GLOBAL FUND ANALYTIC GUIDE

MALARIA GRANT CYCLE 8 (GC8) INDICATOR ANALYSES

DECEMBER 2025

METRICS FOR MANAGEMENT

THE GLOBAL FUND

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LIST OF ABBREVIATIONS

ABER	Annual Blood Examination Rate
ANC	Antenatal care
ANC1	Antenatal Care Surveillance
CLQAS	Cluster Lot Quality Assurance Sampling
DHS	Demographic and Health Survey
GC8	Grant Cycle 8
HMIS	Health Management Information System
IPTP	Intermittent Preventive Treatment in Pregnancy
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Net
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and Evaluation
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
NMP	National Malaria Program
OPD	Outpatient Department
PMC	Perennial Malaria Chemoprevention
PHMES	Public Health Monitoring and Evaluation Specialist
PR	Principal Recipient
PUDR	Performance Update and Disbursement Request
RBM	Roll Back Malaria
RDT	Rapid Diagnostic Test
RMNCH	Reproductive, Maternal, Newborn, and Child Health
RSSH	Resilient and Sustainable Systems for Health
SBC	Social and Behavior Change
SMC	Seasonal Malaria Chemoprevention
SPI	Specific Prevention Intervention
TB	Tuberculosis
WHO	World Health Organization

INTRODUCTION

Purpose of the Guide

The Global Fund Analytic Guide is designed to support Global Fund Country Teams, including Public Health Monitoring and Evaluation Specialist (PHMES) and PHME Managers, by offering standardized, yet flexible, approaches for analyzing malaria grant data. In an era of stalled progress toward malaria elimination and increasingly constrained global health funding, data-driven decision-making is more critical than ever. This guide aims to serve not as a rigid protocol, but as a foundational resource that can be adapted to diverse country contexts and evolving analytical needs.

More than a compilation of techniques, the Analytic Guide reflects a broader commitment to transforming malaria programs from reactive efforts into proactive, data-informed strategies. It promotes consistent, rigorous analysis of Global Fund malaria indicators, enabling Country Teams to better monitor performance, identify trends, and support timely, evidence-based programmatic adjustments. Recognizing that no single indicator can fully capture program performance, the guide emphasizes the value of integrating coverage, outcome, and impact indicators—alongside external data sources and country-specific insights.

To support strategic decision-making, the guide includes embedded follow-up questions within each intervention area. These are designed to prompt deeper reflection—asking why patterns emerge and what can be done to improve. This critical thinking is essential for driving sustainable impact and ensuring that malaria programs remain responsive to shifting epidemiological trends, emerging threats, and changing operational realities.

As the malaria landscape evolves—with new tools, technologies, and challenges—the guide offers a flexible but consistent framework. While specific indicators or methods may change over time, the underlying principles remain: systematic analysis, data triangulation, evidence-based decision-making, and a shared commitment to achieving malaria elimination.

Objectives

This guide aims to:

- **Standardize analytical practices** across Country Teams to ensure consistent and comparable analysis of Global Fund malaria indicators.
- **Improve performance monitoring** by offering structured methods for analyzing indicators and identifying trends.
- **Support strategic decision-making** through key follow-up questions that promote evidence-based programmatic adjustments.

Guide Structure

The Analytic Guide is organized in a modular format based on intervention. Each intervention is broken down into key guiding questions, with each question serving as a standalone module. These modules include sample analyses, relevant follow-up questions, and suggested next steps. You can explore them in any order, depending on your priorities and analytical needs. Note that all graphs are based on fictional data and do not reflect real Global Fund grants.

Click on a question below to go directly to the corresponding module or click on the  *to return to the Table of Contents.*

Analyses for All Indicators

- Compare indicator performance against the indicator target
- Compare indicator performance across time
- Review trends in indicator numerators and denominators
- Compare indicator performance across disaggregation categories

Case Management Guiding Questions

- How effectively is the country implementing the **testing** component of the test–treat–track care cascade?
- How effectively is the country implementing the **treatment** component of the test–treat–track care cascade?
- How effectively is the country implementing the **tracking** component of the test–treat–track care cascade?

Vector Control Guiding Questions

- To what extent is the country achieving high ITN coverage among at-risk populations?
- To what degree are individuals within targeted populations using ITNs?
- Are IRS campaigns achieving the desired coverage in targeted areas?

Specific Prevention Interventions Guiding Questions

- Are pregnant women & girls attending ANC services receiving the recommended 3+ doses of IPTp?
- Are children receiving the full number of cycles of seasonal malaria chemoprevention each transmission season in targeted areas?
- Are children in target age groups receiving the full number of doses of perennial malaria chemoprevention?

Impact Guiding Questions

- How is the malaria burden changing?
- How are trends in severe malaria changing?
- Is the country progressing towards elimination?

Appendix

The Appendix provides essential information to support accurate interpretation and analysis of Global Fund indicators. It includes:

- **Appendix A – Indicator Tables:** Lists indicator codes, indicator descriptions, disaggregations, and data sources.
- **Appendix B – Indicator Data Sources:** Describes both traditional data sources (e.g., surveys, campaign data, HMIS) and newer methods (e.g., LQAS, ANC1), offering guidance on how to use and interpret each source effectively.
- **Appendix C – Data Quality Checks:** Outlines key data quality checks that should be conducted prior to analyzing indicator data.
- **Appendix D – Supplemental Data Sources:** Provides information on external sources (e.g., WHO, RBM, ClimateSERV, etc.) that can be used to triangulate data and enhance analysis.
- **Appendix E – Essential Questions to Frame Discussions with Principal Recipients:** Outlines key discussion topics, such as budget absorption, climate impact, conflict, and stockouts, to help structure effective conversations with PRs.
- **Appendix F – Additional Analyses:** Each module includes a section on "Additional Analyses." Appendix F is organized by intervention area and provides further details and examples of more advanced analyses to support deeper exploration of the Global Fund malaria indicators.

Acknowledgements

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ANALYSES FOR ALL INDICATORS

Compare indicator performance against the indicator target

A target is set for each indicator included in the performance framework. It is important to continually monitor performance against this target for grant rating, while also assessing whether the target needs to be adjusted over time to reflect a changing scenario.

If a country consistently exceeds its targets, it is essential to verify the accuracy of the reported data, both by confirming it with the principal recipient (PR) and triangulating it with other data sources, such as those described in Appendix D. After verifying the scenario, you should then initiate a conversation with the PR to establish new, more ambitious targets that will continue to drive greater impact.

If a PR is consistently failing to meet its targets, it is again valuable to verify the accuracy of the data both with the PR and through triangulation with other sources. If the indicators are accurate, it is important to initiate a discussion with the principal recipient regarding the drivers of underperformance and the support they may require to get back on track. If underperformance is driven by a changing scenario, it may be necessary to update targets.

Compare indicator performance across time

Wherever possible, it is valuable to analyze indicator performance across time. Examining indicators over time is not only useful for data quality checks but can also provide valuable insights into performance trends. If an indicator, such as the number of confirmed cases receiving treatment, had been trending in the right direction and suddenly began trending in the wrong direction, it is essential to dig deeper to understand why. The same is true if an indicator was stagnant and now performance is improving. Understanding the drivers of change can help ensure strong performance continues.

Review trends in indicator numerators and denominators

Many indicators require both a numerator and a denominator. When reviewing these indicators it is important not only to look at the proportion, but to also review trends in the numerators and denominators separately. While a proportion may remain stable, this can mask large underlying shifts. For example, indicator CM-1a may show that the proportion of patients with suspected malaria who received a parasitological test was 0.8 (80%) in both 2023 and 2024, but in 2023 this represented 100,000 patients tested out of 125,000 suspected cases and in 2024 it represents 150,000 patients tested out of 187,500 suspected cases. While overall performance appears the same, a close look at the trends in the numerator and denominator reveal a large increase in suspected cases and the number of tests required to continue to achieve that same overall performance. This more nuanced analysis helps you to more fully understand what is driving performance trends.

Compare indicator performance across disaggregation categories

Many indicators have a series of associated disaggregation categories. All disaggregation categories are required unless otherwise stated, and they provide important insights into program performance. In some cases, these disaggregation categories provide insight into the performance of indicators among key risk groups, such as children under 5 years old. In other cases, they allow for an examination of how performance compares across sectors or, for elimination settings, on the source of infection.

Where the disaggregation categories focus on different subpopulations, it can be valuable to compare performance across these categories as well as between each group and the population as a whole to identify any potential discrepancies. If differences between groups are identified, this should prompt a discussion with the PR as to the drivers of these discrepancies and possible programmatic adjustments that could be made to address them. If a PR is not reporting on a disaggregation category, it is important to understand the reason and identify the steps being taken to enable the reporting of disaggregated data.

CASE MANAGEMENT ANALYSES

Question #1: How effectively is the country implementing the *testing* component of the test–treat–track care cascade?

Key Indicators

- **REQUIRED** **CM-1A:** Proportion of patients with suspected malaria who received a parasitological test (microscopy or RDT) at a public sector health facility.
  - Age (<5, 5+); Type of testing (microscopy, rapid diagnostic test)
- **CM-1B:** Proportion of patients with suspected malaria who received a parasitological test (microscopy or RDT) in the community.
  - Age (<5, 5+); Type of testing (microscopy, rapid diagnostic test)
- **CM-1C:** Proportion of patients with suspected malaria who received a parasitological test (microscopy or RDT) at private sector sites.
  - Age (<5, 5+); Type of testing (microscopy, rapid diagnostic test)
- **CM-7:** Percentage of districts achieving national target for the proportion of patients with suspected malaria who receive a parasitological test.
  - Type of provider (public, private, community)
- **O-9:** Annual blood examination rate (ABER): Number of people receiving a parasitological test during 1 year out of the total population at risk.
  - Case detection (active, passive)

Question #2: How effectively is the country implementing the *treatment* component of the test–treat–track care cascade?

Key Indicators

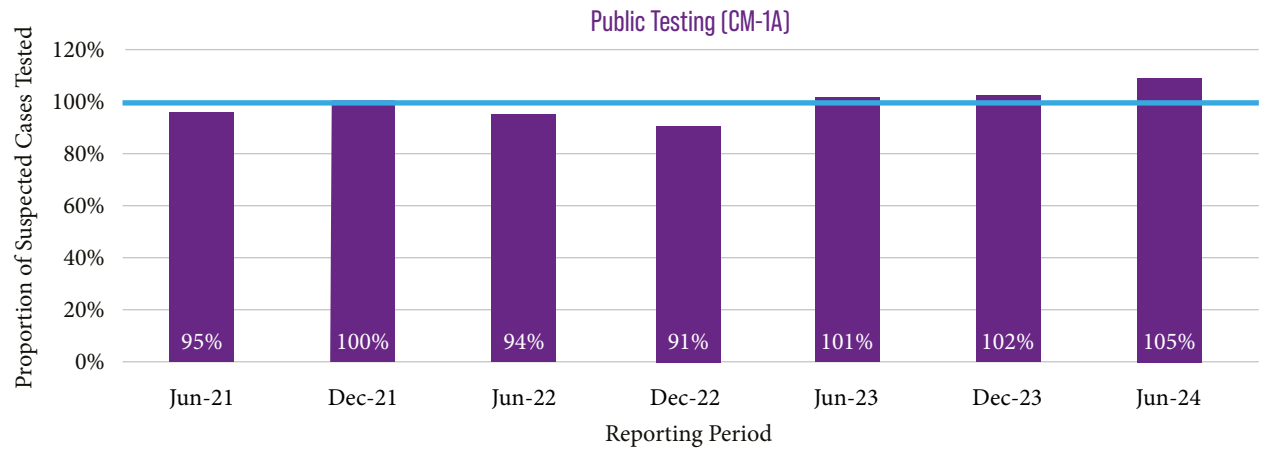
- **REQUIRED** **CM-2A:** Proportion of patients with confirmed malaria who received first-line antimalarial treatment, according to national policy, at public sector health facilities.
  - Age (<5, 5+)
- **CM-2B:** Proportion of patients with confirmed malaria who received first-line antimalarial treatment, according to national policy, in the community.
  - Age (<5, 5+)
- **CM-2C:** Proportion of patients with confirmed malaria who received first-line antimalarial treatment, according to national policy, at private sector sites.
  - Age (<5, 5+)
- **CM-11:** Proportion of *P. vivax* cases tested for G6PD deficiency.
- **CM-8:** Percentage of districts achieving national targets for the proportion of patients with confirmed malaria who received first-line antimalarial treatment.
  - Type of provider (public, private, community)
- **CM-9:** Proportion of detected malaria patients that contacted health services within 48 hours of symptoms (elimination settings).

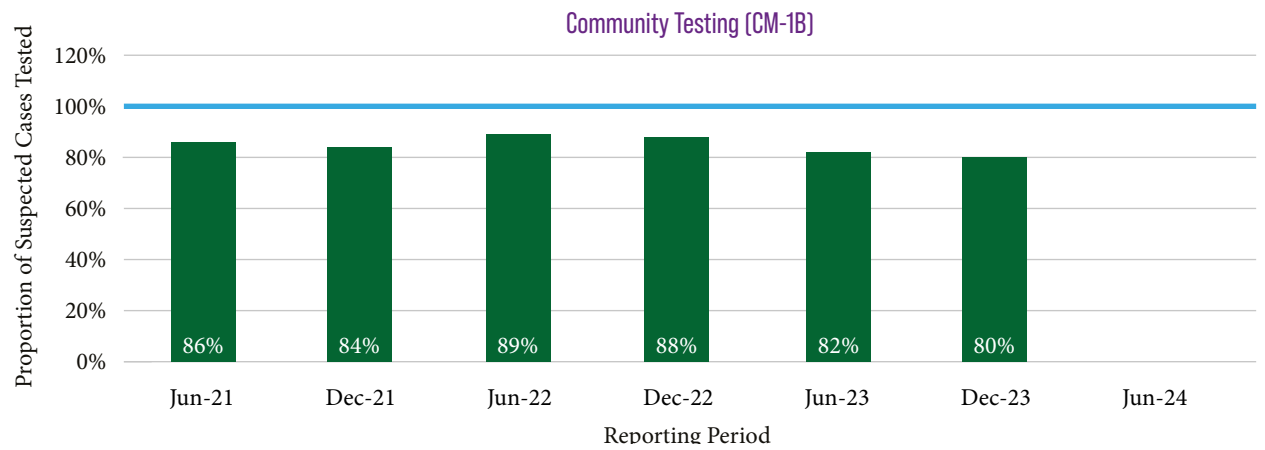
How often/when to review: The case management testing and treatment indicators are sourced from the health management information system (HMIS). Each indicator should be reviewed whenever new data becomes available, including during pulse checks, progress updates, or the PUDR.

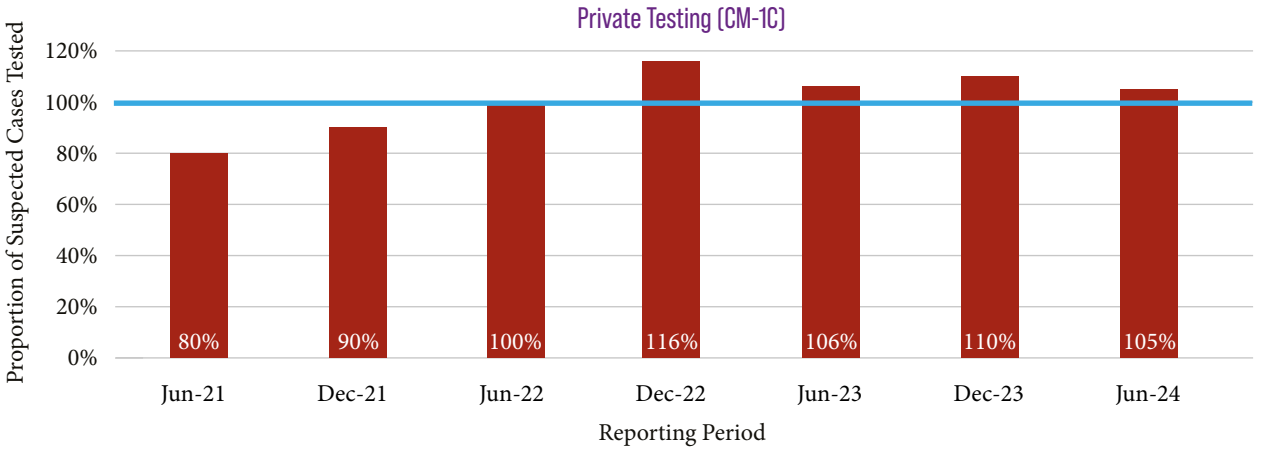
Case Example: Country X receives funding for parasitological testing (microscopy and RDT) and treatment in the public, community, and private sectors, and reported the following data in their most recent PUDR. You also pull data from the past several reporting periods so you can compare the country's performance.

Analyses

Testing Trends Across Sectors



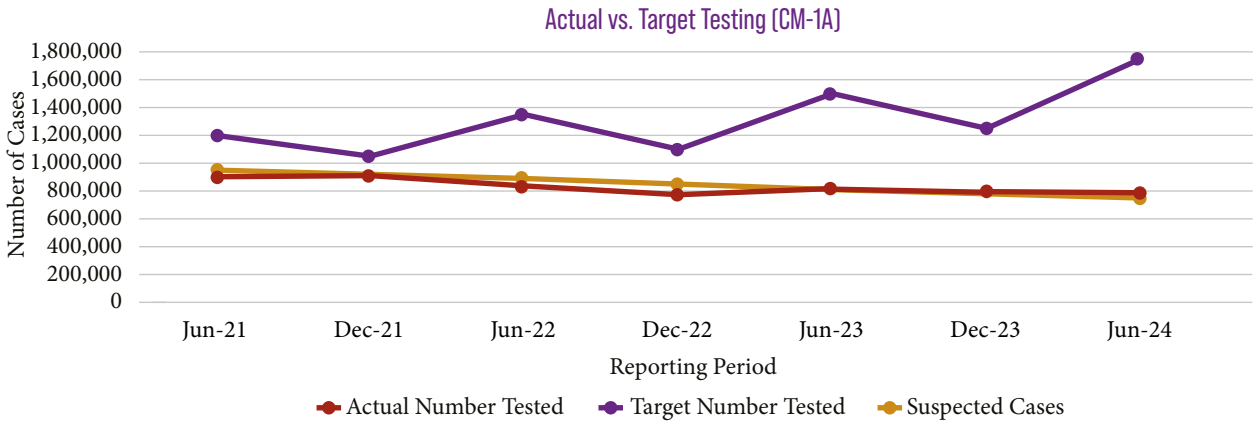




Description: This set of graphs illustrates performance trends for **CM-1A (purple)**, **CM-1B (green)**, and **CM-1C (red)** over the same reporting period. The blue line represents the target: 100% of suspected cases receiving testing. For countries with funding across multiple sectors, comparing these indicators can help identify whether performance trends are aligned or diverging.

CM-1A shows variable performance but consistently exceeds the 100% target toward the end of the period. CM-1B remains relatively stable, though consistently below target. CM-1C demonstrates a steady upward trend and consistently reports values above 100%.

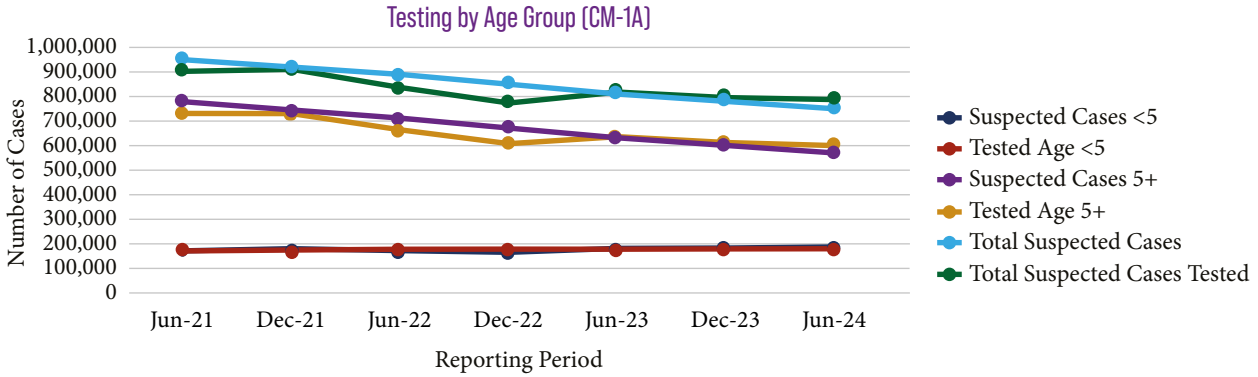
Actual Number of Individuals Tested vs. Target



Description: While the CM-1 series presents the proportion of suspected cases tested, it is also important to examine the absolute number of suspected cases tested (CM-1 numerator) in relation to the target number of tests. In the graph, the **red line** represents the actual number of individuals tested, the **purple line** shows the target number of individuals to be tested, and the **gold line** indicates the total number of suspected cases. In this example, the number of individuals tested consistently falls below the target. Additionally, both the number of individuals tested and the number of suspected cases appear to be declining. In the last reporting period, more individuals were tested and reported than suspected cases.

A similar analysis should be conducted for CM-1B, CM-1C as well as the CM-2 series, with a focus on comparing the actual number of cases treated to the target treatment numbers.

