VACCINE DELIVERY RESEARCH DIGEST

UNIVERSITY OF WASHINGTON STRATEGIC ANALYSIS, RESEARCH & TRAINING (START) CENTER

REPORT TO THE GATES FOUNDATION

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{Abstract & START Commentary} {Full Article}

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{Abstract & START Commentary} {Full Article}

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Additional Articles of Interest

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1. Reaching Never- and Incompletely-Vaccinated Children with Routine Immunization: A Proof-of-Concept Activity Using Geo-Referenced Microplans in Two Health Zones in Maniema Province, Democratic Republic of the Congo.

Alleman M, Tanon A, Rukengwa E, Tschirhart K, Lendo C, Balepukayi M, et al.

Vaccines (Basel). 2026 Feb 26;14(2).
PubMed ID: 41746095

ABSTRACT

BACKGROUND/OBJECTIVES: The Democratic Republic of the Congo (DRC) has a history of low coverage (<50%) with all first-year-of-life vaccines for children aged 12-23 months, resulting in frequent outbreaks of vaccine-preventable diseases. In response, the DRC's Expanded Program on Immunization (EPI) is applying innovations to improve vaccination coverage, including using geospatial data to inform vaccination planning (geo-referenced microplans). This report describes a proof of concept to geo-locate, by locality of residence, never-vaccinated children (NVC) or incompletely vaccinated children (IVC); use those data to prepare geo-referenced microplans for rounds of Periodic Intensification of Routine Immunization (PIRIs); and implement the PIRIs.

METHODS: In 2022, in Kindu and Kibombo Health Zones (HZs), Maniema Province, DRC, children aged 0-23 months were enumerated with inquiries about their vaccination status and reasons for non-vaccination by locality of residence. The enumeration was coupled with the collection of the localities' geographic coordinates, facilitating the spatial illustration of estimated proportions of NVC by locality. Coordinates for HZ and health area (HA) landmarks and borders were also collected. We created maps that informed geo-referenced PIRI microplans, placing an emphasis on deploying vaccination teams to localities with high proportions of NVC, especially those in remote and riverine locations. To account for inclusion of children aged up to 59 months in the PIRIs, enumeration data were extrapolated to estimate the numbers of NVC and IVC in this wider age range. Volunteers mobilized communities for the PIRIs, HA staff vaccinated age-eligible children, and vaccination teams were geographically tracked.

RESULTS: In Kindu, 29,837 children aged 0-23 months were enumerated in 430 localities; among them, 38% were NVC and 6% IVC. In Kibombo, 9582 children aged 0-23 months were enumerated in 168 localities; among them, 50% were NVC and 16% IVC. In both HZs, reasons for never vaccination were primarily associated with knowledge- or belief-related factors, while reasons for incomplete vaccination were associated with access-related factors. Between HAs and localities, there was heterogeneity in the proportions of NVC and IVC and in the reasons for non-vaccination.

The numbers of NVC and IVC aged 0-59 months were estimated at 28,220 and 4613 in Kindu and 12,038 and 3785 in Kibombo. Approximately 2000 health staff and community volunteers were engaged for implementation of each of the three PIRIs. The number of children vaccinated during the three PIRIs ranged from 15,500 to 26,500 and from 10,500 to 15,500 in Kindu and Kibombo, respectively. Data suggest that vaccinated children originated from >90% of localities identified during the cartography. Tracking data showed that vaccination teams visited localities with high proportions of NVC, including those that were remote and riverine.

CONCLUSIONS: Geo-referenced microplanning with engagement of health staff and communities succeeded in vaccinating at least 40,000 children who were not routinely benefiting from health services in two HZs in the DRC; similar innovative strategies could be considered elsewhere. Applying new technologies to existing microplanning strategies can enhance their success.

WEB: 10.3390/vaccines14020175
IMPACT FACTOR: 3.4
CITED HALF-LIFE: 2.8

START COMMENTARY

This activity collected geographic coordinates for health zone (HZ) and health area (HA) borders, enumerates and geolocates children aged 0-23 months who were never vaccinated (NVC) or incompletely vaccinated (IVC) by locality; these data were used to develop and implement microplans for Periodic Intensification of Routine Immunizations (PIRIs). The activity focuses on Kindu HZ and Kibombo HZ in Maniema Province, DRC which are divided into 11 and 12 HAs, respectively. In addition to enumeration of children, participatory mapping was conducted by cartographers and local nurses to assess HA and boundaries using available maps and satellite imagery. Notably, maps from before and after the participatory mapping show significant revisions in HA shapes, borders, and extent, revealing 430 and 168 newly identified localities across the revised boundaries of Kindu and Kibombo, respectively. Enumeration of children combined with participatory mapping identified 29,839 children living in the 430 identified localities in Kindu and 9,592 children from the 168 localities identified in Kibombo. After linking participatory mapping and enumeration data, new maps showed the proportion of NVC, and the main reason reported for non-vaccination (Figure 1). These maps informed PIRI microplanning and contributed to local knowledge of drivers of non-vaccination. For example, to address issues like lack of transport to vaccination sites, microplans included provisions for mobile vaccination teams to go areas with high proportions of NVC that cited this as the most common reason for non-vaccination. Other constraints were addressed by planning PIRIs during daylight hours, including weekends, and having vaccination sites at public locations like churches and markets. This activity served as a proof of concept that thousands of children in these HZs could be enumerated, located, and vaccinated with tailored

microplanning. The success of this activity was the result of strong collaboration between the levels of DRC's EPI program. For future interventions, the authors suggest integrating resources from multiple health programs to identify and reach areas with the most need on a wider scale.

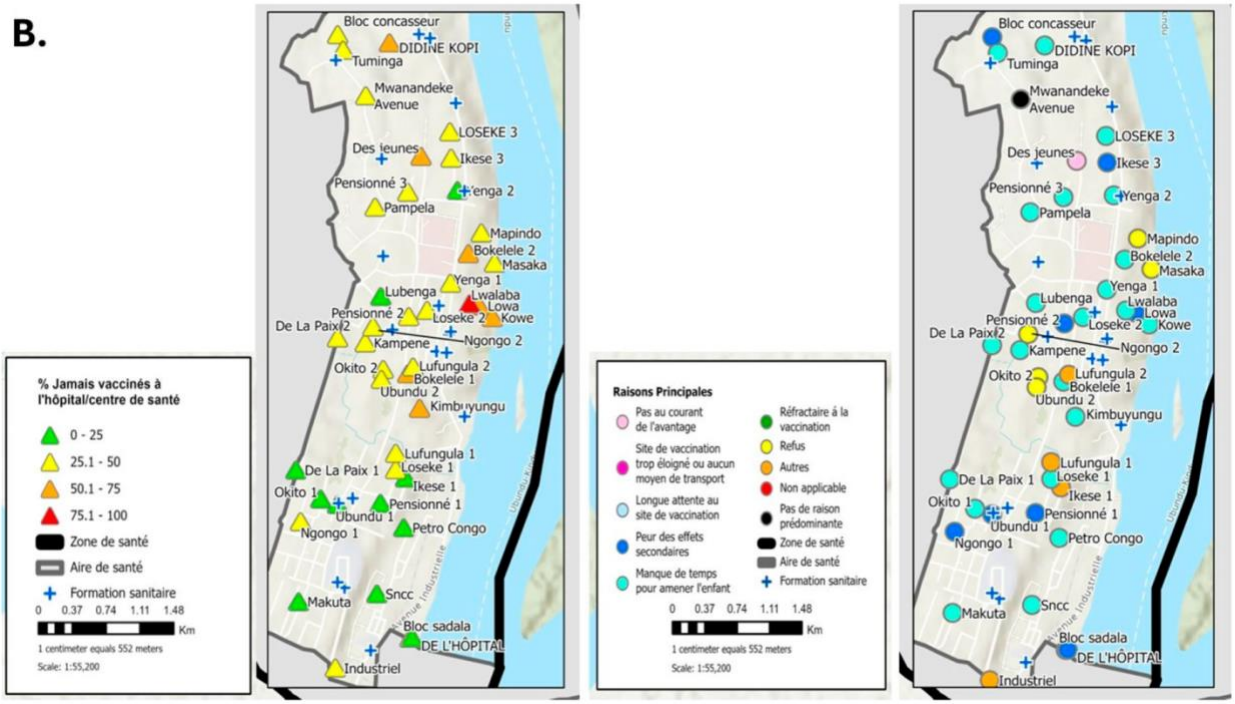

Figure 1: Linking Enumeration and Geospatial Data

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2. A Scalable Polio-EPI Synergy Model for Urban Immunization: Coverage Gains Following Workforce Integration in Lahore, Pakistan.

