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Editorial

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COVID-19 vaccines: the imperfect instruments of vaccine diplomacy

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On 3 March 2022, the Government of Lithuania reversed its decision to donate more than 400 000 doses of the Pfizer-BioNTech mRNA COVID-19 to Bangladesh. Lithuania's withdrawal of its COVID-19 vaccine donation followed Bangladesh's decision to abstain from a UN General Assembly resolution condemning the Russian invasion of Ukraine.[1]

While the Lithuanian leadership in Vilnius is understandably disappointed in Bangladesh's abstention, withholding a vaccine that could save thousands of lives is not the correct next step. After all, vaccines, even ones produced through advanced technology such as mRNA vaccines, constitute a humanitarian intervention. They are not luxury goods and certainly not tools of retribution. Moreover, Bangladesh was by no means alone in its decision to abstain from voting on the Russia–Ukraine conflict—34 other countries also abstained including others in South Asia and in Africa. An additional 12 nations chose simply not to vote at all.

On the other hand, we should not be too surprised by the actions of Lithuania given that COVID-19 vaccines have been imperfect instruments of vaccine diplomacy ever since the first COVID-19 vaccines became available in the final quarter of 2020.[2] Even as we enter the third year of the pandemic, a glance at the COVID-19 vaccination rates by nation or continent still reveals a sharp global north–south divide. Only 19% of the population of the African Continent has received even a single dose of COVID-19 vaccine compared with 78% of the USA and Canada.[3] Except for Morocco and possibly Botswana, almost no one in Africa has yet been fully vaccinated and boosted.[4] Elsewhere, several significant low- and middle-income countries (LMICs) such as Afghanistan, Iraq, Syria and Yemen in the Middle East; Haiti and Jamaica in the Caribbean region and Papua New Guinea and Myanmar in Asia-Pacific region face similar and profound inequalities in COVID-19 vaccine access or uptake. For some of these nations, low vaccination coverage may reflect their fragile nation status due to conflict or political instability. In addition, several Eastern European countries, as well as some migrant populations, suffer from low vaccination rates due to high rates of vaccine hesitancy and refusal.[5,6]

Vaccine Diplomacy Successes

While vaccine inequity remains a dominant theme of the COVID-19 pandemic, there are successes. The COVAX sharing facility, the vaccine component of the World Health Organization's (WHO's) Access to COVID-19 Tools (ACT) Accelerator, works to provide every nation with vaccine doses for at least 20% of its population (https://www.who.int/initiatives/act-accelerator/covax). In addition to Gavi and UNICEF, COVAX also partners with the Coalition for Epidemic Preparedness Innovation (CEPI) to accelerate new COVID-19 vaccines. Through these mechanisms, COVAX has distributed more than one billion vaccine doses as of 17 January 2022 (https://www.gavi.org/covax-vaccine-roll-out).

However, it is clear that even this undertaking has so far failed to meet the full global demand for COVID-19 vaccinations, especially for the African LMICs and fragile nations highlighted above. Moreover, these actions often sidestep efforts to encourage joint vaccine development between nations. In this sense, we might think of the COVAX donations and also some of the larger bilateral donations from the USA and European nations as important examples of vaccine empathy, meaning 'a nation's capability to sympathize with other individuals or nations' vaccine wants and needs'.[7]

While vaccine empathy is a vital and life-saving force required to achieve vaccine equity, it still lacks the power and sustainability of true vaccine diplomacy to bridge nations and mutually reinforce efforts to strengthen scientific and health systems.[7,8] The most celebrated example of vaccine diplomacy occurred in the years following the 1957 launch of the Soviet Sputnik satellite.[8,9] At the height of Cold War tensions, the USA and the Soviet Union put aside their differences to engage in scientific cooperation and ultimately develop, manufacture and test the oral polio vaccine.[9] That achievement helped to accelerate the global elimination of polio.

Our Texas Children's Hospital Center for Vaccine Development (Texas Children's CVD) has embarked on similar COVID-19 vaccine diplomacy efforts with vaccine producers in several LMICs, including India, Indonesia, Bangladesh and Botswana. With India, the Texas Children's CVD has transferred its production cell bank and other assets to Biological E where they have produced and own a recombinant protein vaccine made in yeast known as Corbevax, now released for emergency use authorization in adults and children.[10] We collaborated with Biological E without patents in order to facilitate LMIC ownership and demonstrate a commitment to decolonize the vaccine ecosystem. Now BioFarma in Indonesia and Incepta in Bangladesh is each working to achieve a similar goal. The irony is that potentially through this recombinant protein vaccine Bangladesh is in a position to help Lithuania build capacity in vaccine development and production. Arguably, this is a fair exchange for doses of the Pfizer-BioNTech vaccine. In still another development, the US-based ImmunityBIo is working to expand production capacity for COVID-19 vaccines in Southern Africa, such as the one developed by the Texas Children's CVD (https://www.bloomberg.com/news/articles/2022-02-22/billionaire-soon-shiong-bets-africa-is-cure-for-flatlined-stock).

