

VACCINE DELIVERY RESEARCH DIGEST

UNIVERSITY OF WASHINGTON STRATEGIC ANALYSIS,
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1. [Evaluating a Behavioral Insights-Informed Social Media Campaign to Increase HPV Vaccination During Routine Immunization in Nigeria.](#)

Agha S, Nsofor I, Zeng W.

Vaccines (Basel). 2026 Apr 27;14(4).

PubMed ID: 42042804

ABSTRACT

Background: Cervical cancer remains a leading cause of cancer-related deaths among women in Nigeria. In 2023, the Government of Nigeria, with support from Gavi and partners, introduced the single-dose human papillomavirus (HPV) vaccine through a phased, school-based campaign. The first phase was launched in October 2023 across 16 states, followed by a second phase in May 2024 that expanded coverage to the remaining states and the Federal Capital Territory. This study evaluates the additional impact of a behavioral insights-informed digital intervention, comprising a social media campaign amplified by trained pharmacists serving as local influencers, implemented in 2025 to increase acceptance and uptake of HPV vaccination during routine immunization. Methods: A pre-test/post-test quasi-experimental design with a control group was implemented in three Nigerian states in 2025 to assess the additional impact of a behavioral insights-informed social media campaign designed to strengthen social approval for HPV vaccination, increase awareness of vaccination locations, and reinforce caregivers' recognition of their adolescent daughters' desire to be vaccinated. Messages were amplified by trained pharmacists who served as local influencers. Caregivers of adolescent girls aged 9-17 years were recruited online through targeted Facebook and Instagram advertisements during Nigeria's transition from school-based HPV vaccination campaigns to routine immunization. Caregivers in treatment areas were exposed to geofenced social media advertisements on Facebook and Instagram and pharmacist counseling, while those in control areas were not. Logistic regression models using a difference-in-difference approach estimated the campaign's effect on HPV vaccination, controlling for caregiver and adolescent characteristics. Additional statistical models assessed the campaign's impact on caregivers' motivation and ability—key drivers of behavior according to the Fogg Behavior Model. Results: HPV vaccination increased at a significantly higher rate in the treatment compared to the control area. The adjusted odds of an adolescent girl being vaccinated were 1.48 times higher in the treatment area at follow-up (95% CI: 1.14-1.92). Adjusted marginal effects indicated that exposure to the campaign increased the probability of vaccination by 8.9 percentage points relative to the control group. The rate at which caregivers' motivation (aOR = 1.31, 95% CI: 1.00-1.70) and ability (knowing where to get vaccinated: aOR = 1.38, 95% CI: 1.07-1.79; ease of vaccination: aOR = 1.59, 95% CI: 1.22-2.06) increased was

also higher in the treatment area. There was no relative increase in intervention versus control groups in factual knowledge regarding HPV vaccination. Conclusions: A behavioral insights-informed social media campaign in which pharmacists served as influencers was associated with higher HPV vaccine uptake during routine immunization. The higher rate of vaccination observed in intervention areas was associated with higher rates of caregiver motivation and ability but not with higher rates of caregiver knowledge. These findings are consistent with the potential of behavioral insights-informed digital campaigns to complement routine immunization efforts and improve vaccine uptake in low- and middle-income countries.

WEB: [10.3390/vaccines14040328](https://doi.org/10.3390/vaccines14040328)

IMPACT FACTOR: 3.4

CITED HALF-LIFE: 2.8

START COMMENTARY

This study evaluated the impact of a 2025 social media campaign that used local pharmacists as influencers to promote HPV vaccination among adolescent girls in Nigeria. The intervention aimed to increase HPV vaccine uptake among girls aged 9–14 years through a combination of localized digital outreach and direct pharmacist engagement.

Caregivers of adolescent girls aged 9–17 years were recruited online through Facebook and Instagram advertisements. The adjusted probability of HPV vaccination in treatment areas increased from 0.55 at baseline to 0.64 at follow-up and did not change substantially in the control area. The subsequent adjusted difference-in-difference estimate suggested 9 percentage-point increase in vaccination probability.

The authors highlighted limitations of this study including reliance on self-reported vaccination status and recruitment through social media platforms, which may have excluded caregivers without internet access. Despite these limitations, the findings demonstrate the potential of digital communication strategies to strengthen routine immunization programs and increase vaccine demand in low- and middle-income countries.

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2. [Modernizing Vaccination Data System: Design, Development, and Deployment of a Digital Vaccination Registry in Liberia, 2023-2025.](#)

Adeoye O, Tchoualeu D, Konwloh P, Abdu H, Coleman C, Theophile A, et al.

Vaccines (Basel). 2026 Apr 27;14(4).

PubMed ID: 42042799

ABSTRACT

BACKGROUND: Liberia modernized vaccination data systems in 2023-2025 by piloting a District Health Information System (DHIS2)-based Digital Vaccination Registry (Electronic Immunization Registry, EIR) to address the limitations of paper-based workflows and of a proprietary COVID-19 electronic platform (offline gaps, lack of unique identifiers, performance issues and cost).

OBJECTIVE: To assess a pilot platform by evaluating training, registry use and device management, utility for routine immunization, vaccine logistics and Adverse Events Following Immunization (AEFI) data, and routine immunization data quality in the DHIS2 mobile application compared with paper registers.

