VACCINE DELIVERY RESEARCH DIGEST

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

REPORT TO THE GATES FOUNDATION

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1. Increasing Maternal Vaccination Awareness, by Working With Women Influencers in Kawempe Division, Uganda: A Brief Report.

Kyohere M, Nalubega P, Ssemere H, Ssali A, Le Doare K.

Pediatr Infect Dis J. 2025 Feb 14;44(2S):S146-S148.

PubMed ID: 39951093

ABSTRACT

Although the World Health Organization recommends 2 tetanus vaccine-containing injections in pregnancy, in Uganda, only 59.2% of pregnant women received a 2nd dose in 2022. We set out to (1) create awareness of maternal vaccine-preventable diseases, maternal immunization benefits and vaccination safety through the use of media; (2) determine the effectiveness of maternal immunization campaigns and (3) assess stakeholder's acceptability of project interventions' delivery methods.

WEB: 10.1097/INF.0000000000004635

IMPACT FACTOR: 2.9

CITED HALF-LIFE: 9.0

START COMMENTARY

In collaboration with community members, 20 community influencers were identified and received training about the importance of maternal immunization using the Uganda Ministry of Health Vaccination handbook. The influencers went door-to-door in their community sharing vaccine-related information and worked with investigators to create video and audio messages promoting maternal immunization. People in the community reported greater understanding after the short video was shared in community engagement sessions.

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2. High Intention to Vaccinate Against Tuberculosis During Pregnancy and Lactation: Understanding Vaccine-specific Maternal Immunization Acceptance in Amhara, Ethiopia.

Quincer E, Gobezayehu A, Belew M, Endalamaw L, Tesfaye Y, Shiferaw M, et al.

Pediatr Infect Dis J. 2025 Feb 14;44(2S):S135-S140.

PubMed ID: 39951091

ABSTRACT

BACKGROUND: Tuberculosis (TB) disease during pregnancy results in adverse maternal and infant outcomes. The development of a TB vaccine with potential for administration during pregnancy or lactation is a priority identified by the World Health Organization. We assessed the acceptability of vaccines currently administered during pregnancy [tetanus, diphtheria and COVID-19] and willingness to receive a new TB vaccine during pregnancy and/or lactation among Ethiopian women.

METHODS: From January to February 2022, we conducted surveys among pregnant women receiving antenatal care at 20 hospitals in Amhara, Ethiopia. We evaluated uptake of available vaccines (diphtheria), acceptance of new and future vaccines (COVID-19 and TB) during pregnancy and lactation, and knowledge, attitudes and beliefs associated with vaccine-specific acceptance.

RESULTS: Among 200 participants, we found high intention to receive a TB vaccine during pregnancy (90%) and lactation (92%) and low COVID-19 vaccine acceptance during pregnancy (40%) and lactation (47%). Most participants believed TB vaccination would protect their child from disease (82.5%) and have societal benefits (81.5%), while few women perceived the COVID-19 vaccine to offer protection (35.5%) or have societal benefits (42.5%). Intention to receive TB vaccination during pregnancy was associated with the belief that a future maternal TB vaccine would prevent TB among infants (adjusted prevalence ratio 1.37, 95% CI: 1.10-1.70). Most participants reported high acceptability of educational interventions to increase uptake of maternal immunization.

CONCLUSIONS: We found high intention to receive a new TB vaccine during pregnancy and lactation among Ethiopian women. Our findings support vaccine-specific educational interventions to strengthen maternal immunization programs in Ethiopia.

WEB: 10.1097/INF.0000000000004699

IMPACT FACTOR: 2.9

CITED HALF-LIFE: 9.0

START COMMENTARY

While uptake of COVID-19 vaccination in pregnancy was low (40%), >80% of participants received a tetanus and diphtheria-containing vaccine (Td) during their pregnancy. Approximately 70% of participants reported that Healthcare provider's recommendation was a reason for their vaccine uptake during pregnancy. Overall, 66% of participants reported receiving educational information about vaccines during pregnancy and nearly all indicated that feeling well-educated about a vaccine would make them more likely to agree to receive it during pregnancy.

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3. Pharmacovigilance for Vaccines Used in Pregnancy: A Gap Analysis From Uganda.

Nambasa V, Ssebagereka A, Ssali A, Namugumya R, Nalubega P, Figueras A, et al.

Pediatr Infect Dis J. 2025 Feb 14;44(2S):S123-S129.
PubMed ID: 39951089

ABSTRACT

BACKGROUND: Despite the effectiveness of maternal vaccines, low- and middle-income countries grapple with inadequate safety monitoring systems. Robust safety surveillance is crucial to increasing vaccine confidence and timely identifying any potential safety signal that could put pregnant women and children at risk following vaccination. This study assessed the pharmacovigilance (PV) systems for vaccines used in pregnancy in Uganda.

