

RESEARCH BRIEF

LEARNING FROM NIGERIA'S EXEMPLARY PROGRESS IN MALARIA SNT

Authors: Adachi Ekeh*, Solomon Oladimeji*, Kemisola Agbaoye*, Yasir Bakare*, Anwuli Peter*, Imole Agunbiade*, Sunday Oko*, Vivianne Ihekweazu*

Contributors: Christina J. Matta*†, Letitia Onyango*, Anna Makido*, Abdisalan M. Noor*†

EXECUTIVE SUMMARY

Malaria is preventable, treatable, and curable, but it remains a devastating disease that affects hundreds of millions of people each year.¹ Progress in malaria control has been uneven, partly because malaria transmission is highly heterogeneous, varying across and within countries by geography, climate, vector ecology, health system capacity, and socioeconomic conditions. "One-size-fits-all" national strategies that do not account for this variability often fail to reach the most at-risk populations, deploy interventions where they will have the greatest impact, or maximize limited resources.

In 2018, the World Health Organization (WHO) and the Roll Back Malaria Partnership launched the High Burden to High Impact initiative supporting countries' use of local data to customize the deployment of malaria interventions at regional, district, and municipal levels. This approach, known as subnational tailoring (SNT), has improved the efficiency and impact of malaria control strategies across low- and middle-income countries worldwide.^{2,3}

Recent research has shown that Nigeria's malaria transmission rates are marked by wide heterogeneity in malaria epidemiology, subnational health system capacity, and other contextual factors including poverty, conflict, and climate shocks. Consequently, in 2019, Nigerian policymakers began to adopt national processes for malaria strategic planning, resource mobilization, and partner coordination that used SNT to account for and address this diversity. The National Malaria Elimination Program pivoted away from broad nationwide intervention models to a more participatory, data-driven approach that directs limited resources to the highest-need states and local government areas. Policymakers also embedded SNT in Nigeria's National Malaria Strategic Plans, the blueprint for the country's malaria control and elimination activities. This included expanding seasonal malaria chemoprevention to 21 high-burden northern states, establishing continuous replacement campaigns for insecticide-treated nets in the south, targeting indoor residual spraying for hot spots with the highest incidence and entomological risk, and reinforcing coverage for

intermittent preventive treatment of malaria in pregnancy across all states. These decisions increased the impact of interventions delivered and strengthened the country's case for funding support. National parasite prevalence also declined in Nigeria, from 27% in 2015 to 15% in 2025.⁴

The Exemplars in Malaria SNT project is a convergent mixed-methods study of subnational tailoring strategies in five countries. This brief highlights some of Nigeria's promising practices in SNT implementation, including:

- **Embedding SNT** within national planning, financing, and decision-making frameworks such as National Malaria Strategic Plans and donor investment processes.
- **Strong national leadership and coordination** via the National Malaria Elimination Program, aligning government and partners in the use of evidence to inform national strategy, make financing decisions, and shape subnational implementation.
- **Improved data collection, dissemination, analysis, and quality** through the National Malaria Data Repository.
- **Forecasting the projected impact of interventions** on prevalence and mortality, strengthening granular subnational evidence for both real-time adaptation and future planning.

How does SNT typically work?

Subnational tailoring (SNT) makes it possible for countries to identify and implement the most appropriate malaria interventions for a given region or locality. A conceptual framework, developed in partnership with the Harvard T.H. Chan School of Public Health and Applied Health Analytics for Delivery and Innovation, describes the SNT process as a continuous cycle: **generating the evidence**, in which actors gather data at regional, district, and municipal levels; **synthesizing the evidence**, in which policymakers analyze that data and translate it into recommendations for localized interventions; and **acting on the evidence**, or delivering interventions and measuring their impact.⁵

1 World Health Organization. Malaria. December 4, 2025. Accessed April 27, 2026. <https://www.who.int/news-room/fact-sheets/detail/malaria>

