Strengthening timely hepatitis B birth dose vaccination in Nigeria

Hepatitis B birth dose learning agenda

Country context

Nigeria introduced the hepatitis B birth-dose vaccine in 2004 and has steadily integrated it into national immunization and maternal health programs, achieving modest progress with coverage increasing from 53% in 2018 to 58% in 2024.

Community health workers (CHWs) play a significant role in vaccine delivery along with nurses and midwives. CHWs deliver free hepatitis B birth-dose vaccine through public facilities and outreach, while traditional birth attendants (TBAs) provide support by mobilizing caregivers and tracking newborns, creating a strong community network that promotes timely immunization.

Despite this progress, timely birth-dose administration remains a challenge, especially in regions where many births occur outside health facilities. The national average is 58%, but the rate is only 39% in the North West Zone, where Kebbi and Kaduna States have particularly low facility delivery rates (9% to 26%). High hepatitis B virus prevalence and cultural norms favoring home births, combined with logistical barriers, staffing shortages, and weak cold chain infrastructure, have hindered progress.

To identify practical strategies for improving timely birth-dose vaccination, PATH collaborated with the Ministry of Health to assess learning questions on the feasibility, acceptability, cost, and market access of innovative strategies to improve coverage for babies born at home or in health facilities.

Study design

This study examined existing hepatitis B birth-dose delivery models in Nigeria and identified strategies to improve timely coverage in both facility and community settings, beginning with a literature review followed by phased qualitative data collection in urban and rural regions. UNICEF's Journey to Health and Immunization framework covering the caregiver and provider journey informed thematic analysis of barriers, facilitators, and implementation processes.

National level data were collected in Abuja through engagements with government stakeholders, while subnational data came from four local government areas (LGAs) in Kaduna and Kebbi States, purposively selected for varying coverage levels and logistical feasibility. These largely rural areas face challenges such as dispersed settlements, limited facility coverage, and geographic barriers affecting health service delivery. Key informant interviews (n=34) across national, state, and LGA levels included policymakers, immunization managers, health workers, partners, and community mobilizers, focusing on policies, operational feasibility, barriers, facilitators, and opportunities to strengthen birth-dose delivery.

Findings

Current implementation strategies

Hepatitis B birth-dose vaccination in Nigeria is mainly delivered through primary health care facilities, supported by outreach and mobile sessions. Secondary, tertiary, and private facilities in urban areas also provide immunizations with a fee for consumables, while public facilities provide these services free of charge.

While facility-based immunization is the primary approach, routine outreach is key to delivery across LGAs, with most facilities conducting weekly sessions and some organizing more frequent outreach, especially facilities with partner support. Outreach teams are aided by community mobilizers and leaders for household engagement and referrals, but only trained health workers, including community health extension workers (CHEWs), nurses, and midwives, administer vaccines. Community-based actors like TBAs and volunteers focus on mobilization and referral but do not administer vaccines, according to national policy.

About the hepatitis B birth dose learning agenda

With funding from Gavi, the Vaccine Alliance, PATH has employed a mixed methods approach to assess learning questions on the feasibility, acceptability, cost, market access, and impact of innovative strategies to improve timely hepatitis B birth-dose coverage for babies, whether born at home or in health facilities. By exploring innovative delivery strategies, assessing the role of community health systems, and understanding stakeholder perspectives, the project aims to identify scalable solutions. Evidence and insights from this initiative will help inform countries introducing the birth dose as well as those seeking new strategies to increase both coverage rates and timely administration.

This brief is a summary of the full case study available at www.path.org/who-we-are/programs/primary-health-care/hepb-birthdose.

Barriers and facilitators

Timely hepatitis B birth-dose uptake in Nigeria is influenced by behavioral, cultural, financial, and system-level factors across facilities and communities. Beyond maternal characteristics and documented family, gender, and infrastructure barriers, interviews identified gaps in home-birth tracking, linking newborns to services, transport, unreliable power, supply chains, and reporting, all warranting further research (Box 1). Caregiver knowledge gaps, misconceptions, cultural norms, and geographic barriers continue to hinder timely vaccination, especially for home births.