METHODS: A qualitative study involves 13 key informant interviews and 8 focus group discussions among key stakeholders. Purposive sampling was used to select study participants. Data analysis was done using Miles and Huberman's matrices approach and conducted in Atlas.ti software.

FINDINGS: A passive system involving multistakeholders at various levels of the healthcare structure existed but was inadequate for monitoring adverse events following maternal immunization. The existence of parallel reporting systems for vaccines was noted. Heavy workload, lack of feedback, inadequate knowledge to recognize and report adverse events following maternal immunizations and logistical challenges impeding reporting and follow-up were among the barriers to reporting. Electronic medical records, though underutilized for safety surveillance, offer promising potential.

CONCLUSIONS: To address the specific needs of maternal vaccination, the PV system in Uganda needs improvement. A multipronged approach, including policy coherence, embracing active surveillance and leveraging existing birth outcome surveillance and electronic medical records, is essential. Harnessing healthcare provider knowledge and advisory committee capacity in causality assessment is also necessary. The study findings can inform priority interventions to enhance PV for existing and new maternal vaccines.

WEB: 10.1097/INF.0000000000004705
IMPACT FACTOR: 2.9
CITED HALF-LIFE: 9.0

START COMMENTARY

Vaccines administered to pregnant individuals in Uganda include tetanus and diphtheria vaccines (Td), COVID-19 vaccines, and vaccines for hepatitis B, cholera, meningitis, and yellow fever during

disease outbreaks. While the World Health Organization provides policy guidance and Uganda's National Drug Agency coordinates pharmacovigilance activities, there is no formal pharmacovigilance program focused on pregnant individuals in Uganda and no data collection tools are available for reporting adverse effects following maternal immunization. Authors conclude that health care workers should be trained to assess and report adverse events in pregnant individuals after immunization.

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4. Facility Readiness Assessment for Maternal Immunization: Results of Field Testing in Kenya and Bangladesh.

Noguchi L, Njogu R, Morgan C, Yunus S, Kabue M, Rahman S, et al.

Pediatr Infect Dis J. 2025 Feb 14;44(2S):S101-S104.

PubMed ID: 39951084

ABSTRACT

Recent COVID-19 vaccine experience in low- and middle-income countries has suggested many primary care settings are unprepared to administer new vaccines to pregnant and postnatal populations. Deployment of a new maternal vaccine against respiratory syncytial virus (RSV) to protect against RSV lower respiratory illness in the first 6 months of life has accelerated, with vaccination now offered during pregnancy in some high- and middle-income countries. We aimed to design and assess the feasibility of tools for the evaluation of health facility readiness to introduce new vaccines into antenatal care. The health facility assessment tool for maternal immunization readiness was developed with indicators for key health service delivery domains for maternal immunization and piloted in Kenya and Bangladesh. Pilots were conducted from February to April 2022 in Kenya and January 2023 to June 2023 in Bangladesh. The tool proved feasible for administration via audit of records, facility equipment and operations, interview with officer-in-charge and optional modules for structured nonidentifiable observation of antenatal care and immunization services. The pilot exercise surfaced multiple areas for quality improvement action by health systems in Kenya and Bangladesh. In addition to testing the functionality of the tool, data collected during pilot testing were reviewed and presented to participating subnational managers and national technical working groups, allowing these entities to review and discuss initial assessments of gaps and strengths in readiness for new maternal vaccines. A global adaptable version of the tool is now available for contextualization to other settings that are preparing for rollout of new maternal vaccines.

WEB: 10.1097/INF.0000000000004608

IMPACT FACTOR: 2.9

CITED HALF-LIFE: 9.0

START COMMENTARY

Authors identified existing readiness tools for antenatal care (ANC) or immunization services (Supplemental Digital Content 1) that have been developed since 2005 and used in low- and middle-income countries (LMICs). Assessments of capacity for gestational age estimation and referral systems between maternal and vaccination services were added to indicators extracted from the existing readiness tools to create the health facility assessment (HFA) tool tested in this study.

Proposed products to support service delivery for introduction of maternal vaccines include a checklist or guide to gestational age determination, posters with timing of antenatal interventions, technical briefs on key maternal immunization messages, and immunization education material (Supplemental Digital Content 4).

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5. Engage less, provide more: Community health workers' perspectives on how to overcome opposition to polio vaccination in Pakistan.

Majidulla A, Sultan M, Zaman A, Shafique M, Ahmed S, Naz F, et al.

Glob Public Health. 2025 Feb 11;20(1):2465645.