Hussain I, Majeed N, Khan A, Khan A, Umer M, Ansari U, et al.

Vaccines (Basel). 2026 Feb 26;14(2).

PubMed ID: 41746087

ABSTRACT

Background: Large urban centers in low- and middle-income countries (LMICs) often have persistent pockets of under-immunized children, despite higher overall vaccination coverage than rural areas. Lahore, a megacity in Pakistan, had the lowest rate of fully immunized children in Punjab province as of 2022 (70%), partly due to challenges in its urban slums. In 2023, an innovative intervention was implemented, utilizing Pakistan's extensive polio eradication workforce to identify and reach children who were missing routine vaccinations. Objective: The objective was to assess changes in routine immunization coverage during a pre-post evaluation period in which polio campaign workers were engaged to support routine immunization among under-immunized urban populations in Lahore. Methods: A special outreach strategy engaged polio vaccination teams to conduct door-to-door visits of children aged 12-23 months, recording each child's routine immunization status. These data were integrated into the electronic health system and provided to Expanded Programme on Immunization (EPI) staff for targeted follow-up. Two cross-sectional household surveys of caregivers of children aged 12-23 months were conducted: a 2022 baseline survey and a 2023 follow-up survey conducted six months after implementation. Both surveys used two-stage cluster sampling and WHO-standard immunization coverage methods, with vaccination status verified using cards or caregiver recall. Results: A total of 773 children were surveyed at baseline and 780 at endline. Full immunization coverage increased from 69.8% (CI: 64.13-74.98) to 85.1% (CI: 81.01-88.51). Partial immunization declined from 26.9% (CI: 22.37-31.92) to 14.5% (CI: 11.27-18.50), and the proportion of children not vaccinated at all dropped from 3.3% (CI: 1.92-5.60) to 0.3% (CI: 0.11-0.98). Penta-3 coverage improved from 83.2% (CI: 78.65-87.04) to 94.1% (CI: 91.15-96.07), and Measles 1 from 76.9% (CI: 71.80-81.40) % to 92.1% (CI: 88.71-94.56). Immunization card retention increased from 69.9% (CI: 64.15-75.16) to 84% (CI:81.19-86.94). Improvements were observed across all socio-demographic groups, with a higher impact in peri-urban clusters and low socio-economic groups, and all remained statistically significant. Conclusions: Our findings showed improvements in routine immunization coverage in urban Lahore between 2022 and 2023. This period coincided with district-wide implementation of a polio worker outreach strategy as well as the broader post-COVID-19 recovery of immunization services. This study lacked a control group; therefore, the findings indicate a temporal association occurring during the post COVID-19 recovery period, rather than definitive evidence of causal impact. Nonetheless, integrating the workforce of the polio program into routine

immunization could be a promising programmatic strategy to close immunization gaps in urban areas.

WEB: 10.3390/vaccines14020167
IMPACT FACTOR: 3.4
CITED HALF-LIFE: 2.8

START COMMENTARY

This study evaluates changes in routine immunization coverage in Lahore, Pakistan, following an intervention from the Government of Punjab that leveraged the polio campaign workforce to strengthen routine immunization services. Polio campaign teams conducted house-to-house visits to identify children who were due for or had defaulted on routine vaccinations and compiled updated lists of these children. The study used a pre–post evaluation design with cross-sectional household surveys administered before and after implementation of the intervention.

A key mechanism of impact was the improved identification and tracking of defaulter children. In urban settings, Expanded Program on Immunization (EPI) vaccinators often struggle to accurately identify the number of children in their catchment areas and determine which vaccines they are missing, particularly in areas with high population mobility. By deploying polio workers to register all children under two years of age including their names, addresses, and vaccination status, the program created a comprehensive registry of the target population. Integrating the polio program's house-to-house strategy into routine immunization operations enabled district health authorities to plan outreach activities more precisely and follow up with under-immunized children.

The success of deploying this approach in other cities will depend on strong coordination between polio and routine immunization programs, effective data systems, and sustained monitoring. However, since the study used a pre–post design without a control district, causal inference is limited.

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3. Pathways to economically viable and sustainable vaccine manufacturing in LMICs.

Helble M, Nannei C, Friede M, Nicholson M.

Vaccine. 2026 Feb 15:128273.

PubMed ID: 41692648

ABSTRACT

In an effort to improve pandemic preparedness and health security, many low- and middle-income countries (LMICs) have launched initiatives to expand regional vaccine manufacturing. A number of elements relating to vaccine markets, production, value chains, and ecosystems significantly impact the ability to generate economically viable and sustainable vaccine manufacturing in LMICs. This paper provides an overview of vaccine manufacturing characteristics and global vaccine markets dynamics. Establishing vaccine manufacturing is a complex undertaking due to a variety of factors including intense competition, associated uncertainty regarding the ability to capture market share and substantial capital investment requirements. Substantive government commitment and investment are essential to ensure new local entrants compete successfully. In the medium to long run, the role of government should shift from supporting individual firms to strengthening local science ecosystems as this bolsters economic sustainability in three ways. First, investment in science promotes technological advances which can reduce production costs, e.g., through process innovations for vaccine manufacturing. Second, strong science ecosystems help to address the skills gap faced by manufacturers. And third, strong science ecosystems enable research and development of new vaccines that address local unmet needs and open new markets. Furthermore, developing a regional approach to vaccine manufacturing and procurement, with associated regulatory harmonization, is crucial to achieving economically viable and distributed vaccine manufacturing. Importantly, investment in research and development and fostering of regional collaborations drives innovation, feeding into new product discovery and consequently a strong pipeline of new vaccine products, driving economically sustainable regional vaccine manufacturing. This offers the potential to prevent endemic infectious diseases with significant socioeconomic and health burden or to develop therapeutic vaccines, generating regular interpandemic demand for regional vaccine manufacturers, consequently sustaining capacity retention and associated pandemic preparedness.

WEB: 10.1016/j.vaccine.2026.128273

IMPACT FACTOR: 3.5

CITED HALF-LIFE: 8.2

START COMMENTARY

This article discusses the challenges and policy considerations involved in establishing economically viable and sustainable vaccine manufacturing in LMICs. The authors state that expanding regional manufacturing capacity is essential for improving global pandemic preparedness and addressing the inequitable vaccine access highlighted during the COVID-19 pandemic. However, creating sustainable vaccine production systems requires overcoming significant market, technological, and regulatory barriers.

Compared with other pharmaceutical products, vaccines involve high development costs and complex regulatory requirements, which create a high barriers to entry for new manufacturers, particularly in LMICs. Additionally, vaccine markets are highly concentrated, with a small number of manufacturers controlling most of the global market. In LMICs, demand is largely driven by public-sector procurement and donor-funded programs, which makes predictable demand and purchasing systems crucial for manufacturers.

The authors also highlight the operational and technical challenges of vaccine production. Manufacturing facilities require substantial investment, specialized labor, strict quality control systems, and complex global supply chains. Technology transfer from established manufacturers is critical for enabling new producers to enter the market. Emerging technologies such as mRNA platforms may lower some barriers by enabling production to at smaller facilities and at faster scale-up.

