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consideration programmatic knowledge of vaccine scale up, and known differences related to health-care seeking or access. Real-world evaluations cannot capture elusive behaviours that affect vaccine uptake and increased exposure, largely driven by social and cultural inclinations that are not part of a standard electronic medical record.<sup>6</sup> Still, assuming consistent application of the methods described in this Article by Rearte and colleagues,<sup>5</sup> all future estimates will be subject to the same sources of potential bias, thus providing a reliable tool for continuous monitoring of vaccine-induced immunity in the population, along with the changing of the seasons, and dominant variants.

Evaluating the real-world effectiveness of vaccines for any disease is challenging, but even more so with COVID-19 because the roll-out of vaccines occurred with unprecedented speed over divergent social and geographical environments. These vaccines were developed during the early period of the pandemic when SARS-CoV-2 variants were poorly understood. The roll-out in Argentina occurred when the lambda (C.37) variant was the dominant subtype in the continent of South America.<sup>5</sup> Argentina is now experiencing a surge in cases, most likely linked to omicron (B.1.1.529).<sup>7</sup> Unlike other continents, the delta (B.1.617.2) variant has not developed much of a foothold in the region, but the emergence of omicron as a highly transmissible variant now necessitates careful monitoring to determine the spread of it in South America and whether new mutations weaken the morbidity associated with infection. Evidence from North America reported in early 2022 indicated that two doses of vaccine may be less effective than hoped at protecting against omicron infection, but that a third vaccine dose with an mRNA vaccine offered some protection (82%) that wanes over time.<sup>8</sup> The definition of fully vaccinated now is reasonably three doses.

The many questions answered by Rearte and colleagues are important to every country that is choosing which

vaccines to distribute. Evidence that the rAd26-rAd5 and ChAdOx1 nCoV-19 vaccines offer slightly more protection than BBIBP-CorV should be balanced with the costs and availability of these vaccines. An important factor to consider is emerging evidence that indicates mixing vaccines offers favourable outcomes and supports distribution of any vaccine that is readily available.<sup>9</sup>

EJM is employed by Platform Life Sciences, which is a private company providing consultancy on global health trial design and methods. Platform Life Sciences is not involved with any work on COVID-19 vaccines. EJM has previously been employed by Cytel, which does contract research and software development. GR is the founder and an employee of Cardresearch, which leads the Brazilian TOGETHER trial of repurposed therapies for SARS-CoV-2.

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## Meeting the health challenges of displaced populations from Ukraine

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The worsening humanitarian catastrophe and conflict in Ukraine has led to the largest refugee crisis in Europe since World War 2. Millions of people are expected to flee

Ukraine, with more than a million individuals having fled the country in the first week of the conflict alone.<sup>1</sup> The consequences of war, trauma, and devastation must be

tackled swiftly. The resultant mid-term and long-term needs must propel all sectors, including health, into rapid action. The UCL–Lancet Commission on Migration and Health report highlighted evidence-based approaches to address the health needs of forcibly displaced individuals.<sup>2</sup>

Although the initial response of the EU agreeing to a uniform policy of settlement, work, and welfare rights for those forcibly displaced is welcomed,<sup>3</sup> implementation of these policies, without restrictions, red tape, or xenophobia and racism is by no means assured.<sup>2,4</sup> The COVID-19 pandemic illuminated the need to strengthen health systems and reduce disparities in access to and quality of care for migrant groups.<sup>5</sup> As the crisis in Ukraine becomes protracted, access to health care could be at further risk because nations have varying levels of preparedness and reception, and variable health systems, particularly in neighbouring countries such as Poland, Slovakia, Bulgaria, and the Czech Republic (Czechia), which will be strained by the large numbers of people arriving from Ukraine. These countries will need increased support, including financial support, from other countries. The Ukrainian crisis will test political solidarity, health system planning and capacity, and the global community's ability to keep the commitment to universal health coverage.