PubMed ID: 39930859

ABSTRACT

Pakistan has 40 Super High Risk Union Councils (SHRUCs) where polio has been persistently endemic, and community relationships have been a persistent challenge due to campaign fatigue and violent, organised resistance. This study aimed to gather perspectives from frontline workers in these areas to improve community engagement. We conducted participant observation, over 100 interviews, and held Human-centred Design inspired sessions with 171 teams of frontline polio staff from 2020 to 2022 in the SHRUCs of a major city in Pakistan. The results show that frontline polio workers repeatedly visited households broadly neglected by government services in SHRUCs, but some households refused the vaccine due to fatigue from multiple visits and fear of government surveillance. Others refused the vaccine to draw attention to their more pressing needs. Frontline polio workers suggested that decreasing touchpoints and providing additional services, such as food, medicines, primary health care, and sanitation services, would improve vaccine uptake. We discuss several implications for vaccine communications, including the importance of quality engagement, the legitimacy of rumours surrounding vaccination, the limited applicability of 'vaccine hesitancy', and the critical role of service provision in improving vaccine acceptability.

WEB: 10.1080/17441692.2025.2465645

IMPACT FACTOR: 2.3

CITED HALF-LIFE: 4.4

START COMMENTARY

Frontline workers (FLW) reported that community resistance to polio immunization lessened when communities were given social and poverty mitigation interventions. FLWs suggest polio vaccine refusal is a form of resistance against structural neglect rather than stemming from vaccine hesitancy or lack of knowledge about the vaccine. Results suggest combining polio immunization campaigns with programs that provide food, medicine, primary healthcare, and sanitation services are more effective than changing messaging or continuing frequent home visits.

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6. Impact of measles vaccination strategies on vaccination rates in low-income and middle-income countries: a systematic review and meta-analysis.

Yitbarek K, Mahimbo A, Bobo F, Woldie M, Sheel M, Frawley J, et al.

BMJ Glob Health. 2025 Feb 10;10(2).

PubMed ID: 39929538

ABSTRACT

INTRODUCTION: While many interventions aim to raise measles vaccination coverage in low-income and middle-income countries (LMICs), their overall effectiveness and cost-effectiveness are unknown. We did a review to identify and synthesise scientific research that evaluated the impact and cost-effectiveness of measles vaccination strategies on measles vaccination coverage, timeliness, hospitalisation rates, and mortality.

METHODS: In this review, we searched for English-language articles published between 2012 and July 2023 in eight databases, including PubMed, ProQuest, MEDLINE (Ovid), Embase (Ovid), CINAHL, Scopus, Web of Science and the Cochrane Database of Systematic Reviews. We also included relevant grey literature sources. The review focused on studies evaluating the impact of vaccination strategies on vaccination-related outcomes in children under 5. Following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines throughout the process, we used Covidence software to manage most review activities. Two independent reviewers screened articles, assessed their quality using the Joanna Briggs Institute guidelines and extracted data using a predefined electronic tool. We predetermined measles vaccination coverage and timeliness as the primary outcomes, with hospitalisation and mortality as secondary outcomes. A random-effects model was employed for the meta-analysis.

RESULTS: We identified 44 articles, of which 14 were included in the meta-analysis. The meta-analysis indicated that vaccination-targeting interventions such as vaccination reminders, cash incentives, community engagement and health education activities increase measles vaccination coverage (RR 1.19, 95% CI 1.10 to 1.27). Our analysis also indicated that interventions such as vaccine reminders, educational programmes and incentives improved timely vaccination. Furthermore, we identified cost-effective strategies such as geographically informed microplanning, unrestricted vial opening, supplementary immunisation activities, community engagement, outreach programmes and financial incentives.

CONCLUSION: Most of the identified vaccination interventions significantly improve measles vaccination coverage and timeliness in LMICs while remaining cost-effective. Tailoring these interventions to local contexts is crucial for maximising their effectiveness in protecting children from measles and its adverse consequences.

PROSPERO REGISTRATION NUMBER: CRD42023433125.

WEB: 10.1136/bmjgh-2024-016647
IMPACT FACTOR: 7.1
CITED HALF-LIFE: 3.2

START COMMENTARY

While 28 of 44 studies included were from the World Health Organization (WHO) African region, 50% of these studies were from two countries, Nigeria (n=8) and Guinea-Bissau (n=6), potentially limiting generalizability of results to other African nations. Vaccine reminders, vaccine campaigns, and financial incentives were the three most frequently studied intervention types, accounting for 31%, 16%, and 14% of interventions, respectively. Figure 3 provides pooled results of the effect of vaccination strategies on measles vaccine coverage. Overall, no significant association was found between measles vaccination strategies and hospitalization or all-cause mortality.

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7. Microarray patches likely to reduce the operational costs of immunization: A Monte Carlo simulation study.

Hagedorn B, Frey K, Scarna T, El Sheikh F.

Vaccine. 2025 Feb 23;50:126840.