Testing Disaggregated by Age

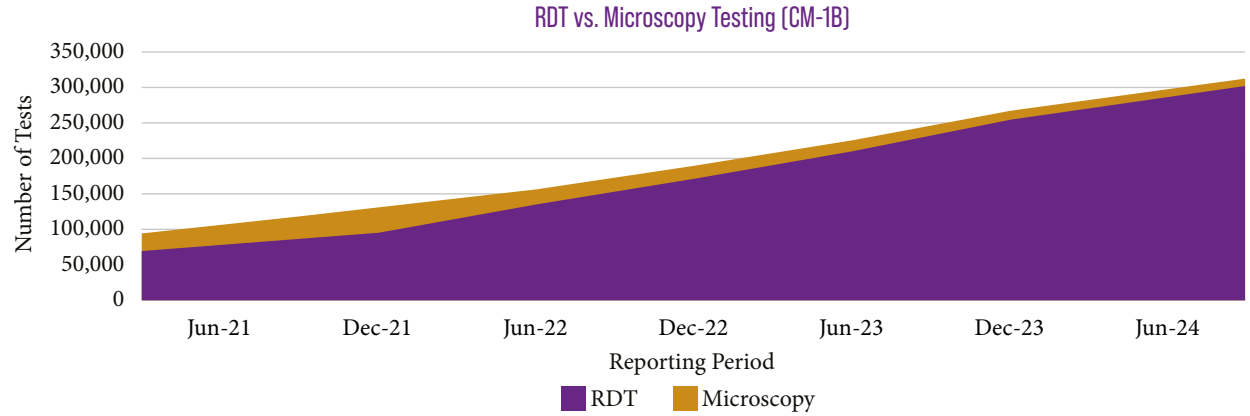


Description: This graph shows testing patterns across different age groups using age-disaggregated data from indicator CM-1A. The **navy line** represents the number of suspected cases in children under 5, while the **red line** indicates the number of tests conducted in this age group. The **purple line** shows the number of suspected cases among individuals aged 5 and older, and the **gold line** represents the number of tests performed in this older age group. The **blue line** displays the total number of suspected cases across all ages, and the **green line** shows the total number of tests across all ages.

The graph shows that both suspected cases and testing volumes are consistently higher in the 5+ age group compared to children under 5. A notable trend is the significant decline in both suspected cases and testing over time among individuals aged 5 and older. In contrast, trends for children under 5 remain relatively stable. The data suggest that nearly all suspected cases in the under-5 age group are being tested, whereas in earlier reporting periods, a portion of suspected cases in the older age group did not receive testing. As observed in other CM-1 series graphs, there are also instances where the number of tests exceeds the number of suspected cases.

A similar age-disaggregated analysis of testing should be conducted for each sector (CM-1A, CM-1B, and CM-1C). Additionally, a comparable analysis should be carried out for the proportion of positive cases receiving antimalarial treatment, disaggregated by age (CM-2A, CM-2B, CM-2C).

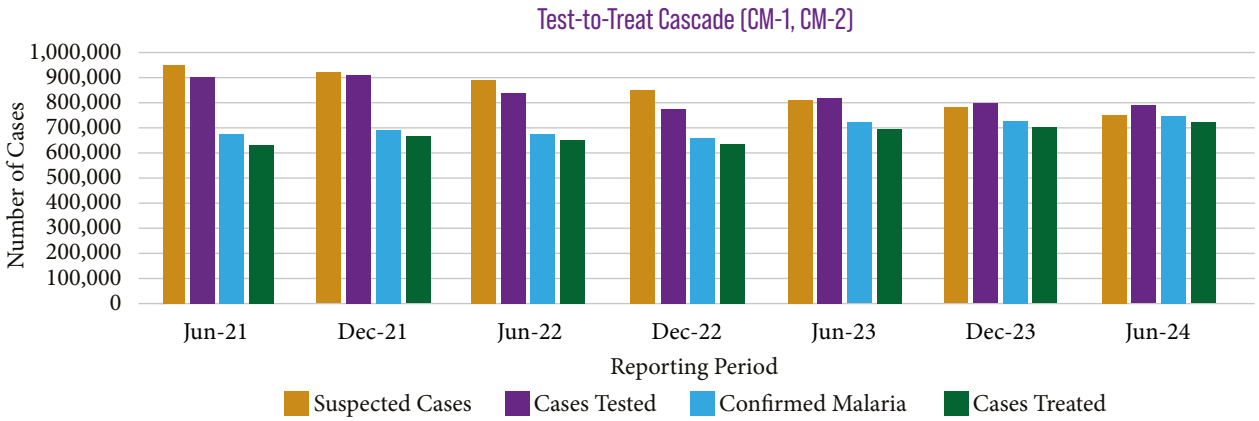
Type of Parasitological Test



Description: This stacked area chart illustrates the composition of diagnostic testing for CM-1B, comparing the use of RDTs and microscopy methods in the private sector. Over time, total testing volume increased substantially. RDTs, shown in **purple,** dominated testing throughout the period and grew both in absolute numbers and as a proportion of total tests. In contrast, microscopy, represented in **gold,** declined in absolute volume and share of overall testing.

A similar analysis should be conducted for CM-1A (public) and CM-1C (community) to understand trends in parasitological testing methods.

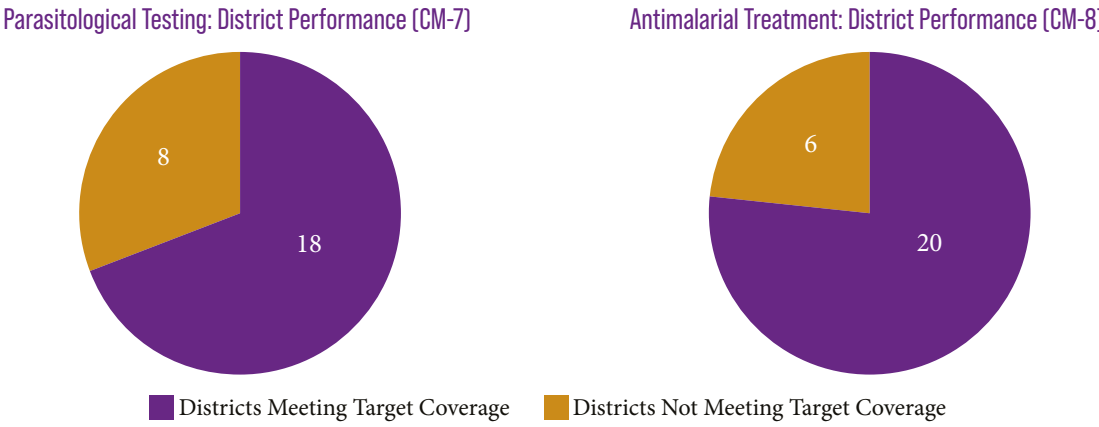
Test-to-Treat Cascade



Description: This graph illustrates the test to treat cascade using indicators CM-1 and CM-2. It shows a stepwise decline in numbers from suspected cases **(gold),** to those tested **(purple),** to confirmed malaria cases **(blue),** and finally to treated cases **(green).** Ideally, all suspected cases should be tested, and all confirmed cases treated. The observed drop-offs highlight areas potentially needing attention. Over time, testing coverage has improved significantly, reducing the gap between suspected and tested cases. Treatment rates among confirmed cases have also increased.

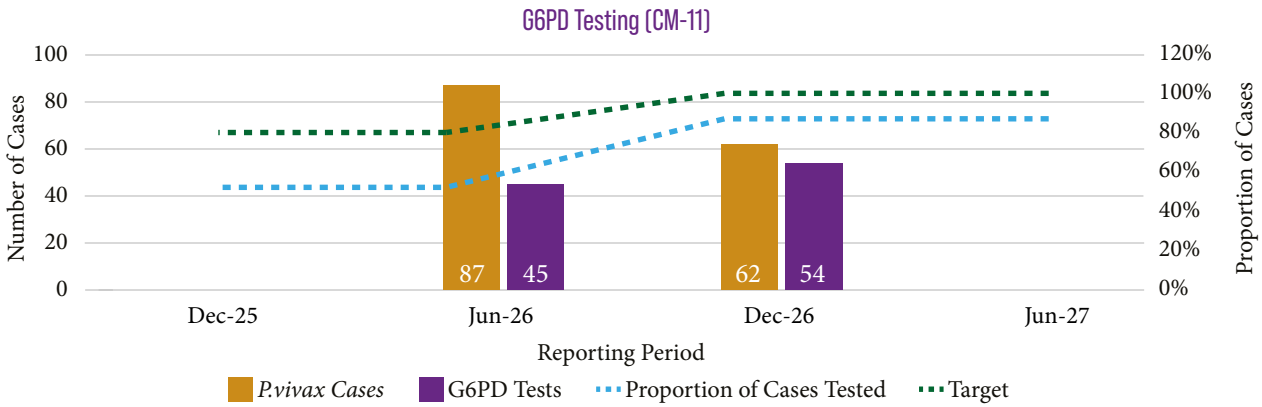
While this analysis combines data across sectors (CM-1A-C), this cascade analysis should be conducted separately for the public, private, and community sectors to identify possible differences in trends across sectors.

District Performance



Description: These pie charts provide subnational data showing how many districts are meeting the national targets for parasitological testing (CM-7) and antimalarial treatment (CM-8). **Purple** indicates districts that met the national target, while **gold** indicates those that did not. While national coverage figures can mask local variations, this detailed information helps identify which districts are not meeting the testing and treatment targets. Such insights can guide targeted discussions and interventions to improve performance in specific geographic areas. Accessing district-level data from the country is especially valuable to pinpoint exactly which districts are falling short, by how much, and whether the districts missing the testing targets are the same as those missing the treatment targets or if they differ.

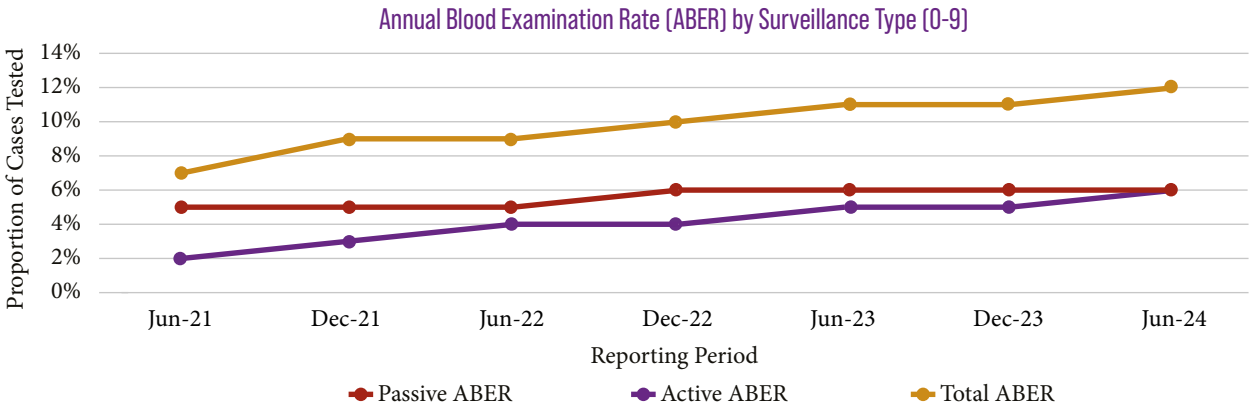
G6PD Testing



Description: The G6PD testing indicator, CM-11, is new in GC8, and captures the proportion of *P.vivax* cases that receive G6PD testing. As this is a newly established indicator, there will be no historical data for comparison. Therefore, it is essential to work closely with the PR to ensure proper tracking and reporting.

This graph displays the number of *P. vivax* cases (CM-11 denominator) in **gold** and the number of G6PD tests conducted (CM-11 numerator) in **purple.** The **blue line** shows the proportion of *P.vivax* cases tested, and the **green line** shows the target number of G6PD tests. The data show a decline in the total number of *P. vivax* cases over time, alongside an increase in the number of G6PD tests performed. Over time, the proportion of cases tested is increasing, and getting closer to the target.

Annual Blood Examination Rate (ABER) Trends



Description: This graph shows trends in the ABER (O-9). The **red line** shows passive case detection, the **purple line** shows active case detection, and the **gold line** reflects the overall ABER. All three metrics show an upward trend over time. The graph also highlights that passive case detection consistently accounts for a larger share of the ABER compared to active case detection.

Additional Analyses

- If you are able to get district-level data from the country, it is valuable to understand more about exactly which districts are failing to meet the target and by how much they are missing the target. An example of this analysis is provided here.
- If multiple sectors are receiving grant funding and you want to know about the proportional distribution of tests/treatment conducted in the public, private, and community sector, conduct this analysis.

Case Example – Follow-up: After reviewing the NMP's data, you have concluded that:

FINDING	ACTION
The number of suspected cases that are tested is falling below the target.	There is a substantial gap between the number of individuals actually tested and the target. As both the number of suspected cases and the testing volume declined in parallel, the CM-1 proportion metric appeared to improve. However, this apparent improvement is misleading. The proportional gain masks a significant decline in performance, as the gap between the actual and target testing volumes has widened over time. Several critical questions arise from these trends. Is there a shortage of RDTs? Do providers need additional training on testing guidelines? Engage with the PR to understand why fewer tests are being conducted than expected. **Additional data source:** Review the RBM Supply Chain Dashboard to assess whether RDT stockouts may be contributing to underperformance in testing. Note that the NMP may have more up-to-date data on stockouts than the RBM dashboard.

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CM-1a and CM-1c are exceeding 100%.	Between June '23 and June '24, the number of individuals tested exceeded the number of suspected cases reported. This discrepancy raises concerns. Engage with the PR to understand why this might be occurring. Discuss with the PR why the number of tests performed is exceeding the number of suspected cases. Possible reasons may include: ❖ Suspect cases may be undercounted in the denominator due to the absence of effective systems for tracking febrile illness. ❖ The data may reflect the number of tests performed rather than the number of individuals tested, leading to double counting, such as when a person receives both an RDT and microscopy. ❖ Women tested for malaria during ANC surveillance may be included in the numerator but excluded from the denominator if they were not recorded as suspected malaria cases. Recommendations to improve the interpretability of the CM-1 series include: ❖ Using OPD registers instead of laboratory registers to count individuals rather than total tests. ❖ Excluding women tested through ANC1 from the numerator if they were not identified as suspected malaria cases.
There is an opportunity to continue to improve malaria testing rates in the community sector.	While the public and private sectors are meeting or exceeding the target of 100% of suspected cases being tested, the community sector has yet to meet this target. Engage with the PR to understand the reasons why targets are not being met, in order to identify opportunities for improvement going forward. Are adequate tests being made available to the community sector? Are community health workers being properly trained in case management?
There are higher rates of testing in the 5+ age group, but it appears to be declining.	Discuss with the PR the reasons for the decline in testing rates among the older age group, while noting that testing in the under-5 age group appears relatively stable. Engage with the PR to determine whether additional testing is needed in both age groups.
RDTs are being used more than microscopy.	RDTs account for the vast majority of tests throughout the reporting period, which is a positive development as they provide faster results and can be more widely deployed, especially in areas where microscopy is not feasible. However, maintaining some microscopy capacity remains important for species identification and for monitoring the accuracy of RDTs. Given the increasing use of RDTs, confirm with the PR that adequate supplies are available and are being distributed appropriately across the country.
There is an opportunity to improve the proportion of positive cases treated.	Engage with the PR to understand why not all individuals who test positive are receiving the appropriate antimalarials. **Additional data source:** Review the RBM Supply Chain Dashboard to assess whether antimalarial stockouts may be contributing to underperformance in testing. Note that the NMP may have more up-to-date data on stockouts than the RBM dashboard.
Eight districts are missing the testing target and six districts are missing the national treatment target.	Discuss with the NMP and PR what might be different about these districts. What are the reasons they are not reaching the targets? What can be done to improve? Consider asking for/doing additional analysis to see how these districts have performed over time. Do these districts often have problems or was this just an issue this year?
G6PD is increasing over time.	Congratulate the NMP on successfully implementing G6PD testing. Ask the NMP if there were any issues rolling out G6PD testing and if there is adequate supply of tests. If possible, understand the distribution of G6PD testing across districts.
ABER is increasing over time.	Congratulate the NMP on the positive trends in ABER. While passive case detection has remained relatively stable, active case detection rates have increased. Confirm with the NMP that this increase in active cases aligns with their elimination strategy.

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Testing/treatment lower than target	❖ Were there any problems with the distribution of RDTs or antimalarials? Why? ❖ Were there specific districts that had particularly low values? Which ones? Why? ❖ What strategies are being explored to improve testing/treatment?	❖ Are all relevant facilities reporting? ❖ What is the timeliness and completeness of health facility reports? ❖ How reliable is the routine data?
Testing/treatment over 100%	❖ Which sectors are reporting testing/treating over 100%? ❖ Are the actual numbers of individuals tested or treated close to the intended targets? ❖ Should the testing/treatment targets be revised?	❖ Is there under-reporting of suspected cases? ❖ Is the reported figure based on the number of individuals tested, or the number of tests conducted—potentially resulting in double counting?
Large increase in number of tests conducted	❖ Do the increased testing numbers indicate an outbreak, or improved testing capacity? ❖ Could the rise be due to new facilities reporting, thereby inflating the numbers? ❖ Has there been a geographic expansion of testing efforts contributing to the observed increase? ❖ **Additional data source:** Consider reviewing ClimateSERV rainfall data to help interpret these testing trends.	❖ Are new facilities reporting? ❖ What is the timeliness and completeness of health facility reports?
Unexpected distribution of testing or treatment by sector	❖ What proportion of funding for testing and treatment is allocated to each of the three sectors? ❖ Are there differences in health-seeking behavior across sectors? ❖ Is the facility registry accurate and complete? If there are unexpected results in the proportion of tests conducted by sector, the facility register should be reviewed for potential misclassification or missing facilities. ❖ In the private and community sectors, are all facilities submitting reports, and what is the level of completeness?	❖ Are all relevant facilities reporting? ❖ What is the timeliness and completeness of health facility reports? ❖ Is the health facility register accurate? ❖ Are facilities correctly classified by sector in the HMIS system?

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Question #3: How effectively is the country implementing the *tracking* component of the test–treat–track care cascade?

Key Indicators

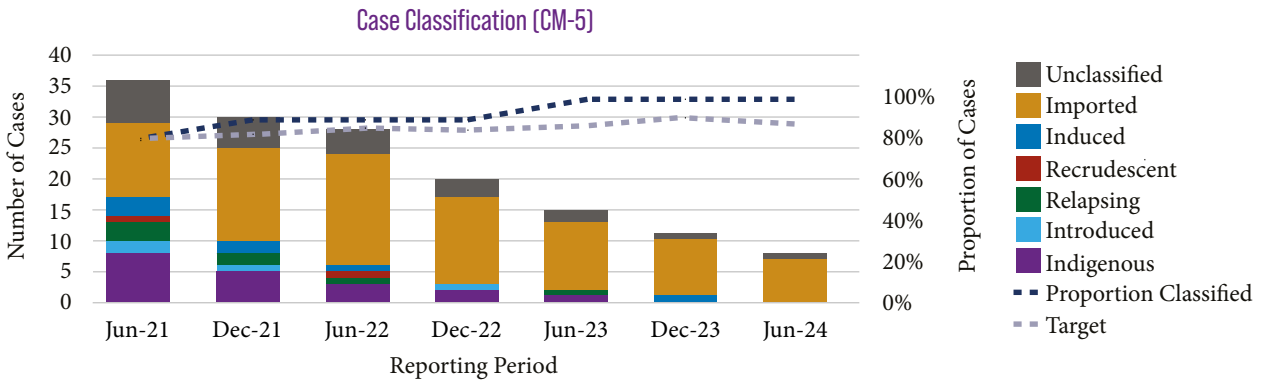
- **CM-5:** Proportion of confirmed cases classified (elimination settings).
  - Source of infection (indigenous, introduced, relapsing, recrudescent, induced, imported).
- **CM-6:** Proportion of foci classified as active, residual non-active and cleared (elimination settings).
- **CM-10:** Proportion of cases reported to relevant reporting system within 24 hours of diagnosis (elimination settings).
- **O-13:** Proportion of malaria cases detected by the surveillance system.

How often/when to review: The case management tracking indicators are sourced from HMIS. Each indicator should be reviewed whenever new data becomes available, including during pulse checks, progress updates, or the PUDR.

Case Example: Country X has made significant progress in malaria control over the past decade and is on target for elimination. The country is neighbored by several countries that still have higher malaria prevalence. You receive data from the most recent progress update, and you also pull data from the past several reporting periods so you can compare the country's performance.

Analyses

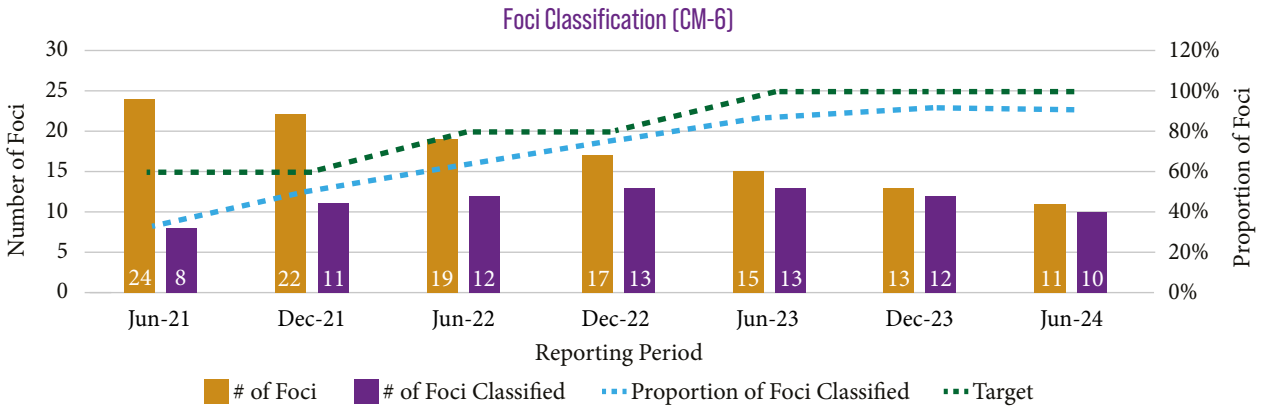
Case Classification Trends



Description: This graph displays trends in case classification (CM-5). The left y-axis represents the number of cases, while the right y-axis shows the proportion of cases classified. The bar charts show the number of cases classified in each of the categories: **indigenous**, **introduced**, **relapsing**, **recrudescent**, **induced**, **imported**, and **unclassified.** The **black dashed line** shows the proportion of all cases that are classified, and the **gray dashed line** shows the target proportion of cases that are classified.