The article emphasizes that government support and long-term policy commitment are necessary to build sustainable vaccine manufacturing ecosystems. Rather than focusing solely on supporting individual firms, governments should invest in broader scientific infrastructure, workforce development, and research and development. Regional cooperation is essential as it allows countries to purchase vaccines together, align regulations, and share costs, which helps lower expenses and reduce financial risk. The authors conclude that sustainable vaccine manufacturing in LMICs requires long-term commitment and collaboration across governments, industry, and international organizations.

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4. Safety, Reactogenicity, and Acceptability of a Placebo Dissolving Microneedle Patch in Children.

Kao C, Rostad C, Kettle P, Tippett A, Yi J, Yildirim I, et al.

J Pediatric Infect Dis Soc. 2026 Feb 20;15(2).
PubMed ID: 41626738

ABSTRACT

BACKGROUND AND OBJECTIVES: Dissolving microneedle patches (dMNPs) are a novel vaccine delivery method that may enhance acceptability and uptake. However, more data on their use in children are needed.

METHODS: We performed a single-center, unblinded study at Emory University to evaluate the safety, reactogenicity, and acceptability of placebo dMNPs applied to the skin of healthy infants and children. Each participant received a dMNP on day 1, and if well tolerated, could receive second and third dMNPs on day 8 applied to different anatomical sites. Solicited local and systemic adverse events (AEs) were collected for 7 days following dMNP application. Unsolicited AEs, serious adverse events (SAEs), and new-onset medical conditions (NOMCs) were collected through the study. Parents were surveyed to assess dMNP acceptability.

RESULTS: Between August 2018 and April 2019, 25 participants 6 weeks to 24 months of age were enrolled. All the participants received one placebo dMNP applied to the wrist, and 23/25 received second and third placebo dMNPs. Overall, dMNPs were safe and well tolerated, with minimal local reactogenicity. Systemic reactogenicity was generally mild but grade 2 and 3 irritability were observed. There were no SAEs or NOMCs following the application of any dMNP. Parental acceptability of dMNPs was high, and parents reported that having a dMNP administered by a healthcare worker would increase their likelihood of obtaining a recommended vaccine for their child.

CONCLUSIONS: Placebo dMNPs were safe and well tolerated in infants and young children. These data support the continued development of pediatric dMNP vaccines.

: In this study of 25 children, placebo dissolving microneedle patches (dMNPs) were safe and well tolerated. Parents reported that having a dMNP administered by a healthcare worker would increase their likelihood of obtaining a recommended vaccine for their children.

WEB: 10.1093/jpids/piag007
IMPACT FACTOR: 2.6
CITED HALF-LIFE: 4.7

START COMMENTARY

Dissolving microneedle patches (dMNPs) are a novel vaccine delivery method that may help address barriers associated with traditional needle-and-syringe vaccination, such as fear of needles, sharps disposal, and the need for trained healthcare personnel for administration. However, limited data exist on dMNP safety and acceptability in pediatric populations. This study evaluated the safety, reactogenicity, and parental acceptability of placebo dMNPs in infants and young children.

To assess parental acceptance, surveys were administered before and after dMNP application and during follow-up visits. Parents rated acceptability using a 0–10 likelihood scale and answered questions about vaccination knowledge, attitudes, and perceptions using Likert scales. They were also asked to compare their experience with dMNP administration to prior vaccination experiences with traditional syringe or intranasal administration and indicate their willingness to use dMNPs for their child, other children in the household, and themselves.

Placebo dMNPs were found to be safe, well tolerated, and strongly preferred by parents compared with needle-and-syringe and nasal spray vaccination. Parents consistently preferred dMNP administration by a healthcare provider rather than self-administration, which contrasts with adult studies where self-administration is often favored. Limitations include the small sample size, single-center design, lack of a control group, and inclusion of only healthy children. However, a strength of this study is the inclusion of parental perception data alongside safety outcomes in a pediatric population. Overall, these findings support further development of pediatric dMNP vaccines.
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5. Persistent measles immunization gaps in LMICs: Insights from the 2024 revision of the WHO/UNICEF estimates of National Immunization Coverage.

Mwale M.

Vaccine. 2026 Feb 19;75:128298.
PubMed ID: 41621116

ABSTRACT

BACKGROUND: Measles remains a leading vaccine-preventable killer in low- and middle-income countries (LMICs). Using the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) 2024 revisions, this article assesses measles-containing vaccine first-dose (MCV1) and second-dose (MCV2) coverage trends, inequities, and priority groups for targeted action.

METHODS: Data from 2019 to 2024 for 137 LMICs were analysed using descriptive statistics; Welch's t-tests and Wilcoxon rank-sum tests to compare fragile versus non-fragile states; Gini coefficients for inequality; k-means clustering (k = 4) on coverage, MCV1-to-MCV2 dropout, change, unvaccinated counts, and fragility; and bounded linear models to project MCV1 to 2030.

RESULTS: In 2024, mean MCV1 coverage was 79.2% (95% CI: 76.8-81.6)-below the 95% threshold-with fragile LMICs at 68.5% versus 87.4% in non-fragile LMICs (difference - 18.1 percentage points; $p < 0.001$). MCV2 gaps were larger (-26.9 percentage points; $p < 0.001$). DTP1-based zero-dose prevalence was 20.8%, with 15.6 million children unvaccinated for MCV1 and 22.4 million for MCV2; West and Central Africa accounted for 7.2 million MCV1-unvaccinated (46.2%). Inequality rose (Gini 0.22 → 0.25, 2019-2024). Projections indicate MCV1 of 84.2% by 2030, with fragile LMICs off-track. Clustering identified four profiles: (1) very low coverage, high dropout, high fragility (22 countries); (2) high coverage, low dropout (44); (3) low coverage, severe dropout (31); and (4) low coverage, moderate dropout (40), each implying distinct priorities (conflict-adapted SIAs; sustaining gains; follow-up campaigns; expanding first-dose access).

CONCLUSIONS: Persistent and widening measles immunization gaps-especially in fragile settings-threaten IA2030's 90% coverage targets. Pairing the 2024 WUENIC revision with fragility-sensitive clustering and bounded projections provides a practical framework to prioritize equity-focused funding and operational strategies where need is greatest.

WEB: 10.1016/j.vaccine.2026.128298
IMPACT FACTOR: 3.5
CITED HALF-LIFE: 8.2

START COMMENTARY

This study examines measles vaccination coverage LMICs using the 2024 revision of the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC). The analysis focuses on first-dose (MCV1) and second-dose (MCV2) measles vaccine coverage from 2019–2024 and assesses coverage trends and inequities by fragility status. The findings show that measles vaccination coverage declined during the COVID-19 pandemic and has recovered slowly. Global MCV1 coverage fell from 86% in 2019 to 81% in 2021 before rising to 84% in 2024 which is still below the 95% threshold required for herd immunity (Figure 1). Recovery has been uneven across regions, with Sub-Saharan Africa and South Asia lagging behind Europe and the Americas. Many fragile states remain below 70% coverage, and projections suggest average coverage may remain below elimination thresholds by 2030. The study emphasizes the need for targeted, equity-focused strategies tailored to different country contexts, including conflict-adapted delivery in fragile settings, improved follow-up systems to reduce dropout between doses, and expanded outreach where access remains limited. Limitations include reliance on national-level aggregate data, which may mask subnational disparities, and projections based on linear trends that may not fully capture future changes in immunization systems. A strength of the study is its use of updated global coverage estimates and multi-indicator clustering to identify policy-relevant country groupings.