PubMed ID: 39923545

ABSTRACT

Development of microneedle array patches (MAPs) for potential use in immunization is ongoing, but the cost of manufacturing is expected to be higher than that of existing needle-and-syringe vial systems. The potential benefits of MAPs in reaching previously unvaccinated populations have been touted, but affordability, especially in low- and middle-income countries, remains an open question. In this study, we quantify the expected impact on operational costs of switching to MAPs for immunization for measles-rubella, human papilloma virus, and typhoid in both routine and campaign-based delivery modes. We endeavor to make a comprehensive estimate, including the costs of labor, syringes, waste management (i.e., sharps and trash), wastage (unused vaccine), freight and in-country cold chain transportation. We examined five potential use cases and our results show that in total, operational cost savings from a switch to MAPs are expected to range from a low of $0.24 per dose delivered (HPV, 1-dose vial, campaign) up to $0.61 per dose delivered (MR, 10-dose vial, routine). Excluding the allocated cost of labor, the estimated range of cost savings are $0.18 and $0.43, respectively. Confidence intervals are wide, due to the uncertainty in the assumptions, but in all five use cases tested, there was at least an 87 % probability of savings. These results show that operational savings from a switch to MAPs may offset at least part of the expected incremental manufacturing costs, which will make the transition more viable in settings with limited budget space. With this in mind, development agencies should continue to invest in MAPs technology and, if the product does come to market, use this evidence as part of total value of vaccines assessments and to inform investment strategies for implementation of vaccine MAPs, including alignment with policy makers.

WEB: 10.1016/j.vaccine.2025.126840

IMPACT FACTOR: 4.5

CITED HALF-LIFE: 7.9

START COMMENTARY

The five comparison scenarios modeled were 5-dose or 10-dose vials for measles and rubella vaccine (MR) used in routine immunizations, 10-dose vial for MR used in supplementary immunization activities (SIAs), 5-dose vial of typhoid conjugate vaccine (TCV) used in SIAs, and one dose vial for HPV vaccination used in SIAs. Delivery cost components included vaccine, syringes,

waste boxes, product wastage, labor, freight to deliver to a port of entry, in-country cold chain transportation, and waste management. A boxplot showing cost savings per dose delivered is shown in Figure 1.

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8. Advancing local manufacturing capacities for vaccines within Africa - Opportunities, priorities and challenges.

Doua J, Ndembi N, Auerbach J, Kaseya J, Zumla A.

Vaccine. 2025 Feb 23;50:126829.

PubMed ID: 39914258

ABSTRACT

Our viewpoint focuses on the paradox that Africa represents 25 % of total global vaccine usage, yet 99 % of these vaccines are manufactured overseas. In view of the iniquitous supply and distribution of COVID-19 vaccines to Africa during the pandemic, we emphasize the need for scaling up local vaccine manufacturing capacities across Africa. We review current vaccine manufacturing capacities within Africa, highlight priority vaccines needs, and describe opportunities and challenges of advancing local manufacturing capacities within Africa. Of 11 manufacturers in Africa, ten have operational formulation/fill/finish capacities. However, capacities to produce active vaccine components locally are very limited and leveraging of vaccine technology platforms such as live-attenuated virus, inactivated virus, and mRNA remain scanty. South Africa and Senegal are the only countries with end-to-end manufacturing capacities. Based on market demand, manufacturing complexity, target population, disease burden and vaccination regimen, the top 5 priority vaccines identified for local manufacturing in Africa were measles-rubella, yellow fever, cholera, rotavirus, and meningococcal vaccines. Enablers identified for Africa's vaccine manufacturing initiatives include: a preferential procurement of African-made vaccines for sustainable and reliable volumes through GAVI and UNICEF; deal preparation to target investments avoiding overproduction; technology transfers; regulatory systems strengthening; R&D capacities and infrastructure. Thus, African vaccine manufacturers and all stakeholders should focus taking forward the portfolio of activities required for continental vaccine manufacturing, including regulatory strengthening capacities, training and workforce development, rather than only focus on efforts that benefit a particular manufacturer or country. Optimism for advancing vaccine manufacturing in Africa comes from the announcement in December 2023 by GAVI for the establishment of the African Vaccine Manufacturing Accelerator, a financing mechanism of USD 1 billion aimed at creating a sustainable vaccine manufacturing industry in Africa. However, many challenges need to be overcome including that of having secure funding for sustaining what is developed.

WEB: 10.1016/j.vaccine.2025.126829

IMPACT FACTOR: 4.5

CITED HALF-LIFE: 7.9

START COMMENTARY

Eight countries in Africa (South Africa, Ethiopia, Nigeria, Algeria, Senegal, Morocco, Tunisia, and Egypt) have vaccine manufacturing capability that can provide a foundation for further vaccine manufacturing opportunities (Table 1). Authors rated licensed vaccines on market opportunity, vaccine platform manufacturing complexity, dose regimen, target population, and disease burden within Africa, and provided a priority score for in-region manufacturing in Table 2. Authors highlight the importance of government support and creating a sustainable business model in developing and scaling up vaccine manufacturing enterprises in Africa.