2 World Health Organization. Update on subnational tailoring of malaria interventions. Malaria Policy Advisory Group Meeting; March 4-5, 2024; Yaoundé, Cameroon. 2024. Accessed April 27, 2026. https://cdn.who.int/media/docs/default-source/malaria/mpac-documentation/mpag-march2024-session4-subnational-tailoring-of-interventions-rev.pdf?sfvrsn=6eebf97_3

3 World Health Organization. High burden to high impact: a targeted malaria response. November 18, 2018. Accessed April 27, 2026. <https://www.who.int/publications/i/item/WHO-CDS-GMP-2018.25>

4 Nigeria Malaria Indicator Survey (MIS) 2025.

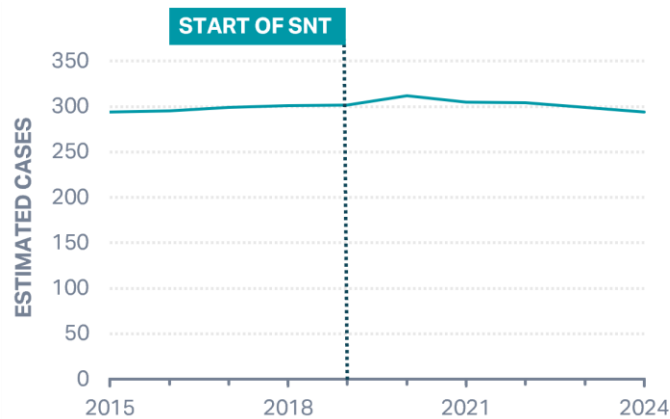
5 World Health Organization. Accessed April 23, 2026. <https://iris.who.int/server/api/core/bitstreams/78b4fed5-a372-4f87-8a04-edec47e092d5/content>

In Nigeria, the National Malaria Elimination Program (NMEP) coordinates SNT implementation at the national level, ensuring that data and evidence inform the development of National Malaria Strategic Plans. Technical support for SNT implementation is provided by the Federal Ministry of Health and academic partners such as the University of Ilorin and the Nigeria Medical Research Institute. International and development partners such as WHO, the US President's Malaria Initiative (PMI),⁶ Malaria Consortium, PATH, Solina, Catholic Relief Services, and the Gates Foundation provide analytical support for data modeling, geospatial analysis, and data harmonization. At the subnational level, State Malaria Elimination Programs coordinate intervention implementation, validate local data, and draft state-level malaria operational plans with the support of implementation and technical support partners.

Malaria SNT in Nigeria

In 2018, Nigeria accounted for one-quarter of the world's malaria cases—approximately 300 malaria cases per 1,000 people (Figure 1)—and 24% of the world's malaria deaths. Approximately 40% of the country's at-risk population were sleeping under insecticide-treated nets (ITNs), and less than one-third of pregnant women were receiving intermittent preventive treatment of malaria in pregnancy.⁷

Figure 1: Estimated national malaria case incidence per 1,000 people in Nigeria, 2015–2024