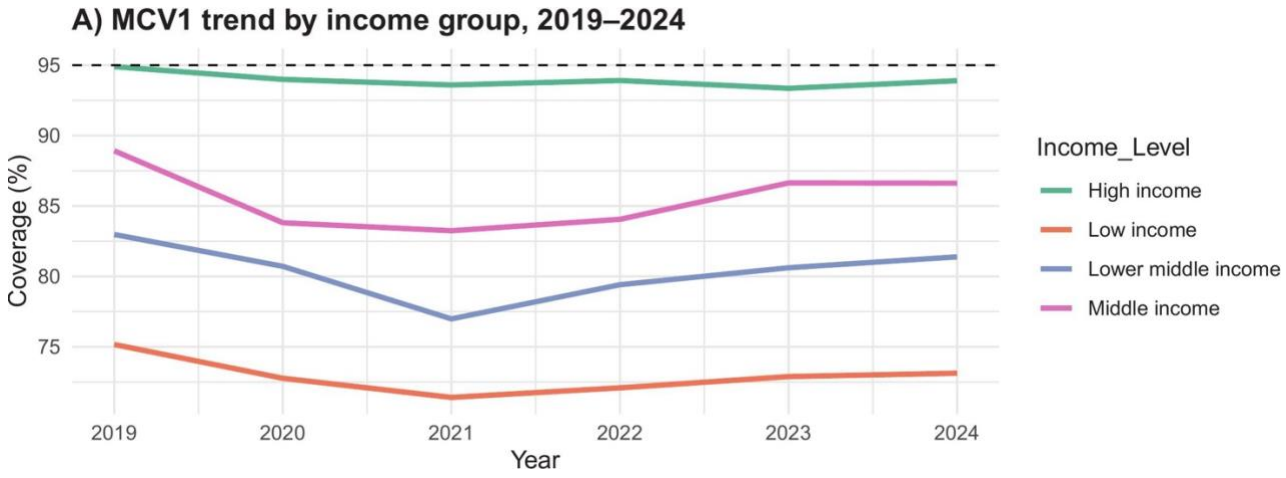

Figure 2: MCV1 trend by World Bank income group, 2019–2024

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6. Integrating infodemiology and infodemics management to address antimicrobial resistance and vaccine hesitancy challenges in Nigeria/Africa.

Chigozie V, Nnamani M, Igwe K, Ogbonna B.

J Commun Healthc. 2026 Jan 30:1-23.

PubMed ID: 41614609

ABSTRACT

BACKGROUND: Antimicrobial resistance (AMR) and vaccine hesitancy (VH) are significant public health threats in Nigeria/Africa, due to limited healthcare infrastructure and health literacy, thus encouraging misinformation, which further exacerbates these issues.

METHODS: This review examines recent literature to explore how Infodemiology and Infodemics management can be integrated into strategies addressing AMR and VH in Nigeria and Africa. A narrative review methodology was employed, sourcing studies mostly from 2020 onwards to ensure contemporary relevance.

RESULTS: Infodemiology offers tools for addressing the dual public health threats of AMR and VH in Nigeria/Africa. Evidence reveals AMR behaviors are strongly influenced by misconceptions about antibiotics, such as their efficacy against viral infections, perpetuated by social media and word-of-mouth misinformation. Similarly, VH is fueled by cultural beliefs and mistrust in health systems, amplified during the COVID-19 pandemic, where myths about infertility and harmful ingredients led to skepticism. Infodemiology enables real-time tracking of misinformation trends through digital tools, allowing health authorities to identify hotspots and intervene with targeted campaigns.

CONCLUSION: Integrating infodemiology into AMR and VH management strategies enhances public health outcomes by addressing misinformation at its roots and promoting evidence-based practices. By leveraging digital tools and engaging trusted local figures, health systems can foster trust and literacy among communities. African governments must invest in digital health infrastructure, establish supportive policies, and foster partnerships with social media platforms to sustainably manage infodemics. These strategies are ivotal for reducing AMR and increasing vaccine acceptance, ultimately safeguarding health across human, animal, and environmental domains.

WEB: 10.1080/17538068.2026.2623348

IMPACT FACTOR: 2.2

CITED HALF-LIFE: 7.1

START COMMENTARY

Infodemiology refers to the idea that information, similar to infectious diseases, can spread rapidly and influence public health outcomes. It examines patterns of information dissemination from both online and offline sources to support evidence-based public health interventions. This review explores the role of infodemiology in addressing antimicrobial resistance (AMR) and vaccine hesitancy (VH), particularly within Nigeria and other African countries.

Infodemiology can play an important role in understanding and managing these challenges because both AMR and VH are strongly influenced by misinformation. For example, AMR often results from inappropriate antibiotic use driven by common misconceptions, such as the belief that antibiotics can cure viral infections or act as contraceptives. These myths contribute to antibiotic misuse and facilitate the development of resistance. By tracking the spread of such misinformation and identifying the populations most affected, infodemiology provides a targeted approach to combating AMR-related misinformation.

Similarly, infodemiology helps address vaccine hesitancy by identifying misinformation related to vaccine safety, ingredients, and effectiveness. During the COVID-19 pandemic, widespread misinformation about vaccine side effects and infertility concerns contributed to lower vaccine uptake in many African countries. Monitoring these narratives enables public health authorities to design targeted interventions that address specific community concerns.

Practical integration of AMR and VH interventions has already been demonstrated in Nigeria. For example, community immunization campaigns in Plateau State incorporated AMR education sessions to improve public understanding of antibiotic misuse while also increasing vaccine acceptance. Additionally, some state health authorities distributed informational materials during COVID-19 vaccination campaigns that addressed both pandemic prevention and antibiotic stewardship. Findings suggest integrating infodemiology into AMR and VH mitigation strategies allows health authorities to monitor misinformation in real time, design targeted communication campaigns, and promote evidence-based health behaviors.

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7. Stakeholder perceptions of political and economic factors influencing vaccination in two States with a high burden of zero-dose children in Nigeria.

Akande T, Bolarinwa O, Salaudeen G, Dahab M, Adesoro O, Khogali A, et al.

Health Policy Plan. 2026 Jan 27.

PubMed ID: 41588659

ABSTRACT

Globally, an estimated 22.7 million children are unimmunized or “zero-dose” (ZD), with 3.1 million in Nigeria. The political and economic environment plays a critical role in influencing the number of ZD and under-immunized (UI) children. We explored stakeholder perceptions of the political and economic context of vaccination services in Kano and Lagos States, two Nigerian states with a high number of ZD children. We conducted stakeholder mapping, followed by key informant interviews with 84 state, local, and community informants responsible for or influential in immunization. Transcripts were analyzed using a reflective thematic framework approach. We describe the multi-level network of domestic and international actors characterizing Nigeria’s immunization policymaking and implementation landscape. Respondents perceived a strong and mutual political commitment by all actors involved in routine immunization. The pivotal role of local influencers further reinforced this commitment, from traditional to religious leaders, in improving uptake in challenging settings. Knowledge of national policies, and thus, perception of their adequacy in addressing under-immunization, was weakest among participants working at the local and community levels. Other reported barriers to policy implementation included bureaucratic delays in fund disbursement, outdated policies, slow dissemination of policies to local levels, and inadequate policy provisions for funding and staffing at the local level. To enhance equitable immunization coverage in Kano and Lagos, our findings suggest a need for meaningful engagement of community actors in policy development, timely policy revisions, and the establishment of mechanisms for expedited fund disbursements and addressing funding shortfalls at the local levels.

WEB: 10.1093/heapol/czag010

IMPACT FACTOR: 3.1

CITED HALF-LIFE: 7.8

START COMMENTARY

This study explored how immunization stakeholders perceive the political and economic factors shaping vaccination services in Kano and Lagos, Nigeria, two regions with a high burden of zero-dose children. The researchers used a qualitative design and conducted key informant interviews with stakeholders at the national, state, local, and community level. The study found that Nigeria’s immunization system involves a complex network of actors across national, state, local, and

community levels, and that stakeholders generally perceived strong political commitment to routine immunization.