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9. A decade of rotavirus vaccination in the World Health Organization African Region: An in-depth analysis of vaccine coverage from 2012 to 2023.

Mwenda J, Mandomando I, Worwui A, Gacic-Dobo M, Katsande R, Bwaka A, et al.

Vaccine. 2025 Feb 19;48:126768.

PubMed ID: 39890559

ABSTRACT

BACKGROUND: Significant progress has been achieved in the introduction of rotavirus vaccines in the World Health Organization, African Region (WHO/AFR), with only 19% (9/47) of the countries yet to introduce the vaccines. Despite this achievement, a considerable number of eligible children in Africa still lack access to these lifesaving rotavirus vaccines.

METHODOLOGY: We performed in-depth data exploration and analysis on the WHO/UNICEF rotavirus vaccine uptake estimates of vaccine coverage to document progress and estimated the number of children missing vaccination through under- or un-vaccination between 2012 and 2023.

RESULTS: Thirty-eight countries have introduced the vaccine in the national immunization programs and the vaccine coverage rates have increased from 5% to 61% between 2012 and 2023 in the WHO/AFR, compared to 11% to 55% at the global level. Coverage by sub-regions ranged from 48% in Central African countries to 73% in the Southeast sub-region in 2023. Vaccine coverage has been increasing every year, yet some countries reported a significant drop during the COVID-19 pandemic (2020-2022) compared to the pre-pandemic (2019_or earlier) period. For instance, in Senegal, coverage declined from 94% to 70%; Namibia, 90% to 55%; Republic of Congo, 71% to 23 %; for 2019 and 2022, respectively. Four countries experienced a significant decline between 2021 and 2022. For instance, Botswana (85% to 65%), Kenya (95% to 23%), Zambia (87% to 32%), and Zimbabwe (86% to 55%); but coverage increased in 2023 (post-pandemic) in Kenya (71%), Senegal (83%), and Zambia (40%). The estimates of vaccinated children increased steadily over the years, reaching 23.5 million in 2023. However, 257.8 million children missed vaccination between 2012 and 2023, of which 18.5 million in 2022.

CONCLUSIONS: Although countries in the WHO/AFR have made significant progress in introducing rotavirus vaccines, reaching every eligible child remains a challenge; and more than half of children are missing the full benefit of protection against rotavirus diarrhoea. There is a need for accelerated actions and concerted efforts to reach missed children and support for the nine remaining countries to introduce the vaccine.

WEB: 10.1016/j.vaccine.2025.126768

IMPACT FACTOR: 4.5

CITED HALF-LIFE: 7.9

START COMMENTARY

Challenges to rotavirus vaccine uptake include global vaccine shortages, vaccine stock outs, and difficulty reaching children in remote areas. Figure 6 shows rotavirus vaccine coverage between 2012-2023 for countries that experienced a decline in vaccine coverage during the COVID-19 pandemic. No countries in the AFRO Region introduced rotavirus vaccine during 2020 or 2021 despite four countries expressing interest, suggesting the COVID-19 pandemic effected both vaccine introduction and coverage.

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10. Informing the development of transmission modelling guidance for global immunization decision-making: A qualitative needs assessment.

Leask J, Christou-Ergos M, Abdi I, Mboussou F, Sabahelzain M, Wiley K, et al.

Vaccine. 2025 Feb 24;49:126800.

PubMed ID: 39889533

ABSTRACT

In recent years, mathematical transmission models have been increasingly used to support immunization program decisions and to measure the impact and cost-effectiveness of interventions. However, countries face expertise-and resource-related barriers that limit the use and application of modelled evidence to inform decisions. The World Health Organization (WHO) established an Immunization and Vaccines Implementation Research advisory committee subgroup in 2023 to support immunization decision-makers to effectively generate, translate and use such evidence for strategies, policies, and programs. This study supports this effort, detailing the needs of end-users to inform content and format of the guidance. Fifteen in-depth interviews were conducted with vaccination decision-makers and modelers from all six WHO regions and across low-, middle- and high-income countries. Interviews explored: (i) how modelling is understood and used; (ii) the challenges faced when using modelled evidence; (iii) the types of guidance that would be most useful to enhance the use of modelled evidence. Analysis of transcripts was guided by the framework method, which structures the analysis of qualitative data. Participants with modelling expertise used it firsthand, systematically, and often in an advisory capacity. Less experienced users, often in policy advisory roles, were less confident in their understanding of modelling and some did not use it at all. Decision-makers with little or no modelling experience cited a need for more information to help them understand the value of modelling in their context and many supported its potential. All participants saw a need for capacity strengthening and localised application to instil confidence in using modelled evidence. Those with less experience expressed a need for ongoing interactive engagement with knowledge brokers and training. Insights from this study are being integrated into the development of guidance by WHO. By considering the diverse challenges and needs of both experienced and inexperienced users of modelling, the guidance will support immunization strategy and policy by responding specifically to immunization decision-makers information needs.