METHODS: Using the Public Health Informatics Institute's Collaborative Requirements Development Methodology, stakeholders defined requirements, trained users and implemented a pilot. Mixed methods were used; a mini data audit was performed, and qualitative data were collected across 19 facilities in Montserrado, Gbarpolu and Grand Bassa. Seventy-eight health workers were trained to use the DHIS2 mobile application.

RESULTS: The future state design replaces paper aggregation steps with real-time mobile entry to a national registry and dashboard. Dual entry persisted during high-volume periods. The mini data audit found discrepancies between facility paper registers and DHIS2-EIR entries for child enrollment data and, Bacillus Calmette Guérin and Diphtheria-Pertussis-Tetanus dose administration records. Participants attributed these discrepancies to internet and device problems and challenges navigating the system. Participants requested a training manual, improved connectivity at point of service, integration with supportive supervision, additional staff and system features (field to record hospital number, automated next visit date, and vaccination status prompts).

CONCLUSIONS: Lessons from the pilot will inform country-wide implementation, including planned linkage with electronic birth and death registration to enable a unique child identifier and reduce manual errors and delays.

WEB: [10.3390/vaccines14040323](https://doi.org/10.3390/vaccines14040323)

IMPACT FACTOR: 3.4

CITED HALF-LIFE: 2.8

START COMMENTARY

The District Health Information System version 2 (DHIS2) is a popular, open-source platform that supports digital health information systems, including electronic immunization registries (EIRs) in low-resource settings. Liberia piloted a DHIS2-based EIR from 2023–2025 to improve routine immunization data management and replace inefficient paper-based workflows. Stakeholders from Liberia’s Ministry of Health and partner organizations assessed existing workflows, identified system needs, and selected DHIS2 because it aligned with Liberia’s existing digital health infrastructure. The new system aimed to enable real-time mobile data entry at health facilities and to reduce delays caused by manual reporting while improving access to immunization data for decision-makers.

The DHIS2 platform pilot included trainings for health workers, key informant interviews among stakeholders in participating counties, and a quantitative analysis using a mini data-audit that compared routine immunization totals in paper registries compared to the new digital platform. Participants reported that the digital registry improved record management and reduced time spent handling paper forms. However, several implementation challenges were noted among health care workers. Internet connectivity issues, device malfunctions, limited technical support, and staffing shortages contributed to substantial discrepancies between paper and electronic records. Many vaccinators continued using paper records during busy periods before later transferring data into the system. Findings from this study suggest that Liberia’s pilot demonstrated the potential of digital immunization systems while emphasizing the need for stronger infrastructure and continued training for users.

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3. [Artificial intelligence at the frontlines: Emerging infectious and parasitic diseases in the digital era.](#)

Nasr D, Alraee N, Katbi S, Kouli N, Asaad N, Ismail M, et al.

New Microbes New Infect. 2026 Apr 24;71:101751.

PubMed ID: 42027758

ABSTRACT

Emerging infectious diseases are one of the most significant threats to global health, driven by many factors such as zoonotic spillovers, climate change, globalization, and antibiotic resistance. While a great deal of attention is focused on viral and bacterial pathogens (e.g., SARS-CoV-2, influenza, multidrug-resistant TB), parasitic diseases contribute to global morbidity and mortality that remain largely unrecognized. The recent development of artificial intelligence has introduced powerful computational tools that can integrate large and complex datasets to assist with infectious disease surveillance, diagnosis, outbreak prediction, and drug discovery. Artificial intelligence encompasses machine learning, deep learning, and natural language processing techniques, which allow for automated pattern recognition and predictive modeling based on very complex biomedical data sets. This narrative review explores the recent advancements in AI applications in four key areas related to infectious disease: disease surveillance and early-warning systems; diagnostics and clinical decision support; outbreak prediction and modeling; and drug/vaccine discovery. Emphasis will be placed on applications of AI to parasites such as malaria, leishmaniasis, and soil-transmitted helminths. In addition, we discuss several challenges related to AI implementation in endemic regions including limited data availability, algorithmic bias, limited infrastructure in endemic areas, and ethical issues regarding data governance. Integrating AI into the One Health framework of linking human, animal, and environmental health will potentially enhance global preparedness to respond to emerging infectious and parasitic diseases.

WEB: [10.1016/j.nmni.2026.101751](https://doi.org/10.1016/j.nmni.2026.101751)

IMPACT FACTOR: 5.4

CITED HALF-LIFE: 4.6

START COMMENTARY

This review examines current literature on the use of artificial intelligence (AI) in emerging zoonotic and parasitic diseases. Advances in AI have improved infectious disease surveillance by enabling real-time analysis of large datasets. Digital epidemiology uses natural language processing to extract information from online news reports, social media, and public health records, allowing outbreaks to be identified earlier than with traditional surveillance methods. For example, AI-supported platforms like HealthMap and BlueDot combine machine learning, global news monitoring,

air travel data, and social media analysis to detect early warning signals of disease outbreaks. Notably, these systems identified unusual pneumonia clusters in Wuhan before the World Health Organization released its first COVID-19 alert.

AI is also increasingly used to predict the geographic spread of vector-borne and parasitic diseases. By integrating environmental factors such as temperature, rainfall, and vegetation data from satellites, AI-driven geospatial models can identify regions at high risk for disease transmission. These approaches have been successfully applied to estimate malaria incidence and distribution in endemic regions.