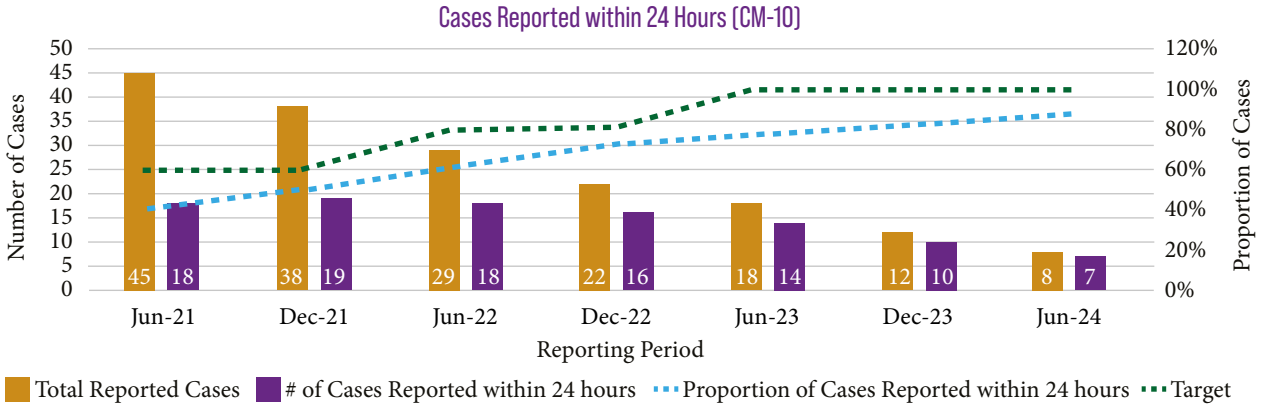
The total number of cases is decreasing over time, and the composition of cases is shifting. Unclassified cases appeared consistently but in smaller numbers across all reporting periods, while other categories, including introduced, relapsing, recrudescent, and induced cases, occurred sporadically and in minimal quantities. Imported cases appear to be the largest source of cases.

Foci Classification



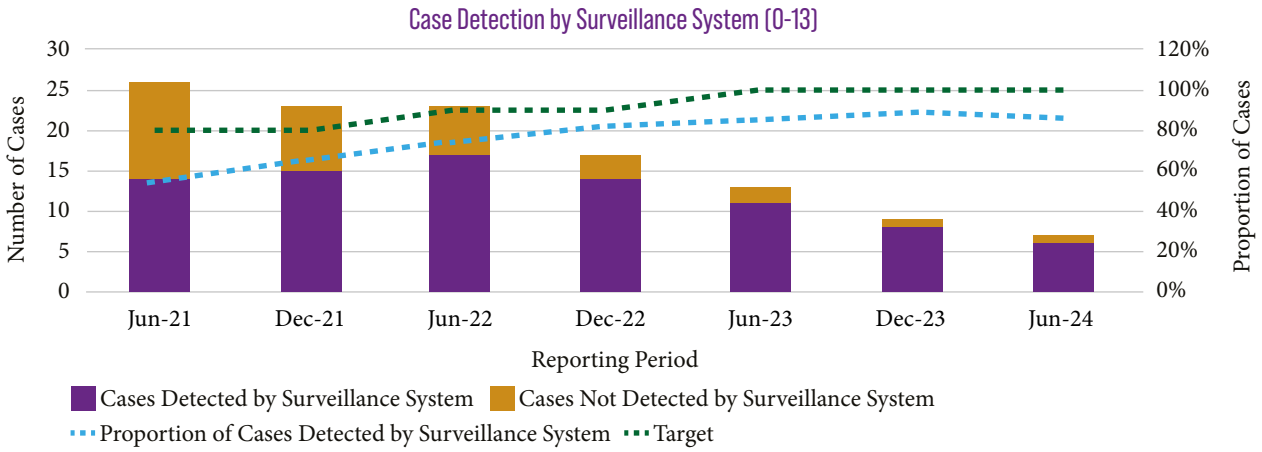
Description: This graph displays trends in foci classification over time. The left y-axis represents the number of foci, while the right y-axis indicates the proportion of foci. **Gold bars** show the total number of foci identified, and **purple bars** represent the number of foci that were classified. The **blue dashed line** illustrates the proportion of foci classified, and the **green dashed line** marks the target proportion for classification. The data reveal a clear downward trend in the total number of foci identified, while the proportion of foci classified has steadily increased over time.

Case Reporting within 24 Hours



Description: This graph shows the total number of reported cases and the subset reported within 24 hours, based on data for indicator CM-10. The left y-axis represents the number of cases, while the right y-axis shows the proportion of cases. **Gold bars** indicate the total number of reported cases, and **purple bars** represent those reported within 24 hours. The **blue dashed line** shows the proportion of cases reported within 24 hours, while the **green dashed line** marks the target for this indicator. The graph shows the total number of reported cases is decreasing over time and the proportion of cases that are reported within 24 hours is increasing over time.

Case Detection by Surveillance System



Description: This graph shows the proportion of malaria cases detected by the surveillance system, as reported under indicator O-13. The left y-axis represents the number of cases, while the right y-axis shows the proportion of cases. **Purple bars** represent cases detected by the surveillance system, while **gold bars** represent those not detected. The **blue dashed line** indicates the proportion of cases detected by the system, and the **green dashed line** marks the target for this indicator. Over time, the total number of cases has declined. There is a steady increase in the proportion of cases identified through the surveillance system.

Additional Analyses

- If you are interested in the discrepancy between the number of reported cases (I-1 numerator) and the number of cases estimated by the WHO (O-13 denominator), you should conduct this analysis. This analysis can provide insight into the potential underreporting of cases.

Case Example – Follow-up: After reviewing the NMP's data, you have concluded that:

FINDING	ACTION
Overall, case tracking is improving over time.	Congratulate the NMP and PR on their achievements and sustained improvements over time in case classification, foci classification, case detection through the surveillance system, and timely case reporting within 24 hours. In this discussion, you also verify that these positive trends are genuine and not the result of reduced efforts/capacity in case detection.
Imported cases appear to be the primary contributor to the overall case burden.	This pattern suggests successful control of local transmission following the initial period, with the continued presence of imported cases likely reflecting ongoing travel-related transmission. The overall downward trend points to effective case management and prevention efforts. However, it is important to confirm that these declines reflect genuine reductions in transmission rather than decreases in case identification capacity. Discuss with the NMP and PR the potential drivers of imported cases. - What factors are contributing to the imported cases? - What actions can be taken to address or reduce them? - What efforts at cross-border collaboration have been tried or are being considered? - Consider requesting or conducting additional analyses to assess performance in border areas.
There is a decrease in total foci, and more foci are being classified	The decrease in total foci may indicate improved containment efforts leading to fewer overall foci, shifts in foci definitions, or possible resource constraints affecting foci identification. Engagement with the PR is essential to accurately interpret these trends and understand the underlying drivers. Discuss with the NMP and PR how they are identifying and defining foci.
The proportion of cases reported within 24 hours is increasing over time.	Timely reporting has improved over time, with a steady increase in the proportion of cases reported within 24 hours. This trend suggests enhanced surveillance capacity, with the system becoming more effective at rapid case detection and reporting. However, it is important to confirm that these trends reflect genuine reductions in case numbers, rather than a decline in detection capacity.
Some cases continue to be missed by the surveillance system.	Initially, the system detected only about half of the cases, highlighting substantial gaps in coverage. However, detection steadily improved. This enhancement in surveillance coincided with successful malaria control efforts, as the total number of reported cases declined. This suggests that improved detection capabilities supported broader disease control objectives. Again, it is important to confirm that the observed reduction in cases reflects true progress, rather than a decline in detection capacity or a weakening surveillance system. Discuss with the NMP and PR potential opportunities to further strengthen the surveillance system. - How can community-based or cross-border surveillance efforts be enhanced?

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Performance lower than target	❖ How can case and foci classification be improved to support more effective malaria control? ❖ What strategies can be implemented to strengthen the malaria surveillance system and ensure all cases are detected? ❖ What steps are needed to guarantee timely and accurate reporting of cases to the appropriate reporting systems?	❖ Confirm that there is no underreporting of cases that could be artificially inflating performance indicators.
Performance around target	❖ What strategies will help ensure continued robustness of the surveillance system?	❖ Confirm that there is no underreporting of cases that could be artificially inflating performance indicators.
Unexpected results for CM-6	❖ How is foci being defined? A key challenge in interpreting the CM-6 indicator is the inconsistent definition of "foci."	

VECTOR CONTROL ANALYSES

Question #1: To what extent is the country achieving high ITN coverage among at-risk populations?

Key Indicators

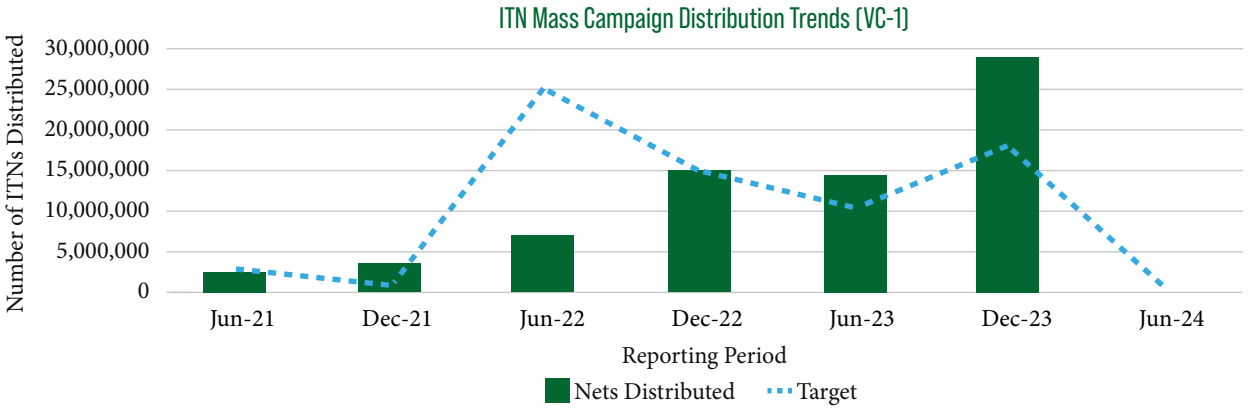
- **REQUIRED:** **VC-1:** Number of insecticide-treated nets distributed to populations at risk of malaria transmission through mass campaigns
  - Type of mass campaign (regular distribution, emergency distribution).
- **VC-3:** Number of insecticide-treated nets distributed to targeted risk groups through continuous distribution.
  - At risk population group (children 0-5, pregnant women, school children, people in emergency situation, others).
- **O-11:** Percentage of districts achieving national target for the proportion of population at risk potentially covered by distributed ITNs.
- **O-2:** Proportion of population with access to an ITN within their household.
- **O-10:** Proportion of population at risk potentially covered by distributed ITNs.

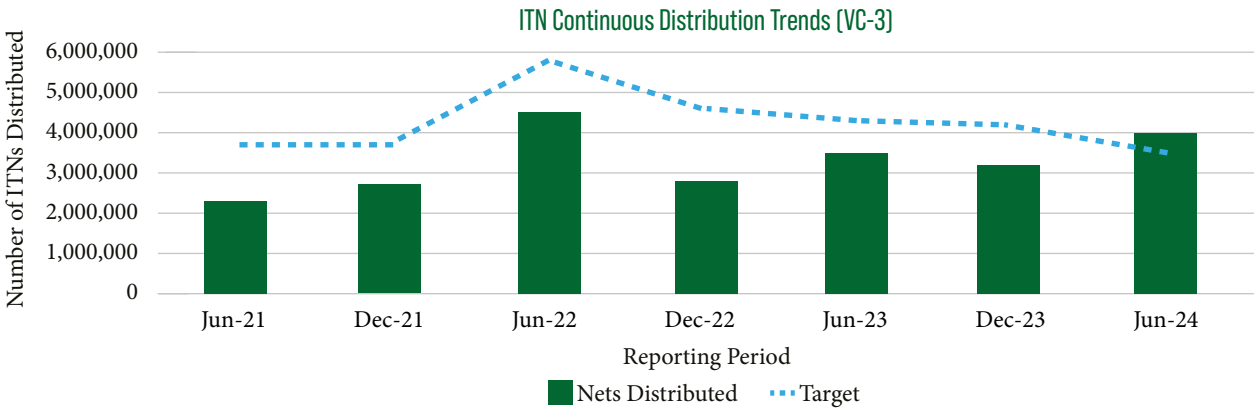
How often/when to review: Each indicator should be reviewed as new data becomes available. For indicators VC-3, O-10, and O-11, this may occur during pulse checks, progress updates, or the PUDR. For VC-1, new data will typically be available annually, following the completion of a mass campaign. For O-2, data will only become available after the completion of a household survey or other study, such as a lot quality assurance sampling (LQAS) study.

Case Example: The NMP of Country X implements a combination of ITN mass campaigns and continuous distribution to specific risk groups including pregnant women, children under 5 and school children. In their most recent progress update, they reported data following the completion of their ITN mass campaign. To assess current performance, you pull data from previous reporting periods for comparison.

Analyses

Targets vs. Performance Over Time

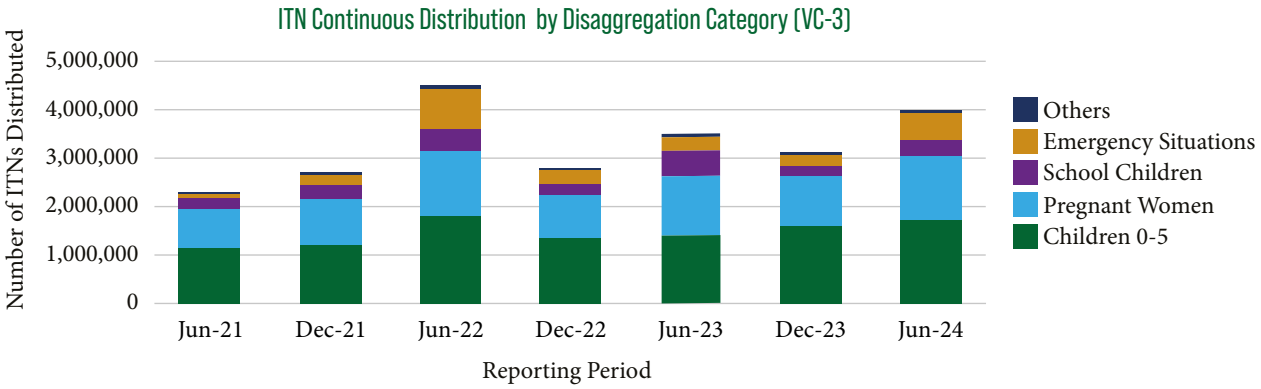




Description: These graphs compare national performance to targets for indicators VC-1 and VC-3. In the first graph, the **green bars** represent the actual number of ITNs distributed by mass campaigns, the **blue dashed line** shows the target number of ITNs. In the second graph, the **green bars** represent the actual number of ITNs distributed by continuous distribution, and the **blue dashed line** shows the target number of ITNs. Although the time periods for both indicators are the same, note that the y-axis scales differ.

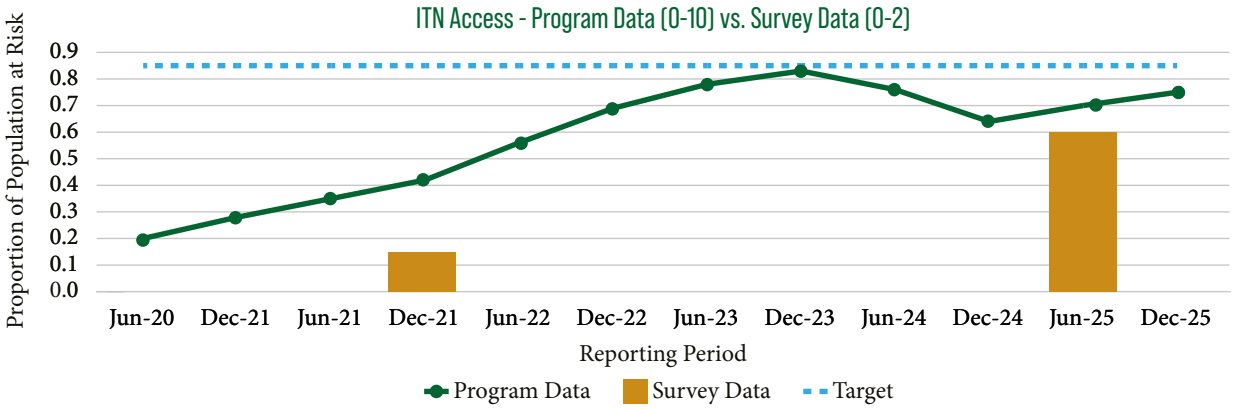
Country X distributed significantly more ITNs through mass campaigns than through continuous distribution. For mass campaigns, the number of ITNs distributed initially fell below the target but then sharply exceeded it in December 2023. The ITN continuous distribution shows a fairly consistent, gradually increasing pattern, though generally remaining below target.

Performance Over Time by Disaggregation Category



Description: Whenever possible, it is important to analyze performance across the various disaggregation categories. In the case of Country X, most ITNs distributed via continuous distribution channels are distributed to **children under five** and **pregnant women**. Notably, in June 2022, there was a significant increase in ITNs distributed through emergency channels. The **"Other"** category can vary by country and grant, so it is essential to understand what is included in this classification.

Trends in ITN Access



Description: This graph presents ITN access based on both program and survey data. The **green line** represents the proportion of the population at risk potentially covered by distributed ITNs, calculated using program data on the number of ITNs distributed. The **gold bars** show the proportion of the population with access to an ITN within their household, based on survey data. Household surveys were conducted in June 2021 and June 2025. When recent survey data is available, O-2 and O-10 can be compared directly. The **blue dashed line** shows the target ITN coverage rate.

For Country X, we see a steady increase in potential ITN coverage thanks to continuous distribution and mass campaigns, reaching peak coverage near the target. We see a decrease in potential ITN coverage in the final periods. The ITN access based on survey data is consistently lower than the potential coverage based on program data, but shows a similar large increase in coverage between 2021 and 2025.

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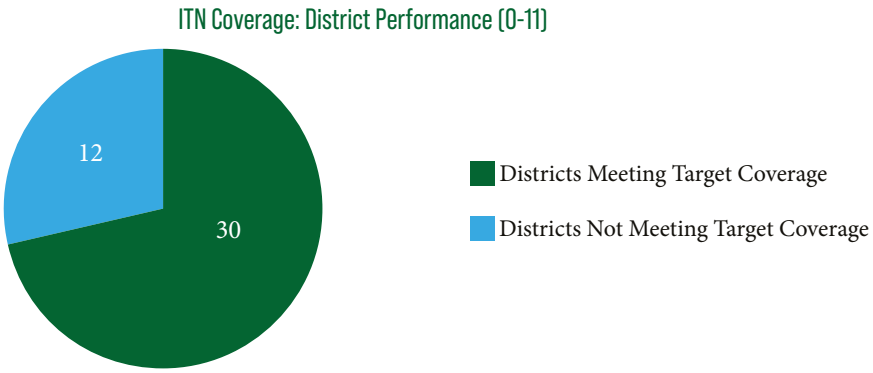
District Performance



Description: This pie chart provides subnational information on how many districts are meeting the target using indicator O-11. National coverage data can hide subnational variation. This information can then guide conversations to discuss which districts did not meet the ITN target to help improve performance in those geographical areas.

Additional Analyses

- If you are able to get district-level data from the country, it is valuable to understand more about exactly which districts are failing to meet the target and by how much they are missing the target. An example of this analysis is provided here.
- If you are interested in analyzing trends in emergency distribution of ITNs through both continuous distribution and mass campaigns (VC-1 & VC-3), conduct this analysis.
- It is valuable to estimate potential ITN coverage while accounting for the gradual decay or loss of ITNs, in order to better understand current coverage levels and the gap remaining to achieve universal coverage. An example of this type of analysis is provided here.
- To understand if the choice of ITN is still appropriate, it is recommended to review the WHO Threats Dashboard to ensure there are no emerging resistance patterns. Note that the PR may have more up-to-date information on current resistance trends.

Case Example – Follow-up: After reviewing the NMP's data, you have concluded that:

FINDING	ACTION
Overall, national ITN coverage is increasing over time.	Congratulate the NMP and PR on their achievements and improvement over time in ITN coverage.
But VC-1 and VC-3 performance is not in-line with set targets.	For mass campaigns, the number of ITNs distributed initially fell below the target but then sharply exceeded it in December 2023—potentially indicating delayed or postponed campaign activities. Continuous distribution shows a relatively consistent and gradually increasing pattern, though it generally remains below target. A decline in continuous distribution appears to coincide with periods of mass campaign activity; however, this overlap does not fully explain the persistent shortfall relative to targets. It is important to engage with the PR to better understand these trends. Have there been delays in mass campaign implementation? Are ITN supplies sufficient? Is the current balance between mass campaigns and continuous distribution appropriate? Are both distribution approaches being carried out in the correct regions and at the appropriate times? **Additional data source:** Additionally, review the RBM Campaign Dashboard to understand if there were any delays that may contribute to the observed trends in ITN distribution.
12 districts are not achieving the national target for potential ITN coverage.	Discuss with the NMP and PR what might be different about these districts. What are the reasons they are not reaching the targets? What can be done to improve? Consider asking for/doing additional analysis to see how these districts have performed over time. Do these districts often have problems or was this just an issue this year? **Additional data source:** If the districts are targeted for mass campaigns, consider also reviewing the RBM Campaigns Summary Dashboard to understand if there were campaign delays.
Continuous distribution is primarily reaching pregnant women and children under-5.	For continuous distribution, these high-risk groups appear to have been prioritized. Confirm with the PR that this remains the most appropriate distribution strategy moving forward.
Increase in ITNs distributed for emergencies.	There was a slight increase in the number of ITNs distributed through emergency channels. What contributed to this change? How can we strengthen our preparedness for future emergency situations?
Survey data shows lower ITN access than programmatic data.	Since a household survey was recently conducted, we can directly compare ITN access (O-2) versus potential coverage (O-10). Engage with the PR to understand why ITN access in households is lower than expected from program data. Are ITNs not being retained in households? Are ITNs decaying faster than expected? Are ITNs being used for some other purpose?