Reception countries need to plan and provide for specific health needs of the displaced population. Most of the displaced people will be older individuals, women, and children, including a growing number of unaccompanied children.<sup>6</sup> In 2017, 91% of deaths in Ukraine were attributed to non-communicable diseases, with 84% of deaths caused by cardiovascular disease, diabetes, cancer, chronic respiratory diseases, or mental disorders.<sup>7</sup> The burden of communicable diseases such as tuberculosis, associated drug resistance, HIV, and viral hepatitis in vulnerable populations also remains high in Ukraine, whereas vaccination rates are low.<sup>8</sup> Consequently, the demographics and living conditions before displacement and during refugee journeys will dictate health needs. Systems must prepare for pregnant women, people with chronic diseases and underlying conditions requiring continuity of care, and the health risks associated with infectious and communicable diseases of large groups either in motion or collectively stationed. The physical and mental

impacts of enormous numbers of people experiencing the trauma of war, as well as those who are medically vulnerable, children, and those with disabilities, must be addressed.

We join others in calling for the immediate cessation of violence by the Russian Government in Ukraine and urge all European countries to adopt evidence-based approaches in supporting and responding to the health needs of displaced populations from Ukraine.<sup>2,9</sup> First, we urge Russia to desist from attacking health facilities and allow access for evacuation of wounded and vulnerable civilians. Second, governance must be migration-sensitive so that official processes do not worsen the health of already vulnerable and traumatised populations. Border controls and authorities should undertake their responsibilities by acting to counter all discrimination and mitigate health risks. Third, to ensure that those with chronic illnesses do not suffer, health-care services must secure continuity of care during and after their journey. We call for immediate and rapid access to medicines for individuals with insulin dependence and those requiring dialysis, chemotherapy, anticoagulation, and other lifesaving treatments. Immediate attention must be paid to people who need mental health and psychosocial services, particularly children. Fourth, we ask that health workers from Ukraine are allowed to continue working in reception countries, for automatic recognition of their qualifications, and for those in training to be allowed access to medical, nursing, and other health schools throughout Europe. Finally, we urge all countries aiding Ukraine to include



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support for the needs of the Ukrainian health system in the context of conflict by providing needed medicines, equipment, and any particular health needs as identified by the Ukrainian Government,<sup>10</sup> and ask Russia to allow unimpeded supply. Such actions will help mitigate the continuing displacement, suffering, and tragedy unfolding in Ukraine.

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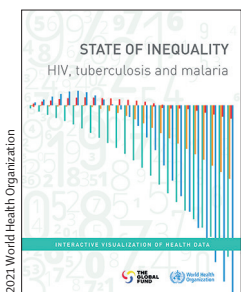
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## Monitoring inequalities is a key part of the efforts to end AIDS, tuberculosis, and malaria



HIV/AIDS, tuberculosis, and malaria kill more than 2 million people every year<sup>1–3</sup> and cause a disproportionate burden on the world’s most disadvantaged people. WHO recognises the urgency of tackling inequities and redoubling efforts to prevent and control these diseases during the COVID-19 pandemic and looking ahead to post-pandemic recovery. The uneven progress to date in addressing inequalities in HIV/AIDS, tuberculosis, and malaria is a complex issue and requires strengthening of people-centred primary health care and universal health coverage, as well as multisectoral actions on the social determinants of health. One element that can help advance this agenda is to institutionalise and strengthen inequality monitoring as part of these efforts. An up-to-date analysis of inequalities in HIV, tuberculosis, and malaria can help inform equity-oriented approaches to tackle these diseases.

A new report from WHO and The Global Fund to Fight AIDS, Tuberculosis and Malaria, *State of Inequality: HIV, Tuberculosis and Malaria*,<sup>4</sup> to which we contributed or

helped develop, was launched on Dec 9, 2021. This is the first monitoring report to systematically assess the global state of inequalities in these diseases. This analysis, which used global data for 32 health indicators and five inequality dimensions, highlights the extent and magnitude of inequalities in the past 10 years (2011–20) compared with the previous decade (2001–10). Four major findings from this report are relevant to the global health community.

First, the report reveals major deficiencies in the availability of disaggregated data suitable for the monitoring of inequalities in HIV, tuberculosis, and malaria. The limited scope in terms of the number of countries, health indicators, and inequality dimensions available for inclusion in the analysis underscores the urgent need for more, better, and timely disaggregated data.

Second, the report shows there are widespread inequalities across many aspects of HIV, tuberculosis, and malaria, where data are available, including

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