Despite these benefits, there are notable limitations to implementing AI tools. Many AI models rely on datasets from high-income countries and may not be sufficiently applicable in low-resource endemic settings. Challenges such as limited digital infrastructure, fragmented surveillance systems, and inconsistent data sharing also limit implementation. Collaboration among epidemiologists, clinicians, data scientists, and policymakers is essential to ensure the responsible and equitable use of AI in global health

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4. [Africa's Struggle to Meet Global Pandemic Influenza Immunization Targets: Lessons for Public Health Policy and Preparedness-A Focus on Ghana.](#)

Salifu Y, Lasong J, Dasoberi I.

Health Sci Rep. 2026 Apr 21;9(4):e72228.

PubMed ID: 42005620

ABSTRACT

BACKGROUND: Influenza remains a significant yet under-prioritized public health challenge in Africa, where unique hurdles such as limited surveillance, variable seasonal patterns, and under-resourced health systems constrain effective prevention and control. This commentary provides a detailed analysis of the influenza landscape, with a focused case study on Ghana, to elucidate the barriers to achieving global immunization targets.

METHODS: We review the substantial morbidity and mortality burden attributable to influenza in Africa, drawing on recent estimates and modeling studies. The manuscript systematically examines the evolution of Ghana's influenza epidemiology, the current state of its surveillance strategies, and the fragmented nature of its vaccination policies and implementation. Through comparative analysis with other African nations like South Africa, Egypt, and Morocco, we highlight successful strategies in integrating surveillance with data-driven policy and legal frameworks.

RESULTS: The analysis identifies critical gaps, including the acute shortage of locally representative epidemiological data, weak regulatory environments for vaccine deployment, pervasive vaccine hesitancy, and fragile supply chains. By synthesizing lessons from Ghana's Expanded Program on Immunization and its COVID-19 response, we propose a multi-pronged, context-sensitive roadmap for strengthening influenza preparedness. This roadmap emphasizes the imperative of investing in robust, digitally integrated surveillance, enacting supportive legal instruments, launching targeted community engagement to build vaccine confidence, and pursuing regional vaccine manufacturing partnerships.

CONCLUSIONS: Strengthening seasonal influenza programs is not only crucial for reducing the annual disease burden but also serves as an indispensable foundation for building resilient health systems capable of mitigating future pandemic threats, directly contributing to the attainment of Sustainable Development Goal 3 (Good Health and Well-being).

WEB: [10.1002/hsr2.72228](https://doi.org/10.1002/hsr2.72228)

IMPACT FACTOR: 2.1

CITED HALF-LIFE: 2.0

START COMMENTARY

This commentary examines Ghana's influenza epidemiology, surveillance systems, vaccination, and public health preparedness while drawing lessons from African countries with similar socioeconomic contexts and influenza epidemiology. While Ghana has an established national influenza vaccination policy, implementation is weak because policies lack dedicated state funding or enforcement systems. Unlike vaccines in Ghana's Expanded Program on Immunization (EPI), seasonal influenza vaccines are not procured for public distribution which leads to low vaccine uptake and inequitable access.

Findings identify major barriers to effective influenza vaccination programs in Ghana, including lack of government commitment for financing, unreliable vaccine supply chains, and widespread vaccine hesitancy. Regarding vaccine hesitancy, the authors state many people in Ghana perceive influenza as a mild and self-limiting illness that doesn't necessitate annual vaccination. Vaccine uptake is also hindered by misconceptions about vaccine safety, fear of side effects, misinformation spread through social media and community networks, and limited trust in health authorities.

This study also highlights lessons learned from South Africa, Egypt, and Morocco. For example, the Egyptian government has integrated influenza surveillance into its national system and uses that data to better understand burden across severity levels. Morocco has enhanced surveillance through digital health infrastructure and has developed methods for establishing seasonal and alert threshold through a centralized data-sharing platform. Common factors for success in these countries are political commitment demonstrated through resource allocation, investment in surveillance and laboratory infrastructure, data-informed decision making, and supportive legal and regulatory backing.

Limitations of this study include reliance on secondary data and the lack of robust local influenza burden estimates. A key strength is the policy-oriented analysis that integrates epidemiological evidence with comparable recommendations. The authors suggest that Ghana should shift from viewing influenza as a seasonal concern to recognizing it as a persistent public health threat. Sustained investment in surveillance, vaccine access, and public trust-building will be essential for strengthening national influenza control.

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5. [Digital vaccines for immunization equity: an approach to strengthen vaccine delivery and public trust in low- and middle-income countries.](#)

Othman Z, Ahmed M, Okesanya O, Musa S, Lucero-Prisno D.

JAMIA Open. 2026 Apr 14;9(2):ooag045.

PubMed ID: 41978684

ABSTRACT

BACKGROUND: Global immunization efforts still face major inequities and declining vaccine confidence, leaving millions of children in low- and middle-income countries unvaccinated or under-vaccinated.

OBJECTIVES: This article aims to discuss “digital vaccines,” including SMS reminders, mobile apps, electronic immunization registries, gamification, and virtual reality education, as practical complements to routine immunization services.