Community actors like TBAs and CHEWs support referrals, but lack mandates and training to administer vaccines, while primary facilities face staffing shortages, cold chain failures, and weekend service gaps. Single-dose or controlled temperature chain (CTC) vaccines may help reduce wastage and would necessitate adequate training.

Higher-performing LGAs reported more facility births, reliable cold chains, and stronger partner support, while lower performers had more home births, limited outreach, broken cold chain equipment, and weaker partner engagement. Caregiver incentives for vaccination showed mixed impact, suggesting a need for further validation.

Overall, uptake is facilitated by strong caregiver education in facilities and communities, transportation assistance, reliable reporting systems, and community actors leading mobilization and referrals. Coverage is further improved by consistent vaccine supply and cold chain stability, centralized procurement with effective distribution, and facilities with daily immunization services.

Operational feasibility considerations

Supply chain

Nigeria's vaccine supply chain requires investment to overcome transport gaps, unreliable cold chain equipment, and difficult terrain, all potential threats to vaccine potency. Expanding solar infrastructure, improving logistics, funding outreach, and strengthening health worker training are critical to ensure timely birth-dose delivery.

Controlled temperature chain

A CTC-prequalified hepatitis B birth-dose vaccine could significantly strengthen Nigeria's immunization reach by bypassing persistent cold chain challenges. Stakeholders at all levels saw broad applicability of CTC across platforms, generally preferring a 4- to 7-day CTC window aligned with weekly outreach cycles, with a few district leaders advocating for an 8- to 14-day window to accommodate remote areas. Realizing this potential will require investments in training, clear guidelines, strong supervision, and affordable pricing to ensure sustainable national adoption.

Product presentation

Stakeholders stressed that product presentation must match delivery context. About 62% of national and district respondents preferred one-dose vials for facility use, while 38% preferred ten-dose vials. One-dose vials were seen as best for outreach, reducing wastage, simplifying logistics, and fitting low-volume, power-constrained settings. Ten-dose vials were considered suitable for high-volume facilities with reliable cold chain.

Regarding willingness to pay, most national stakeholders said Nigeria could not pay above current prices for either multidose (baseline US$0.24) or single-dose vials (baseline US$0.49), with fewer than a quarter willing to accept small increases ($0.10 to $0.40 for multidose; $0.10 to $0.50 for single-dose). Respondents cited severe funding constraints, challenges purchasing routine vaccines at current prices, and the need to prioritize affordability over operational benefits. Further research is needed to assess optimal use of mixed vaccine presentations (Box 1).

Policy and program recommendations

Strengthening integration in maternal and newborn care

Respondents identified actionable opportunities to strengthen birth-dose delivery in Nigeria across national policy, subnational implementation, provider and caregiver knowledge, and service systems (Box 2). Two priorities emerged: strengthening integration of the vaccine into maternal and newborn care workflows and increasing community awareness.

Respondents urged fully integrating the birth dose in Nigeria's maternal and newborn care system by clarifying national policies (including CTC), issuing guidance for out-of-facility birth-dose vaccination, and dedicated funding for hepatitis B programs. Subnational respondents emphasized translating policy into practice through PHC maternal and immunization coordination and stronger reporting. Facilities should ensure 24/7 readiness, integrate the birth dose into immediate

BOX 1

Opportunities for continued learning through implementation research

- **Explore caregiver perspectives** to further inform design and piloting of strategies to increase timely birth dose, including the role of incentives.
- **Examine barriers to tracking home births;** develop systems improving newborn identification.
- **Assess transportation challenges** for caregivers and providers and design solutions that reduce delays.
- **Investigate infrastructure constraints** such as unreliable power, stockouts, and distribution failures and strengthen system resilience.
- **Examine gaps in reporting and follow-up;** implement tools improving data quality and continuity of care.
- **Assess optimal use of mixed (one- and ten-dose)** vaccine presentations by context, quantifying where CTC adds most value and evaluating CTC-approved vaccines' impact on coverage. Future studies could explore feasibility/acceptability of microarray patch delivery by CHWs.

postnatal care, maintain reliable cold chain, and sustain trained vaccinators. Stronger CHW, TBA, and facility linkages are essential to track pregnancies, identify home births, and ensure timely referral and follow-up.

