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Equitable global access to coronavirus disease 2019 vaccines

Vaccines will be as challenging to deliver as they were to develop

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The pace and progress of research and development for vaccines against coronavirus disease 2019 (covid-19) have been extraordinary. This autumn, each week brought new reports of positive developments for vaccine candidates in phase III clinical trials.^{1–3} The vaccine developed by Pfizer/BioNTech has been authorized for use in the UK, Canada, and the US, and US authorization of Moderna's vaccine appears imminent. On account of these products and others in development—as well as Russian produced and Chinese produced vaccines about which less is publicly known—a new chapter in the global covid-19 vaccination effort is rapidly approaching, one in which problems of distribution, delivery, and access will determine how effective these vaccines are at changing the trajectory of the pandemic.

Two linked papers illustrate the considerable scale and complexity of manufacturing, purchasing, distributing, and administering covid-19 vaccines in a way that meets global needs, and does so equitably among nations and populations. So and colleagues (doi:10.1136/bmj.m4750) synthesize what is publicly known about the vast web of agreements, commitments, and reservations by national governments and multinational organizations to purchase doses of specific vaccine candidates—should development conclude successfully—for their own populations and for global vaccination efforts, in some cases through intermediary organizations.⁴ The authors found a substantial concentration of vaccine reservations among high income countries, for a small number of vaccine candidates, raising questions about access to vaccines for low and middle income countries, particularly if a leading candidate fails during clinical testing or manufacturing problems are encountered after approval.

Complementing this work on aspects of supply planning for covid-19 vaccines, Wang and colleagues (doi:10.1136/bmj.m4704) present analyses of potential vaccine demand and need. They estimated target populations worldwide, regionally, and nationally for whom vaccines would be required based on the vaccination strategy developed by health officials.⁵ Those estimates varied widely by geography, the societal priorities reflected in vaccination plans, and the impact of vaccine hesitancy in reducing demand. In all cases, however, they point to the need for billions of doses of safe and effective vaccines to be manufactured and distributed strategically and equitably to populations worldwide without undue delay.

The authors of both papers acknowledge the implications of uncertainty and incomplete

information for their analyses, from the lack of transparency for vaccines produced or distributed by Russia and China, to missing population data for many countries. But taken together, the central message of these papers is clear: the operational challenges of the global covid-19 vaccination programme will be at least as difficult as the scientific challenges associated with rapidly developing safe and effective vaccines.⁶

The latter effort has moved swiftly towards initial successes, and similar achievements in manufacturing, distribution, and delivery will be required for vaccines to produce the benefits eagerly anticipated worldwide. The scientific work of developing vaccines is far from complete, but the world is approaching an inflection point at which the challenges of vaccination programmes will demand increasing attention and resources as those programmes transition from high level planning to detailed, front line implementation.

Members of the global community, including national governments, international bodies, and non-governmental organizations, have already shown a laudable commitment to equitable global access to covid-19 vaccines. This is most visible in their participation in and support for the COVAX Facility, the initiative coordinated by Gavi, the Vaccine Alliance; the World Health Organization; and the Coalition for Epidemic Preparedness Innovations through which billions of vaccine doses could be procured and distributed to participating countries, regardless of income level, by the end of 2021.⁷

COVAX and its companion mechanism for an advance market commitment are important steps toward equitable global access to vaccines.⁸ But vigilance is required to ensure that such aspirations are realized in the months and years ahead, including defining and implementing plans that reflect a shared definition of equity in this context.^{9–11} Among the many areas requiring further transparency and clarity are the sequence in which vaccine manufacturers will fill orders placed by governments or multinational organizations, and how the additional challenges and costs associated with vaccination programmes (beyond the cost of vaccines) will be managed, particularly in low income countries. That two doses and low temperature storage is required for several of the leading vaccine candidates presents additional obstacles for vaccination efforts in any setting, even more so in low income countries.

The successful, equitable implementation of covid-19 vaccination programmes requires unprecedented global coordination and a sustained commitment of resources—financial, logistical, and technical—from high income countries. The election of Joe Biden in

the US signals the country's imminent re-engagement in the global community, including the World Health Organization, and in global health priorities.¹² US participation in vaccination efforts will be invaluable in challenges ahead, and in ensuring that all populations globally have access to the covid-19 vaccines that will ultimately help bring an end to this devastating global health crisis.

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- 1 Pfizer. Pfizer and BioNTech conclude phase 3 study of COVID-19 vaccine candidate, meeting all primary efficacy endpoints. 2020 Nov 18 [cited 2020 Nov 25]. <https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-conclude-phase-3-study-covid-19-vaccine>.
- 2 Moderna. Moderna's COVID-19 vaccine candidate meets its primary efficacy endpoint in the first interim analysis of the phase 3 COVE study. 2020 Nov 16 [cited 2020 Nov 25]. <https://investors.modernatx.com/news-releases/news-release-details/modernas-covid-19-vaccine-candidate-meets-its-primary-efficacy>.
- 3 AstraZeneca. AZD1222 vaccine met primary efficacy endpoint in preventing COVID-19. 2020 Nov 23 [cited 2020 Nov 25]. <https://www.astrazeneca.com/media-centre/press-releases/2020/azd1222hr.html>.
- 4 So AD, Woo J. Reserving coronavirus disease 2019 vaccines for global access: cross sectional analysis. *BMJ* 2020;371:m4750.
- 5 Wang W, Wu Q, Yang J, et al. Global, regional, and national estimates of target population sizes for covid-19 vaccination: descriptive study. *BMJ* 2020;371:m4704.
- 6 Paltiel AD, Schwartz JL, Zheng A, Walensky RP. Clinical outcomes of a COVID-19 vaccine: implantation over efficacy. *Health Aff (Millwood)* 2020; published online 19 Nov. doi:10.1377/hlthaff.2020.02054.
- 7 Gavi, the Vaccine Alliance. COVAX. 2020 [cited 2020 Nov 25]. <https://www.gavi.org/covax-facility>.
- 8 Gavi, the Vaccine Alliance. The Gavi COVAX AMC explained. 2020 [cited 2020 Nov 25]. <https://www.gavi.org/vaccineswork/gavi-covax-amc-explained>.
- 9 World Health Organization. WHO SAGE values framework for the allocation and prioritization of COVID-19 vaccination. 2020 Sep 14 [cited 2020 Nov 25]. https://apps.who.int/iris/bitstream/handle/10665/334299/WHO-2019-nCoV-SAGE_Framework-Allocation_and_prioritization-2020.1-eng.pdf.
- 10 Emanuel EJ, Persad G, Kern A, et al. An ethical framework for global vaccine allocation. *Science* 2020;369:1309-12. doi: 10.1126/science.abe2803 pmid: 32883884
- 11 Schmidt H, Pathak P, Sónmez T, Ünver MU. Covid-19: how to prioritize worse-off populations in allocating safe and effective vaccines. *BMJ* 2020;371:m3795. doi: 10.1136/bmj.m3795 pmid: 33020072
- 12 Biden-Harris Transition. The Biden-Harris plan to beat COVID-19. 2020 [cited 2020 Nov 25]. <https://buildbackbetter.gov/priorities/covid-19/>.

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