RESULTS: Using an organizing framework focused on access, equity, and trust, we highlight how digital tools can reduce missed appointments, strengthen follow-up for zero-dose children, improve data quality for planning, and support transparent and culturally responsive communication to counter misinformation. We also outline the barriers that limit equitable impact, including digital divides, gender gaps in phone access, fragmented information systems, limited financing, and concerns about data governance. Many children in poorer countries still do not get the vaccines they need. Some families live too far from clinics. Others do not trust vaccines or the health system. This article looks at how digital tools can help more children get vaccinated. These tools include text message reminders, phone apps, online health records, digital games, and virtual reality lessons. Text reminders help parents remember vaccine dates. Online records help health workers find children who missed their vaccines. Digital games teach people why vaccines are safe. These tools can also help planners know how many vaccines are needed and where to send them. They can share clear, respectful health messages and fight false claims about vaccines. But not everyone can use these tools. Some people do not have smartphones or internet access. Women, who often care for children, may not have their own phones. There are also worries about keeping personal data safe and paying for these systems.

CONCLUSIONS: We propose implementation principles that emphasize inclusive design, interoperability, privacy safeguards, and hybrid online and offline delivery models. We suggest that digital tools should be easy to use for all, keep private data safe, and work well with other health systems. Where there is no internet, non-digital options should also be offered. With the right support, these tools can help make sure all children get their vaccines.

WEB: [10.1093/jamiaopen/ooag045](https://doi.org/10.1093/jamiaopen/ooag045)

IMPACT FACTOR: 3.4

CITED HALF-LIFE: 3.1

START COMMENTARY

Digital vaccines are emerging digital immunization support tools including mobile apps, SMS reminders, and electronic immunization registries (EIRs) that are designed to strengthen vaccine delivery systems and improve vaccine communication. This study explores how these tools can increase vaccine uptake and promote equity in low-resource settings.

A major application of these tools is *via* EIRs, which improve immunization programs through strong data collection which informs resource allocation and enhances vaccination coverage. Tanzania has implemented EIRs across 15 regions to track individual immunization records, improve data accuracy, and support targeted outreach to under-immunized populations. In Tanzania, these systems have strengthened immunization services in underserved areas and improved follow-up for zero-dose and missed children.

Despite the potential of digital vaccines, these tools face several implementation barriers. Digital divides are significant in low-resource settings and populations with the lowest vaccination rates often lack access to smartphones, internet, or digital literacy. Without inclusive design, these technologies could risk worsening these existing inequalities. The authors recommend governments invest in integrated and reusable digital health platforms rather than isolated applications. They also emphasize the importance of demonstrating cost-effectiveness to attract domestic and international funding and suggest innovative financing approaches like as public-private partnerships and performance-based grants.

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6. [Unlocking Africa's vaccine Independence: The critical role of technology transfer and intellectual property.](#)

Gashema P, Iradukunda P, Rudacogora J, Siddig E, Shema H, Bigirimana R, et al.

Vaccine. 2026 May 02;81:128573.

PubMed ID: 41965977

ABSTRACT

The COVID-19 pandemic exposed Africa's profound dependency on external vaccine suppliers, with the continent producing less than 1% of global vaccines and hosting only 1.1% of clinical trials. Despite emerging initiatives, most African facilities remain limited to downstream fill-and-finish operations, while full vaccine antigen manufacturing capacity is largely absent. This perspective paper examines the critical role of Technology Transfer (TT) and Intellectual Property (IP) access in achieving Africa's vaccine independence. Effective TT must extend beyond documentation to include unspoken know-how, on-site mentorship, regulatory dossiers, and supply-chain integration. Simultaneously, pragmatic IP frameworks through voluntary licensing, patent pooling, and time-bound waivers are essential to enable lawful and sustainable local production. Drawing lessons from mature European and U.S. ecosystems, the paper highlights the need for regional manufacturing clusters, harmonized regulatory systems under the African Medicines Agency (AMA), and African pooled procurement mechanisms to ensure market viability. Persistent challenges such as fragmented regulation, supply-chain fragility, limited skilled human capital, and uncertain financing continue to constrain progress and highlight the imperative for political commitment to be operationalized through sustained structural investments. Africa's vaccine sovereignty will depend on aligning TT with IP reform, regional cooperation, and predictable market assurance, transforming the continent from a dependent recipient into a resilient and globally competitive vaccine producer.

WEB: [10.1016/j.vaccine.2026.128573](https://doi.org/10.1016/j.vaccine.2026.128573)

IMPACT FACTOR: 3.5

CITED HALF-LIFE: 8.2

START COMMENTARY

This perspective paper discusses the role of technology transfer, policy reform, sustainable financing, and regional cooperation to support Africa's transition away from vaccine dependence on external suppliers. A major priority is regulatory harmonization and market integration across African countries. Historically, fragmented regulatory systems and weak regional coordination have limited African countries' ability to collaborate on vaccine manufacturing and large-scale production. However, initiatives like the African Medicines Regulatory Harmonization (AMRH) program and the East African Community (EAC) regulatory frameworks are improving coordination between African

countries by facilitating joint review of vaccine applications, sharing inspections, and reliance mechanisms.

Domestic investment is also essential for sustainable manufacturing capacity. Senegal, for example, has committed land and public resources to expand vaccine production at the Institut Pasteur de Dakar and is supported by international financing partnerships aimed at strengthening local supply chains and increasing regional vaccine production capacity. Similarly, South Africa has attracted substantial investment through public–private partnerships supporting the Biovac Institute and mRNA technology initiatives.

