

Benefits of routine childhood vaccines far outweigh risks of additional COVID-19 transmission in Africa

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The health benefits of maintaining routine childhood vaccination programmes in Africa during the COVID-19 pandemic far outweigh the risk of SARS-CoV-2 transmission that might be associated with clinic visits, according to a modelling study published in *The Lancet Global Health* journal.

For every additional COVID-19 death that might be associated with additional exposure to the virus during routine clinic visits, the model predicts that 84 deaths in children before five years of age (uncertainty interval 14-267) could be prevented by continuing with routine vaccinations. The additional risk of COVID-19 transmission associated with clinic visits is predicted to primarily affect older adults living in the same household as the vaccinated children.

The findings suggest that continuing with usual vaccination schedules could prevent 702,000 child deaths (uncertainty interval 635,000-782,000) from the point of immunisation until they reach five years of age.

The study looked at all 54 countries of Africa and found that in all countries, the number of child deaths averted through vaccination far exceeded the number of excess COVID-19 deaths that might be associated with clinic visits.

However, the authors acknowledge there are other issues that will affect whether vaccination programmes can continue, such as [vaccine](#) supply chain problems or healthcare staff shortages during the pandemic.

Dr. Kaja Abbas, joint lead author of the study, from the London School of Hygiene and Tropical Medicine, UK, said: "We found that, even with our most conservative estimates, the benefits of routine childhood immunisation in Africa are likely to far outweigh the risk of additional COVID-19 transmission that might ensue, and these programmes should be prioritised as far as logistically possible."

National immunisation programmes are at risk of disruption due to the severe health system constraints associated with the ongoing COVID-19 pandemic and physical distancing measures introduced to mitigate transmission of the virus.

Researchers created a mathematical model to assess the risks and benefits of continuing with vaccination programmes during the current pandemic for all 54 countries of Africa. Their model assumes that the spread of COVID-19 in African countries will be similar to other countries that were affected earlier in the pandemic and were unable to control the virus. It assumes around 60% of the population will become infected and that the potential disruption to [health services](#) will last for six months.

Exact data on the risk of SARS-CoV-2 infection associated with routine clinic trips for childhood immunisations were not available, so the model was based on assumptions relating to the likely number of people encountered during such a journey, both at the clinic itself as well as during travel there and back again. Risks to the child, accompanying adult and any household members were taken into account. The model also accounted for the household size and age composition in each country, as risk of death from COVID-19 is known to substantially

increase with age.

The researchers based their estimates of the number of childhood deaths that could be prevented by routine immunisations on existing health data from each country. They focused on the impact of vaccines for diphtheria, tetanus, pertussis, hepatitis B, Haemophilus influenzae type b and Streptococcus pneumoniae (bacterial causes of pneumonia and meningitis), rotavirus, measles, rubella, meningitis A and yellow fever. Vaccination rates for each country were assumed to be the same as in 2018.

According to the model, continuing with routine immunisation programmes may lead to 8,300 additional deaths across Africa (uncertainty interval 1,300 to 25,000), attributable to SARS-CoV-2 infections associated with children visiting immunisation clinics.

However, suspending such vaccination programmes to avoid excess COVID-19 deaths could lead to 702,000 children across Africa dying from [preventable diseases](#) before the age of five (uncertainty interval 635,000 and 782,000), according to the model. The researchers say this scenario assumes no catch-up vaccination campaigns at the end of the COVID-19 risk period and may overestimate the negative impact of suspending vaccination services for a short period of time.

Even in a much more conservative scenario (where suspending vaccination is primarily assumed to increase the chance of a local measles outbreak and children would be protected from other diseases from existing immunity in the population or catch-up immunisation campaigns at the end of the COVID-19 risk period), the number of childhood deaths that could be prevented was still greater than the potential increase in COVID-19 deaths for most countries of Africa.

Dr. Tewodaj Mengistu, co-author of the study, from Gavi, the Vaccine

Alliance, Switzerland, said: "Routine immunisation programmes are facing enormous disruption across the globe due to this pandemic. Lockdowns make it harder for vaccinators and parents to reach vaccination sessions, health workers are being diverted to COVID-19 response, and misinformation and fear are keeping parents away. This important study shows just how big an impact this could have, risking the resurgence of diseases that vaccines have kept largely at bay."

Findings were similar for all 54 countries of Africa, ranging from between 4 and 124 preventable child deaths in Morocco to between 28 and 598 in Angola, for each excess COVID-19 [death](#). One third of vaccine-preventable deaths would be in Nigeria, Ethiopia, Democratic Republic of Congo and Tanzania, the study found. Around one third of vaccine-preventable deaths would be caused by measles, and another third would be attributable to pertussis, according to the model.

While the study clearly shows the [health benefits](#) of vaccination for children, it revealed that the additional risk of COVID-19 infections acquired during visits to the clinic would primarily affect adults from the same household. According to the model, 11% of excess COVID-19 deaths attributable to clinic visits are expected to affect parents or adult carers and 88% are predicted to affect older adults living in the same household as the vaccinated children. The researchers say this highlights the importance of shielding older adults to lower their risk of acquiring COVID-19, while children in their households can benefit from routine vaccinations.

Dr. Stefan Flasche, senior author of the study, from the London School of Hygiene & Tropical Medicine, UK, said: "We found that the biggest factors affecting the benefit of maintaining childhood immunisations during the pandemic are the likelihood of transmission of COVID-19 during clinic visits and the number of people encountered at the clinic. This highlights the need for personal protective equipment for clinic

staff, the need to implement physical distancing measures and avoid crowded waiting rooms, and the importance of good hygiene practices to reduce virus transmission."

The authors acknowledge that other factors must be considered when making decisions on sustaining routine childhood immunisation programmes during the COVID-19 pandemic. These include vaccine supply chain problems, reallocation of doctors and nurses to other prioritised health services, staff shortages resulting from ill-health or COVID-19 infection, and decreased demand for vaccination caused by fear of contracting COVID-19.

Dr. Emily Dansereau, co-author and program officer at the Bill & Melinda Gates Foundation, USA, said: "Across the African continent, many essential health services—from immunization to antenatal care to HIV and TB services—are experiencing significant challenges in the face of COVID-19. To address these new challenges and build resilient health systems, countries are exploring how to rethink health service delivery and are embracing innovative approaches to reach women, children and families with high quality support and care."

More information: Kaja Abbas et al, Routine childhood immunisation during the COVID-19 pandemic in Africa: a benefit–risk analysis of health benefits versus excess risk of SARS-CoV-2 infection, *The Lancet Global Health* (2020). [DOI: 10.1016/S2214-109X\(20\)30308-9](https://doi.org/10.1016/S2214-109X(20)30308-9)

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