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
ITN distribution lower than target	❖ Were there any problems with ITN continuous distribution or mass campaigns? Why? ❖ Were there specific districts that had challenges with ITN distribution? Which ones? Why? ❖ What strategies are being explored to improve ITN campaign planning and implementation? ❖ Were there any changes to the program this year (i.e. expansion in geography for mass campaigns, or new targeted risk groups for continuous distribution that may have caused issues?)	❖ How reliable are the routine data for continuous distribution? ❖ Are mass campaign distribution records complete and of high-quality?
ITN distribution around target	❖ Were there specific districts that had challenges with ITN distribution? Which ones? Why?	❖ How reliable are the routine data for continuous distribution? ❖ Are mass campaign distribution records complete and of high-quality?
ITN distribution exceeds target	❖ What factors contributed to ITN distribution exceeding its target? ❖ Were there previous delays in ITN distribution that are now being addressed? ❖ Was there a need for emergency ITN distribution?	❖ How reliable are the routine data for continuous distribution? ❖ Are mass campaign distribution records complete and of high-quality?
Potential coverage and survey coverage are not aligned	❖ What factors might be contributing to the difference between ITN access based on survey data and program data? ❖ Why might distributed ITNs not remain in households? ❖ Are ITNs deteriorating faster than anticipated? ❖ Are ITNs being used for purposes other than intended?	❖ Is the program data on ITN distribution accurate? ❖ What is the data source for the denominator being used to capture potential coverage? ❖ Is there a reason we might be over- or under-estimating the population?
Emergency ITN distribution	❖ If emergency net distributions have increased significantly, what are the underlying causes? Possible drivers could include higher rainfall, disease outbreaks, or increases in displaced populations. ❖ How are trends in emergency distributions impacting future planning?	

Question #2: To what degree are individuals within targeted populations using ITNs?

Key Indicators

- **O-1a:** Proportion of population that slept under an insecticide-treated net the previous night in areas targeted for ITNs.
  - Gender (female, male); Targeted risk groups (<5 children, pregnant women, migrants, refugees, IDPs, prisoners, others).
- **O-3:** Proportion of the population with access to an ITN in their household that slept under an ITN the previous night.

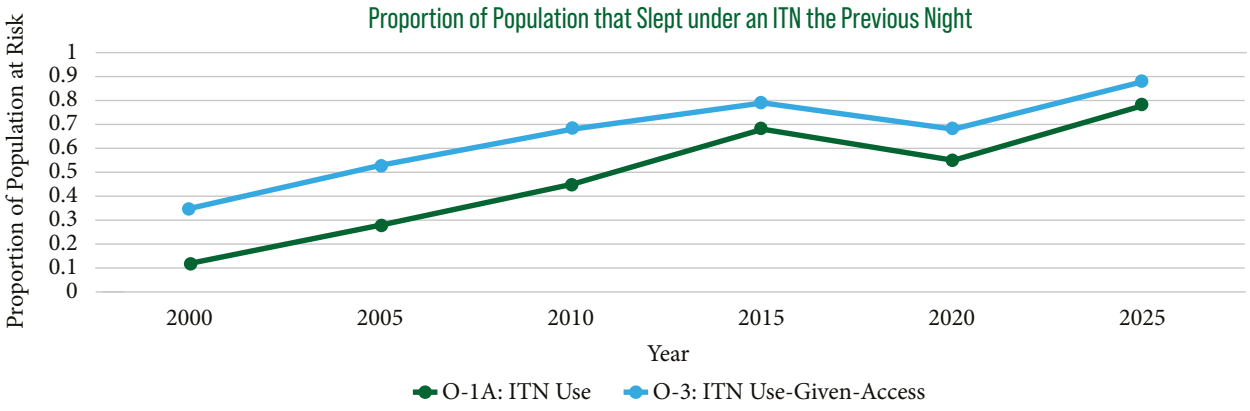
How often/when to review: Review the data whenever new information becomes available from household surveys such as MIS, DHS, or MICS, or from small-area surveys such as LQAS.

Data Source Consideration: If LQAS is used as the data source, it is important to understand the data collection method employed (e.g., simple LQAS vs. cLQAS), as well as the sample size and geographic coverage. Additionally, disaggregations are unlikely to be available.

Case Example: The NMP of Country X implements a combination of ITN mass campaigns and continuous distribution. Country X recently completed a DHS survey and has been conducting DHS surveys every 5 years. You analyze the most recent DHS data and pull the relevant indicators from past surveys.

Analyses

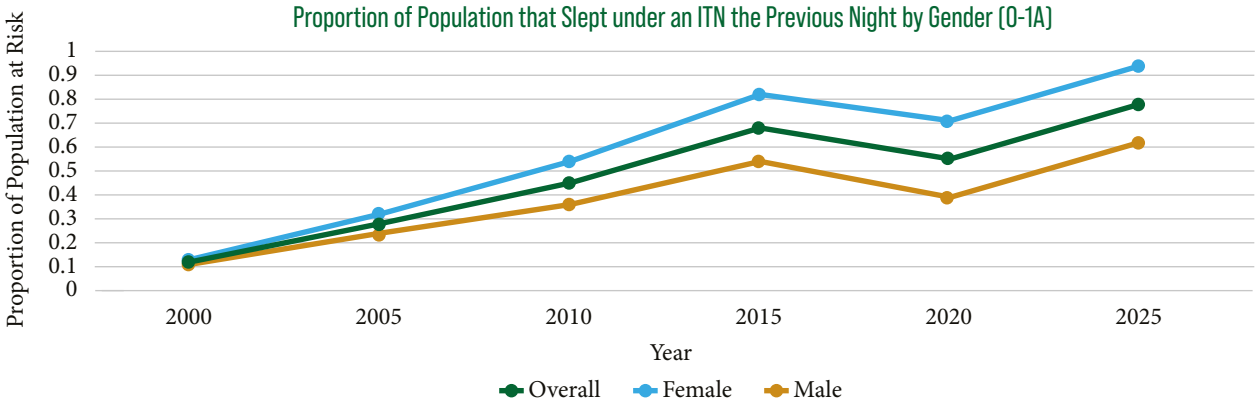
ITN Use Trends Over Time



Description: This graph illustrates 25-year trends in ITN use in areas targeted for ITN distribution. The **green line (O-1a)** represents the proportion of the population that slept under an ITN the previous night. The **blue line (O-3)** shows the proportion of those with access to an ITN in their household who slept under one the previous night.

Overall, ITN use has steadily increased over time, likely due to a combination of expanded distribution campaigns and social and behavior change efforts promoting ITN use. A noticeable dip occurs during the COVID-19 years, reflecting possible disruptions in access or behavior, but both indicators rebound afterward. Since O-3 includes only individuals with access in the denominator, the proportion is consistently higher.

ITN Use Trends Over Time by Gender



Description: This graph illustrates the proportion of the population that slept under an ITN the previous night (Malaria O-1a), disaggregated by gender. The **green line** represents overall ITN use, while the **blue line** and **gold lines** represent ITN use among females and males, respectively. Both male and female usage increased over time, with a dip in 2020—likely due to COVID-19 disruptions—followed by a strong rebound. Although usage started at similar levels across genders, females consistently had higher rates of ITN use than males throughout the period.

It is important to conduct a similar analysis of ITN use among key risk groups — children under five, pregnant women, migrants, refugees, internally displaced persons, prisoners, and other vulnerable populations. Identifying any groups with lower ITN usage is essential to determine where additional targeted interventions, such as social and behavior change education, may be needed.

Case Example – Follow-up: After reviewing the NMPs data, you have concluded that:

FINDING	ACTION
Overall, national ITN use is increasing.	Congratulate the NMP and PR on their achievements and improvement over time.
There appear to be substantial differences in ITN use between men and women.	There is a growing gap in ITN use by men and women. This suggests that while ITN programs have been broadly effective, they have increasingly prioritized female access—likely through maternal health initiatives—highlighting emerging equity concerns for males, who remain less protected against malaria. Discuss with the NMP and PR what might be causing these differences. ❖ Could they be related to the method of ITN distribution? ❖ Are cultural factors contributing? ❖ Is there a need for more social and behavior change education specifically targeting men? **Additional data source:** Consider reviewing the Malaria Behavior Survey on the RBM Dashboard to check for any recent country-specific data that may be useful. Additionally, consider reviewing the Johns Hopkins ITN Access & Use Report, which includes helpful data visualizations and supplementary information.

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
ITN use lower than target	If ITN use is low, what social or cultural factors might be contributing? Are there sufficient social and behavior change communication activities in place to promote ITN use? Are ITNs being distributed but not used, or are there challenges related to ITN access?	What is the data source for ITN use? ❖ If the data source is an MIS or DHS survey, how recently was it conducted and what may have changed since that time? ❖ If the data source is a small area survey, what was the sampling approach? Is it a representative sample? Is there a reason we might be overestimating the population for indicator O-3? ❖ Only individuals residing in areas targeted for ITN distribution should be included in the denominator.
ITN use around target	What activities are required to ensure consistent and high use of ITNs? Are there specific subpopulations with lower ITN use? ❖ Which subpopulations? ❖ What are the reasons for their lower usage? ❖ What strategies can be implemented to increase ITN utilization among these populations?	What is the data source for ITN use? ❖ If the data source is an MIS or DHS survey, how recently was it conducted and what may have changed since that time? ❖ If the data source is a small area survey, what was the sampling approach? Is it a representative sample?
ITN use above target	What factors might be driving better than expected ITN use? ❖ Are usage rates particularly high in certain geographic areas or subpopulations?	What is the data source for ITN use? ❖ If the data source is an MIS or DHS survey, how recently was it conducted and what may have changed since that time? ❖ If the data source is a small area survey, what was the sampling approach? Is it a representative sample?

Question #3: Are IRS campaigns achieving the desired coverage in target areas?

Key Indicators

❖ **REQUIRED:** **VC-6.1:** Proportion of the population at risk receiving at least one round of IRS within the last 12 months in areas targeted for IRS.

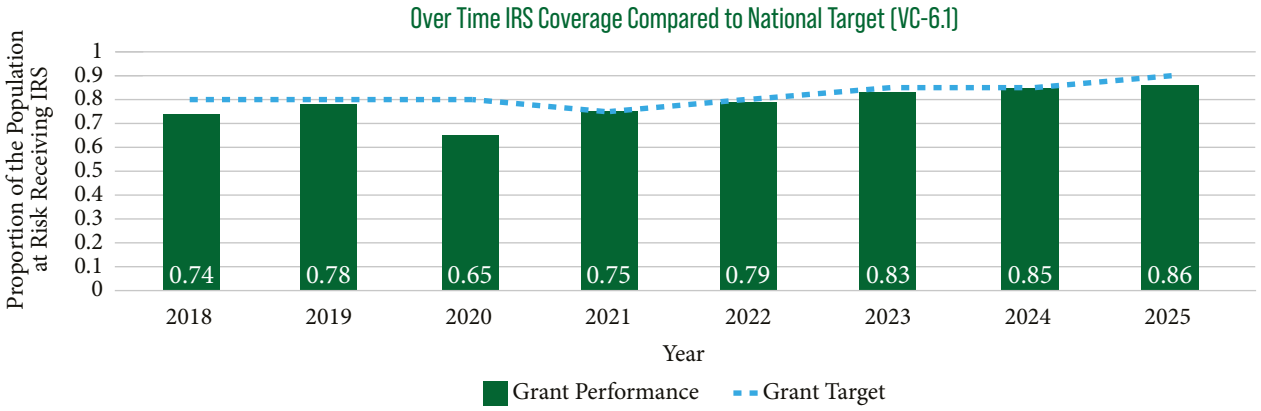
❖ **VC-7:** Percentage of districts achieving the national target for the proportion of the population at risk receiving at least one round of IRS within the last 12 months in areas targeted for IRS.

How often/when to review: Annually, after completion of IRS campaign.

Case Example: NMP for Country X has completed their IRS campaign and reported the following data in their most recent PUDR. You pull the data from the past IRS campaigns so that you can compare to how they are doing this year.

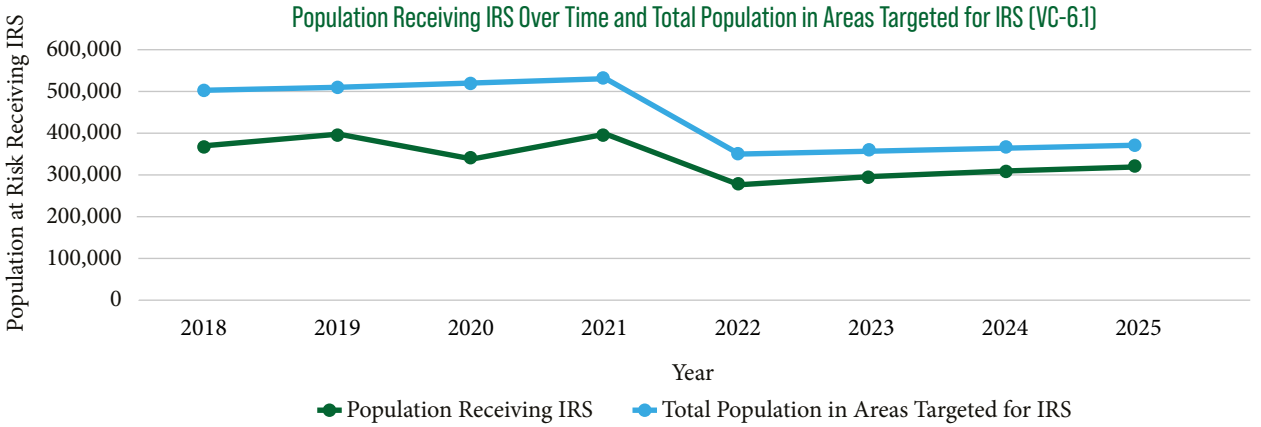
Analyses

Target vs. Performance Over Time



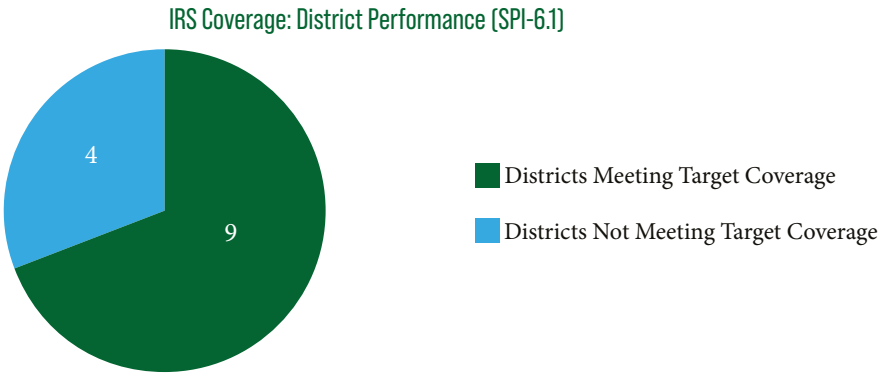
Description: This graph shows the national performance compared to the target for indicator VC-6.1. The **green bars** are the actual proportion that received IRS in each year. In this example, we can see that Country X has gradually improved its performance over time, with the exception of a decline in 2020 which may be explained by the COVID-19 pandemic. The **blue dashed line** shows the grant target for each year. Here we can see that the target has gradually increased over time as the grant meets prior performance targets. In 2025, the grant did not reach the target, but did show a slight improvement from the prior year's performance.

Population Receiving IRS versus Population Targeted for IRS Over Time



Description: This graph shows the number of individuals who received IRS **(green line)** and the number of individuals targeted for IRS **(blue)** each year using the numerator and denominator for indicator VC-6.1. This is useful in providing information on the scale of the program, which can be useful for ordering commodities and comparing scale across countries. It can also show where there were expansions or retractions in the program. For example, in this country, the program appears to have scaled back IRS starting in 2022.

District Performance



Description: This box provides subnational information on how many districts are meeting the target using indicator SPI-6.1. National coverage data can hide subnational variation. This information can then guide conversations to discuss which districts did not meet the target to help improve performance in those geographical areas. If you are able to get district-level data from the country, it is valuable to understand more about exactly which districts are failing to meet the target and by how much they are missing the target. An example of this analysis is provided here.

Case Example – Follow-up: After reviewing the NMP's data, you have concluded that:

FINDING	ACTION
Overall, national IRS coverage is high – and improving somewhat over time.	Congratulate the NMP and PR on their achievements and improvement over time.
Yet, 4 districts that are not achieving the targets.	Discuss with the NMP and PR what might be different about these districts. ❖ What are the reasons they are not reaching the targets? ❖ What can be done to improve? ❖ Consider asking for/doing additional analysis to see how these districts have performed over time. Do these districts often have problems or was this just an issue this year?
Some districts are exceeding 100% coverage.	Discuss with the NMP and PR what might be different about these districts. ❖ Is this a data quality issue? (How is data collected? What measures are in place to make sure it is accurate?) ❖ Is there an issue with the population estimation?

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Coverage lower than target	Were there any problems with the implementation/ distribution? ❖ Why? ❖ **Additional data source:** Consider checking the RBM campaign status tracker to see if the IRS campaign is on track or if there have been delays Were there specific districts that had particularly low values? ❖ Which ones? ❖ Why? What strategies are being explored to improve campaign planning and implementation to ensure improved coverage? Were there any changes to the program this year (i.e. expansion in geography) that may have caused issues?	What is the population data source? Is there a reason we might be overcounting the population? ❖ Only individuals residing in areas targeted for IRS should be included in the denominator.
Coverage around target	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why?	
Coverage exceeds 100%	Were there specific districts that had particularly high values? ❖ Which ones? ❖ Why? **Additional data source:** Are there end of cycle surveys that may support your interpretation of coverage?	What is the population data source? Is there a reason we might be undercounting the population? What are the data collection systems? Are there challenges with aggregation and/or challenges calculating across cycles?

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SPECIFIC PREVENTION INTERVENTIONS ANALYSES

Question #1: Are pregnant women and girls that attend ANC services receiving the recommended 3+ doses of IPTp?

Key Indicators

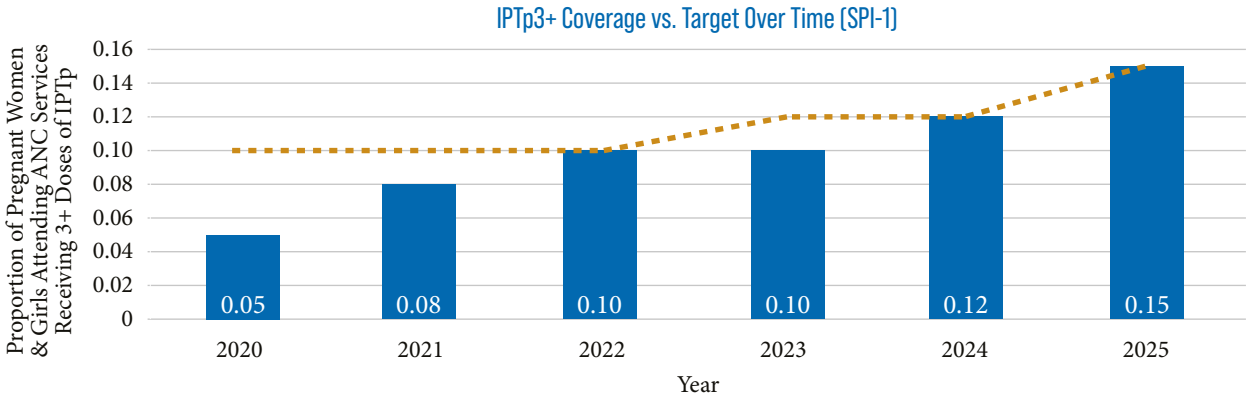
- **REQUIRED:** **SPI-1:** Proportion of pregnant women and girls attending antenatal care services who received three or more doses of intermittent preventive treatment for malaria.
  - Age (<15, 15+)
- **SPI-4:** Percentage of districts achieving national target for the proportion of pregnant women and girls attending antenatal care services who received three or more doses of intermittent preventive treatment for malaria.
- **O-17:** Number of women receiving 1 dose of IPTp.

How often/when to review: Annually

Case Example: The NMP for Country X has reported the following data in their most recent PUDR. You pull the data from past years so that you can compare to how they are doing this year.