The authors suggest long-term vaccine manufacturing sustainability depends on national investment in skilled workers, scientific research, and strong regional cooperation. This includes training experts in vaccine production, regulation, and quality testing, while also strengthening local research to improve vaccine production methods and develop vaccines for diseases that are high-priority in the region. Strong governance systems are also important for improving funding coordination, aligning regulations, and strengthening long-term vaccine security across the continent.

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7. [Beyond campaigns: a national mixed-methods study on advancing routine HPV vaccination in Lesotho.](#)

Zbelo M, Chakauya J, Maepe S, Mosese M, Koto M, Makone M.

BMJ Public Health. 2026 Apr 01;4(1):e003889.

PubMed ID: 41919196

ABSTRACT

BACKGROUND: Lesotho has historically delivered human papillomavirus (HPV) vaccination through school-based campaigns, achieving high uptake of the first dose but lower completion of subsequent doses. This study assessed HPV vaccination coverage, dropout rates, documentation practices and the behavioural and social drivers (BeSD) of uptake to inform the transition towards routine HPV vaccination.

METHODS: A nationally representative mixed-methods survey was conducted in 2024. The quantitative component involved visits to 5111 households and identifying 279 eligible girls aged 9-17 years. Data were collected on receipt of HPV dose 1 and dose 2, availability of vaccination cards and caregiver knowledge. Additionally, 15 key informant interviews were conducted with adolescent girls, caregivers and service providers in Butha-Buthe and Quthing to explore barriers to communication, trust and access. Weighted survey estimates and logistic regression were used for quantitative analysis, while qualitative data were analysed thematically using the WHO BeSD framework.

RESULTS: HPV dose 1 coverage was 85%, while dose 2 coverage was 52.9%, reflecting a 32% dropout rate. In-school girls had higher completion rates than out-of-school girls. Caregiver education and trust in health workers were strong predictors of vaccine uptake. Only 43% of vaccinated girls were able to present a vaccination card. Qualitative findings highlighted communication gaps in follow-up doses, limited access for out-of-school girls due to school-based delivery, and the significant role of trust in health workers as a key factor influencing vaccine acceptance.

CONCLUSION: High uptake of HPV dose 1 demonstrates strong acceptance; however, substantial dropout and inequities persist, particularly among out-of-school girls. Strengthened communication, improved documentation and expanded delivery strategies are needed. Integrating HPV vaccination into routine primary healthcare and adopting the WHO-recommended single-dose schedule could enhance equitable coverage and support cervical cancer elimination efforts in Lesotho.

WEB: [10.1136/bmjph-2025-003889](https://doi.org/10.1136/bmjph-2025-003889)

IMPACT FACTOR: 3.6

CITED HALF-LIFE: 5.4

START COMMENTARY

This mixed-methods study combined quantitative data on HPV vaccination coverage estimates with qualitative insights from adolescent girls, caregivers, and health workers to examine challenges and opportunities for transitioning from campaign-based to routine HPV vaccine delivery in Lesotho. The qualitative findings identified three major themes influencing vaccine uptake. First, caregivers and adolescents reported uncertainty about when vaccinators would return to schools or communities which contributed to missed opportunities for completing the HPV vaccine series. Some girls also demonstrated limited understanding of the importance of completing the full vaccination series, particularly if they felt the information provided at school was brief or unclear. Second, the study highlighted significant access barriers for girls not enrolled in school. Because HPV vaccination delivery in Lesotho relies heavily on schools, girls not enrolled in school were often missed unless outreach teams specifically targeted their communities. These challenges were exacerbated in rural and mountainous regions where access to services and community outreach was more difficult. Third, trust in health workers was as a key driver of vaccine acceptance. Caregivers expressed greater confidence in vaccination when information was provided by trusted nurses and community health workers.

This study had several limitations. For many girls, vaccination status was determined by caregiver recall because participants did not have vaccination cards which could potentially introduce recall bias. However, the mixed-methods design strengthened the analysis by combining behavioral insights with vaccination coverage data. The authors suggest transitioning from campaign-based delivery to a routine approach that is integrated within primary health care, school health programs, alongside improved follow-up messaging and the adoption of the single-dose HPV schedule.

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8. [Understanding pneumococcal vaccine perceptions in seven countries: Findings from a cross-sectional survey.](#)

Smith D, D'Silva C, Ratzan S, Rabin K, Fullerton M, Hu J.

Hum Vaccin Immunother. 2026 Mar 31;22(1):2650844.