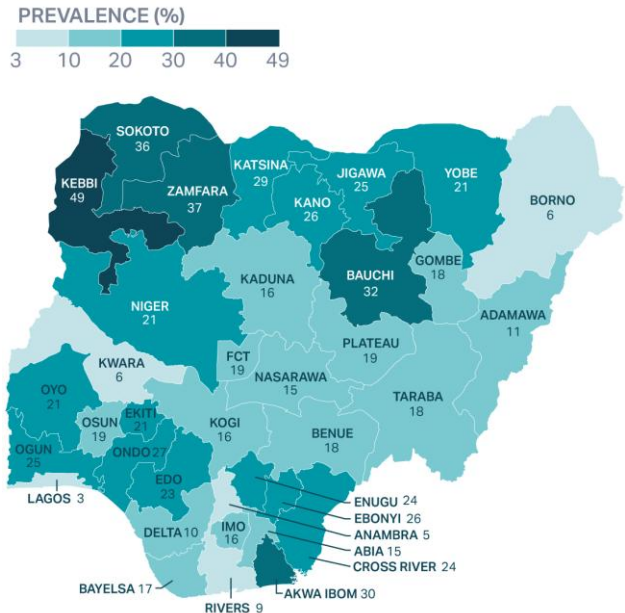


Source: World Malaria Report

Transmission intensity also varied dramatically across states and local government areas (LGAs). Urban and coastal areas such as Lagos had, and continue to have, low prevalence, in contrast to very high-prevalence northern parts of the country such as Kebbi and Sokoto (Figure 2). However, the country's limited malaria control resources were inefficiently allocated through “one-size-fits-all” interventions that did not account for these subnational differences in entomological risk, health system capacity, or population vulnerability.

6 KFF. The Trump administration's foreign aid review: status of the President's Malaria Initiative (PMI). October 16, 2025. Accessed April 27, 2026. <https://www.kff.org/global-health-policy/the-trump-administrations-foreign-aid-review-status-of-the-presidents-malaria-initiative-pmi/>

Figure 2: Percentage of malaria prevalence in children under five in Nigeria, by state, 2021



Source: World Malaria Report, 2022

Building on WHO's High Burden to High Impact initiative and with the support of WHO, PMI, the Global Fund, and technical partners, Nigeria's NMEP introduced SNT in 2019. The new approach aimed to boost efficiency, make better use of scarce resources, and match interventions to state-specific needs.

The first round of SNT analysis in Nigeria focused on building proof of concept, assembling key epidemiological evidence, and exploring the impact of contextual factors on malaria burden. In 2020, the country launched the National Malaria Data Repository, a DHIS2-based platform that integrated routine surveillance, survey, and partner data sets into a single system with standardized indicators, dashboards, and data validation processes. This strengthened data quality and usability, enabling the NMEP—and, increasingly, State Malaria Elimination Programs—to conduct structured subnational analyses. Since 2021, Nigeria has expanded its commitment to SNT, integrating it into malaria planning and programming nationwide.

Core outputs of the SNT process, including subnational stratification analyses, optimized intervention mixes, and costed operational plans supported by scenario modeling, have informed Global Fund grant negotiations and PMI investment decisions. Subnational transmission data and other stratified evidence have also directed tailored interventions such as the expansion of seasonal malaria chemoprevention to 21 of Nigeria's 36 states by 2023; the routine distribution of ITNs in the southern part of the country; targeted indoor residual spraying in malaria hot spots; and the rollout of the R21 vaccine in select states, with plans to scale up.

Nigeria's malaria programming is both more efficient and more responsive to realities on the ground than it was before policymakers adopted SNT. While challenges remain, particularly when it comes to

7 World Health Organization. The "World malaria report 2019" at a glance. December 4, 2019. Accessed April 27, 2026. <https://www.who.int/news-room/feature-stories/detail/world-malaria-report-2019>

program sustainability and data quality, the process of institutionalizing SNT in Nigeria highlights key promising practices that peer countries can adopt or adapt for their own contexts.

The promising practices that enabled the SNT process are sorted into the three steps in the cycle: generating the evidence, synthesizing the evidence, and acting on the evidence.

PROMISING PRACTICES: GENERATING THE EVIDENCE

Layering diverse data from a variety of sources—including routine disease and entomological surveillance, demographic reports, weather and climate tracking, and community health worker reports—improves intervention targeting and analysis for maximum impact.⁸ In Nigeria, stakeholders have:

Strengthened pre-SNT coordination between national and subnational stakeholders

To generate and validate the national, state-level, and local data that SNT implementation requires, Nigeria’s NMEP convened stakeholders across sectors and levels of the government—including individual NMEP units, State Malaria Elimination Programs, donors, and technical partners—to conduct planning workshops. These workshops assigned responsibilities, defined terms, established methodological frameworks, and mapped timelines for evidence generation. These convenings also emphasized the need for preparation and continued coordination, both prerequisites for the data analysis SNT depends on. This structured space to assign responsibilities, define terms, and establish methodological frameworks created a shared sense of ownership and helped reduce fragmentation and duplication of efforts.

