# World view

By Gavin Yamey

# Rich countries should tithe their vaccines

**Game theory suggests that donating doses can help nations of all income levels.**

As I write this, 191 million vaccination shots against COVID-19 have been administered; more than three quarters were given in just 10 nations that account for 60% of the global gross domestic product. In some 130 nations with 2.5 billion people, not a single shot has been administered. High-income countries represent only 16% of the world's population, but they have purchased more than half of all COVID-19 vaccine doses.

The US$4 billion that the White House pledged towards equitable vaccine distribution this month is a huge help in paying for doses for poorer nations. Reframing how vaccine deals are structured — and explained to the public in rich countries — could make this pledge even more powerful.

I live in the United States, so even though I am at low risk, I will be able to get vaccinated well ahead of many health workers and high-risk people in poorer nations.

This is unfair, and will prolong the pandemic. When SARS-CoV-2 transmission is wildly uncontrolled, the virus has more scope to evolve into dangerous variants. A COVID-19 outbreak anywhere could become an outbreak everywhere.

To help, rich countries should tithe their vaccine supply to poorer places and negotiate direct purchasing deals with vaccine manufacturers to increase supplies.

Many public-health workers strived to avoid the disparities we are seeing now. We knew that rich nations had hoarded vaccines during past outbreaks, such as the 2009 swine-flu pandemic. So, dozens of us working in global health tried — in long weekly Zoom calls for many months — to at least mitigate the hoarding and put a global sharing mechanism for COVID-19 vaccines in place. The result was COVID-19 Vaccines Global Access (COVAX) — co-led by Gavi, the Vaccine Alliance; the Coalition for Epidemic Preparedness Innovations; and the World Health Organization. It is a first-of-its-kind 'buyers' pool' in which richer nations can collectively purchase vaccines, fund vaccine development and manufacturing and ensure that some of the supply will go to poorer countries.

Although around 190 nations have joined COVAX, about 3 dozen rich nations ended up buying most of their doses by way of direct deals with vaccine companies rather than through the COVAX pool. COVAX still expects to secure some 2 billion doses by the end of 2021, but richer countries have already bought 5.8 billion doses, often purchased before clinical trials were completed, through bilateral deals. COVAX is still getting pushed to the back of the queue.

What to do now? Richer nations should share their doses, stat. Perhaps for every nine doses they administer, they can donate one dose to COVAX. This falls far short of 'equitable', but it is within what is possible. This will help beyond dimming the chance of an outbreak from an imported variant that hoarded vaccines might have reduced efficacy against.

> "If the rich world continues to hoard vaccines, the pandemic will drag on for perhaps as long as seven more years."

One analysis of vaccine nationalism (see go.nature.com/37wr), in which people in rich nations receive immediate vaccination and poorer nations are left behind for years, suggested that the global economy could lose US$9 trillion. Rich nations, whose exports would be suppressed, would bear half the cost. Disruption of global supply chains that provide parts for industry would continue.

Some nations are taking the lead. Norway is the first rich nation to have pledged to donate doses to the COVAX pool in parallel with vaccinating its citizens (the United Kingdom plans to donate superfluous doses after all its citizens have been vaccinated).

My colleagues and I used game theory to project what would happen if rich nations reconfigured their purchasing deals to increase the global vaccine supply (D. McAdams *et al. BMJ Glob. Health* **5**, e003627; 2020). Currently, each vaccine purchase is a zero-sum game. But deals could include provisions that require vaccine makers to share knowledge and technology to boost production by other manufacturers. As a real-world example, the Serum Institute of India can manufacture the AstraZeneca–University of Oxford vaccine, providing doses for low- and middle-income countries.

An advanced purchase agreement might also finance risky investments that would speed up vaccine manufacturing. If one candidate fails in trials, the facility could be used for a different, successful vaccine, with a portion of the doses going to poorer countries. These deals create what economists call 'positive spillovers'. With such collaboration, global vaccine distribution would no longer be a zero-sum game.

Some in rich countries might push back against sharing doses, arguing that a government needs to put its own citizens first and that no politician would risk giving doses away. But public polling in many of these nations shows that citizens want their governments to be more collaborative. A UK poll found that almost two-thirds of the public does not want rich countries to be prioritized for COVID-19 vaccination over poorer countries. And if the rich world continues to hoard vaccines, the global pandemic will drag on for perhaps as long as seven more years.

Another argument is that many poorer countries — such as Mongolia and Vietnam — have already curtailed their COVID-19 outbreaks using non-pharmaceutical interventions such as testing, contact tracing and mask-wearing. It is unfair to penalize nations that have used these measures by denying them vaccines. How will citizens respond to public-health advice in the next pandemic if they think it will deprive them of vaccine access?

It is in everybody's interests to act collectively to boost vaccinations. It is self-defeating to act otherwise.

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