


Vaccine hesitancy in low- and middle-income countries: potential implications for the COVID-19 response

Sunil Bhopal ,^{1,2} Maryke Nielsen ^{3,4,5}

At this point in the COVID-19 pandemic, children are relatively spared by the direct effects of the SARS-CoV-2 virus, but their role in transmission is less understood. Conclusions on these issues call for caution, as the nature of the pandemic and the virus changes. Global health organisations and national governments are pinning hopes for a return to

quasynormality on the development of a safe and effective vaccine that can be quickly manufactured and supplied around the world for use at scale in record time. There are currently more than 100 such vaccine candidates with phase 1, 2 and 3 studies in progress. Adults who are at high-risk of COVID-19 may overwhelmingly choose to receive a vaccine, but it remains unclear if an exclusively adult targeted vaccine campaign would be sufficient to interrupt transmission. Some experts estimate that, at a minimum, 60% population level immunity will be required.¹ This figure rises if R_0 increases. Particularly in low-income and middle-income countries (LMICs) with a high proportion of young people and less well-established adult vaccination programmes, widespread childhood vaccination may also be necessary. This leads us to consider

the likely acceptability of a novel COVID-19 vaccination for children, who are—at this stage of the pandemic—mostly not severely affected by COVID-19.

The good news is that vaccinations are largely accepted in LMICs. According to the results of the 2018 Wellcome Global Monitor, a survey of 140 000 individuals in 140 countries regarding public attitudes to health and science, 94% and 90% of participants in South Asia and East Africa, respectively, described vaccination as effective. Similarly 95% and 92% of those in South Asia and East Africa perceived vaccines as safe.² In comparison with Western Europe, only 59% of participants believed vaccines to be safe. Of note, this perceived safety was highest in low-income, lower middle-income and upper middle-income countries where respondents reported higher levels of trust in scientists, doctors and nurses. The WHO SAGE Working Group on Vaccine Hesitancy describes hesitancy on a continuum between full acceptance and outright refusal and recognises that hesitance can be to single or multiple vaccines.³

Research using the WHO SAGE Vaccine Hesitancy Scale suggested that even among an on-the-whole pro-vaccine population of 2265 respondents from

¹Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne, UK

²Maternal & Child Health Intervention Research Group, Faculty of Epidemiology & Population Health, London School of Hygiene & Tropical Medicine, London, UK

³Institute of Infection & Global Health, University of Liverpool, Liverpool, UK

⁴Early Life Infection Group, Malawi-Liverpool-Wellcome Trust Clinical Research Programme, Blantyre, Malawi

⁵Liverpool Health Partners, Liverpool, UK

Correspondence to Dr Sunil Bhopal, Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne NE1 7RU, UK; sunil.bhopal@newcastle.ac.uk

Bangladesh, China, Ethiopia, Guatemala and India (95% agreed that 'childhood vaccines are important for my child's health') more than 50% agreed or were neutral with regards to the question 'new vaccines carry more risks than older vaccines'.⁴ Work from high-income countries suggests that individuals are naturally willing to take more risks over new infant vaccines when the direct benefits are greater,⁵ but this may be a different situation for COVID-19 vaccine in children. As with all infections, there are children at higher risk, but even the impact of the infection directly on vulnerable child populations in LMICs, often with high burden of undernourishment and children living with or exposed to HIV, is yet to be fully described. A great deal of continuous local and national community engagement and trust building goes on to increase both acceptance and demand for all vaccines. It is important that among the urgency to use new vaccines, care is taken to ensure that established programmes maintain confidence and continue to protect children, taking account of parental confidence and the tendency to complacency and the importance of convenience (the 'three C's model') in reducing vaccine hesitant behaviour.³ We have been here before. In 2017, 'Dengvaxia', a new dengue vaccine was found to have risks for those never exposed to dengue. In the Philippines, this news was met with political and societal outrage with drastic increases in reported concerns regarding effectiveness, safety, perceived importance and even compatibility with religious beliefs being documented by the Vaccine Confidence Project.⁶