Built a central platform for data aggregation and distribution

Although Nigeria collected routine surveillance data before 2019, it was often difficult to find and use, since it was fragmented across different sources such as DHIS2, household surveys, and partner datasets. Nigeria launched the National Malaria Data Repository platform in 2020, which integrated data from DHIS2, the Malaria Indicator Survey, the Demographic and Health Survey, campaign monitoring reports, and other sources, enabling significant improvements in data accessibility, quality, and tracking (Figure 3). Technical partners supported the effort by cleaning, harmonizing, and triangulating data and building dashboards and templates to make the evidence more user-friendly and approachable. These efforts collectively enabled a more comprehensive evidence base with timely data validation and an environment for shared interpretation of results that SNT relies on.

Figure 3: Data assembly for Malaria SNT

TYPE OF DATA	DATA SOURCE	INDICATORS
Household Surveys	NMIS 2015 & 2021	Parasite prevalence, ITN coverage
	NDHS 2018 & 2024	IPTp uptake
		Treatment seeking behavior
Routine Health Data	HMIS	Number of outpatient cases, severe malaria cases seen, test positivity rates
	LMIS	ACT and RDT stocks
Campaign program & monitoring data	Campaign reports	ITN/SMC distribution & coverage, SMC cycles delivered
Surveillance	Partner and NMEP entomological surveillance data	Vector distribution, insecticide resistance, transmission seasonality
	Partner and NMEP therapeutic efficacy surveillance data	Resistance markers and parasite clearance
	Partner campaign distribution	Microplanning datasets
Other data	Funding	NMEP and donors
	Malaria Atlas Project	Health facility accessibility geospatial estimates
	CHIRPS	Modelled open access climate surfaces
	WHO	Seasonality surfaces modelled from climate data and validated using incidence data

PROMISING PRACTICES: SYNTHESIZING THE EVIDENCE

Before translating epidemiological, entomological, programmatic, and financial information into operational priorities and strategic decisions, stakeholders need to develop frameworks and methods that make data synthesis possible.⁹ In Nigeria, stakeholders have:

Increased stratification granularity to tailor interventions

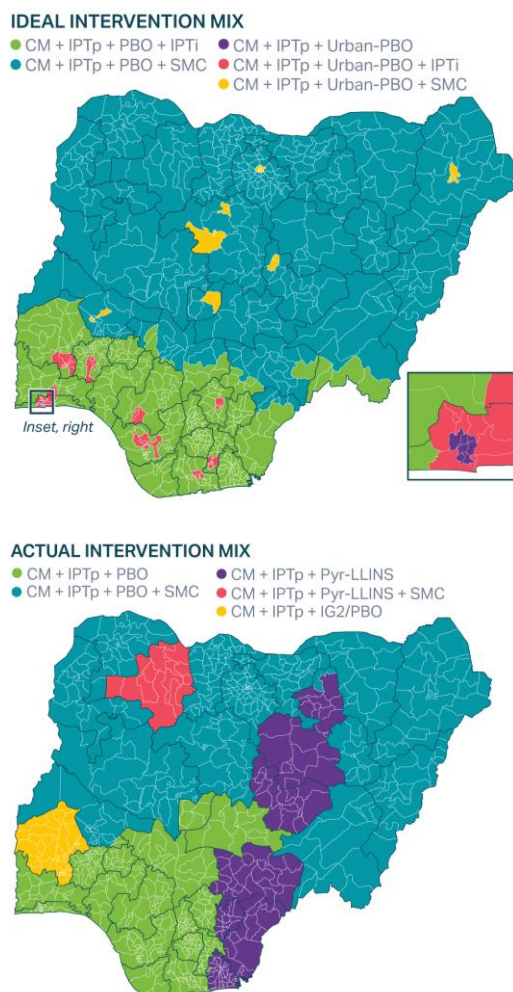
Malaria parasite prevalence among children under five varied widely in Nigeria, and rural populations carried more than double the burden of urban populations. The country’s six ecological zones also created fundamentally different transmission intensities and seasonal profiles, making the historical uniform intervention approach ineffective. This heterogeneity pushed Nigeria to conduct state- and LGA-level stratification, with microplanning for urban hot spots, where differentiated packages were developed for high-burden northern states and moderate-burden southern states: high-burden northern states expanded seasonal malaria chemoprevention, enhanced vector management, and improved case management for intermittent preventive treatment of malaria in pregnancy; and moderate-burden