Despite this complexity, several barriers to effective policy implementation were identified. A major concern in both states was delayed disbursement of funds for immunization activities. Although vaccines are provided free of charge, operational activities such as vaccine transportation and logistics were often disrupted by delayed budget releases and slow bureaucratic processes. In Kano, some respondents emphasized that the main problem was not insufficient funding but rather delays in accessing approved funds. Inadequate funding and staffing at the local level, particularly in Lagos, were also seen as major constraints, with participants calling for stronger accountability to ensure resources reach frontline services efficiently.

Another key barrier, especially in Kano, was the persistence of outdated policies that failed to reflect current challenges, particularly in reaching zero-dose and under-immunized children. Some noted the rigidity of older policies made it challenging to update immunization programs and outreach activities to address the unique circumstances of various hard-to-reach populations. Respondents also highlighted slow dissemination of policies to local levels and limited involvement of community actors in policymaking. Findings show that while collaboration and commitment to immunization are strong, improving equitable coverage will require timely funding, updated policies, better local dissemination, and greater inclusion of local stakeholders in policy development.
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8. The role of HPV single-dose vaccination in expanding access in GAVI-supported countries during a period of supply constraints.

Stuart R, Theopold N, Miall N, Kobayashi E, Vernam S, Taskin T, et al.

Vaccine. 2026 Feb 19;75:128187.
PubMed ID: 41576708

ABSTRACT

BACKGROUND: Over 2023 and 2024, 19 of the countries that were supported by Gavi to purchase HPV vaccines adopted a single-dose HPV vaccination schedule. The goal of this study is to estimate the impact on vaccination access and the number of cervical cancers averted compared to a two-dose schedule.

METHODS: We estimated the population that could be targeted in countries supported by Gavi to purchase HPV vaccines. We used UNICEF shipment plans to identify the number of HPV doses shipped to each country in 2023 and 2024, plus information supplied by Gavi on the dose schedule implemented in each country and year, adjusting for vaccine wastage. We computed the number of girls that could have been reached, first assuming complete utilization of all shipped doses under a single-dose schedule, and second assuming a counterfactual scenario where all countries would have used a 2-dose schedule. We then compared this to country-reported data on the number of girls actually vaccinated. For each of the three scenarios we modeled the number of cervical cancers averted using HPVsim, a microsimulation model calibrated to each country.

FINDINGS: We calculate that the introduction of single-dose HPV vaccination in Gavi-supported countries would have allowed these countries to target 23.3M additional girls if all supply was utilized. Reported data on girls vaccinated indicates that in actuality an additional 18.5M girls were reached due to adoption of single-dose. We estimate that the use of single-dose schedule in 2023 and 2024 could have averted up to 370,000 (356,000-376,000) additional future cervical cancers if all supply had been utilized, and 297,000 (222,000-369,000) given actual utilization.

INTERPRETATION: The single-dose HPV vaccination strategy has had a substantial positive impact on cervical cancer elimination in context of supply constraints affecting low and middle-income countries.

WEB: 10.1016/j.vaccine.2025.128187
IMPACT FACTOR: 3.5
CITED HALF-LIFE: 8.2

START COMMENTARY

Since 2012, Gavi has supported HPV vaccines among eligible countries, but supply constraints and implementation challenges led to coverage below 10% in Gavi-supported countries until the WHO recommended a single-dose regimen in 2022 based on evidence of comparable protection to a multi-dose regimen. This recommendation improved vaccine supply and increased investment in HPV vaccination. This study seeks to determine how many additional girls aged 9-14 were vaccinated because of the adoption of a single-dose HPV schedule in Gavi-supported countries in 2023 and 2024. The study uses a microsimulation model called HPVsim to estimate how this increase in vaccinations could translate into future cervical cancer reductions.

The authors focused on 16 countries that used single-dose HPV vaccine regimens in 2023 and/or 2024 to create simulation models to estimate vaccine coverage and cervical cancer impact. From these models, when comparing single-dose regimens to a counterfactual scenario where HPV vaccination is a 2-dose regimen, findings show an estimated increase from 42%-73% of full vaccination among all girls aged 9-14 in the selected countries. This corresponds to approximately 297,000 cases of cervical cancer averted over the next century. Beyond improved coverage and cervical cancer prevention, the single-dose recommendation may offer additional benefits like reducing resources needed because of fewer service delivery requirements, lower vaccine and vial purchasing cost, reducing cold chain capacity requirements, and reducing the burden or target girls.

This analysis is limited by assuming that all doses would be allocated to girls in each country's target age cohort of 9-14 years when in reality the actual delivery likely reached girls from other age groups or boys. The study also assumed no prior vaccine stocks before January 2023 which could impact the precision of estimates for individual countries but would not change the overall impact of single-dose regimen adoption. Findings support that the widespread adoption of single-dose regimens has the potential to expand reach, improve coverage, and prevent hundreds of thousands of cancer cases. As countries implement and strengthen HPV programs, prioritizing single-dose administration could allow for broader reach and impact.

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9. The use of artificial intelligence in decreasing vaccine skepticism and hesitancy.

Wolf N, Nguyen N, Mejia R.

Curr Opin Pediatr. 2026 Mar 04;38(2):136-141.
PubMed ID: 41568433

ABSTRACT

PURPOSE OF REVIEW: Recent advances in artificial intelligence (AI) coincide with decreases in confidence in vaccines. This review examines studies that analyze and mitigate vaccine skepticism by implementing artificial intelligence strategies in various ways.

RECENT FINDINGS: Studies have explored public attitudes towards vaccines using AI to analyze language in social media postings and interactions, scrutinize AI responses to vaccine-related queries, and attempt to use AI to directly influence vaccine hesitancy. Findings show that AI can be effective in addressing vaccine hesitancy in various ways, including, but not limited to, directly interacting with vaccine-hesitant groups, identifying reasons for vaccine hesitancy, and predicting vaccine hesitancy among specific populations.

SUMMARY: AI will undoubtedly continue to evolve and improve over the coming years. Continued advances and new applications can help mitigate unwarranted vaccine hesitancy in a variety of ways, such as educating people with messaging tailored to end users or using AI to identify the specific concerns of vaccine-hesitant individuals and groups. It will require an integrative approach to a complex issue - vaccine hesitancy is not a monolith; there is a range of degrees of vaccine hesitancy, and various factors go into a person's vaccine knowledge and beliefs.

WEB: 10.1097/MOP.0000000000001546
IMPACT FACTOR: 2.5
CITED HALF-LIFE: 7.9

START COMMENTARY

Artificial intelligence (AI) is increasingly explored for its potential applications in healthcare to improve research and patient care. One emerging area of research focuses on how AI can help address vaccine hesitancy and increase public confidence in vaccination. Recent literature highlights the use of natural language processing to analyze vaccine-related discussions on social media platforms such as Twitter (X), Facebook, Reddit, and blogs, with most studies focusing on Twitter data. By mining social media content, researchers can identify public concerns and misinformation themes within different communities. This information can help public health organizations to better understand public sentiment and tailor communication strategies to improve vaccine uptake.

Studies using these data mining techniques consistently showed that reasons for vaccine hesitancy varied substantially across geographic regions and sociocultural groups. Common concerns include misinformation, fear of side effects, and lack of trust in institutions. Notably, findings showed that vaccine attitudes often change rapidly over short periods of time. For example, a study analyzing tweets in Brazil found that vaccine sentiment shifted weekly depending on current events, highlighting vaccine hesitancy as a dynamic outlook influenced by social and political factors. In addition to social media analysis, generative AI tools like chatbots have been used to interact directly with vaccine-hesitant individuals. Studies show that AI systems using motivational interviewing techniques can increase vaccine confidence compared with standard informational messaging.

This study shows that AI has promise in combating vaccine hesitancy, but continued development, investment, and careful oversight by experts are necessary to ensure these technologies provide accurate and trustworthy information.