Researchers, governments and global agencies should proceed with particular care in the evaluation of candidate SARS-CoV-2 vaccines in LMICs, with effective communication to build trust and avoid generation of vaccine hesitancy. Vaccine efficacy is often highly variable between high-resource and low-resource settings. The transmission dynamics of SARS-CoV-2 in countries with predominantly young populations, which is true of many LMICs, are largely unknown. To be accepted, it is vital that any vaccine intended for use in LMIC is shown to be safe and effective in the settings in which its use is intended. Recent remarks from French researchers that candidate vaccines should be tested first in Africa were met

with widespread outrage and accusations of racism. The scientists subsequently apologised, yet the damage to confidence in COVID-19 research on the continent may be difficult to repair. Inadequate attention to communication and perceived secrecy, particularly in the context of the heightened fear of an epidemic, can be disastrous. In 2015, two Ebola vaccine trials in Ghana were suspended and subsequently abandoned, in response to media accusations that researchers were infecting participants with Ebola.⁷ It is imperative that in the justifiable haste to evaluate a novel COVID-19 vaccine, confidence in existing vaccination programmes is not jeopardised through suboptimal science communication, lack of public engagement or inadequate trust that governments will act in the best interests of public health and safety and based on sound scientific evidence.

Perhaps the greatest risk of vaccine hesitancy in the coming months and years is that caused by factors related to the COVID-19 response itself. Vaccination programmes have been curtailed in over 20 countries already in response to strict social distancing measures, even in countries with active measles outbreaks. The pandemic has significantly altered parental health-seeking behaviour; a recent WHO global poll reported that 73% of countries have witnessed reduction in demand for immunisation, higher for countries in the WHO Africa region (89%). Nearly half of survey respondents suggested that the public hold concerns regarding risk of COVID-19 exposure when attending for vaccination (www.who.int/immunization/monitoring_surveillance/immunization-and-covid-19/). Urgent work is needed to make transportation and vaccination centres COVID-19 secure, along with linked public health messaging to address these fears.

We celebrate the scientific progress that means development of a vaccine for this novel virus is even a consideration. We can also be somewhat reassured that vaccine hesitancy in LMICs remains on the whole low. However, this lack of hesitancy is fragile and should not be taken for granted; communities and families must be incorporated into decision making to ensure that whole populations move together in solidarity. Small mistakes including safety problems as well as necessary social distancing measures may

have large and unintended consequences for immunisation uptake for eventual COVID-19 vaccine and routine vaccinations. Care and caution are needed to protect our children

Twitter Sunil Bhopal @sunilbhop and Maryke Nielsen @MarykeJN

Funding MN is funded by a Wellcome Trust Training Fellowship (203919/Z/16/Z).

Patient consent for publication Not required.

Provenance and peer review Commissioned; internally peer reviewed.

Data availability statement No original data are presented in this piece

This article is made freely available for use in accordance with BMJ's website terms and conditions for the duration of the covid-19 pandemic or until otherwise determined by BMJ. You may use, download and print the article for any lawful, non-commercial purpose (including text and data mining) provided that all copyright notices and trade marks are retained.

© Author(s) (or their employer(s)) 2021. No commercial re-use. See rights and permissions. Published by BMJ.



To cite Bhopal S, Nielsen M. *Arch Dis Child* 2021;**106**:113–114.

Received 5 June 2020

Revised 26 August 2020

Accepted 29 August 2020

Published Online First 10 September 2020

Arch Dis Child 2021;**106**:113–114.

doi:10.1136/archdischild-2020-318988

ORCID iDs

Sunil Bhopal <http://orcid.org/0000-0003-1229-781X>

Maryke Nielsen <http://orcid.org/0001-7148-520X>

REFERENCES

- 1 Altmann DM, Douek DC, Boyton RJ. What policy makers need to know about COVID-19 protective immunity. *Lancet* 2020;395:1527–9.
- 2 Wellcome Global Monitor. Wellcome, 2018. Available: <https://wellcome.ac.uk/reports/wellcome-global-monitor/2018> [Accessed 25 Jun 2020].
- 3 Sage Working Group. *Report of the SAGE Working group on vaccine hesitancy*. Geneva: World Health Organization, 2014. https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf
- 4 Wagner AL, Masters NB, Domek GJ, et al. Comparisons of vaccine Hesitancy across five low- and middle-income countries. *Vaccines* 2019;7:155.
- 5 Bakhache P, Rodrigo C, Davie S, et al. Health care providers' and parents' attitudes toward administration of new infant vaccines—a multinational survey. *Eur J Pediatr* 2013;172:485–92.
- 6 Larson HJ, Hartigan-Go K, de Figueiredo A. Vaccine confidence plummets in the Philippines following dengue vaccine scare: why it matters to pandemic preparedness. *Hum Vaccin Immunother* 2019;15:625–7.
- 7 Kummervold PE, Schulz WS, Smout E, et al. Controversial Ebola vaccine trials in Ghana: a thematic analysis of critiques and rebuttals in digital news. *BMC Public Health* 2017;17:642.