PubMed ID: 41914241

ABSTRACT

Pneumococcal disease remains a major global cause of morbidity and mortality, yet vaccine uptake varies. Understanding how demographic, socioeconomic, and regional factors shape pneumococcal vaccine perceptions is essential for developing effective public health strategies. We conducted a stratified, cross-sectional survey of 7,000 adults across seven countries (Canada, Brazil, France, India, Nigeria, the United Kingdom, and the United States), with sampling structured by age, sex, income, and education. Perceptions of pneumococcal vaccine safety, efficacy, importance, and disease concern were assessed using Likert scales. χ^2 tests, Kruskal-Wallis tests, and ordinal regression models examined demographic and country-level differences, with trust in information sources included as a predictor. Confidence in pneumococcal vaccine safety and efficacy was highest among adults aged 35-44 and 65+, whereas younger adults expressed the greatest concern about pneumococcal disease ($p < .001$). Women showed the strongest support across all measures, including awareness and importance of vaccination at different life stages ($p < .001$). Higher income and education were associated with greater confidence and awareness ($p < .001$). Country-level variation was substantial: Brazil and India reported the highest agreement with pneumococcal vaccine safety and efficacy, while France and the UK reported the lowest, despite established health systems. Trust in healthcare providers and public health institutions was the strongest predictor of positive perceptions, while informal sources had little influence. Demographic, socioeconomic, and country-level differences significantly shape pneumococcal vaccine perceptions. Efforts to strengthen trust in healthcare providers, address misinformation among younger adults, and tailor outreach to local contexts are needed to improve uptake globally.

WEB: [10.1080/21645515.2026.2650844](https://doi.org/10.1080/21645515.2026.2650844)

IMPACT FACTOR: 3.5

CITED HALF-LIFE: 4.8

START COMMENTARY

Increased global public attention to infectious diseases due to the COVID-19 pandemic has reinforced the importance of immunization for some individuals, while causing skepticism and mistrust in others. This observational, cross-sectional study addresses changing perspectives by

examining perceptions of pneumococcal vaccines across seven countries representing diverse health care systems and socioeconomic conditions.

A notable finding was contradictory attitudes observed among younger adults. Respondents aged 18–24 expressed the greatest disagreement with pneumococcal vaccine safety and efficacy, while also reporting the highest levels of concern about pneumococcal disease. The authors suggest that younger individuals may recognize the seriousness of pneumococcal disease but feel skeptical of vaccination itself. Potential explanations include more exposure to misinformation through social media, fewer routine healthcare interactions, and perceptions of being generally healthy and less vulnerable to severe illness.

Findings are limited by the study's cross-sectional design, which prevents causal inference, and the reliance on self-reported data, which may introduce recall or social desirability bias. A major strength of this study is its use of a standardized multinational framework, which facilitates comparison across diverse health care and socioeconomic settings to identify both shared and context-specific drivers of vaccine hesitancy. The findings suggest future public health efforts should emphasize provider counseling, targeted digital outreach for younger adults, and culturally tailored communication strategies to improve vaccine confidence and uptake globally.

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9. [Evaluation of the first malaria vaccine introduction: ongoing learning opportunities during the introduction into routine immunisation in Cameroon.](#)

Josue Kedakse T, Kaba M, Baonga S, Mboussou F, Njoh A, Amani A, et al.

BMJ Glob Health. 2026 Mar 26;11(3).

PubMed ID: 41887666

ABSTRACT

BACKGROUND: Cameroon is the first country to introduce malaria vaccine (MV) into routine immunisation, following the pilot programme. The vaccine was introduced in 42 health districts across all 10 regions, with plans to scale up in additional districts in future. A mini-postintroduction evaluation (mini-PIE) was conducted to rapidly review the MV programme, make improvements and inform future strategies.

METHODS: A programme evaluation was conducted using desk review and field data collection with standardised interviews of immunisation staff and caregivers. A facilitated discussion was then conducted with key immunisation and malaria staff and partners using WHO intra-action review methodology.

RESULTS: The desk review found that completeness of monthly reports exceeded 95% in all regions in April 2024 except North-West and Adamawa (87%). Only 56% of eligible children received their first dose; however, coverage of the second and third doses was 31% and 28%, respectively. All 10 regions had high drop-out rates. Based on field data collection, 8 of 10 health facilities received communications materials for community awareness. Among caregivers interviewed, 88% (42/48) were aware of MV introduction (MVI); 60% (29/48) were informed by health workers and 81% (39/48) cited vaccine protection as the main reason to vaccinate children. 60% (29/48) knew the importance of continuing to use long-lasting insecticidal nets after malaria vaccination. During the facilitated discussion, 65% (n=37) of participants totally agreed that the mini-PIE methodology used was an effective way to identify challenges and lessons learnt.

CONCLUSIONS: Cameroon's MVI was largely successful, despite vaccine misinformation, demonstrating the importance of community dialogue and engagement in successful vaccine introduction. The mini-PIE methodology is recommended for other countries to adopt 4-6 months after introduction, including field work tailored to country needs and thorough desk review of key indicators conducted in advance to inform the facilitated discussion.

WEB: [10.1136/bmjgh-2024-017315](https://doi.org/10.1136/bmjgh-2024-017315)

IMPACT FACTOR: 6.1

CITED HALF-LIFE: 3.9

START COMMENTARY

Shortly after the introduction of the malaria vaccine in Cameroon, coverage was low for both doses with high dropout for the second dose. To better understand and address issues impacting coverage, the Cameroon Ministry of Health conducted a rapid evaluation of the malaria vaccine introduction program using the WHO-recommended mini-post introduction evaluation (mini-PIE) tool.

The evaluation identified several barriers that impacted the effectiveness of the rollout. Limited collaboration between the Expanded Program on Immunization (EPI) and the National Malaria Control Program at regional levels created gaps in coordination and monitoring. Financial challenges also affected implementation. Projected budgets often exceeded available funding which led to delays. Additionally, inadequate training and training materials for district and health facility staff weakened service delivery. Weak data collection systems hindered accurate monitoring of vaccination progress. Cold chain management problems, alongside low reporting of adverse events following immunization (AEFI), impacted program monitoring and safety surveillance.