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10. Strategies, interventions, and uptake of catch-up vaccination among adolescent and adult migrants, refugees, and internally displaced persons (IDPs) in low- and middle-income countries (LMICs): A systematic review.

Faijue D, Bouaddi O, Mackey K, Deal A, Cinar E, Morais B, et al.

Vaccine. 2026 Feb 19;75:128249.

PubMed ID: 41564840

ABSTRACT

BACKGROUND: Catch-up vaccination helps close immunity gaps among migrants, refugees and internally displaced people (IDPs) in low- and middle-income countries (LMICs). Despite immunisation life-course policies and global guidelines promoting catch-up vaccination of arriving migrants, vaccination strategies for adolescent and adult populations are poorly described. We synthesised evidence on catch-up vaccination strategies and interventions, delivery platforms, uptake and coverage, and contextual barriers and enablers in LMICs.

METHODS: We searched Embase, Medline, PsycINFO, Global Health, Web of Science and grey literature sources (including websites of international and national public health organisations and agencies) for primary studies and reports on catch-up vaccination strategies and interventions, delivery platforms, uptake and coverage, and contextual barriers and enablers targeting adolescents (9-18 years) and, or adults (≥19 years) in migrants (foreign-born, including refugees) and internally displaced people (IDPs; displaced within national borders) across 136 LMICs, (from January 1st 2000 to February 1st 2025; all languages). Study quality was accessed using ROBINS-I, CASP, AACODS and, AGREE II tools.

RESULTS: Thirty-seven records met the inclusion criteria (13 peer-reviewed, 24 grey literature), reporting catch-up vaccination activities across 16 LMICs. Most studies were conducted in Uganda (n = 6), Bangladesh (n = 4), Lebanon (n = 3), and Kenya (n = 3). Interventions reached ≥48,000 migrants, refugees, and IDPs (primarily Rohingya refugees in Bangladesh during COVID-19 catch-up campaigns). Populations targeted included mostly refugees (n = 16 studies; 43.2%), general migrants (n = 14; 37.8%), and IDPs (n = 5; 13.5%), with a smaller number involving mixed or other migrant groups (n = 4; 10.8%). The most frequently delivered vaccines were measles-rubella (n = 12; 32.4%), COVID-19 primary-series catch-up (n = 9; 24.3%), HPV (n = 6; 16.2%), polio OPV/IPV (n = 5; 13.5%), and Hepatitis B (n = 3; 8.1%). Catch-up vaccine delivery most commonly occurred through primary care via opportunistic offers (n = 11) and mobile/outreach delivery (n = 11), with additional implementation in fixed posts in camps/settlements (n = 7), supplemental immunisation activities (SIAs) (n = 6), school-linked delivery (n = 5), and hospital/outpatient opportunistic vaccination (n = 4). High uptake (≥85%) was reported where access barriers were minimised (e.g., walk-in availability, extended hours) was paired with community or peer

engagement and simple recall systems (SMS or e-booking). Reported barriers included documentation/entitlement checks, language barriers, and fragmented or non-interoperable vaccination records.

CONCLUSIONS: Migrants remain at risk of under-immunisation, and greater emphasis must be placed on promotion of vaccination across the life-course for missed vaccines, doses, and boosters. Strengthening catch-up vaccination in adolescents and adults, and improving migration-disaggregated data and delivery systems, are urgently needed.

WEB: 10.1016/j.vaccine.2026.128249
IMPACT FACTOR: 3.5
CITED HALF-LIFE: 8.2

START COMMENTARY

This systematic review synthesizes evidence on catch-up vaccination strategies and interventions, delivery platforms, and coverage alongside barriers and facilitators for implementation among adolescent and adult migrants, refugees and internally displaced persons (IDPs) in low and middle income (LMIC) settings. Across 37 studies from 16 LMICs, the most effective strategies for improving vaccine uptake aligned migrant, refugee, and IDP populations with the national immunization schedule and then offered catch-up vaccination through platform-matched approaches including opportunistic vaccination through primary care, mobile service for IDPs, and fixed posts in refugee settlements alongside school-linked delivery. There was strong emphasis across studies on national schedule alignment and opportunistic primary care catch-up in HICs with refugee and migrant populations as well, highlighting primary-care integration as a key delivery route. Additionally, particularly in LMIC settings, low-friction access including co-administration, walk-in policies, and extended hours were frequently combined with outreach in camp and transit contexts to reduce missed opportunities. However, national immunization frameworks rarely included explicit provisions for adult and migrant refugees and catch-up vaccination was often implemented through one-time campaigns instead of through integration with routine health systems. Strengths of this study include its inclusion of a large sample of LMICs reporting catch-up vaccination activities representing diverse contexts. However, findings are limited by heterogeneity across denominators and outcome definitions across studies that limit comparisons across settings. The evidence is also concentrated between 2020-2025 which may disproportionately reflect pandemic-era vaccination catch-up priorities. The authors suggest that future research should prioritize evaluations of catch-up vaccination strategies using standardized outcome definitions and use mixed-methods implementation studies and program within routine services.

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11. Estimating the impact of decreasing vaccination response times for outbreaks of vaccine-preventable diseases in low- and middle-income countries.

Delport D, Muellenmeister A, Greig J, Abeysuriya R, Scott N.

BMC Glob Public Health. 2026 Jan 21;4(1):9.

PubMed ID: 41559840

ABSTRACT

BACKGROUND: The 7-1-7 targets are gaining traction as measurable targets for assessing a country's readiness to detect and respond to outbreaks of infectious diseases. The targets are outbreak detection within 7 days of emergence, notification to health authorities within 1 day, and key early response actions commenced within another 7 days. For outbreaks of measles, cholera, yellow fever, and meningococcal meningitis, we estimated the impact of initiating outbreak response immunisation (ORI) within 15 days of outbreak emergence, relative to the mean ORI response time for each disease in low- and middle-income countries (LMICs) since 2000. Initiating ORI within 15 days of outbreak emergence aligns with the 7-1-7 targets and supports outbreak containment.

METHODS: Using agent-based models for four diseases, a status quo and series of 'Faster response' scenarios were compared for simulated outbreaks of each disease, with a 15-day ORI response time as the minimum. The Starsim modelling framework was used to build the models to provide a single common software and analysis architecture for all models while having the flexibility to account for very different modes of transmission across the diseases being modelled. The models were calibrated to epidemiological and programmatic response data for 51 measles, 40 cholera, 24 meningococcal meningitis, and 88 yellow fever outbreaks in LMICs.

RESULTS: In a synthetic model population, a 15-day ORI response could avert: 80% of cases from cholera outbreaks relative to a historical response time of 105 days, 35% of cases from meningococcal meningitis outbreaks relative to a historical response time of 75 days, 0-35% of cases from yellow fever outbreaks relative to a historical response time of 105 days (depending on routine vaccine coverage and environmental suitability), and 0-55% of cases from measles outbreaks relative to a historical response time of 120 days (depending on routine vaccine coverage).

CONCLUSIONS: Improvements made to ORI response time could reduce disease burden and decrease the risk of large outbreaks of vaccine-preventable diseases in LMICs. Efforts to improve ORI timeliness should be prioritised to higher risk settings, and it was clear that even a slow vaccination response was beneficial relative to no response at all.

WEB: 10.1186/s44263-025-00239-6
IMPACT FACTOR: 3.6
CITED HALF-LIFE: 5.4

START COMMENTARY

This study estimates the impact of improving outbreak response immunization (ORI) timeliness for outbreaks of measles, cholera, yellow, fever, and meningococcal meningitis in LMICs. It evaluates ORI timelines down to a minimum of 15 days, aligned with the 7–1–7 framework which proposes detecting outbreaks within 7 days, notifying authorities within 1 day, and initiating a response within a further 7 days.