WEB: 10.1016/j.vaccine.2025.126800

IMPACT FACTOR: 4.5

CITED HALF-LIFE: 7.9

START COMMENTARY

Immunization decision makers from low-income countries (LIC) expressed concern that models were not relevant because context-specific data from LICs needed to inform models is lacking. Participants requested creation of a guidance document to explain how to assess model quality and usefulness. Authors emphasize the importance of collaboration between modelers and decision makers to build trust and co-create useful context-specific modelled data.

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11. Implications of conflict on vaccination in the Sahel region.

Sabahelzain M, Dwyer H, Abimbola S, Leask J.

BMJ Glob Health. 2025 Jan 30;10(1).
PubMed ID: 39884724

ABSTRACT

The Sahel region is a geographical belt in Africa that stretches from the Atlantic Ocean to the Red Sea, between the Sahara Desert in the north and the Savannah in the south. It is characterised by challenging environmental crises and conflicts. This analysis highlights the potential implications of conflict on vaccination across five Sahel countries, including Burkina Faso, Chad, Mali, Niger and Sudan, from 2019 to 2023. It also presents recommendations to improve vaccination coverage in these settings. The WHO Immunisation Data Portal was used to extract data about vaccination coverage and disease outbreaks. With the increasing complexity of humanitarian access in the Sahel, there has been an accumulation of the number of zero-dose and underimmunised children. In 2023 alone, most of these countries had a significant proportion of zero-dose children, particularly Sudan (43%), Mali (22%) and Chad (16%). Nearly half of children in Sudan (49%), 33% in Chad and 23% in Mali are underimmunised. Measles vaccine coverage was consistently below 90% in these countries, except for Burkina Faso. The trend of polio outbreaks (circulating vaccine-derived poliovirus) across these countries showed fluctuations in the number of cases, with Niger having reported several cases over this period, and Chad having 101 cases reported in 2020 alone. Despite relatively high coverage, there were significant outbreaks of polio in Burkina Faso, Sudan and Mali in 2020, which reflects the potential impact of the COVID-19 pandemic. Lessons can be learnt from past diplomatic and programmatic successes, while investments in innovative and flexible approaches may help increase the reach of vaccination programmes in inaccessible areas.

WEB: 10.1136/bmjgh-2024-016496
IMPACT FACTOR: 7.1
CITED HALF-LIFE: 3.2

START COMMENTARY

The impact of conflict and political instability on vaccine coverage can be seen in Figure 2. Decreased coverage of dose 1 and dose 3 of diphtheria, tetanus, and pertussis vaccines (DPT1/DPT3) and dose 1 and dose 2 of measles-containing vaccines (MCV1/MCV2) in Sudan is shown corresponding to key moments of political instability and conflict. Integrating vaccine delivery programs with other health interventions may be an effective strategy to increase vaccine coverage in conflict settings.

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12. Assessing the use of geospatial data for immunization program implementation and associated effects on coverage and equity in the Democratic Republic of Congo.

Ngo-Bebe D, Mechael P, Kwilu F, Bukele T, Langwana F, Lobukulu G, et al.

BMC Public Health. 2025 Jan 25;25(1):311.

PubMed ID: 39856652

ABSTRACT

BACKGROUND: The National Expanded Program on Immunization in the Democratic Republic of the Congo implemented a program in 9 Provinces to generate georeferenced immunization microplans to strengthen the planning and implementation of vaccination services. The intervention aimed to improve identification and immunization of zero-dose children and overall immunization coverage.

METHODS: This study applies a mixed-methods design including survey tools, in-depth interviews and direct observation to document the uptake, use, and acceptance of the immunization microplans developed with geospatial data in two intervention provinces and one control province from February to June 2023. A total of 113 health facilities in 98 Health Areas in 15 Health Zones in the three provinces were included in the study sample. Select providers received training on gender-intentional approaches for the collection and use of geospatial data which was evaluated through a targeted qualitative study. A secondary analysis of immunization coverage survey data (2020-2022) was conducted to assess the associated effects on immunization coverage, especially changes in rates of zero dose children, defined as those aged 12-23 months who have not received a single dose of Pentavalent vaccine.

