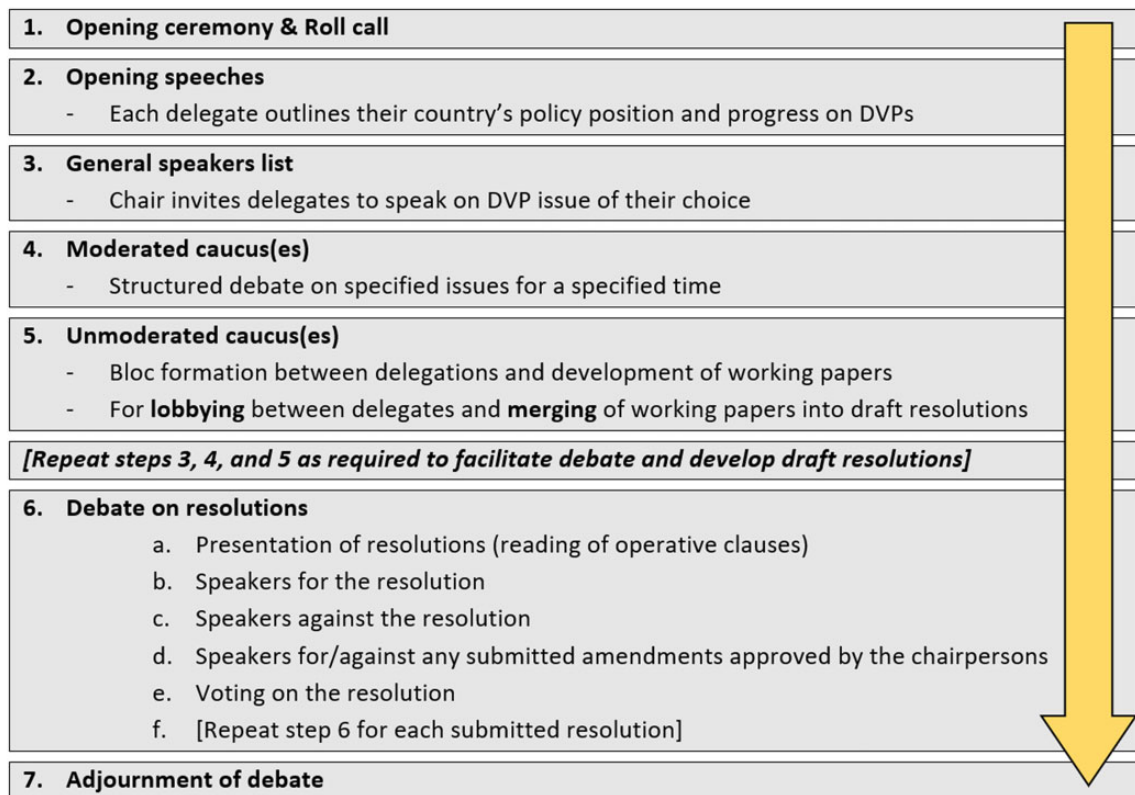
Figure 1. Outline of debate council procedure.

OPPORTUNITIES AND CHALLENGES FOR ONLINE DEBATE SIMULATIONS

As health diplomacy simulations continue to increase in popularity, conducting them in the online environment is likely to offer both opportunities and challenges.[48]

Opportunities for online debate simulations

Digitalization: The online nature of the conference underscored the potential for digital media to scale and sustain this innovation despite travel barriers, augmented by online tools (eg, MUNCoordinated) for MUN sessions over videoconferencing platforms (eg, Zoom). Delegates could participate without the added costs of travel, enabling participation from beyond the Western Pacific Region and democratizing participation overall.

Decolonization: While literature's emphasis on health policy debate simulations in developed nations portrays them as a phenomenon of the global north,[11] our experience with several health policy simulations in the global south suggest otherwise.[13–18] Online debate platforms remove travel and cost barriers to participation, potentially improving opportunities for South-South sharing of culture and knowledge for health, accelerating the decolonization of global health through knowledge diplomacy.[40,49] In the context of DHD, such knowledge sharing may help avoid reliance on donor nations in the global north who may skew policy agendas to their interests.[7]

Decentralization and Democratization: Online policymaking simulations and roleplays open to all irrespective of location can gain economies of scale, building local capacity through global conferences. Online simulations could be more rapidly adapted than in-person meetings to reflect changing geopolitics. This can potentially improve the local capacity for community advocacy and health policy change in developing nations,[18] enabling more significant citizen input into local health governance,[50] and care services.[47]

Challenges of online debate simulations

Most limitations can be attributed to the online mode of participation and the global distribution of participants. As delegates were based in very different time zones, some had to participate at unusual hours, likely affecting performance. Moreover, the shift to Australian Eastern Daylight Time during the conference caused some confusion about the timing of committee sessions.

Online conferences are a less enticing proposition for potential MUN participants when compared to in-person conferences, resulting in fewer registered participants and limiting the diversity of countries and perspectives in each debate council. With online meetings there is also a loss of interpersonal in-person communication, which can help build trust and help open more dialog among participants. There were also technical challenges related to internet bandwidth issues that hindered audio transmission and prevented video and screen sharing making it difficult to ensure that participants were attentively engaged or distracted. However, these issues are not unlike those faced by real-world diplomatic processes.[51] Despite challenges to participation, the validity of debate arguments can still be considered on their merit.

CONCLUSION

Co-creating international consensus around DVPs that are globally interoperable is not just a public health, technical, or health systems challenge but also a trust-building effort, for which diplomatic expe-

rience and learning can be essential. While challenging to organize, online debate simulations can offer safe, collegial environments to train "digital health diplomats" and foster balanced conversations about digital health issues while ensuring equitable participation. This can create the necessary conditions to begin the journey toward a global EHR and digital health ecosystem.

AUTHOR CONTRIBUTIONS

MAG conceptualized and designed the work, interpreted the data, drafted the work critically for important intellectual content, approved the final version, and is accountable for all aspects of the work. S-TL made substantial contributions to the conception and design of the work, interpreted the data, revised the work critically for important intellectual content, approved the final version and is accountable for all aspects of the work. CK made substantial contributions to the interpretation of the data, revised the work critically for important intellectual content, approved the final version and is accountable for all aspects of the work. HFM made substantial contributions to the interpretation of the data, revised the work critically for important intellectual content, approved the final version, and is accountable for all aspects of the work. HM made substantial contributions to the interpretation of the data, revised the work critically for important intellectual content, approved the final version, and is accountable for all aspects of the work. YQ made substantial contributions to the interpretation of the data, revised the work critically for important intellectual content, approved the final version, and is accountable for all aspects of the work.

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CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

All data are contained within the manuscript and associated materials.

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