Across all four diseases, faster ORI responses reduced the size of simulated outbreaks, especially in higher risk setting with low routine immunization coverage, higher initial prevalence, or strong transmission. This pattern was weaker in lower-risk settings. ORI initiated within 15 days consistently averted more cases than historical response times observed in LMICs, where vaccination responses can take months. The findings support efforts to improve ORI timeliness but also note that meaningful benefits can be achieved through incremental reductions in response time even if the 7-1-7 target is not reached. For example, moving from very delayed responses toward 45 or 30 days could still represent substantial progress.

The authors note some limitations. The models were calibrated using outbreak datasets of varying sizes and are biased toward the most commonly observed outbreak patterns in LMICs. Overall, the results suggest that faster vaccine response, especially in high-risk settings, could substantially reduce disease burden and help guide prioritization of outbreak response strategies.

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12. Vaccine hurdles for children in war-torn Somalia: the result of post-campaign coverage survey 2025.

Salad A, Gedi M, Mire A, Duale H, Eltayeb A, Ali D, et al.

Confl Health. 2026 Feb 06;20(1):10.

PubMed ID: 41555439

ABSTRACT

BACKGROUND: The measles vaccine represents one of the most efficacious means of safeguarding pediatric populations against the measles virus. Empirical evidence consistently demonstrates that over 99% of recipients who complete the two-dose regimen achieve immunity to the disease. Despite this high efficacy, suboptimal vaccine coverage persists as a significant impediment to the containment and eventual eradication of measles. To augment immunization coverage, routine vaccination programs are often supplemented by second-dose opportunities administered through Supplemental Immunization Activities (SIAs), particularly in countries with a high measles burden. This study aims to evaluate the measles vaccination coverage attained after the nationwide SIAs in May 2025 as well as vaccination coverage prior to SIAs.

METHODS: This study was conducted from May 26th to June 5th, 2025. A two-stage cluster sampling design was utilized, where 938 clusters were randomly selected from a national sampling frame of 6,936. This sampling frame covered all accessible districts, villages, and nomadic areas throughout the country. The sample size was calculated using the WHO-2018 manual, resulting in the selection of 134 clusters and 1,780 households from each state, culminating in 12,832 interviews overall. A total of 355 interviewers, equipped with the KoboCollect app for digital data collection, conducted surveys. We calculated vaccine coverage during supplemental immunization activities (SIAs) and prior to SIAs (which means routine immunization). To calculate the national coverage, a survey weighting methodology was applied. Specific procedures were used to determine cluster and household weights, following the formula outlined in the WHO Vaccination Coverage Cluster Survey 2018. Both descriptive and inferential statistics were applied. Descriptive statistics, including frequency counts and proportions, enabled us to summarize the general attributes of the sample. Conversely, inferential statistics were used to estimate national vaccine coverage, featuring point estimates and confidence intervals (Wilson 95% Confidence Intervals), with the application of survey weights. Ethical approval was obtained from the Somali National University Ethical Committee.

RESULTS: Of 17,700 children across seven states, 46.5% were girls and 53.5% were boys. Most children (56.2%) lived in urban areas, followed by 25.8% in rural areas and 14.2% in nomadic areas. Additionally, 3.76% of children lived in Internally Displaced Persons (IDP) camps. Weighted coverage estimates indicate that 73% (CI: 68.14-77.3) of children in Somalia received the measles vaccine during SIAs. Regarding the regional variation of vaccine coverage, the highest coverage

was observed in Somaliland (87.4%, CI: 81,7-91.3) and Puntland (87.1%, CI: 82.7-90.5), while the lowest were found in Hirshabelle (48%, CI: 32.6-63.8) and Southwest (50%, CI: 40.4-59.7) states. In terms of geographic settlements, the nomadic population had the lowest measles vaccine coverage during SIAs (70.9%, CI: 57.8-81.3), and had the highest zero-dose children of 15.4% (CI: 8.9-25.2) compared to urban and rural populations. The national measles coverage prior to SIA was found to be 78,6% (CI: 74.6-82.09). The SIAs achieved a national coverage rate of 39.8% among children who had previously received no doses (zero-dose children) and 82% among those who had received at least one dose prior. The predominant reason for children not being vaccinated during the SIAs was a lack of awareness about the vaccination campaign.

DISCUSSION: The lowest national vaccine coverage and the highest proportion of zero-dose children were predominantly found in the Hirshabelle and Southwest states and among nomadic communities. This difference in vaccine coverage among states and communities is concerning and suggests the need for targeted intervention to address these gaps.

WEB: 10.1186/s13031-025-00727-4
IMPACT FACTOR: 3.4
CITED HALF-LIFE: 4.7

START COMMENTARY

This study summarizes results from a 2025 survey assessing measles vaccine coverage following national Supplemental Immunization Activities (SIAs) in Somalia and analyzes differences in coverage across states. The survey focused on children aged 6–59 months at the time of the SIAs, particularly those living in hard-to-reach areas.

After the SIAs, the national percentage of zero-measles dose children was 12.9%. The majority of these children were located in Hirshabelle and Southwest states, which are conflict-affected regions. Reasons for non-vaccination differed across states. In six states, the main reason was a lack of awareness about the vaccination campaign, while in Somaliland the most common reasons were the absence of a guardian or the child being unwell at the time of vaccination. The most commonly cited sources of vaccination information were community health workers (CHWs), followed by social mobilizers. CHWs are essential frontline personnel in routine vaccination efforts and play an important role in creating demand for childhood immunizations by linking community members with the formal healthcare system and engaging with communities, schools, and religious centers. CHWs were particularly active in providing vaccine information in states with higher vaccination rates, including Puntland and Somaliland.

The study found that approximately 40% of children who had previously received no vaccine doses were vaccinated during the 2025 SIAs. Limitations include the use of population estimates that may

not fully reflect demographic changes and the exclusion of 15 districts controlled by non-state actors, which limits the generalizability of the findings.

The authors recommend targeted outreach programs to identify and vaccinate zero-dose children in overlooked clusters, strengthening training and resources for CHWs, and implementing nationwide sensitization campaigns prior to SIAs using multiple communication channels to increase awareness and participation in vaccination campaigns.

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13. Health-economic impacts of age-targeted and sex-targeted Lassa fever vaccination in endemic regions of Nigeria, Guinea, Liberia, and Sierra Leone: a modelling study.

Smith D, Antony Oliver M, Holohan K, Street H, Torkelson A, Asogun D, et al.

Lancet Glob Health. 2026 Jan 10;14(2):e261-e271.
PubMed ID: 41519155

ABSTRACT

BACKGROUND: Lassa fever is an emerging zoonotic disease endemic to west Africa. Several vaccines aimed at preventing Lassa fever are currently under development, creating a need to assess how best to administer them once licensed for human use. We aimed to project the health-economic burden of Lassa fever from 2025 to 2037 across age and sex groups in subnational administrative divisions of west Africa with endemic Lassa mammarenavirus transmission and to estimate the cost-effectiveness of targeting Lassa vaccination to different risk groups.

METHODS: In this vaccine-impact modelling study, we developed a mathematical model using a zoonosis risk map and epidemiological data from recent and ongoing cohort studies to predict the health-economic burden of Lassa fever across age and sex groups in endemic regions. We simulated vaccination campaigns targeting different risk groups to estimate the cost-effectiveness of various strategies for Lassa vaccine administration. Threshold vaccine costs (TVCs), which represent the break-even price per dose of vaccine administered, were estimated in international dollars (INT$ 2023), accounting for health-care costs, productivity losses, and monetised disability-adjusted life-years (DALYs) averted by vaccination.