RESULTS: This research study shows that georeferenced microplans are well received, utilized, and led to changes in routine immunization service planning and delivery. In addition, the gender intervention is perceived to have led to changes in the approaches taken to overcome sociocultural gender norms and engage communities to reach as many children as possible, leveraging the ability of women to engage more effectively to support vaccination services. The quantitative analyses showed that georeferenced microplans may have contributed to a dramatic and sustained trend of high immunization coverage in the intervention site of Haut-Lomami, which saw dramatic improvement in coverage for 3 antigens and little change in Pentavalent drop-out rate over three years of implementation.

CONCLUSION: The overall study identified positive contributions of the georeferenced data in the planning and delivery of routine immunization services. It is recommended to conduct further analyses in Kasai in 2024 and 2025 to evaluate the longer-term effects of the gender intervention on immunization coverage and equity outcomes.

TRIAL REGISTRATION: The study was registered and given BMC Central International Standard. Randomised Controlled Trial Number ISRCTN65876428 on March 11, 2021.

WEB: 10.1186/s12889-025-21578-x
IMPACT FACTOR: 3.5
CITED HALF-LIFE: 5.4

START COMMENTARY

Geospatial data was used to estimate populations within health facility catchment areas and estimate the number of vaccines needed for each. Additionally, the data was used to identify settlements with limited access to health facilities and assess the proportion of the population that may require outreach to access vaccinations. The systematic collection of geospatial data identified previously missed settlements, enabling more effective immunization planning. Limitations of this study include not assessing acceptance of microplans based on geospatial data and not evaluating impact on equitable vaccine coverage.

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13. Advancing the Fight Against Cervical Cancer: The Promise of Therapeutic HPV Vaccines.

Zheng Q, He M, Mao Z, Huang Y, Li X, Long L, et al.

Vaccines (Basel). 2025 Jan 30;13(1).

PubMed ID: 39852871

ABSTRACT

Human papillomavirus (HPV) is a major global health issue and is recognized as the leading cause of cervical cancer. While prophylactic vaccination programs have led to substantial reductions in both HPV infection rates and cervical cancer incidence, considerable burdens of HPV-related diseases persist, particularly in developing countries with inadequate vaccine coverage and uptake. The development of therapeutic vaccines for HPV represents an emerging strategy that has the potential to bolster the fight against cervical cancer. Unlike current prophylactic vaccines designed to prevent new infections, therapeutic vaccines aim to eradicate or treat existing HPV infections, as well as HPV-associated precancers and cancers. This review focuses on clinical studies involving therapeutic HPV vaccines for cervical cancer, specifically in three key areas: the treatment of cervical intraepithelial neoplasia; the treatment of cervical cancer in combination with or without chemotherapy, radiotherapy, or immune checkpoint inhibitors; and the role of prophylaxis following completion of treatment. Currently, there are no approved therapeutic HPV vaccines worldwide; however, active progress is being made in clinical research and development using multiple platforms such as peptides, proteins, DNA, RNA, bacterial vectors, viral vectors, and cell-based, each offering relative advantages and limitations for delivering HPV antigens and generating targeted immune responses. We outline preferred vaccine parameters, including indications, target populations, safety considerations, efficacy considerations, and immunization strategies. Lastly, we emphasize that therapeutic vaccines for HPV that are currently under development could be an important new tool in fighting against cervical cancer.

WEB: 10.3390/vaccines13010092
IMPACT FACTOR: 5.2
CITED HALF-LIFE: 2.2

START COMMENTARY

Zheng et al. provide an overview of therapeutic human papillomavirus (HPV) vaccine research and explain biologic mechanisms for therapeutic HPV vaccines in development. Clinical trial data on vaccines effectiveness against 1) persistent high-risk HPV infection and cervical intraepithelial

neoplasia (CIN), 2) cervical cancer, and 3) post-treatment prophylaxis are found in Tables 3, 4, and 5, respectively. Most therapeutic vaccines currently being developed target the regression of CIN.
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14. Closing the gap on vaccine uptake in developing countries: Is there a role for cash incentives?

Sato R.

Vaccine. 2025 Feb 19;48:126763.

PubMed ID: 39848129

ABSTRACT

Vaccination saves lives, yet vaccine uptake remains insufficient particularly in developing countries. While various approaches have been used to improve vaccine uptake, this review focuses on the potential of cash incentives to address this issue in developing countries. We examine the role and criticism of cash incentives and offer suggestions for reducing health disparities through targeting. We also explore potential bottleneck for scaling up the incentive program. The review concludes with recommendations for future steps.

WEB: 10.1016/j.vaccine.2025.126763

IMPACT FACTOR: 4.5

CITED HALF-LIFE: 7.9

START COMMENTARY

Evidence that cash or in-kind incentive programs increase vaccine uptake in multiple populations, including women of reproductive age, children, and older individuals has been shown in randomized control trials and large-scale programs across multiple geographies, including Latin America, India, Nigeria, Ghana, and China. Pairing cash incentives with vaccine education and community engagement can create a sustainable vaccine coverage increase. In areas with a history of vaccine hesitancy, addressing vaccine misinformation and explaining the reason for the cash incentive, e.g. to offset travel costs for those who otherwise may not have been able to afford to travel to a vaccine clinic location, may offset concerns and optimize the benefits of providing cash incentives.