Analyses

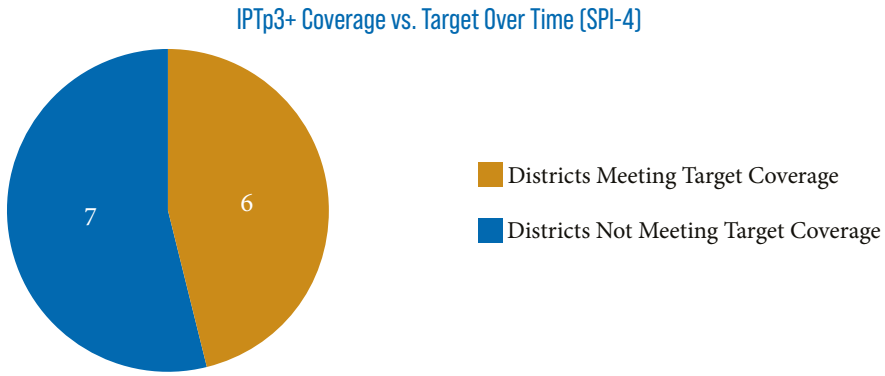
Trends Over Time



Description: This graph shows the national performance compared to the target for indicator SPI-1. The **blue bars** are the actual proportion of pregnant women and girls attending ANC in each year that received three or more doses of IPTp. In this example, we can see that Country X has low IPTP3+ coverage but has shown gradual improvement over time. The **gold line** shows the grant target for each year. Here we can see that the target has gradually increased over time as the grant meets prior performance targets. In 2025, the grant met the performance target.

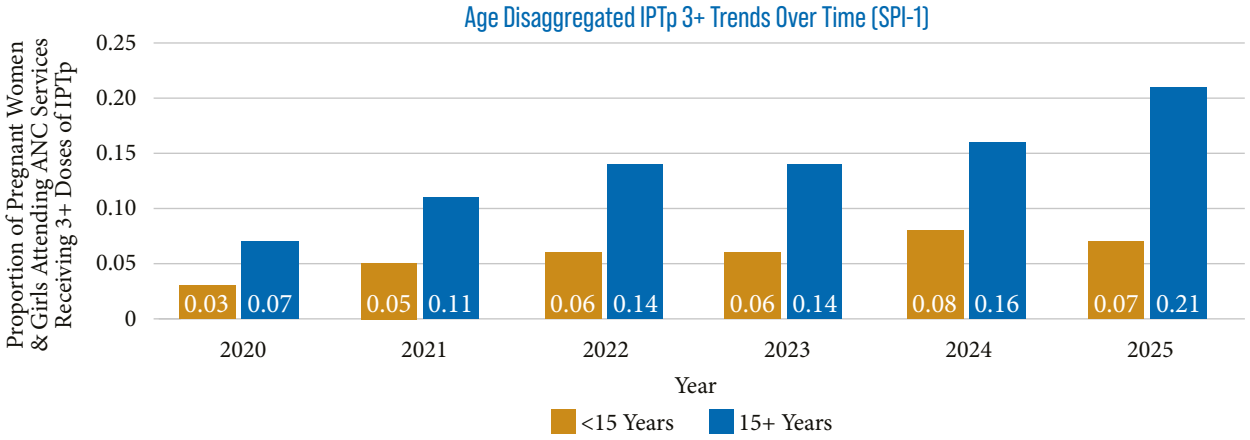
In the case of a new indicator, such as O-17, an overtime analysis may not be possible. However, it is still important to compare indicator performance to the target and, once additional years of data are available, then trends over time should also be assessed for this indicator.

District Performance



Description: This graph provides subnational information on how many districts are meeting the target using indicator SPI-4. National coverage data can hide subnational variation. This information can then guide conversations to discuss which districts did not meet the target to help improve performance in those geographical areas. While the previous analysis showed that Country X has met its target overall, this analysis shows that more than half of the districts failed to meet the target.

Disaggregation: Following the Global Fund reporting guidelines, Country X reports age disaggregated data for indicator SPI-1. Specifically, they report on performance for pregnant girls under age 15 and for pregnant women and girls ages 15 and over.



Description: This graph shows the proportion of pregnant women and girls attending ANC services who received three or more doses of IPTp disaggregated by age. In **gold** are girls under age 15 while in **blue** are women and girls ages 15 and over. This chart shows that in Country X, the proportion of pregnant girls under the age of 15 who are receiving three or more doses of IPTp is consistently lower than for those ages 15 and over.

Additional Analyses

If you are able to get district-level data from the country, it is valuable to understand more about exactly which districts are failing to meet the target and by how much they are missing the target. An example of this analysis is provided here.

If performance targets are not being met, you may want to look at where in the care cascade eligible women and girls are being lost. The following analyses can help identify how many women begin the series, but do not complete it and understand at what point they drop out.

If you are interested in IPTp coverage among all pregnant women and girls, and not just those attending ANC services, perform this analysis.

If your country of interest has both ANC clinic-based IPTp as well as community IPTp, you may want to understand where women are seeking IPTp1 and if the introduction of community IPTp is expanding the number of pregnant women and girls receiving IPTp1 or if those who otherwise may have received IPTp1 at the clinic are now receiving it in the community. This analysis would require requesting disaggregated data from the NMP. An example of how to analyze such data is here.

Case Example – Follow-up: After reviewing the NMPs data, you have concluded that:

FINDING	ACTION
Overall, national IPTp3+ coverage is meeting targets and improving somewhat over time.	Congratulate the NMP and PR on their achievements and improvement over time.
Yet, 54% of districts are not meeting the target.	Discuss with the NMP and PR what might be different about these districts. ❖ What are the reasons they are not reaching the targets? ❖ What can be done to improve? ❖ Consider asking for/doing additional analysis to see how these districts have performed over time. Do these districts often have problems or was this just an issue this year?
And coverage in pregnant girls under age 15 consistently lags behind coverage in pregnant women and girls ages 15 and over.	Discuss with the NMP and PR what might be driving these differences in coverage? ❖ What can be done to increase coverage among pregnant girls?

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Coverage lower than target	Were there any problems with the implementation/distribution of IPTp? ❖ Why? ❖ **Additional data source:** Sulfadoxine-pyrimethamine (SP) is the primary drug used for IPTp. Having sufficient stock is a prerequisite for achieving the desired coverage levels of IPTp. The Supply Chain Dashboard, accessible through the RBM Global Malaria Dashboard, provides high-level SP stock information. Were there specific districts that had particularly low values? ❖ Which ones? ❖ Why? What strategies are being explored to increase IPTp3 coverage? ❖ **Additional data source:** Social factors can influence the use of ANC services and uptake of IPTp. Sources such as Malaria Behavior Surveys, available through the RBM Malaria dashboard, can provide insight into reasons for delayed ANC1 attendance and attitudes towards IPTp. These surveys can also inform understanding of the knowledge, attitudes, and practices of healthcare providers, including the extent to which they recognize and implement IPTp provision as an integral component of ANC services. Such information can be used to identify where social behavior change interventions may be needed to improve IPTp uptake. ❖ **Additional data source:** Two RSSH indicators provide context for interpreting malaria IPTp indicators: percentage of facilities offering integrated RMNCH, HIV, TB, and malaria services to pregnant women (RSSH O-1.1) and percentage of women receiving four or more antenatal care visits (RSSH O-9). Lower values in these indicators may help explain correspondingly lower IPTp 3+ coverage. Were there any changes to the program this year (i.e. expansion in geography) that may have caused challenges?	How reliable is the routine data? ❖ Are reporting rates for ANC and IPTp sufficiently high in the country's HMIS?
Coverage around target	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why?	
Coverage above the target	What factors contributed to stronger than expected performance? Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why? How does above target performance affect quantification for SP?	How reliable is the routine data? ❖ Are reporting rates for ANC and IPTp sufficiently high in the country's HMIS?

Question #2: Are children receiving the full number of cycles of seasonal malaria chemoprevention each transmission season in targeted areas?

Key Indicators

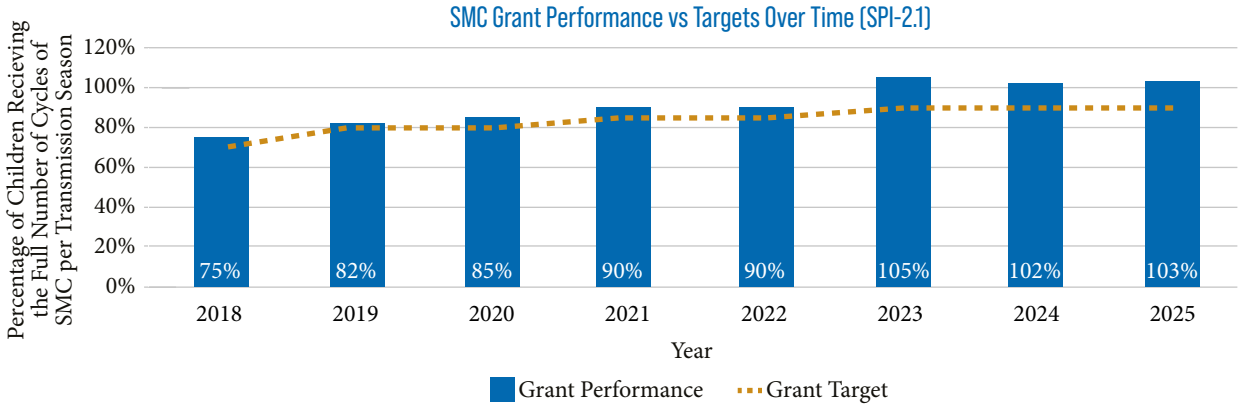
- **REQUIRED:** **SPI 2.1:** Percentage of children who received the full number of cycles of seasonal malaria chemoprevention (SMC) per transmission season in the targeted areas.
  - Age (<5, 5+)
- **SPI-5:** Percentage of targeted districts achieving national targets for the percentage of children who received the full number of cycles of seasonal malaria chemoprevention (SMC) per transmission season in the targeted areas.

How often/when to review: Annually, after completion of SMC campaign.

Case Example: NMP for Country A has completed their SMC campaign and reported the following data in their most recent PUDR. You pull the data from the past SMC campaigns so that you can compare to how they are doing this year.

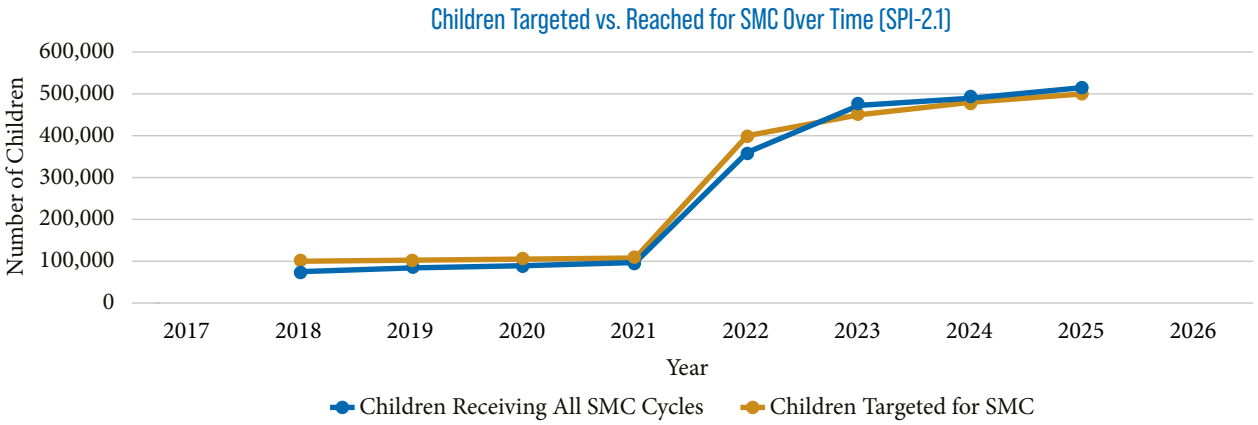
Analyses

Target vs. Performance Over Time (%)



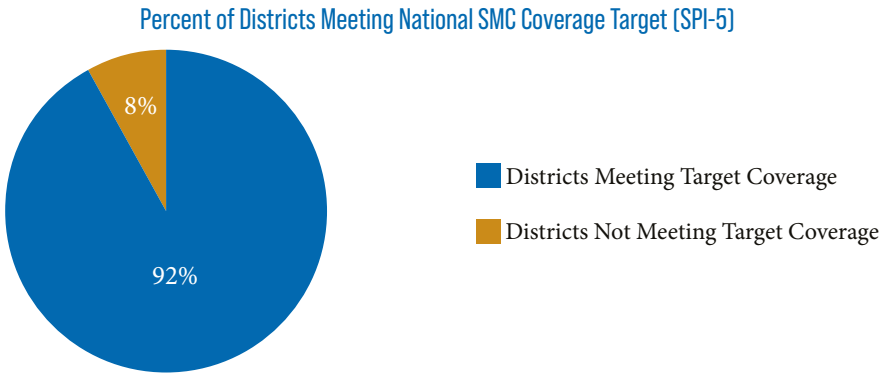
Description: This graph shows the national performance compared to the target for indicator SPI-2.1. The **gold dashed line** shows the grant target for each year. The **blue bars** are the actual percent that received SMC in each year. Bars lower than the target line mean the country did not reach the target that year. Bars over the target line mean that country met or exceeded the target that year. In 2025, the country exceeded the target and showed coverage over 100%.

Population Targeted and Reached Over Time



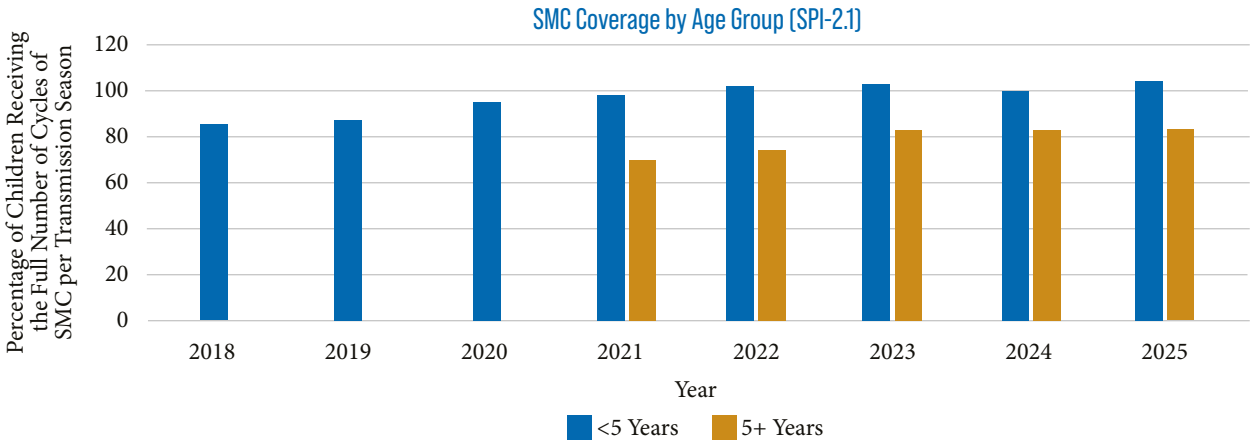
Description: This graph shows the number of children who received SMC **(blue line)** and the number of children targeted for SMC **(gold line)** each year using the numerator and denominator for indicator SPI-2.1. This is useful in providing information on the scale of the program, which can be useful for ordering commodities and comparing scale across countries. It can also show where there were expansions or retractions in the program. For example, in this country there was a large explanation of the program in 2022.

District Performance



Description: This chart provides subnational information on how many districts are meeting the target using indicator SPI-5. National coverage data can hide subnational variation. This information can then guide conversations to discuss which districts did not meet the target to help improve performance in those geographical areas.

Performance By Age Group Over Time



Description: This graph shows the national performance for each age group. It is a disaggregation of SPI-2.1. The **blue bars** are the actual percent of children under 5 years of age that received SMC in each year. The **gold bars** are the actual percent of children 5 years or older that received SMC in each year. This graph can provide useful information on whether there are differences in performance by age group (i.e. are there difficulties in reaching school age children). In this example, we see that until 2021, only children under 5 years of age were targeted, but there has since been an expansion in age groups eligible for SMC. Since the expansion, performance in the 5+ years age group has lagged behind performance among children under 5 years.

Additional Analyses

If you are able to get district-level data from the country, it is valuable to understand more about exactly which districts are failing to meet the target and by how much they are missing the target. An example of this analysis is provided here.

Case Example – Follow-up: After reviewing the NMPs data, you have concluded that:

FINDING	ACTION
Overall, national SMC coverage is high – and improving somewhat over time.	Congratulate the NMP and PR on their achievements and improvement over time, particularly given the 2022 expansion.
Yet, 11 districts that are not achieving the targets.	Discuss with the NMP and PR what might be different about these districts. What are the reasons they are not reaching their targets? What can be done to improve? Consider asking for/doing additional analysis to see how these districts have performed over time. Do these districts often have problems or was this just an issue this year?
Some districts are well-exceeding 100% coverage.	Discuss with the NMP and PR what might be different about these districts. Is this a data quality issue? (How is data collected? What measures are in place to make sure it is accurate?) Is there an issue with the population estimation?
Nationally, coverage is high among both age groups.	Congratulate the NMP and PR on reaching school-age children as part of the expansion, which can be difficult. Consider asking for/doing additional analysis to see how performance among the age groups may differ in poor performing districts.
Yet, coverage among children 5+ years lags behind that of children under 5 years of age.	Discuss with the NMP what may be driving poorer performance among older children. Lagging performance on children 5+ years of age aligns with the expansion of SMC to school children. Ask the NMP for more information on what challenges they are having in reaching this group and how they are working to increase coverage.

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Coverage lower than target	❖ Were there any problems with the implementation/distribution? Why? ❖ **Additional data source:** Consider checking the RBM campaign status tracker to see if the SMC campaign is on track or if there have been delays ❖ Were there specific districts that had particularly low values? Which ones? Why? ❖ What strategies are being explored to improve campaign planning and implementation to ensure improved coverage? ❖ Were there any changes to the program this year (i.e. expansion in geography or age that may have caused issues?)	❖ What is the population data source? Is there a reason we might be overcounting the population?
Coverage around target	❖ Were there specific districts that had particularly low/high values that the national data is obscuring? Which ones? Why?	
Coverage exceeds 100%	❖ Were there specific districts that had particularly high values? Which ones? Why? **Additional data source:** Are there end of cycle surveys that may support your interpretation of coverage?	❖ What is the population data source? Is there a reason we might be undercounting the population? ❖ What are the data collection systems? Are there challenges with aggregation and/or challenges calculating across cycles?

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Question #3: Are children in target age groups receiving the full number of doses of perennial malaria chemoprevention?

Key Indicator

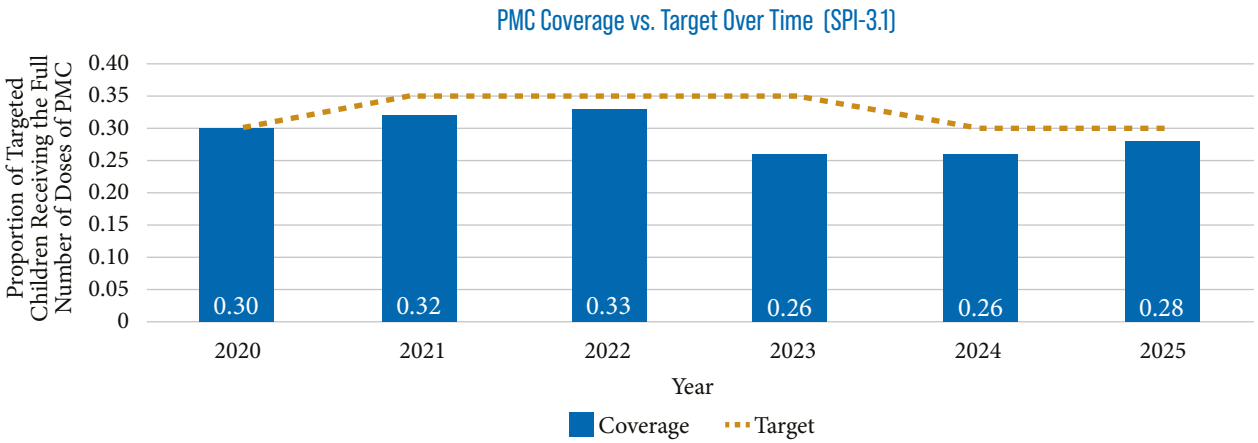
❖ **REQUIRED:** **SPI-3.1:** Proportion of children in the target age group who received the full number of doses of perennial malaria chemoprevention (PMC) according to national policy.

How often/when to review: Annually or after completion of mass campaigns.

Case Example: NMP for Country X has reported the following data in their most recent PUDR. You review the comments to get a clear understanding of how PMC is being implemented in Country X (target ages, number of doses required to achieve full number of doses). You then pull the data from past years so that you can compare to how they are doing this year. In doing so, you compare how the national guidelines for PMC have changed over time in Country X.

Analyses

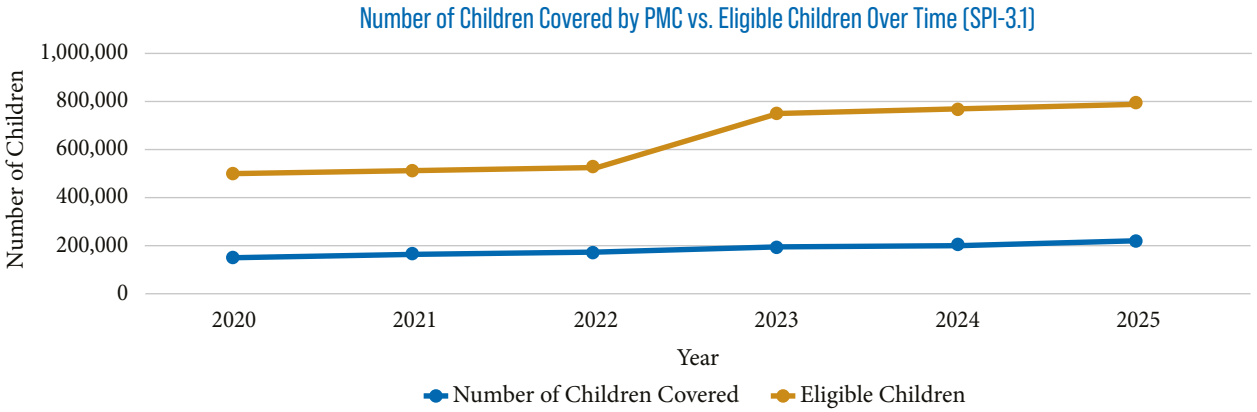
Trends Over Time



Description: This graph shows the national performance compared to the target for indicator SPI-3.1. The **blue bars** are the actual proportion of children in the target age group who received the full number of doses of PMC each year while the **gold dashed line** shows the annual PMC coverage target. In this example, we can see that Country X was seeing increasing coverage until 2022 but experienced a drop in coverage starting in 2023. As of 2025, it has yet to get back to its 2022 coverage rate.