There are other important examples of COVID-19 vaccine diplomacy, including those of India's Serum Institute to accept the technology transfer of the Novavax nanoparticle vaccine and the AstraZeneca adenovirus-vectored vaccine. The AstraZeneca vaccine produced by the Serum Institute India is known as Covishield. Therefore, an important theme of vaccine diplomacy during the COVID-19 pandemic has been the essential role of India's vaccine producers.[11] Most recently, in an important announcement at the European Union-African Union joint summit in Brussels on 18 February 2022, the WHO Director-General announced that six African nations—Egypt, Kenya, Nigeria, Senegal, South Africa and Tunisia—were selected to receive the mRNA technology (https://www.who.int/news/item/18-02-2022-who-announces-first-technology-recipients-of-mrna-vaccine-hub-with-strong-support-from-african-and-european-partners). This followed the establishment of a global mRNA technology transfer hub in 2021 run by a public-private consortium of South African institutions including the South African Medical Research Council, Afrigen Biologics and the South African vaccine producer known as Biovac. The ACT Accelerator and COVAX, as well as the Medicines Patent Pool, were instrumental in supporting this initiative. In addition, on 7 March 2022, the mRNA vaccine producer, Moderna, announced efforts to establish an mRNA vaccine production facility in Kenya (https://www.devex.com/news/moderna-s-first-african-mrna-vaccine-facility-will-be-in-kenya-102808). It would be exciting to see such efforts to empower vaccine research, development and production emphasized later this year at the group of 20 (G20) summit in Bali, Indonesia.

A New Path Forward in Vaccine Equity

The new vaccine development partnerships represent an important step to build a more sustainable path to vaccine equality and access. While sharing vaccine doses manufactured by vaccine producers in North America and Europe remains an important element for equity, the true capacity building offered through vaccine diplomacy is a more enduring prospect. Even with these new initiatives, we need to do and consider additional aspects. Among them, the simple reality that none of the national regulatory authorities is currently certified as 'stringent' is based on an LMIC. Designating a national regulatory authority in a large nation such as Brazil, India or Indonesia, or perhaps one on the African continent would further help to accelerate global vaccine innovation and distribution.

Finally, we must recognize that vaccine hesitancy and refusal represent ominous social forces no longer confined only to North America and Europe.[12] Addressing the rise of vaccine hesitancy and refusal across the world's LMICs, and especially now in Africa, will be an important and essential challenge. Vaccine diplomacy requires the dual elements of promoting science while combating the antiscience. It represents a vital force in reducing pandemic threats, promoting international travel and commerce, and in reducing global tensions and fostering peace.

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Conflict of interest

Prof. Hotez is an inventor on a COVID-19 vaccine technology owned by Baylor College of Medicine that was recently licensed non-exclusively to several companies committed to low- and middle-income countries, including Biological E (India), BioFarma (Indonesia), Incepta (Bangladesh) and ImmunityBio (Southern Africa) for producing a low-cost recombinant protein vaccine.

References

1. Choudhury A. Lithuania Should Not Have Cancelled Its Vaccine Donation to Bangladesh. *The Diplomat* 2022; published online March 9. https://thediplomat.com/2022/03/lithuania-should-not-have-cancelled-its-vaccine-donation-to-bangladesh/ 14 March 2022, date last accessed.
2. Lancet Commission on COVID-19 Vaccines and Therapeutics Task Force Members. Operation Warp Speed: implications for global vaccine security. *Lancet Glob Health* 2021; **9**:e1017–21.
3. Holder J. *Tracking coronavirus vaccinations around the world*. The New York Times. 2022; published online March 12. https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html (14 March 2022, date last accessed).
4. Drissi Bourhanbour A, Ouchetto O. Morocco achieves the highest COVID-19 vaccine rates in Africa in the first phase: what are reasons for its success? *J Travel Med* 2021; **28**:taab040.

5. Karafillakis E, Van Damme P, Hendrickx G *et al*. COVID-19 in Europe: new challenges for addressing vaccine hesitancy. *Lancet* 2022; **399**:699–701.
6. Crawshaw AF, Deal A, Rustage K *et al*. What must be done to tackle vaccine hesitancy and barriers to COVID-19 vaccination in migrants? *J Travel Med* 2021; **28**:taab048.
7. Su Z, McDonnell D, Li X *et al*. COVID-19 vaccine donations-vaccine empathy or vaccine diplomacy? *Vaccines (Basel)* 2021; **9**: 1024.
8. Hotez PJ, Narayan KMV. Restoring vaccine diplomacy. *JAMA* 2021; **325**:2337–8.
9. Hotez PJ. "Vaccine diplomacy": historical perspectives and future directions. *PLoS Negl Trop Dis* 2014; **8**:e2808.
10. Hotez PJ, Bottazzi ME. A COVID vaccine for all. *Scientific America* 2021, published online December 30. https://www.scientificamerican.com/article/a-covid-vaccine-for-all/ 14 March 2022, date last accessed.
11. Sharun K, Dhama K. India's role in COVID-19 vaccine diplomacy. *J Travel Med* 2021; **28**:taab064.
12. Davis TP Jr, Yimam AK, Kalam MA *et al*. Behavioural determinants of COVID-19-vaccine acceptance in rural areas of six lower- and middle-income countries. *Vaccine* 2022; **10**:214.