Increasing community awareness

Stakeholders emphasized the importance of targeted communication to build vaccine confidence and timeliness by mobilizing women's groups, traditional leaders, youth networks, and TBAs. Community strategies include training CHWs for outreach in remote areas, using digital tools for birth tracking and notifications, and providing transport support or small incentives so caregivers access services within 24 hours or as soon as feasible. Clear, user-friendly provider training materials and co-created community messaging were viewed as critical to address knowledge gaps and ensure effective implementation.

Overall, uptake is facilitated by strong caregiver education in facilities and communities, transportation assistance, reliable reporting systems, and community actors leading mobilization and referrals. Coverage is further improved by consistent vaccine supply and cold chain stability, centralized procurement with effective distribution, and facilities with daily immunization services.

BOX 2

Recommended strategies for increasing timely hepatitis B birth dose coverage in Nigeria

Policy and systems—national level

- ☑ Strengthen core health system and routine immunization functions to improve delivery of hepatitis B birth dose, including national budget lines for hepatitis B programs.
- ☑ Develop CTC vaccine guidelines including hepatitis B once CTC-approved birth-dose vaccines are available.
- ☑ Continue to integrate the hepatitis B birth dose into national maternal and newborn health program design and guidance, including policies to embed facility-based vaccination in maternity care.
- ☑ Consider expanding the responsibilities of CHWs to include birth-dose vaccination as part of home-based early postnatal care provision.

Policy and systems—subnational level

- ☑ Ensure timely implementation of national guidelines that reinforce birth-dose administration within 24 hours across LGAs and facilities.
- ☑ Allocate subnational budgets to vaccinators for outreach, transport, and vaccine distribution in remote areas.
- ☑ Strengthen continued implementation of integrated delivery of birth-dose vaccine and routine newborn care workflows through improved coordination across PHC, maternal health, and immunization teams at LGA levels.
- ☑ Strengthen accountability for data, documentation, and timely facility vaccination for birth dose and other vaccines.

Knowledge and awareness

- ☑ Strengthen nationwide community awareness on hepatitis B and the birth dose through engagement of women's groups, traditional leaders, TBAs, and youth groups to build vaccine confidence.
- ☑ Develop clear policies for promoting timely birth-dose vaccine uptake for babies born at home.
- ☑ Provide clear, simple training materials and refresher trainings on hepatitis B birth dose for health workers.
- ☑ Train CHWs, particularly TBAs, community health influencers, and volunteer community mobilizers who may need to be incentivized to track home births, support caregivers in reaching health facilities for timely vaccination, and strengthen linkages with facilities.
- ☑ Educate caregivers and communities on the importance of the birth dose within the first 24 hours regardless of where the birth occurs, through influential community actors.

Service delivery

- ☑ Strengthen integrated birth-dose delivery by ensuring consistent newborn-care linkages across facilities and outreach; maintain a qualified and well-supervised vaccinator workforce; improve cold chain and vaccine availability; and use digital tools to track births, monitor timely coverage, assess performance, provide targeted support, and learn and improve.
- ☑ Strengthen facility readiness to provide timely birth dose at all hours, including through maintaining reliable vaccine stocks and cold chain capacity.
- ☑ Improve community birth-dose delivery by training providers on pregnancy tracking, adapting outreach for postpartum mothers, supporting community actors with referral and transport resources, strengthening cold chain/CTC in remote areas, and offering small incentives to encourage timely newborn vaccination at facilities.
- ☑ Consider using multiple hepatitis B vaccine presentations (one-dose and ten-dose vials) to minimize wastage and maximize value for money.
- ☑ Plan for further local adaptation of hepatitis B birth dose implementation strategies.

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