Individuals Reached

Seeing that there was a large drop in coverage rates in the last three years, you decide to take a closer look at the numerator and denominator of indicator SPI-3.1 over time to understand how the number of children targeted and covered has changed.



Description: This graph shows the number of children targeted for PMC annually in **gold** and the number of children receiving the full number of doses of PMC each year in **blue.** We can see that there was a large increase in the number of children eligible for PMC in 2023 and a subsequent increase in the number of children reached. You note that this change aligns with the WHO's updated guidelines for PMC so revisit the PUDR and see that Country X has expanded the eligible age groups for PMC from only children 12 months and under to children 18 months and under. While the proportion of children receiving the full number of doses has decreased as a result of a larger denominator, the total number of children reached has grown.

Additional Analyses

There is no indicator focused on district performance for PMC. Still, you suspect some districts may be performing better than others. You want to identify which districts are performing above average to understand what strategies they have used to increase coverage as well as which districts are underperforming to identify where additional support may be needed. You ask the NMCP for district performance information and conduct the following analysis.

Since the program has been expanded to new age categories in recent years, you may want to examine if coverage trends differ among different age groups. For example, how do coverage trends differ among the newly included age group, 13-18 months, compared to 12 months and under? If possible, ask the NMCP for age disaggregated data and conduct an analysis like this.

Indicator SPI-3.1 looks at the number of children who received the full number of doses of PMC. You may be interested in knowing if children are receiving any doses of PMC and where those drop offs are occurring. Ask the NMP to share this analysis with you or ask for the data and complete the following analysis.

Case Example – Follow-up: After reviewing the NMPs data, you've concluded that:

FINDING	ACTION
Overall, national PMC coverage has improved compared to last year, but it continues to fall short of targets.	Congratulate the NMP and PR on their improvement from last year, but seek to understand what factors are preventing the country from achieving higher coverage. ❖ Are sufficient commodities available to cover all eligible children now that the age groups have expanded? ❖ Have health workers been trained on the new guidelines? ❖ Have there been communication campaigns to alert parents that their children may be eligible for PMC?

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Coverage lower than target	Were there any problems with the implementation/ distribution? ❖ Why? ❖ **Additional data source:** Sulfadoxine-pyrimethamine (SP) is commonly used for PMC. Having sufficient stock is a precondition for reaching desired coverage levels of PMC. The Supply Chain Dashboard, accessible through the RBM Global Malaria Dashboard, provides high-level SP stock information. Were there specific districts that had particularly low values? ❖ Which ones? ❖ Why? What strategies are being explored to increase PMC coverage? Were there any changes to the program this year (i.e. expansion in geography) that may have caused challenges?	How reliable is the routine data? ❖ Does the denominator only include the eligible children?
Coverage around target	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why?	
Coverage above the target	What factors contributed to stronger than expected performance? Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why? How does above target performance affect quantification for SP?	How reliable is the routine data? ❖ Does the denominator accurately reflect the target population? Have newly eligible age groups been considered in the denominator?

IMPACT INDICATORS ANALYSES

As with all indicators, it is essential to carefully examine the impact indicators, even though they do not contribute to grant ratings. Impact indicators should be analyzed at least once annually in conjunction with the coverage and outcome indicators. If performance on coverage and outcome indicators is strong, but impact indicators are not showing progress, this should lead to a deeper dive into possible explanations and a discussion with the PR.

Impact indicators should be analyzed in conjunction with the intervention specific indicators to get a fuller picture of program performance and identify where improvements could be made in specific interventions to push for greater impact. Grants may also include some activities for which there are not performance framework indicators, such as social and behavior change activities. Even if there is no indicator for such activities, it is important to discuss the progress with the PR. For example, understanding progress on a social behavior change intervention focused on ITNs may provide insight into indicators such as the proportion of the population that slept under an ITN the previous night (O-1a).

In addition, impact indicators provide a bigger picture look at how a malaria program is progressing towards malaria elimination. Global Fund-funded activities are not the only activities contributing to these impact indicators so it is important to take a more holistic look at the country's malaria program and understand how changes in what other funders, national government or donor, are doing may also affect these impact indicators.

Question #1: How is the malaria burden changing?

Key Indicators

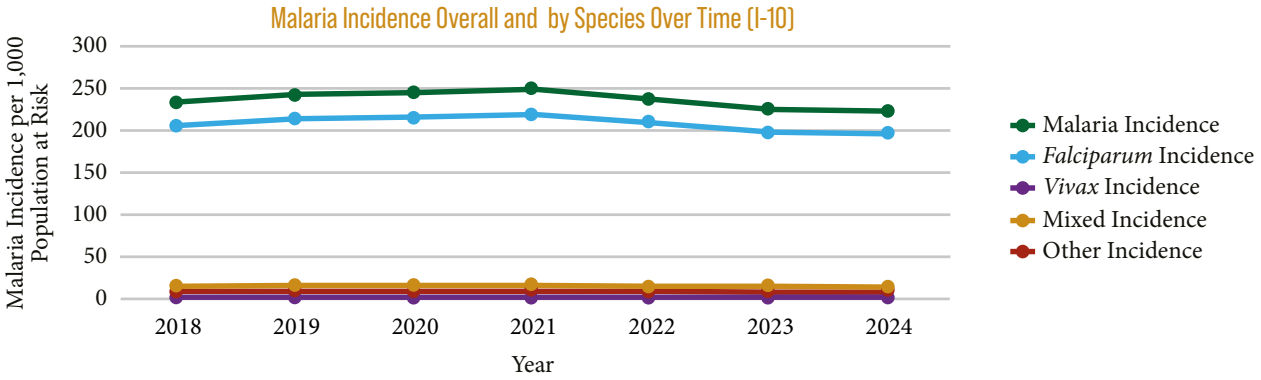
- **Malaria I-10:** Malaria incidence: Number of confirmed malaria cases during a pre-defined period, per 1,000 population at risk.
  - **Burden reduction settings:** Age (<5, 5-14, 15+); Species (*P. falciparum, P. vivax,* mixed, other).
  - **Elimination settings:** Source of infection (indigenous, introduced, relapsing, recrudescent, induced, imported).
- **Malaria: I-1:** Reported malaria cases (presumed and confirmed) from all reporting sectors throughout the country.
  - Age (<5, 5-14, 15+); Malaria case definition (confirmed, presumptive).
- **Malaria I-4:** Malaria test positivity rate: proportion of positive results among all tests performed by microscopy and/or RDT.
  - Type of testing (microscopy, rapid diagnostic test).
- **Malaria I-5.1:** Malaria parasite prevalence: proportion of individuals tested for malaria with malaria infection detected at one point in time or over a specified time period.
  - Age (<5, 5+); Gender (female, male).

How often/when to review: Annually

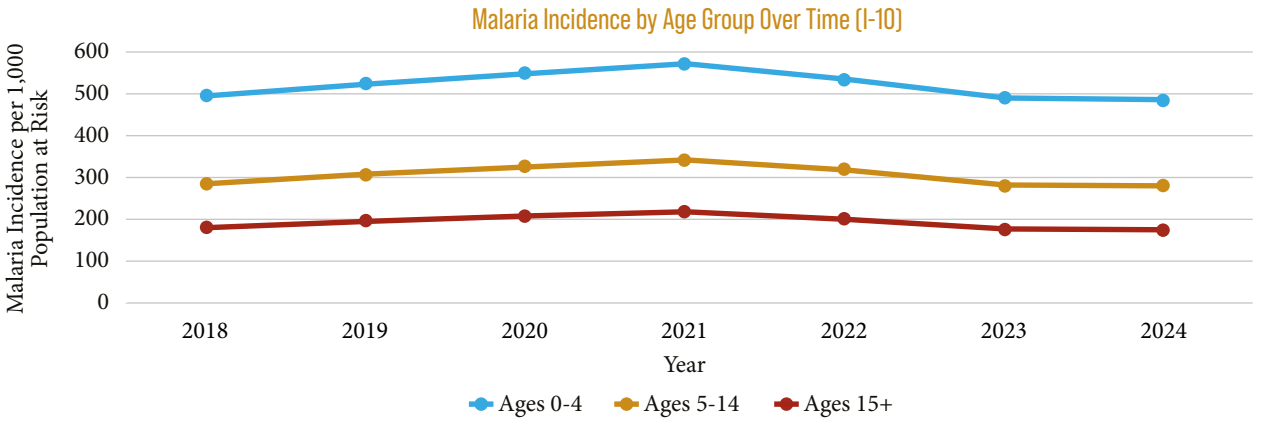
Case Example: The NMP for Country X has reported the following data in their most recent PUDR. You reviewed all of the intervention-specific data and now are interested in the overall impact of these interventions on malaria burden. The grant has included some of the same impact indicators over time so you pull data from past PUDRs for those indicators to compare progress over time. For other indicators that were not consistently included in the past, you go back to prior years' World Malaria Reports to get a sense of trends over time.

Analyses

Malaria Incidence

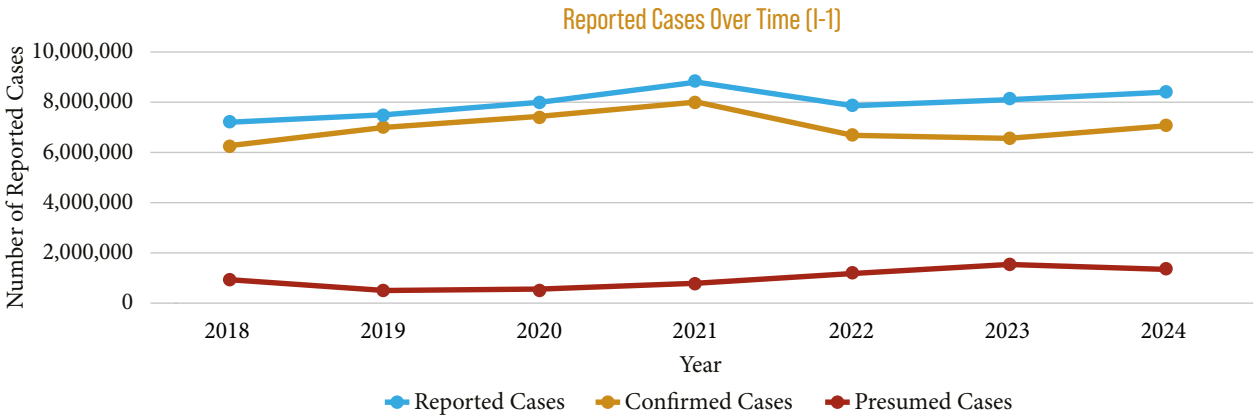


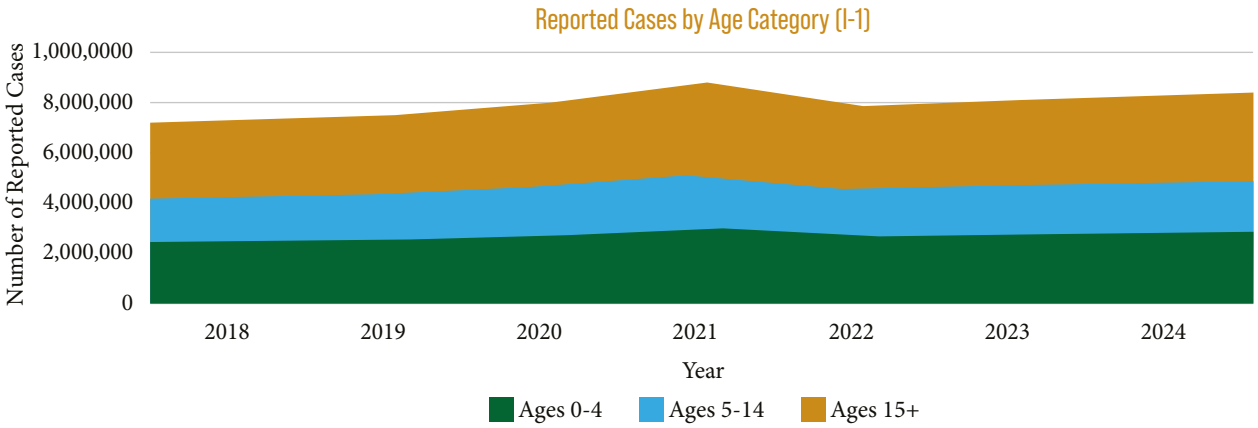
Description: This graph shows trends in malaria incidence over time based on indicator Malaria I-10. In **green** is the overall incidence rate, while each of the other colors show the incidence disaggregated by species. This graph shows you that incidence began to gradually decline starting in 2021 after a period of increasing. The downward trend, however, appears to have stalled this year. From the disaggregation by species, you see that the dominant species has been and remains ***Falciparum*** with ***Vivax***, mixed and other species representing a relatively small proportion.



Description: This graph shows trends in malaria incidence over time based on the age disaggregations reported for indicator I-10. In **blue** is the incidence rate among children under 5, in **gold** is the incidence rate for children ages 5-14, and in **red** is the incidence rate for those age 15 and above. While all age groups follow a similar trend of gradually increasing from 2018 through 2021, followed by a gradual decline from 2021 through 2024. The trends however, are more exaggerated among children ages 0 to 4, the group most vulnerable to malaria in Country X whereas incidence among those ages 15+ has been comparatively stable.

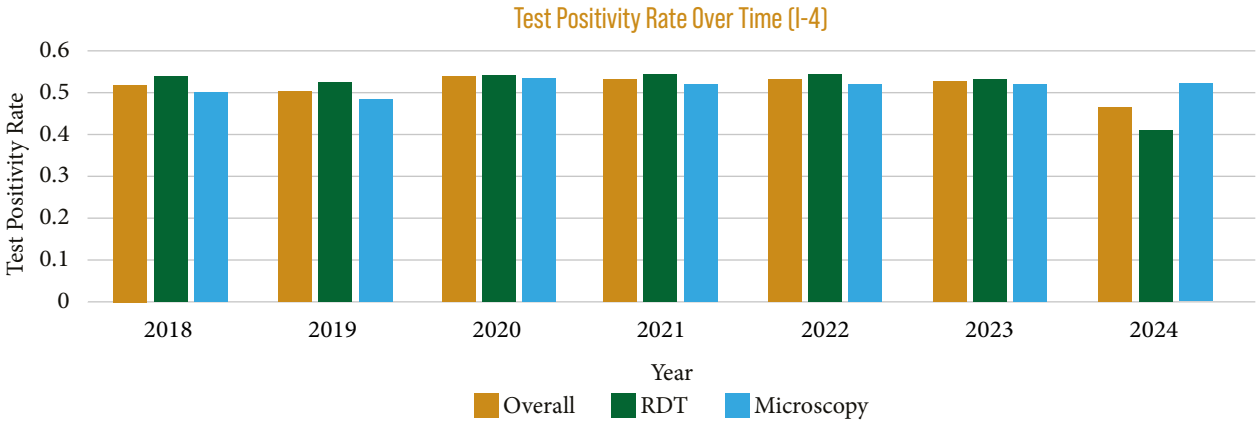
Reported Malaria Cases





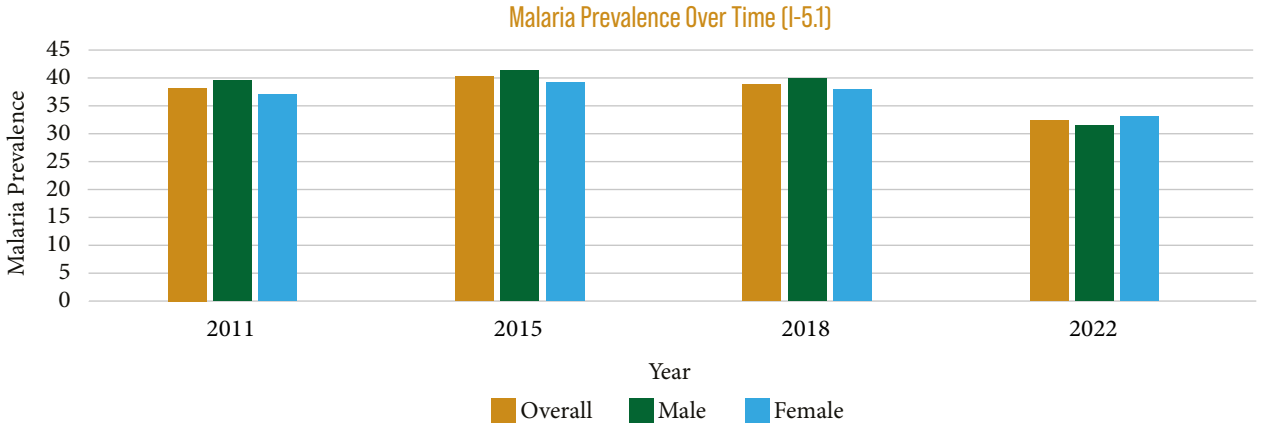
Description: The first graph shows trends in reported malaria cases over time, using indicator Malaria I-1. In **blue** is the overall number of reported cases, which combines both presumed and combined cases. In **red** are the number of presumed cases over time while **gold** shows the number of confirmed cases over time, both of which are required disaggregations of indicator I-1. The second graph shows reported malaria cases broken down by age group.

Test Positivity Rate



Description: This chart shows trends over time for indicator Malaria I-4, test positivity rate (TPR), overall and broken down by test type (RDT or microscopy). The **gold bars** show the overall trend in TPR, while **green** and **blue** show the trends for RDTs and microscopy respectively. From this graph, you determine that the TPR has remained relatively stable in recent years, with the TPR from RDTS slightly exceeding the TPR from microscopy. In 2024, however, the RDT TPR was noticeably lower than the microscopy TPR.

Malaria Prevalence



Description: This chart shows trends over time for I-5.1, malaria prevalence, overall and broken down by gender. The **gold bars** show the overall trend in prevalence, while **green** and **blue** show the trends for males and females respectively. Annual values are not available as this indicator is drawn from household surveys so data are only available approximately every 3-4 years.

Case Example – Follow-up: After reviewing the NMPs data, you've concluded that:

FINDING	ACTION
Overall, after rising in the aftermath of the COVID-19 pandemic, malaria burden appears to be slightly declining again.	Congratulate the NMP and PR on this positive trend.
While the number of cases is highest among ages 15+, the incidence is highest among children ages 0-4.	Discuss with the NMP how they are targeting interventions to reduce incidence among this high-risk age group.
The test positivity rate for RDTs has dropped relative to microscopy.	Discuss with the NMP what may be driving this trend? ❖ Has the testing algorithm changed recently (ex. introduction of ANC1 surveillance)? ❖ How reliable is the routine data?

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Additional Analyses

- **Compare reported cases to estimated cases:** Where estimated cases are greater than the reported cases it is important to discuss with the PR if this represents a gap in surveillance system, or a gap in access to case management services, or if there has been a change, such as increased investment or the introduction of new tools that have driven cases down to levels lower than previously estimated. An example of this analysis can be found here.

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Changes in incidence	Were there specific districts that had particularly low/high values that the national data is obscuring? - Which ones? - Why? Are changes in incidence being driven by changes among certain sub-populations? - Which ones? - Why? Are there any contextual factors that may be contributing to changes in incidence (programmatic, climatic, political, etc.)? - When looking at malaria incidence, it is essential to consider access to care. For example, incidence is likely to increase in the immediate aftermath of an expansion of access to care, such as through an expansion of community case management programs. Similarly, an area with low access to care may artificially appear to have low incidence. **Additional data source:** In addition to asking the PR about potential changes to access that may influence trends, the Malaria Atlas Project provides granular data on healthcare accessibility, however this data source may not reflect recent changes in access. **Additional data source:** Data on climate trends, including rainfall, can play a critical role in understanding unexpected changes in malaria impact indicators. ClimateServ can provide insight into climate to understand if there have been meaningful shifts that may explain large changes in incidence.	- How reliable is the routine data?

Reported Malaria Cases	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why? Are changes in reported cases concentrated among specific sub-populations? ❖ Which ones? ❖ Why? Are there any contextual factors that may be contributing to changes in the number of reported cases (programmatic, climatic, political, etc)? ❖ In high-burden countries, population growth can lead to an increase in malaria cases over time, as more individuals are exposed to the risk of infection. If looking over a longer period of time, looking at incidence is recommended as it is population weighted. ❖ Understanding access to care can be critical for interpreting the number of reported cases. For example, the number of reported cases is likely to increase in the immediate aftermath of an expansion of access to care, such as through an expansion of community case management programs.	❖ How reliable is the routine data?
Test Positivity Rate	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why? Have there been any changes in the testing algorithm? ❖ If yes, what were the changes? It is important to interpret the malaria positivity rate in the context of the country's testing algorithm—for example, whether all children under five are tested or only those with three or more malaria symptoms—as this greatly influences the rate. Any changes in the testing algorithm should be considered when looking at changes in test positivity rate over time. Has there been sufficient stock of RDTs? ❖ Test availability is also a critical factor; when diagnostic tests are limited, the reliability of the positivity rate as an indicator is significantly reduced. **Additional data source:** The RBM Global Malaria Dashboard's Supply Chain Dashboard provides a high-level summary of RDT availability.	❖ How reliable is the routine data?