Despite these challenges, the MVI also demonstrated several strengths that could serve as best practices for future vaccine introductions. Vaccination data dashboards at the district and health facility levels improved accountability and coordination. Training programs and supervision helped prepare health workers for the vaccine rollout and maintain high quality service delivery. Integrating the malaria vaccine into existing immunization services, together with outreach activities to identify eligible children, further improved implementation. Community engagement was strengthened through digital communication tools and local media campaigns that raised awareness about the vaccine.

A major strength of the evaluation was the use of the WHO-recommended mini-PIE tool, which facilitated a systematic, rapid assessment of the early rollout. However, because the evaluation only included selected districts and facilities, the findings may not fully represent all regions of Cameroon. This approach provides valuable insights for improving malaria vaccine implementation both in Cameroon and in other African countries planning future introductions

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10. [Global overview of vaccine trust: Evidence from a scoping review.](#)

Silva L, Lopes V, da Silva D, Nemer C, Sartori A, Lima J, et al.

Vaccine. 2026 Apr 26;79:128482.

PubMed ID: 41887024

ABSTRACT

BACKGROUND: Vaccine trust is essential for achieving high coverage rates and sustaining immunization programs worldwide. However, hesitancy intensified by the COVID-19 pandemic and the spread of misinformation has challenged trust in vaccines, healthcare professionals, and institutions. This scoping review maps global evidence on the determinants, challenges, and strategies to strengthen vaccine trust.

METHOD: The review followed the JBI Brazilian Centre for Evidence-Based Health Care methodology and the PRISMA-ScR guidelines, with a protocol registered on the Open Science Framework. Searches were conducted in seven databases and additional sources. Studies that directly addressed vaccine trust in any population were included. Data extraction and analysis combined descriptive statistics with narrative synthesis.

RESULTS: A total of 66 studies published between 2020 and 2024 were included, most of them conducted in the United States and focused on COVID-19. Vaccine trust was found to be influenced by perceptions of safety and effectiveness, trust in health systems, professionals, and institutions, as well as individual beliefs and cultural factors. The pandemic increased uncertainty but also encouraged new strategies for community engagement. Health literacy and the involvement of trusted professionals were identified as key elements in strengthening trust. Evidence gaps remain concerning groups such as adolescents, older adults, migrants, and populations in vulnerable situations. Several measurement instruments were mapped, but standardization remains limited.

CONCLUSION: Vaccine trust is a complex and context-dependent phenomenon. Strengthening it requires clear communication, context-specific strategies, active community engagement, and the involvement of healthcare professionals as trusted sources. Future research should include understudied populations, use validated instruments, and assess trust-building interventions to inform more equitable and effective immunization policies.

WEB: [10.1016/j.vaccine.2026.128482](https://doi.org/10.1016/j.vaccine.2026.128482)

IMPACT FACTOR: 3.5

CITED HALF-LIFE: 8.2

START COMMENTARY

This scoping review identifies determinants, challenges, and strategies for improving vaccine trust globally. Included studies indicated vaccine trust is shaped by individual, social, institutional, and contextual factors. Findings show that trust in vaccines was higher among individuals who received information from healthcare professionals, including through interactions with healthcare professionals on social media. However, social media as a primary source of information was associated with lower trust and increased vaccine hesitancy. Conspiracy beliefs and some conservative political ideologies were linked to reduced trust in vaccines and dissatisfaction with scientific institutions. However, religiosity did not consistently predict hesitancy. In several contexts, more religious societies demonstrated higher confidence in vaccine safety and effectiveness. Some studies found that countries with higher levels of religiosity reported greater trust in the safety, importance, and effectiveness of vaccines, even after adjusting for socioeconomic and cultural differences, suggesting that certain aspects of religiosity may support vaccine confidence.

Effective strategies for strengthening trust included active listening, community engagement, health education, and communication tailored to each populations' health literacy levels. Physicians and nurses were consistently identified as trusted messengers, although the review noted that sustainable vaccine confidence may require broader community empowerment rather than reliance solely on experts. Due to the scoping design of this study, some relevant studies may have been missed despite a broad and systematic search, and the large proportion of US-based studies may limit the global generalizability of the findings. The authors suggest that strengthening trust depends on transparent vaccine governance, clear communication, and policies addressing social inequalities and that future research should focus on underrepresented populations, qualitative approaches, and evaluations of trust-building interventions.

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11. [Accelerating research and development of new vaccines against tuberculosis: 5-year progress on the global roadmap.](#)

van Riet E, Corleis B, Giersing B, Hatherill M, Burhan E, Jassat W, et al.

Lancet Infect Dis. 2026 Mar 21.

PubMed ID: 41864213

ABSTRACT

In 2021, a global tuberculosis vaccine research and development roadmap proposed a series of actions to accelerate the development of new, effective, and affordable vaccines that are urgently needed to eliminate tuberculosis globally. Since then, the pipeline has diversified, several candidates are currently in phase 3 clinical trials, and many low-income and middle-income countries have made important steps in anticipating regulatory approval. However, the number of candidates in active clinical trials is small and product development challenges persist. Engagement with vaccine manufacturers has increased but is hampered by unclear demand and insufficient committed procurement. Investment in tuberculosis vaccine research and development therefore remains risky and inadequate. In parallel, more work is needed to identify and plan for cost-effective implementation while mitigating potential hesitancy and stigma to ensure uptake of new tuberculosis vaccines once licensed. Increased diversification of funders and strategic coordination of multiple stakeholders is needed more than ever.

