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Authors' reply

Senjuti Saha and Samir Saha make the excellent point that the scope of vaccine impact goes beyond the deaths that are directly averted by immunisation activities. In this we agree. We aimed to quantify the deaths averted by vaccination for ten diseases in 98 low-income and middle-income countries.¹ However, there are wider benefits of vaccination—for example, in reducing the burden on health-care services. With many low-income and middle-income countries having minimal health-care capacity, the impact of vaccination might far outstrip the current best estimates.

COVID-19 has emphasised the ramifications of a health-care capacity that is resource-limited as countries have seen the pandemic saturate possible treatment space, with the introduction of vaccines relieving some of this burden. We noted that vaccination activities reduced overall mortality by 45% between 2000 and 2019, for the countries and pathogens that were studied. However, these data do not capture the reduction in morbidities that are associated with vaccine-preventable diseases, nor the benefits of strengthened health systems and equity.

Quantifying the wider effects of vaccination has been attempted, particularly in an economic sense. Chang and colleagues² assessed the role of vaccination in reducing medical impoverishment, noting a 9% reduction in the number of people in low-income countries whose income is below the World Bank poverty line. The burden of vaccine-preventable diseases disproportionately affected the lowest income quintiles, showing the potential equalising nature of vaccination activities. Vaccination has also been linked with productivity, shown by a measurable improvement in cognitive outcomes in later childhood.³ Improved educational achievements are generally linked with increased social mobility and economic development.⁴

Given the wide-ranging impact of vaccination, why are epidemiological and health economic studies so focused? In our study, 16 modelling groups provided estimates that considered heterogeneity in data, transmission, and health access both geographically and, in some cases, temporally. To provide robust, well calibrated estimates of disease burden, focused analysis is required. This requirement motivates the structure of the Vaccine Impact Modelling Consortium, which brings together modelling groups to capture the latest insights in disease transmission and vaccine impact. Despite this motivation, uncertainties remain in both the natural history of the pathogens that are studied and the input data relating to vaccination and demography. As such, we need to balance the need for robust and focused results, data scarcity, and the huge and far-reaching ramifications of such an effective intervention as vaccination. It is an area of continued study and improvement that will potentially be accelerated by the ongoing COVID-19 pandemic.

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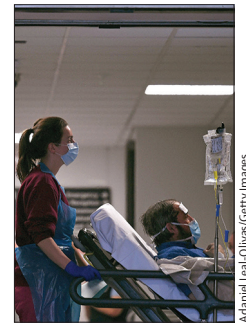
Inclusion and diversity in the PRINCIPLE trial

We welcome the call from Paramjit Gill and colleagues¹ for diverse participation in clinical trials like PRINCIPLE.²

We initiated many inclusive recruitment strategies, including the appointment of a leading and national pharmacist expert working with minority ethnic communities who was tasked with targeting socio-economically deprived areas, minority ethnic communities, and people with learning difficulties; developing UK-wide relationships with community and religious organisations (including places of worship); collaborating with universities and national and regional health-care institutions; and gathering nationwide support from minority ethnic leaders, health professionals, and their organisations (appendix).

We consistently promoted the trial in many languages, via local and UK national media channels, the internet, and social media platforms. Our pharmacy networks and general practice networks helped establish PRINCIPLE footprints in approximately 7500 community pharmacies UK-wide, with more than 1000 general practice co-investigators helping with participant recruitment from a range of settings.

This strategy contributed to the inclusion of 55 (4.0%) South Asian and seven (0.5%) Black participants in our analysis of azithromycin for treatment of suspected COVID-19,² which was comparable to 3.7% Asian ethnicity and 1.6% Black ethnicity among people older than 50 years (PRINCIPLE's target age group) in England and Wales.³ The proportions of participants' in Index of Multiple Deprivation (IMD) quintiles were (from most to least socioeconomically deprived): 352 (26%) of 1375 in IMD1; 267 (19%) of 1375 in IMD2; 270 (20%)



For the Vaccine Impact Modelling Consortium see <https://www.vaccineimpact.org/>

See Online for appendix

of 1375 in IMD3; 241 (18%) of 1375 in IMD4, and 245 (17%) of 1375 in IMD5. Overall, this shows good recruitment from socioeconomically deprived and minority ethnic communities.

PRINCIPLE's innovative approach now supports the recruitment of minority ethnic participants to other UK national trials. We recognise that our initial outreach strategy requires further and targeted investment, initiatives, collaboration, and institutional support to enable sustainable engagement of people from minority ethnic communities in primary care research, ultimately for inclusive, equitable health for all.

We declare no competing interests. FDRH and CCB are joint corresponding authors.

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Intersectionality in UHC: from blue-sky to day-to-day practice

Rajvinder Samra and Olena Hankivsky¹ rightly address intersectionality in analysing inequalities and the intersection of social identities in power structures in medical education

and its negative consequences on the future of health-care providers.

We were recently asked to prepare a presentation on universal health coverage (UHC) for general audiences of doctors and nurses, which raised questions: outside of health policy, global health, and other relevant domains, what do we offer students and service providers for their day-to-day practice on achieving UHC? How should they provide quality service to all people and communities without financial hardship? How should they know each recipient's needs and how to ensure continuity of care?

Intersectionality is an approach that analyses power structures and the processes that lead to the creation and maintenance of inequalities. It must be used to identify the causes and manifestations of health inequalities. But unlike its use in health policy making,³ the application of intersectionality has received less attention in clinical practice. Identifying and understanding inequalities is effective when front-line health-care workers can provide care and equitable services without bias towards social identities. They can adequately identify the manifestations of oppressions through an intersectionality lens, but this approach requires changes to the educational system.⁴

The theoretical training of front-line health-care workers on UHC, equality, or intersectionality would not be sufficient for their practice. Application of intersectionality should be integrated into educational practicums to create a reflexive practice. In this way, while taking a patient history, the service provider uses an intersectional approach to identify health inequalities according to social identities and provide the appropriate care. For example, if analysis reveals that a patient has difficulty with compliance to treatment due to the intersection of income, gender, literacy, and ethnicity, then the treatment plan should be based on culture and gender, prescribing affordable procedures, referring to service centres that facilitate

access to care for that particular patient, and providing educational advice compatible with their literacy. Such educational changes can improve knowledge, attitude, and practice, unfold intersectionality from texts, and apply UHC to provide equitable health care.

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Burtneis B, Harrington KJ, Greil R, et al. Pembrolizumab alone or with chemotherapy versus cetuximab with chemotherapy for recurrent or metastatic squamous cell carcinoma of the head and neck (KEYNOTE-048): a randomised, open-label, phase 3 study. Lancet 2019; 394: 1915–28—In this Article, the overall survival at 24 months in patients receiving cetuximab with chemotherapy (shown in figure S3C) should have been 18%. The appendix has been corrected as of June 10, 2021.

Mathur R, Rentsch CT, Morton CE, et al. Ethnic differences in SARS-CoV-2 infection and COVID-19-related hospitalisation, intensive care unit admission, and death in 17 million adults in England: an observational cohort study using the OpenSAFELY platform. Lancet 2021; 397: 1711–24—In figure 4 of this Article, the hazard ratios and 95% CIs were incorrect and have been amended. These corrections have been made to the online version as of May 6, 2021, and the printed version is correct.

Watts G. Peter MacNaughton Dunn. Lancet 2021; 397: 1802—In this Obituary, the second sentence of the introductory text should read “Born in Birmingham, UK, on June 23, 1929, he died in Bristol, UK, on Feb 2, 2021, aged 91 years.” This correction has been made to the online version as of June 10, 2021.