Malaria Prevalence	Are changes in prevalence particularly notable in specific regions? ❖ Which ones? ❖ Why? Are there any contextual factors that may be contributing to changes in the number of reported cases (programmatic, climatic, political, etc.)?	Have there been any changes in the methodology used to measure prevalence? ❖ Malaria parasite prevalence has typically come from MIS surveys. If a recent survey is available, it is valuable to look at the malaria prevalence rate and how it has changed from previous years. Moving forward, alternative methods, particularly surveillance at 1st antenatal care visits, may be used to estimate malaria prevalence. ❖ If you are comparing ANC1 surveillance data to prior estimates from MIS surveys the following should be considered: ❖ ANC prevalence data is collected consistently over the course of the year while MIS data is generally collected in peak malaria season. If a PR is newly reporting ANC prevalence data, it is important to confirm what time period is covered to assess trends over time in prevalence. ❖ ANC1 surveillance captures prevalence in pregnant women while the MIS/DHS captures prevalence in children ages 6-59 months. Declines in prevalence in pregnant women may lag behind prevalence among children (Kitojo et al., 2019). ❖ In high transmission areas, prevalence among pregnant women may underestimate prevalence in children (Kitojo et al., 2019).

Question #2: How are trends in severe malaria changing?

Impact indicators require annual analysis alongside coverage and outcome indicators to assess grant performance. When coverage and outcome indicators perform well but impact indicators show no progress, deeper investigation and discussion with principal recipients is needed, including review of intervention-specific indicators and activities without formal indicators (like social and behavior change interventions). Since impact indicators reflect broader malaria program progress and are influenced by multiple funders beyond the Global Fund, analysis must take a holistic view of the entire country program, considering how changes by other donors, national governments, or partners may affect outcomes.

Key Indicators

❖ **Malaria I-3.1:** In-patient malaria deaths: rate per 100 000 persons per year.
- Age (<5, 5-14, 15+).

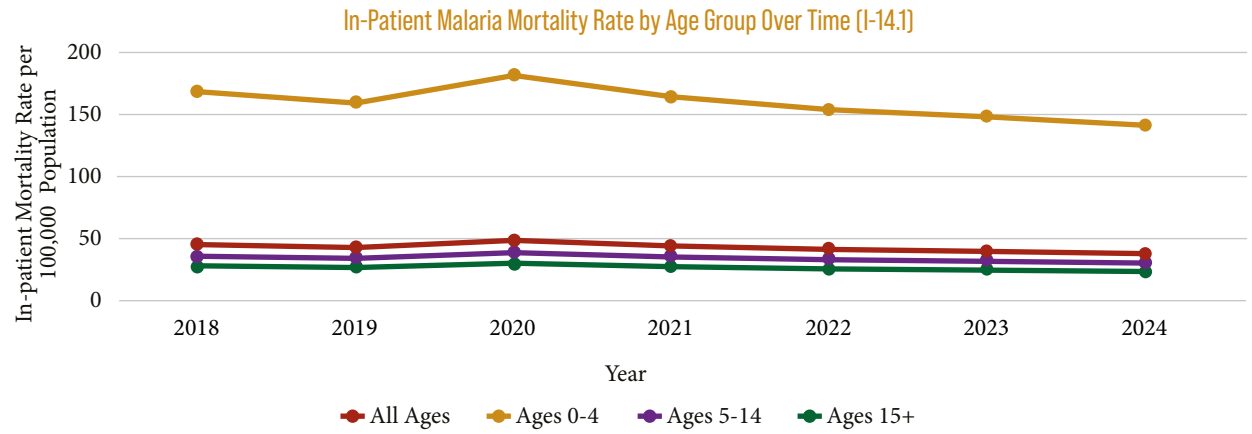
❖ **Malaria I-14.1:** Malaria admissions: number of malaria cases admitted as inpatients per 10 000 population.
- Age (<5, 5-14, 15+).

How often/when to review: Annually

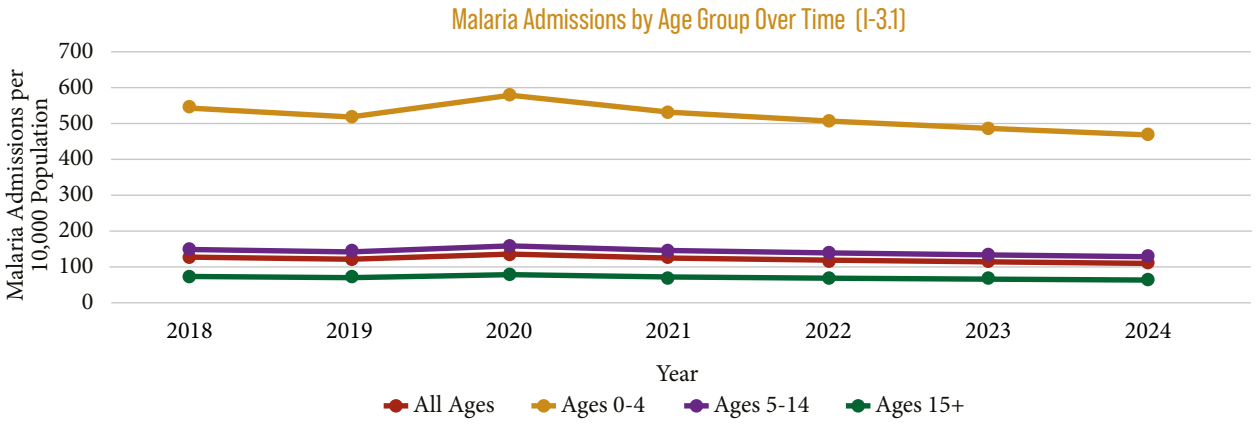
Case Example: The NMP for Country X has reported the following data in their most recent PUDRs. You reviewed all of the intervention-specific data and now are interested in the overall impact of these interventions on malaria burden. The grant has included some of the same impact indicators over time so you pull data from past PUDRs for those indicators to compare progress over time. For other indicators that were not consistently included in the past, you go back to prior years' World Malaria Reports to get a sense of trends over time.

Analyses

In-Patient Mortality



Description: The chart shows trends in in-patient mortality over time using indicator Malaria I-14.1. The trend among all age groups is shown in **red,** while the trends in ages 0-4, 5-15, and 15+ are shown in **gold, purple,** and **green** respectively.



Description: The chart shows trends in malaria admissions over time using indicator Malaria I-3.1. The trend among all age groups is shown in **red,** while the trends in ages 0-4, 5-15, and 15+ are shown in **gold, purple,** and **green** respectively.

Case Example – Follow-up: After reviewing the NMPs data, you have concluded that:

FINDING	ACTION
In-patient mortality has continued to decline, with the largest reductions among children ages 0-4.	Congratulate the NMP and PR on this positive trend. Discuss steps being taken to ensure this positive trend towards reduced admissions continues moving forward.
Malaria admissions have continued to decline, with particularly large drops among children ages 0-4.	Congratulate the NMP and PR on this positive trend. Discuss steps being taken to ensure this positive trend towards reduced admissions continues moving forward.

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
In-patient Mortality	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why? If in-patient mortality remains high or is increasing, what factors may be preventing in-patient mortality from declining? ❖ Are sufficient commodities available for treating severe malaria? ❖ Are health care workers adequately trained in severe malaria case management? ❖ Are patients seeking timely care, and if not, what are the barriers to timely careseeking? **Additional data sources:** RBM's Supply Chain dashboard includes data on artesunate injection which is often used to treat severe malaria. Stockouts may leave in-patient facilities unprepared to treat severe malaria. Malaria Behavior Surveys provide insight into timely and appropriate care seeking for febrile illness.	How reliable is the routine data? ❖ When assessing inpatient malaria deaths over time, it is important to recognize that this indicator may be influenced both by reporting practices and by admission practices. To interpret this indicator, it is valuable to triangulate with data on reporting rates and overall inpatient admissions and deaths. What is the population data source? Is there a reason we might be under- or over-counting the population? ❖ If you are looking at this indicator in a context that has very low transmission (fewer than 10,000 cases per year) it is recommended to look at the absolute number of in-patient deaths rather than the incidence rate.
Malaria Admissions	Were there specific districts that had particularly low/high values that the national data is obscuring? ❖ Which ones? ❖ Why? If malaria admissions remain high or are increasing, what factors may be driving this trend? ❖ Have there been disruptions to normal testing and treatment patterns? ❖ Have there been increases in malaria incidence? ❖ Is there evidence of treatment failure due to drug resistance? **Additional data source:** RBM's Supply Chain dashboard includes data on RDT and ACT stock. A shortage of RDTs or ACTs may prevent earlier detection and treatment of malaria leading to the development of severe malaria. WHO Threat Maps may provide insight into drug resistance. Rising drug resistance may lead to treatment failure and an increasing number of cases of severe malaria.	How reliable is the routine data? What is the population data source? Is there a reason we might be under- or over- counting the population? ❖ If this indicator is being used in an area with very low transmission (ex. fewer than 10,000 cases per year), it is suggested to analyze the absolute number of malaria cases admitted as inpatients rather than the incidence rate.

Question #3: Is the country progressing towards elimination?

Impact indicators require annual analysis alongside coverage and outcome indicators to assess program performance. When coverage and outcome indicators perform well but impact indicators show no progress, deeper investigation and discussion with Principal Recipients is needed, including review of intervention-specific indicators and activities without formal indicators (like social and behavior change interventions). Since impact indicators reflect broader malaria program progress toward elimination and are influenced by multiple funders beyond the Global Fund, analysis must take a holistic view of the entire country program, considering how changes by other donors, national governments, or partners may affect outcomes.

Key Indicators

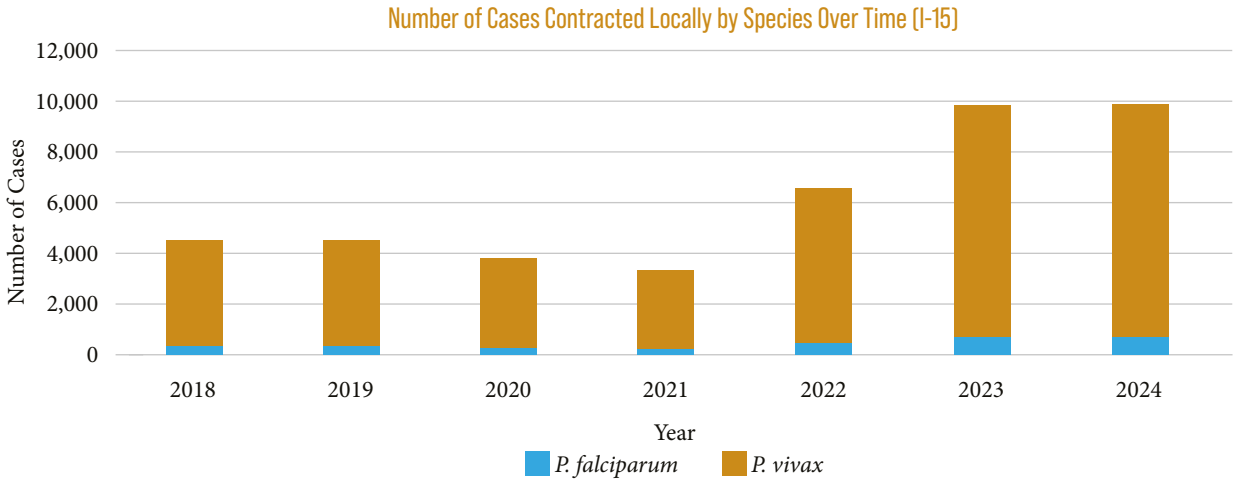
- **Malaria I-15:** Number of cases contracted locally.
  - Species (*P. falciparum, P. vivax,* mixed, other).
- **Malaria I-16:** Number of Malaria free districts.
- **Malaria I-13:** Malaria case fatality rate: Percentage of deaths among confirmed malaria cases (for elimination settings).
  - Age (<5, 5-14, 15+).

How often/when to review: Annually

Case Example: Country Y is working towards elimination. In their most recent PUDR they reported on Malaria I-15 and Malaria I-16. You pull the same indicators from the last several years to see how this year's data compares.

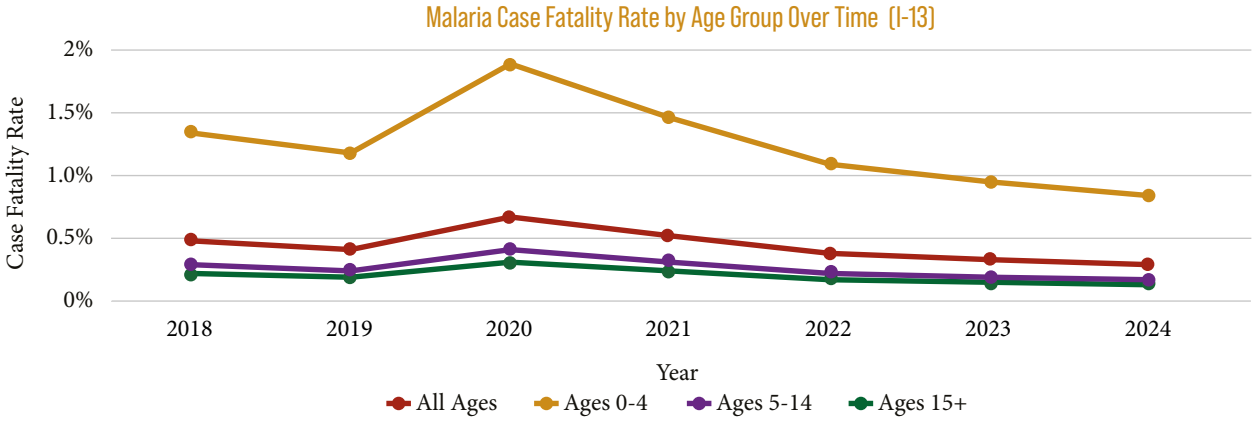
Analyses

Locally Contracted Cases



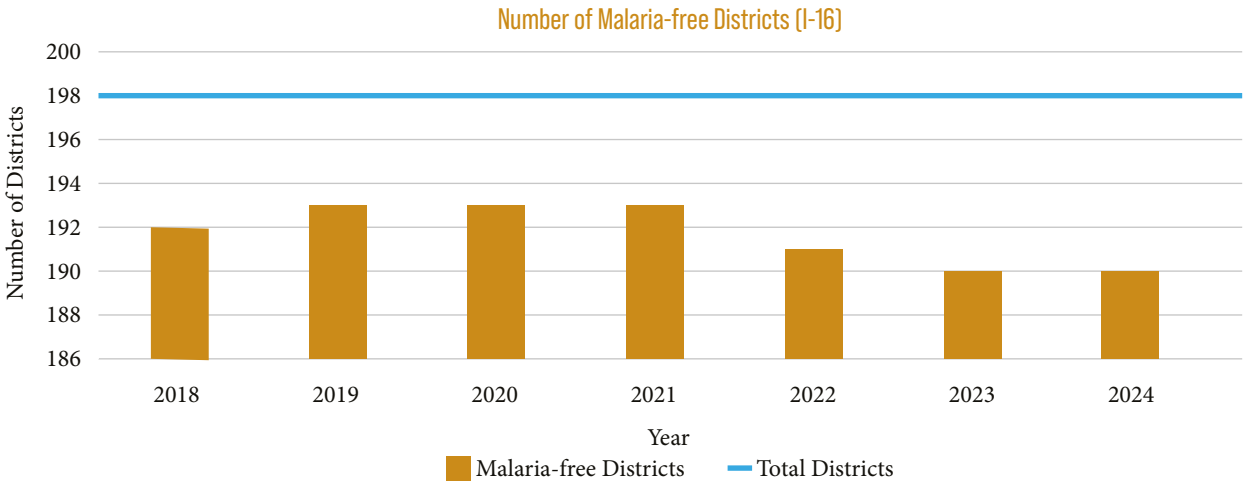
Description: The above graph shows the number of locally contracted cases, based on indicator Malaria I-15. The **gold** portion of the bar represents the number of locally contracted cases that were *P. vivax* while the **blue** portion of the bar is the number that were *P. falciparum*. In Country X, the vast majority of cases are due to *P. vivax,* a trend which has remained relatively stable in recent years including as the total number of cases

has increased.



Malaria Case Fatality

Description: This chart shows trends in malaria case fatality rates, based on indicator Malaria I-13. The **red line** shows the trend among all age groups while the **gold, purple,** and **green lines** show the trends among ages 0-4, 5-14, and 15+ respectively.



Malaria-Free Districts

Description: This graph shows the number of districts that are malaria-free, meaning they have had zero indigenous cases for at least 3 consecutive years. The **gold bars** represent the number of cases, while the **blue line** indicates the total number of districts in the country. In this graph, we can see that the number of malaria-free districts gradually increased from 2018 to 2021 before declining and stagnating from 2022 through 2024.

Case Example – Follow-up: After reviewing the NMPs data, you've concluded that:

FINDING	ACTION
The number of locally-contracted cases has been on the rise since 2021, but the growth slowed in 2024.	Discuss with the NMP or PR what factors are driving the increase in locally contracted cases. ❖ Are cases concentrated in specific regions and have the regions remained the same over time? ❖ Are cases concentrated in any specific populations (ex. forest workers, border communities, etc)?
The number of malaria-free districts declined in 2022 and 2023, but stabilized this year.	Discuss with the NMP what steps are being taken to prevent the reintroduction of malaria in districts which are currently malaria-free. ❖ If the districts are border districts, what cross-border collaboration efforts are being made?
The case fatality rate has continued to decline, with particularly noticeable drops in children ages 0-4.	Congratulate the NMP and PR on this positive trend.

General Interpretations and Key Questions

	PR QUESTIONS	DATA QUALITY QUESTIONS
Number of locally-Contracted Cases	If cases are increasing, what factors might be driving the increase? ❖ What climate or contextual factors might be contributing? ❖ Are case detection and treatment services working as they should? If cases are decreasing, how has the current intervention package achieved this goal? How will this positive trend be sustained?	❖ To what extent are cases being reported and classified (indicators CM-10 and CM-5)?
Number of Malaria-free Districts	If the number of malaria free districts is not increasing (either stagnant or decreasing), what might be potential explanations? What steps are being taken to increase the number of malaria-free districts? If the number of malaria free districts is increasing, what steps are being taken to ensure this progress is sustained?	
Case Fatality Rate	If the case fatality rate is high or increasing, what factors may be driving the increase (delayed case detection, delayed care seeking, etc)? What steps are being taken to reduce the case fatality rate? If the case fatality rate is declining, what factors appear to be driving this improvement? What steps will be taken to sustain this positive progress?	How reliable is the routine data? ❖ The indicator should not use modeled estimates but rather include all confirmed malaria cases.

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REFERENCES

- Alliance for Malaria Prevention. (2022, September). *Procedures for Assessing the Quality of Insecticide-Treated Net (ITN) Mass Distribution Campaign Household Registration and ITN Distribution Activities Using Clustered Lot Quality Assurance Sampling (CLQAS).* Alliance for Malaria Prevention. https://allianceformalariaprevention.com/wp-content/uploads/2022/12/AMP_Prioritization-of-Nets_EN_20221212.pdf
- Anoke, S. C., Mwai, P., Jeffery, C., Valadez, J. J., & Pagano, M. (2015). Comparing two survey methods of measuring health-related indicators: Lot Quality Assurance Sampling and Demographic Health Surveys. *Tropical Medicine & International Health,* 20(12), 1756-1770.
- Biedron, C., Pagano, M., Hedt, B. L., Kilian, A., Ratcliffe, A., Mabunda, S., & Valadez, J. J. (2009). Lot Quality Assurance Sampling (LQAS) and the Mozambique Malaria Indicator Surveys.
- Gutman, J. R., Mwesigwa, J. N., Arnett, K., Kangale, C., Aaron, S., Babarinde, D., Buekens, J., Candrinho, B., Debe, S., Digre, P., Drake, M., Gansané, A., Gogue, C., Griffith, K. S., Hicks, J., Kinda, R., Koenker, H., Lemwayi, R., Munsey, A., … Robertson, M. (2023). Using antenatal care as a platform for Malaria Surveillance Data Collection: Study Protocol. *Malaria Journal,* 22(1). https://doi.org/10.1186/s12936-023-04521-6
- Kitojo, C., Gutman, J. R., Chacky, F., Kigadye, E., Mkude, S., Mandike, R., Mohamed, A., Reaves, E. J., Walker, P., & Ishengoma, D. S. (2019). Estimating malaria burden among pregnant women using data from antenatal care centres in Tanzania: a population-based study. The Lancet Global Health, 7(12), e1695-e1705. https://doi.org/10.1016/S2214-109X(19)30405-X
- Koenker, H., Taylor, C., Burgert-Brucker, C. R., Thwing, J., Fish, T., & Kilian, A. (2019). Quantifying Seasonal Variation in Insecticide-Treated Net Use among Those with Access. *The American journal of tropical medicine and hygiene,* 101(2), 371–382. https://doi.org/10.4269/ajtmh.19-0249
- Nice J, Nahusenay H, Eckert E, Eisele TP, Ashton RA. (2020). Estimating malaria chemoprevention and vector control coverage using program and campaign data: A scoping review of current practices and opportunities. Journal of Global Health. Dec;10(2):020413. doi: 10.7189/jogh.
- van Eijk, A. M., Hill, J., Noor, A. M., Snow, R. W., & ter Kuile, F. O. (2015). Prevalence of malaria infection in pregnant women compared with children for tracking malaria transmission in sub-Saharan Africa: a systematic review and meta-analysis. *The Lancet Global Health,* 3(10), e617-e628.
- World Health Organization. (2024, December 11). *World Malaria Report 2024.* World Health Organization. https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2024

APPENDIX

Appendix A: Indicator Tables

Appendix A1: Case Management Indicators

CODE	INDICATOR	DISAGGREGATION	DATA SOURCE
CM-1a	Proportion of patients with suspected malaria who received a parasitological test (microscopy or RDT) at a public sector health facility.	❖ Age (<5, 5+) ❖ Type of testing (microscopy, rapid diagnostic test)	❖ HMIS ❖ Patient treatment register ❖ Suspect register/ OPD register/ patient treatment register
CM-1b	Proportion of patients with suspected malaria who received a parasitological test (microscopy or RDT) in the community.		
CM-1c	Proportion of patients with suspected malaria who received a parasitological test (microscopy or RDT) at private sector sites.		
CM-2a	Proportion of patients with confirmed malaria who received first-line antimalarial treatment, according to national policy, at public sector health facilities.	❖ Age (<5, 5+)	❖ HMIS ❖ OPD register/ ❖ Malaria treatment register
CM-2b	Proportion of patients with confirmed malaria who received first-line antimalarial treatment, according to national policy, in the community.		
CM-2c	Proportion of patients with confirmed malaria who received first-line antimalarial treatment, according to national policy, at private sector sites.		
CM-5	Proportion of confirmed cases classified (elimination settings).	❖ Source of infection (indigenous, introduced, relapsing, recrudescent, induced, imported)	❖ HMIS/routine surveillance system
CM-6	Proportion of foci classified as active, residual non-active and cleared (elimination settings).	X	❖ HMIS/routine surveillance system
CM-7	Percentage of districts achieving national target for the proportion of patients with suspected malaria who receive a parasitological test.	❖ Type of provider (public, private, community)	❖ HMIS/routine surveillance system
CM-8	Percentage of districts achieving national targets for the proportion of patients with confirmed malaria who received first-line antimalarial treatment.	❖ Type of provider (public, private, community)	❖ HMIS/routine surveillance system
CM-9	Proportion of detected malaria patients that contacted health services within 48 hours of symptoms (elimination settings).	X	❖ HMIS/routine surveillance system
CM-10	Proportion of cases reported to the relevant reporting system within 24 hours of diagnosis (elimination settings).	X	❖ HMIS/routine surveillance system
CM-11	Proportion of *P. vivax* cases tested for G6PD deficiency.	X	❖ HMIS/routine surveillance system
O-9	Annual blood examination rate (ABER): Number of people receiving a parasitological test during 1 year out of the total population at risk.	❖ Case detection (active, passive)	❖ HMIS/routine surveillance system
O-13	Proportion of malaria cases detected by the surveillance system.	X	❖ HMIS/routine surveillance system ❖ WHO estimate, or a country estimate, if justified and agreed to be more accurate.