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Additional Articles of Interest

1 A virtual assistant can persuade you to get vaccinated against the flu. Online dialogue as a tool of social influence in promoting vaccinations. {Full Article}
2 Preventing vaccine drop-outs: Geographic and system-level barriers to full immunization coverage among children in Uttar Pradesh, India. {Full Article}
3 Vaccine failure mode determines population-level impact of vaccination campaigns during epidemics. {Full Article}
4 Increasing child vaccination coverage can reduce influenza cases across age groups: An agent-based modeling study. {Full Article}
5 Prevalence and Predictors of Adverse Birth Outcomes and Their Implications in Assessing the Safety of New Maternal Vaccines in Kenya. {Full Article}
6 Safe in Pregnancy and Safe in Children: Global Living Systematic Reviews and Meta-analyses Hub for Emergency Vaccines. {Full Article}
7 Sociodemographic Factors Associated With Established and Novel Antenatal Vaccination Uptake in a Cohort of Pregnant Women in Uganda. {Full Article}
8 Pertussis Vaccination During Pregnancy: Regional Situation and Impact of Implementation on National Immunization Programs in Latin America. {Full Article}
9 Research Priorities for Maternal Immunization. {Full Article}
10 Educational intervention to increase childhood immunization uptake in rural Pakistan. {Full Article}
11 A review of childhood immunization coverage in Pakistan. {Full Article}
12 Determinants of Under-Immunization Among Children Between 0 and 59 Months in Buea Municipality, South Western Cameroon: Implications for National Immunization Campaign. {Full Article}
13 Where is the hard-to-reach population? Spatial analysis from a cross-sectional study on the access to bed net and malaria vaccine in the Lake Victoria Region, Kenya. {Full Article}
14 Seasonal influenza surveillance and vaccination policies in the WHO South-East Asian Region. {Full Article}
15 Acceptance and affordability of malaria vaccines: issues relating to hesitancy and willingness to pay amongst Nigerian parents of under-five children. {Full Article}
16 Acceptability of the R21/Matrix-M malaria vaccine alongside existing malaria interventions in the trial context. {Full Article}
17 How to accelerate the supply of vaccines to all populations worldwide? Part III: Reflections after the pandemic. {Full Article}
18 What will introducing and delivering new maternal vaccines cost in Ghana and Mozambique? A prospective analysis. {Full Article}

19 A comparison of the persuasiveness of human and ChatGPT generated pro-vaccine messages for HPV. {Full Article}
20 An analytical cross-sectional study on optimal (timely or cumulative age-appropriate) routine childhood immunization coverage in the communities of Ebonyi state, Nigeria. {Full Article}
21 Effectiveness of iNTS vaccination in sub-Saharan Africa. {Full Article}
22 Global research hotspots and trends in DNA vaccine research: A bibliometric and visualization study from 2014 to 2024. {Full Article}
23 Roles of mobile teams in tracing lost to follow-up clients: evidence from the optimization of COVID-19 vaccination uptake and routine immunization in Ekiti State. {Full Article}
24 Perspectives of healthcare workers on drone-enabled healthcare delivery in challenging terrains of Manipur and Nagaland, India: a qualitative research study. {Full Article}
25 Population-based age-period-cohort analysis of declining Human Papillomavirus prevalence. {Full Article}
26 Combatting Salmonella: a focus on antimicrobial resistance and the need for effective vaccination. {Full Article}
27 Association of gross domestic product with equitable access to childhood vaccines in 195 countries: a systematic review and meta-analysis. {Full Article}
28 Recombinant expression systems for production of stabilised virus-like particles as next-generation polio vaccines. {Full Article}
29 Towards an HCV vaccine: an overview of the immunization strategies for eliciting an effective B-cell response. {Full Article}
30 Modelling the impact and cost-effectiveness of upcoming Zika virus vaccines on congenital Zika syndrome. {Full Article}
31 Subnational trends and inequalities of under-immunisation and zero-dose among children aged 12-23 months in Uganda: a national population-based cross-sectional study. {Full Article}
32 Expert consensus and recommendations on the live attenuated hepatitis A vaccine and immunization practices in India. {Full Article}

Appendix

The literature search for the March 2025 Vaccine Delivery Research Digest was conducted on February 24, 2025. We searched English language articles indexed by the US National Library of Medicine and published between January 15, 2025 and February 14, 2025. The search resulted in 400 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 2025/01/15:2025/02/14[Date - Publication]