8 Onyango L, Ouédraogo-Ametchie G, Ozodiegwu I, Galatas B, Gerardin J. Subnational tailoring of malaria interventions for strategic planning and prioritization: experience and perspectives of five malaria programs. PLOS Glob Public Health. 2025;5(5):e0003811. <https://doi.org/10.1371/journal.pgph.0003811>

9 World Health Organization. WHO Guidelines for Malaria. 2025. Accessed April 27, 2026. <https://www.who.int/publications/i/item/guidelines-for-malaria>

southern and middle states prioritized ITNs, intermittent preventive treatment of malaria in pregnancy, and the targeted use of indoor residual spraying (Figure 4). Finer stratification also allowed for more precise and justified targeting of limited resources, such as vaccine rollout prioritization and the phased introduction of next-generation bed nets in areas where insecticide resistance evidence confirmed their superior efficacy.

Figure 4: Ideal and selected intervention mixes for Phase 1 SNT in Nigeria, 2020



Acronyms: CM: Case management; IPTp: Intermittent Preventive Treatment in pregnancy; PBO: Piperonyl Butoxide bed nets; IPTi: Intermittent Preventive Treatment in infants; SMC: Seasonal Malaria Chemoprevention; Pyr-LLINS: Pyrethroid Long-Lasting Insecticidal Nets; IG2/PBO: Interceptor G2 and PBO-treated bed nets

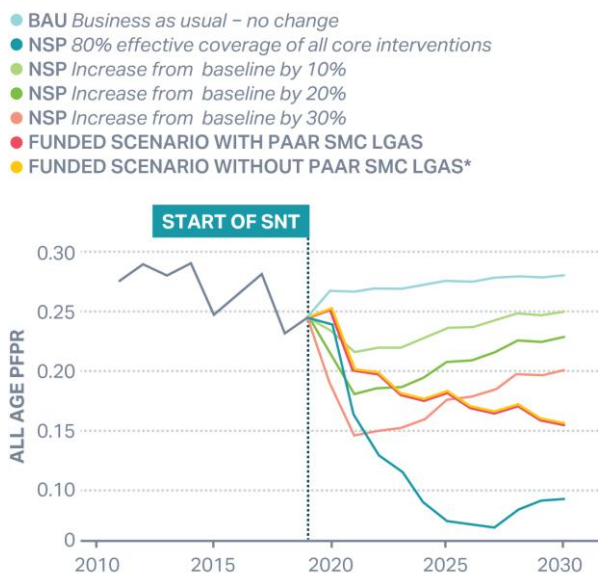
Source: National Malaria Strategic Plan, 2021–2025

Forecasted the impact of interventions

Effective forecasting of the likely impact of intervention mixes on prevalence and mortality required both sophisticated data analysis and awareness of the constraints of real-world health systems. Forecasting in Nigeria used models developed with support from the Institute for Disease Modeling, PATH Malaria Control and Elimination Partnership in Africa, and WHO; these partners worked on model development, scenario analyses review, and data translation and

projection, and they collaborated with program staff to ensure outputs were both technically sound and operationally feasible. For example, the modeled scenarios showed that expanded seasonal malaria chemoprevention coverage in the north would avert substantially more cases than introducing indoor residual spraying at scale, justifying prioritization (Figure 5). These forecasting efforts supported the development of evidence-based investment cases to justify resource prioritization with the Global Fund through Grant Cycle 7.