WEB: [10.1016/S1473-3099\(26\)00019-8](https://doi.org/10.1016/S1473-3099(26)00019-8)

IMPACT FACTOR: 31.0

CITED HALF-LIFE: 5.3

START COMMENTARY

This review evaluates the progress of tuberculosis (TB) vaccine research and development based on the WHO Roadmap for Research and Development of TB. A notable area of progress is the diversification of the vaccine pipeline. While few vaccine candidates have advanced beyond the discovery stage of development, new platforms like mRNA- and peptide-based vaccines have entered preclinical and early clinical testing. Two mRNA candidates (BNT164a1 and BNT164b) have moved to phase 2a trials. However, the authors also note that several candidates, including a BCG revaccination, have been removed from the pipeline due to unsuccessful results. A major obstacle to diversifying the vaccine pipeline is the absence of clearly defined immune correlates of protection against TB. The authors further emphasize that correlates of protection likely vary depending on age, exposure history, and vaccine platforms, which complicates standardization across studies. In addition to advances early vaccine development, the authors discussed strategies for successful implementation once a novel vaccine is approved. They strongly encourage the assessment of

vaccine impact and acceptability in parallel to late-stage clinical studies to inform and create demand for the new vaccine to foster positive political support for procurement. Despite this momentum, there are major concerns regarding insufficient funding and limited early-stage candidates. The authors state that ongoing phase 3 trial results will be critical in the next 5 years of vaccine development, but sustained investment and continued pipeline development are necessary to achieve long-term global TB elimination goals.

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Additional Articles of Interest

- 12 Understanding the Behavioural and Social Drivers of Childhood Vaccination Uptake Among Caregivers: A Qualitative Study in Cape Town, South Africa. [{Full Article}](#)
- 13 Assessing Readiness for Future Maternal Malaria Vaccines: Knowledge, Practices, and Vaccine Attitudes Among Women of Reproductive Age in Malawi. [{Full Article}](#)
- 14 State of Inequality in Childhood Immunization: Monitoring Progress Across Low- and Middle-Income Countries over the Past Decade. [{Full Article}](#)
- 15 Political vs. expert: the impact of influencer type on vaccination willingness. [{Full Article}](#)
- 16 Equitable access to the COVID-19 vaccines in Africa (ECOVA) findings from a qualitative enquiry in Zimbabwe. [{Full Article}](#)
- 17 Unlocking Africa's vaccine Independence: The critical role of technology transfer and intellectual property. [{Full Article}](#)
- 18 Attitudes towards new tuberculosis vaccines among adults, adolescents and their caregivers in southern Mozambique, 2024. [{Full Article}](#)
- 19 Religious leaders' perspectives on childhood immunization in Bauchi State, Nigeria: A Qualitative Study. [{Full Article}](#)
- 20 Time to Act; Let Us Unite to Eliminate Malaria Among Pregnant Women in War Zone From Eastern Democratic Republic of the Congo: A Review. [{Full Article}](#)
- 21 Factor Influencing Knowledge and Attitude Toward Human Papillomavirus Vaccine Among Adolescent Girls in Gambella Town, Southwest Ethiopia: A Community-Based Cross-Sectional Study. [{Full Article}](#)
- 22 Economic analysis of microneedle technology: cost-effectiveness, manufacturing scalability, and commercialization challenges. [{Full Article}](#)
- 23 Potential antenatal care-mediated benefits of delivering maternal immunization in five low- and middle-income countries: a modeling analysis. [{Full Article}](#)
- 24 Timeliness of routine vaccination among 24-35 months children in Urban Gambia. [{Full Article}](#)
- 25 Prevalence and its associated factors of zero-dose vaccination and barriers among children under the age of 2 years in Southwest Ethiopia: A mixed-method study. [{Full Article}](#)
- 26 Explanatory Factors of Vaccination Dropout Among Children Aged 12 to 23 Months in the Kikula Health Zone, Democratic Republic of Congo: Cross-Sectional Analytical Study. [{Full Article}](#)
- 27 Effect of a pharmacist-led infodemic management intervention on perception, willingness to receive and pay for adult vaccines among civil servants in Akwa Ibom State, Nigeria. [{Full Article}](#)
- 28 Prevalence and factors associated with vaccine hesitancy among caregivers of children under five years in Pece-Laroo Division, Gulu City, Uganda. [{Full Article}](#)

- 29 Barriers and facilitators of childhood immunization: sociodemographic and knowledge-related determinants among parents in rural and urban Khyber Pakhtunkhwa, Pakistan. {[Full Article](#)}
- 30 Social Media Perspectives on a Future HIV Vaccine: Mixed Methods Analysis. {[Full Article](#)}

Appendix

The literature search for the April 2026 Vaccine Delivery Research Digest was conducted on April 29, 2026. We searched English language articles indexed by the US National Library of Medicine and published between March 15, 2026 and April 14, 2026. The search resulted in 524 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 2026/03/15:2026/04/14[Date - Publication]