FINDINGS: Lassa fever was estimated to cause 6·23 (95% uncertainty interval (UI) 4·21-8·42) hospitalisations, 0·75 (0·48-1·10) deaths and 31·1 (17·7-52·2) DALYs per 100 000 person-years. Vaccine strategies targeting adolescents-adults aged 15-49, older adults aged 50 years and older, and women of childbearing age (WCBA) aged 15-49 years prevented, respectively, the most hospitalisations, deaths, and DALYs per 100 000 vaccine doses. Under base case assumptions, the most cost-effective strategy (greatest net monetary benefit) was untargeted vaccination for a vaccine costing INT$2 per dose, and targeting adolescents-adults at $5 per dose. At $10 per dose or more, none of the considered strategies were cost-effective. The highest TVC for a single-dose vaccine was estimated at $7·39 (95% UI 4·33-11·60) when targeting adolescents-adults, followed by $6·69 (4·17-9·85) when targeting older adults, $6·10 (3·56-9·74) when targeting WCBA, and $1·94 (1·10-3·10) when targeting children.

INTERPRETATION: Targeting of adolescents-adults appears to generate the greatest health-economic value per vaccine dose. However, the most cost-effective vaccination strategy will depend on vaccine price.

FUNDING: Coalition for Epidemic Preparedness Innovations.

WEB: 10.1016/S2214-109X(25)00450-4
IMPACT FACTOR: 18.0
CITED HALF-LIFE: 4.8

START COMMENTARY

This vaccine impact modelling study projected the health-economic burden of Lassa fever from 2025 to 2037 across age and sex groups in subnational areas of west Africa with endemic transmission and assessed the cost-effectiveness of targeting vaccination to different risk groups.

The model estimated baseline health and economic outcomes in the absence of vaccination and compared these with outcomes in vaccinated populations. The benefits of vaccination differed between groups because the risk of severe outcomes such as hospitalization, death, hearing loss, and pregnancy-related complications varies by age and sex. Although children experienced the highest number of Lassa virus infections, their infections were less likely to result in severe disease or death, meaning that vaccinating children prevented fewer costly health outcomes and was therefore the least cost-effective strategy. Untargeted vaccination was estimated to be the most cost-effective strategy when vaccine cost was low (INT$2 per dose), whereas targeting adolescents and adults aged 15–49 years was most cost-effective at INT$5 per dose. At INT$10 per dose or higher, none of the modelled strategies were cost-effective. Across multiple scenarios and sensitivity analyses, vaccinating adolescents and adults gave the best value for each vaccine dose, so prioritizing this group would likely have the greatest health-economic return if vaccine supply is limited.

A major strength of the study is that it provides the first detailed estimates of Lassa fever burden stratified by age and sex while comparing multiple vaccine-targeting strategies within a health-economic framework. However, an important limitation is that vaccine efficacy assumptions were hypothetical and no efficacy estimates or correlates of protection are available yet for Lassa vaccine candidates. Overall, this analysis offers important evidence to guide prioritization strategies for future Lassa vaccination programs.

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Additional Articles of Interest

1 Strategic resource allocation for malaria elimination in endemic settings: a systematic review of cost-effectiveness evidence. {Full Article}
2 Vaccination Coverage and Awareness on Hepatitis B Virus Among High School, College, and University Students of Rajshahi Division of Bangladesh: A Cross-Sectional Study. {Full Article}
3 From Awareness to ACTion Study: Improving Human Papillomavirus Knowledge, Screening, and Vaccine Uptake in Adolescent-Mother Pairs in the HOMINY study in Nigeria. {Full Article}
4 Social Media Peer-Driven Communication on Cervical Cancer and HPV Vaccine Among Female Youth in Nigeria. {Full Article}
5 Acceptance and the willingness to pay for human papilloma virus (HPV) vaccine: A systematic review. {Full Article}
6 Disparities and barriers to life-course vaccination in Ethiopia: Evidence from a household survey. {Full Article}
7 Vaccination Coverage and Factors Associated With Incomplete Vaccination Schedules in Children Under 5 in a Peripheral Area of the Federal District of Brazil. {Full Article}
8 Circulating genotypes of human papillomavirus in adult women of reproductive age from the Boeny region of madagascar: a cross-sectional study to explore needs and opportunities for HPV vaccination in the country. {Full Article}
9 Direct and indirect effects of distance from health facility on zero-dose children in Ethiopia: a cross-sectional secondary analysis of performance monitoring for action cohort I data, 2025. {Full Article}
10 Maternal satisfaction toward childhood immunization service and its associated factors in Mogadishu, Somalia. {Full Article}
11 Impact of digital supportive supervision (DiSS) on the extent of maternal and child healthcare service utilisation in India: a sequential mixed-methods quasi-experimental study. {Full Article}
12 Spatiotemporal distribution and determinants of immunization among children aged 12-23 months in Ethiopia: Using EDHS 2000, 2005, 2011, and 2016. {Full Article}
13 The impacts of COVID-19 on routine immunization for children in Rwanda. {Full Article}
14 Caregivers awareness, knowledge, attitudes, and perceptions towards malaria vaccine in Kole and Kwania Districts, Northern Uganda. {Full Article}
15 Evaluating the delivery costs and operational context of a single-dose human papillomavirus (HPV) vaccine regimen administered to a multi-age cohort of adolescent girls in Ethiopia. {Full Article}
16 Exploring drivers of childhood vaccine hesitancy among caregivers in Brazil and South Africa: A qualitative study. {Full Article}

17 Knowledge, awareness and practices regarding human papillomavirus vaccine amongst secondary school girls and mothers in North India. {Full Article}

18 Factors related to immunization uptake among the hill tribe and stateless children in northern Thailand: A mixed methods study. {Full Article}

19 Prevalence and determinants of full immunization among children under five in sub-Saharan Africa: A systematic review and meta-analysis (2013-2025). {Full Article}

20 7-year trend of timely hepatitis B birth dose vaccination coverage in The Gambia: a retrospective, population-based analysis. {Full Article}

Appendix

The literature search for the March 2026 Vaccine Delivery Research Digest was conducted on February 26, 2026. We searched English language articles indexed by the US National Library of Medicine and published between January 15, 2026 and February 14, 2026. The search resulted in 463 items.

SEARCH TERMS

((((“vaccine”[tiab] OR “vaccines”[tiab] OR “vaccination”[tiab] OR “immunization”[tiab] OR “immunisation”[tiab] OR “vaccines”[MeSH Terms] OR (“vaccination”[MeSH Terms] OR “immunization”[MeSH Terms])) AND (“logistics”[tiab] OR “supply”[tiab] OR “supply chain”[tiab] OR “implementation”[tiab] OR “expenditures”[tiab] OR “financing”[tiab] OR “economics”[tiab] OR “Cost effectiveness”[tiab] OR “coverage”[tiab] OR “attitudes”[tiab] OR “belief”[tiab] OR “beliefs”[tiab] OR “refusal”[tiab] OR “Procurement”[tiab] OR “timeliness”[tiab] OR “systems”[tiab])) OR “vaccine delivery”[tiab] OR “vaccination refusal”[MeSH Terms] OR “immunization programs”[MeSH Terms] OR “zero dose”[tiab] OR “unvaccinated children”[tiab] OR “gavi”[tiab]) NOT (“in vitro”[tiab] OR “immune response”[tiab] OR “gene”[tiab] OR “chemistry”[tiab] OR “genotox*”[tiab] OR ”sequencing”[tiab] OR ”nanoparticle*”[tiab] OR “bacteriophage”[tiab] OR “exome”[tiab] OR “exogenous”[tiab] OR “electropor*“[tiab] OR”systems biology”[tiab] OR “animal model”[tiab] OR “cattle”[tiab] OR “sheep”[tiab] OR “goat”[tiab] OR “rat”[tiab] OR “pig”[tiab] OR “mice”[tiab] OR “mouse”[tiab] OR “murine”[tiab] OR “porcine”[tiab] OR “ovine”[tiab] OR “rodent”[tiab] OR “fish”[tiab])) AND “English”[Language] AND 2026/01/15:2026/02/14[Date - Publication]