Figure 5: Plasmodium falciparum parasite rate impact forecasting by coverage level in Nigeria, all ages, 2010-2030



*Targeted SMC for LGAs with Priority Above Allocation Request

Source: WHO Impact Modeling Report

PROMISING PRACTICES: ACTING ON THE EVIDENCE

Effectively deploying SNT requires translating stratification outputs into concrete regional and local actions. Nigeria:

Coordinated national leadership, subnational staff, and technical partners to deliver services

With 36 states and 774 LGAs, each with varying analytical capacity, political will, and donor support, translating national stratification decisions into subnational implementation required active coordination. The NMEP coordinated intervention planning and resource mobilization, while State Malaria Elimination Programs managed downstream implementation through state malaria operational plans. Donors such as PMI and the Global Fund provided technical guidance, while implementation partners supported logistics and monitoring. Civil society groups were also involved to help sustain accountability and encourage individuals to actively seek out malaria services through community-led health education and awareness activities. Despite resource constraints and logistical feasibility at subnational levels, coordinated collaboration across a variety of stakeholders ensured intervention packages derived from SNT were effectively operationalized.

Fostered a culture of monitoring and evaluation for adaptive implementation

To enable use of implementation data for adjusting and improving programmatic decisions, countries need to support ongoing monitoring and evaluation. In Nigeria, this required deliberate investments in the systems, tools, and human capacity needed to make data actionable at every level of the malaria program.

To strengthen the monitoring and evaluation (M&E) framework, the NMEP established a dedicated Surveillance, Monitoring, Evaluation and Operations Research objective within the National Malaria Strategic Plan 2021–2025, with explicit strategies, targets, and indicators. Monthly DHIS2 data analysis was institutionalized with structured feedback loops to states, and integrated monitoring and supervision visits were introduced to strengthen routine oversight at national and subnational levels. On reporting tools, Malaria Health Products Logistics Management Information System processes and operating procedures were revised to improve data capture across the supply chain. Mobile technology for facility-level reporting into DHIS2 was piloted in Lagos and Kaduna states, demonstrating improvements in timeliness and completeness of reporting, and plans to scale nationally. To strengthen capacity at the state and LGA levels, the National Malaria Strategic Plan 2021–2025 committed to structured M&E training for malaria program officers, advocacy for dedicated M&E staff recruitment and deployment, and reallocation of cross-program M&E human resources, including from HIV and Expanded Programme on Immunization programs. Decentralization of supply chain management functions through State Logistics Management Coordinating Units has also provided a model for improving subnational data ownership and interpretation.

Investments in these areas have enabled officials to use routine M&E findings in response to stock-outs and coverage gaps, informing operational corrections as well as post hoc assessments. While funding constraints of the Surveillance, Monitoring, Evaluation and Operations Research objective still exist in the 13 non-partner-supported states, and private sector data reporting is weak, this trajectory represents a meaningful and ongoing shift toward evidence-driven adaptive management.

Maintained malaria service delivery

Even before SNT implementation, Nigeria's malaria control efforts showed strength in treatment delivery and case management. However, these services were largely implemented using broad national approaches that did not sufficiently account for subnational differences in burden, transmission intensity, and service gaps. SNT strengthened existing service delivery systems through localized performance monitoring, targeted training, supportive supervision, and more responsive allocation of interventions and commodities across states and LGAs. Cascading case management training updates to subnational levels also ensured that changes to malaria treatment protocols and diagnostic guidance reached frontline health workers, including in insecure or hard-to-reach settings where staff turnover and access constraints were common. These activities helped maintain delivery in states such as Imo and Akwa Ibom, where pre-SNT declines in cases treated with first-line artemisinin-based combination treatments rebounded after SNT implementation.

BARRIERS TO CONTINUED IMPLEMENTATION

In Nigeria, the initial results of SNT are promising. However, barriers to sustained, effective implementation remain. They include:

Gaps in routine surveillance and data collection

Gaps in data quality persist when it comes to routine health information, commodity supply levels, and surveillance data, as well as private sector data.

Uneven technical and analytical capacity

While Nigeria's capacity for analysis and planning has strengthened in recent years, advanced modeling and forecasting remain dependent on technical partners. Training in-country personnel and collaborating with local research and academic institutions can improve long-term sustainability.

Unreliable financing mechanisms

Declining donor funding and inconsistent domestic financing have limited the full implementation of SNT-derived intervention packages, resulting in partial rollouts and interrupted campaigns.

Fragmented supply chains and logistical bottlenecks

Delays in moving supplies to local facilities impact effective coverage, especially in remote areas. These operational constraints are exacerbated by limitations in inventory reporting, workforce availability, geographic barriers, and insecurity, which ultimately limit the total potential of SNT-informed interventions.

Recommendations

Nigeria's advancements in SNT offer valuable insights for peer countries seeking to implement or improve similar programs.

For governments:

- **Embed SNT into national planning.** Countries should embed SNT processes and approaches into annual health sector planning and budgeting cycles to enhance resource allocation across priority health programs and strengthen the investment case for domestic financing.
- **Invest in domestic analytic capacity.** To reduce reliance on technical partners, countries should establish dedicated in-country analytics units at the national and subnational levels to both produce and translate modeling and other processes into accessible formats for decision makers.
- **Strengthen data quality.** Countries can strengthen data quality for future stratification rounds and intervention delivery monitoring by investing in the collection and integration of health and other data—including data related to climate—and an updated national census.
- **Use SNT to navigate changing funding landscapes.** Under increasingly constrained financing, SNT provides a structured way for governments to justify difficult choices, defend prioritization decisions, and develop a data-driven case for investment to reduce and eliminate malaria.

For research and implementation partners:

- **Expand community-based delivery approaches.** Expanding local delivery strategies should include volunteer networks and other community-facing organizations that can sustain service outreach, even when donor support is intermittent or has lapsed.
- **Partner with in-country institutions and mandate knowledge transfers.** Partnering with universities and research institutions to establish a national center of excellence for SNT analytics will strengthen sustainable and independent local analytical capacity for stratification exercises. Adopting structured capacity transfer mandates will also allow institutions to fully own analytical capabilities.

For donors:

- **Align funding with SNT-informed priorities.** Aligning funding decisions with SNT-informed investment cases will minimize duplication of efforts across donors, such as multiple partners funding similar interventions in the same states or LGAs while other high-burden areas remain underserved. Shared SNT analyses and costed operational plans will also enable partners to align investments with state-specific malaria burden, transmission intensity, and health system needs.
- **Sustain investments in core SNT capacities.** Sustained investment in surveillance, analysis, M&E, and capacity strengthening is critical to institutionalizing SNT as a durable feature of global malaria response.

ABOUT THE EXEMPLARS IN MALARIA SNT STUDY

The Exemplars Malaria Subnational Tailoring (SNT) study aims to examine and document facilitators and barriers to planning, implementing, and sustaining tailored malaria interventions that can optimize impact on transmission and burden of disease. Ultimately, the findings from the study highlight opportunities to improve allocative efficiency and fine-tune control efforts, as well as provide transferable lessons for other countries implementing SNT. Exemplars research in Nigeria was conducted by partners at *Nigeria Health Watch based in Abuja, Nigeria, from 2025 to 2026, in collaboration with the +Harvard T.H. Chan School of Public Health and †Applied Health Analytics for Delivery and Innovation (AHADI). ‡Northwestern University also contributed to this research.

This study was funded by the Gates Foundation and Gates Ventures.



The Exemplars in Global Health (EGH) program is a global coalition of partners including researchers, academics, experts, funders, country stakeholders, and implementers. Our mission is to identify positive global health outliers, analyze what makes countries successful, and disseminate core lessons so they can be adapted in comparable settings. We aim to help country-level decision makers, global partners, and funders make strategic decisions, allocate resources, and craft evidence-based policies. EGH is part of the Gates Foundation's Global Development Division.