Appendix A2: Vector Control

CODE	INDICATOR	DISAGGREGATION	DATA SOURCE
VC-1	Number of insecticide-treated nets distributed to populations at risk of malaria transmission through mass campaigns.	❖ Type of mass campaign (Regular distribution, Emergency distribution)	❖ Program records of ITN mass campaigns
VC-3	Number of insecticide-treated nets distributed to targeted risk groups through continuous distribution.	❖ At-risk population group (Children 0-5, Pregnant women, School children, people in emergency situations, others)	❖ HMIS ❖ Program records of ITN continuous distribution
VC-6.1	Proportion of population at risk receiving at least one round of IRS within the last 12 months in areas targeted for IRS.	X	❖ Malaria program records for IRS ❖ Household enumeration data/ population census projection
VC-7	Percentage of districts achieving national target for the proportion of population at risk receiving at least one round of IRS within the last 12 months in areas targeted for IRS.	X	❖ Malaria program records for IRS
O-1a	Proportion of population that slept under an insecticide-treated net the previous night in areas targeted for ITNs.	❖ Gender (female, male) ❖ Targeted risk groups (<5 children, pregnant women, migrants, refugees, IDPs, prisoners, others)	❖ Household surveys such as periodic malaria indicator survey, DHS or MICS ❖ Small area surveys such as LQAS
O-2	Proportion of population with access to an ITN within their household.	X	❖ Household surveys such as periodic malaria indicator survey, DHS or MICS
O-3	Proportion of the population with access to an ITN in their household that slept under an ITN the previous night.	X	❖ Household surveys such as periodic malaria indicator survey, DHS or MICS
O-10	Proportion of population at risk potentially covered by distributed ITNs.	X	❖ Routine Program Reporting System, National Malaria Program records ❖ Program records for ITN distribution ❖ Pre-distribution census/census projection
O-11	Percentage of districts achieving national target for the proportion of population at risk potentially covered by distributed ITNs	X	❖ Program records for ITN distribution & list of districts eligible for ITN distribution ❖ Pre-distribution census/ census projection; and list of districts eligible for ITN distribution

Appendix A3: Specific Prevention Interventions

CODE	INDICATOR	DISAGGREGATION	DATA SOURCE
SPI-1	Proportion of pregnant women and girls attending antenatal services who received three or more doses of intermittent preventive treatment for malaria.	❖ Age (<15, 15+)	❖ HMIS/routine surveillance system
SPI-2.1	Percentage of children who received the full number of cycles of seasonal malaria chemoprevention (SMC) per transmission season in the targeted areas.	❖ Age (<5, 5+)	❖ HMIS/routine surveillance system ❖ Mass campaign registers
SPI-3.1	Proportion of children in the target age group who received the full number of doses of perennial malaria chemoprevention (PMC) according to national policy.	X	❖ HMIS/routine surveillance system ❖ Mass campaign registers
SPI-4	Percentage of districts achieving national target for the proportion of pregnant women and girls attending antenatal services who received three or more doses of intermittent preventive treatment for malaria.	X	❖ HMIS/routine surveillance system
SPI-5	Percentage of targeted districts achieving national targets for the percentage of children who received the full number of cycles of seasonal malaria chemoprevention (SMC) per transmission season in the targeted areas.	X	❖ HMIS/routine surveillance system ❖ Mass campaign registers
O-17	Number of women receiving one dose of IPTp.	X	❖ HMIS (ANC and community registers)

Appendix A4: Impacts

CODE	INDICATOR	DISAGGREGATION	DATA SOURCE
I-1	Reported malaria cases (presumed and confirmed) from all reporting sectors throughout the country.	❖ Age (<5, 5-14, 15+) ❖ Malaria case definition (confirmed, presumptive)	❖ HMIS/routine surveillance system
I-3.1	In-patient malaria deaths: rate per 100,000 persons per year.	❖ Age (<5, 5-14, 15+)	❖ HMIS/routine surveillance system
I-4	Malaria test positivity rate: proportion of positive results among all tests performed by microscopy and/or RDT.	❖ Type of testing (microscopy, rapid diagnostic test)	❖ HMIS/routine surveillance system
I-5.1	Malaria parasite prevalence: proportion of individuals tested for malaria with malaria infection detected at one point in time or over a specified time period.	❖ Age (<5, 5+) ❖ Gender (female, male)	❖ Population-based surveys with diagnostics (e.g., MIS) ❖ ANC-based surveillance serves as an alternative (with no disaggregation unless available)
I-10	Malaria incidence: Number of confirmed malaria cases during a pre-defined period, per 1,000 population at risk.	**Burden reduction settings:** ❖ Age (<5, 5-14, 15+) ❖ Species (*P. falciparum, P. vivax,* mixed, other) **Elimination settings:** ❖ Source of infection (indigenous, introduced, relapsing, recrudescent, induced, imported)	❖ HMIS/routine surveillance system
I-13	Malaria case fatality rate: Percentage of deaths among confirmed malaria cases (for elimination settings).	❖ Age (<5, 5-14, 15+)	❖ HMIS/routine surveillance system
I-14.1	Malaria admissions: Number of malaria cases admitted as inpatients per 10,000 population.	❖ Age (<5, 5-14, 15+)	❖ HMIS/routine surveillance system
I-15	Number of cases contracted locally with no evidence of importation or no direct link to an imported case (elimination settings).	❖ Species (*P. falciparum, P. vivax,* mixed, other)	❖ HMIS/routine surveillance system
I-16	Number of malaria free districts (elimination settings).	X	❖ HMIS/routine surveillance system

Appendix B: Indicator Data Sources

Indicator data is sourced from a variety of data sources. This section provides a brief overview of each source, along with key considerations for their use. More detailed discussion is included for newer data sources—such as Lot Quality Assurance Sampling (LQAS) and Antenatal Care (ANC) Surveillance—that are expected to play a growing role in the coming years.

HMIS Data

Many indicators in the performance framework are based on routine data collected through a country's Health Management Information System (HMIS). Routine data is an essential source of health information and has improved in quality through concerted efforts. Guidance, such as the Global Fund Data Quality Improvement Framework, offer steps for ensuring ongoing improvements in this essential data source. Although routine data is imperfect, promoting its use can incentivize further investment in data quality.

When reviewing HMIS data, the following considerations are important:

- **Reporting Rates:** What percentage of facilities expected to submit monthly reports are doing so? How has this changed over time? Where relevant, this should be disaggregated by sector (public, private, and community).
- **Reporting Completeness:** Among the submitted reports, what percentage are complete? How has this changed over time?
- **Data Element Completeness:** Among submitted reports, how complete is the data for each relevant data element?

If a grant has an RSSH component, specific indicators such as **RSSH M&E 1** (reporting timeliness) and **RSSH M&E-2** (reporting completeness) may capture this information. If these indicators are not part of the grant, it is helpful to request the data from the PR. Data element completeness is not captured in any of the Global Fund indicators so would need to be requested from country programs if you have concerns about data quality.

If reporting rates or completeness are low, it is particularly important to triangulate HMIS-based indicators with other data sources. Low reporting or completeness rates should also trigger discussions with the country program to identify what support may be needed to strengthen routine data reporting.

Campaign Records

Campaign records are another key source of malaria indicator data and are becoming increasingly important in the face of reduced survey frequency. Campaign records are essential for understanding interventions implemented through campaigns, such as mass ITN distribution, SMC, and IRS. Campaign records may be collected on paper and digitized later or directly captured using digital tools such as KoboCollect or RedRose.

When analyzing data based on campaign records, it is important to review the notes provided in the PUDR to understand any assumptions made in estimating target populations or households. These assumptions will affect coverage rates and should be clearly understood when interpreting results. Administrative coverage rates, as determined using campaign records, frequently produce higher coverage estimates than those found in household surveys. These differences are frequently driven by challenges such as inaccurate population denominators or inclusion of individuals outside of the target populations (ex. children over 59 months for an SMC campaign targeted at children ages 3-59 months) (Nice et al., 2020).

Survey Data

Household Surveys

Household surveys, such as the Malaria Indicator Survey (MIS), Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) are considered the gold standard for gathering data on key population indicators like ITN use. These long-running, standardized surveys enable comparisons of key indicators over time and across countries. When reviewing household survey data, it is important to remember that surveys provide a snapshot of a specific point in time. Therefore, the following factors should be considered:

- **Timing of Data Collection Relative to the Peak Malaria Transmission Season:** Key indicators, such as malaria prevalence and ITN usage, are likely to vary by season. MIS surveys are typically timed to coincide with the peak malaria transmission season. In contrast, standard DHS surveys are usually conducted in the dry season. As a result, DHS surveys tend to show lower net usage rates as compared to MIS surveys (Koenker et al., 2019).
- **Changes Since Data Collection:** If a survey was completed in 2022 but a mass ITN campaign was completed in 2023, ITN coverage may have changed significantly. In such cases, alternative data sources, such as campaign records or lot quality assurance sampling may provide more up-to-date information.

While household surveys offer invaluable national-level insights, they are infrequent and may become even rarer due to funding constraints. Additionally, these surveys are generally representative at the national and first administrative level, but not at lower administrative levels, which are increasingly important for supporting the subnational tailoring of malaria interventions. When a household survey is several years old, it is important to consult additional data sources to verify whether the findings remain accurate and relevant.

To supplement household surveys, alternative methodologies are increasingly important for capturing data on outcomes of interest. In the GC8, two alternative methodologies, lot quality assurance sampling (LQAS), and surveillance at the first antenatal care visit (ANC1) surveillance, are being supported.

Alternatives to Nationally Representative Household Surveys

Lot Quality Assurance Sample (LQAS)

Initially developed for industrial quality control, LQAS has since been adapted for public health and development programs. In malaria, LQAS has increasingly been adopted for measuring coverage after SMC or ITN campaigns. This method uses small sample sizes to determine whether specific areas or populations—called 'lots'—meet a predefined performance threshold.

Traditional LQAS uses a simple random sampling design. To improve the practicality and speed of data collection, Clustered LQAS (cLQAS) was developed, which divides the sample into smaller clusters which are then randomly selected. While this approach enhances the rapidity of assessments, it can reduce precision—particularly when there is significant heterogeneity in coverage between clusters. When interpreting LQAS data, it is important to know whether traditional LQAS or cLQAS was used, as well as the degree of underlying population heterogeneity. Because of its reliance on small samples, LQAS may not provide reliable estimates for specific demographic subgroups.

Several practical guides exist for how to implement different types of LQAS, including:

- Liverpool School of Tropical Medicine's LQAS Generic Toolkit
- Alliance for Malaria Prevention's guide on implementing clustered lot quality assurance sampling to assess mass ITN campaigns.

LQAS is primarily designed to classify individual lots based on whether a defined threshold has been met. Its strength lies in providing granular subnational insights that are valuable for programmatic decision-making. However, for global reporting a national-level point estimate is often preferred. A national estimate can be derived from LQAS data by aggregating results across multiple lots and applying post-hoc sampling weights. This approach produces point estimates with reasonable confidence intervals (Alliance for Malaria Prevention, 2022).

Although there is limited literature directly comparing national estimates from LQAS to those from household surveys, existing evidence suggests that the results are generally comparable (Biedron et al., 2009; Anoke et al., 2015). If substantial discrepancies arise between LQAS findings and recent household survey data, it is important to investigate potential drivers of this discrepancy.

ANC1 Surveillance

Malaria prevalence has traditionally been estimated using household surveys, particularly the Malaria Indicator Survey. These surveys typically test both symptomatic and asymptomatic children under 5 years of age to estimate malaria prevalence at the national or first administrative level.

To obtain more frequent and granular data on malaria prevalence, some countries have implemented first antenatal care (ANC1) surveillance as a complementary or alternative method. ANC1 surveillance uses pregnant women and girls attending their first ANC visit as a sentinel surveillance population. All pregnant women and girls are tested for malaria at this visit before they receive intermittent preventive treatment (IPTp) allowing detection of both symptomatic and asymptomatic infections.

Research has shown that malaria prevalence estimates from ANC1 surveillance are closely correlated with those from child-based surveys, particularly among primigravidae (first-time pregnant) women and girls (van Eijk et al., 2015). However, declines in prevalence among pregnant women and girls may lag behind declines observed in children (Kitojo et al, 2019). ANC1 surveillance offers the added advantage of providing continuous, more localized data. It can detect changes in malaria prevalence at lower geographic levels that MIS surveys are not powered to detect (Kitojo et al, 2019).

When interpreting prevalence estimates from ANC1 surveillance, it is important to consider ANC attendance rates in a given country. Generally, ANC1 attendance is quite high, making it a strong indicator of prevalence (Gutman et al., 2023). In the 34 countries that provide IPTp in sub-Saharan Africa, ANC 1 attendance reached 80% in 2023 (World Health Organization, 2024).

Population Denominators

Several indicators rely on population census data as the denominator. Each country determines this denominator using its own methodology and informed by the best available data and known population dynamics (e.g., immigration, birth rates, etc.). The Global Fund should defer to countries in establishing this denominator, while also seeking to understand the methodology behind its calculation.

Appendix C: Data Quality Checks

Before starting data analysis, it is essential to perform data quality checks to ensure the results are reliable. If any issues are detected during this process, the PR should be contacted promptly to investigate and resolve the problem as quickly as possible.

Several data quality checks are automated and integrated directly into the reporting process. For example, during data entry, PRs input numerators and denominators for indicators separately, while the system automatically calculates the indicator values. This automation eliminates the need for manual verification of these calculations. Additionally, a data validation rule prevents numerators from exceeding denominators; however, PRs can override this rule if necessary. In such cases, it is important to understand the reason behind the override to maintain data integrity.

For interlinked indicators—such as CM-7 and CM-8—shared values like denominators are automatically carried forward to maintain consistency across reports. While these automated checks significantly improve data accuracy, users should still perform a high-level review to ensure the overall consistency and coherence of the reported indicators.

When data substantially differs from what is expected, common sources of error include:

- **Incomplete Data Submission:** Not all data from relevant periods was included (e.g., only Q1 data was submitted).
- **Population Mismatch:** Data was reported only for key populations, instead of the general population (or vice versa), leading to lower or higher numbers than expected.
- **Incorrect Indicator Definition:** For IPTp, women with exactly 3 doses were counted instead of those with 3 or more doses, resulting in underreporting.
- **Facility Categorization:** Facilities are not correctly categorized resulting in inaccurate reporting of indicators disaggregated by sector (e.g., CM-1A, CM-1B, CM-1C).

Internal Consistency Checks

Verify these logical relationships to identify data entry errors and reporting inconsistencies:

DATA ELEMENT (LEFT)	RELATIONSHIP	DATA ELEMENT (RIGHT)
Number of cases tested	≤	Number of suspected cases
Number of positive cases	≤	Number of confirmed + presumed cases
Cases receiving antimalarials	≤	Total positive cases
Number of admitted malaria cases	≤	Number of positive cases
Number of in-patient malaria deaths	≤	Number of admitted malaria cases

These logical relationships help identify data entry errors, reporting inconsistencies, or gaps in the surveillance system that require attention.

Disaggregation Categories

All disaggregation categories should add up to their corresponding totals. For example, the number of male and female cases should equal the total number of cases, and the age group breakdowns should sum to the overall total among all age groups. For indicators that include an "Other" category, it is essential to specify which subgroups are included, as this may vary across grants.

Any discrepancies between disaggregated and aggregated totals can be a critical indicator of underlying issues such as incomplete data collection, errors in classification, data entry mistakes, or missing demographic information. Inconsistencies should be investigated and corrected wherever possible to ensure analyses are accurate and can support data-driven decision-making.

Comparisons Over Time

Analyzing data trends over time helps distinguish between normal fluctuations, genuine changes, and potential data entry errors. When indicators show significant deviations from historical patterns, it is essential to systematically investigate the underlying causes.

Given the seasonal nature of malaria, indicators should be compared month-to-month across multiple years—ideally over a 3–5 year period. For example, performance in June 2025 should be compared to June 2024, June 2023, June 2022, and so on. As a general rule, any change greater than 10% should prompt further analysis and follow-up.

It is important to review not only the overall indicator trends but also the individual components that make up the indicator—such as the numerator, denominator, and targets. For population-based denominators, increases should generally align with expected population growth rates.

Environmental factors like floods, droughts, or other natural disasters can dramatically impact health outcomes. Access issues from conflicts or security concerns may prevent people from reaching healthcare services. Methodological changes in reporting procedures, data collection tools, indicator definitions, or data completeness can create artificial shifts in the numbers.

Document the context behind any significant deviations you discover. This analysis ensures that program decisions respond to real trends rather than data anomalies, leading to more effective interventions and resource allocation.

Appendix D: Supplemental Data Sources

Indicator data submitted through the performance frameworks is essential for grant monitoring; however, it is often challenging to interpret the performance framework indicators independently. Triangulating these indicators with information drawn from other data sources is critical. This section provides a summary of some of the relevant external data sources that should be referred to as you conduct your analysis.

SUPPLEMENTAL DATA SOURCE	DESCRIPTION	TRIANGULATION RECOMMENDATION	DATA SOURCE CONSIDERATIONS
WHO World Malaria Report	This annual report summarizes global progress in controlling and eliminating malaria. It provides global, regional, and country-specific data, highlighting key trends to facilitate a clear understanding of malaria-related data.	Impact indicators should be triangulated with the WHO World Malaria Report.	The World Malaria Report is a widely used source, but its reliance on modeled data may lead to scenarios where national programs feel the reported data do not accurately reflect the trends they are seeing in their country. Consult with the national program to ensure you also understand their perspective on trends in their country.
WHO Malaria Threats Map	The WHO Malaria Threats Map is an interactive tool that allows users to examine four primary biological threats to malaria elimination: invasive vector species, vector insecticide resistance, antimalarial drug efficacy and resistance, and parasite pfhrp2/3 gene deletions.	Malaria Threats Maps are useful for identifying potential explanations for suboptimal performance and pinpointing regions where intervention adjustments may be necessary.	The WHO Threat Maps may not reflect the most up-to-date studies. Consult with the national program and partners to identify if more recent data is available.
Malaria Atlas Project (MAP)	The Malaria Atlas Project's Malaria Data Explorer offers interactive maps and visualizations to analyze trends in key malaria indicators at global, national, and subnational levels.	MAP modeled estimates of intervention coverage, prevalence, and incidence can fill data gaps when recent information is unavailable. Additionally, MAP facilitates comparisons across countries and enables scenario analyses to project future trends.	MAP data is modeled and is based on the most up-to-date data available, but may not account for recent changes. Likewise, because MAP data is modeled, there is uncertainty in the estimates. It is important to understand this uncertainty when using MAP data.
Roll Back Malaria (RBM) Global Malaria Dashboards	RBM compiles data from multiple sources into comprehensive dashboards that allow users to examine overall trends and explore country-specific information.		RBM dashboards may not reflect the most recent available data. Consult with the national program and partners to verify if the dashboard reflects the latest available information.
	Supply Chain Dashboard		
	This dashboard provides easy-to-use summaries of the current stock and pipeline of critical commodities, including RDTs, ACTs, SP, Artesunate injection, and Artesunate suppository.	The Supply Chain Dashboard aids in interpreting unexpected case management results.	RBM dashboards may not reflect the most recent available data. Consult with the national program and partners to verify if the dashboard reflects the latest available information.

	Campaigns Dashboard		
	The Campaigns Dashboard provides information on the status of planned campaigns for ITNs, IRS, and SMC. Campaigns are categorized as completed, planned, ongoing, on track, at risk, or off track.	The Campaigns Dashboard supports the interpretation of unexpected results in ITN, IRS, and SMC indicators.	RBM dashboards may not reflect the most recent available data. Consult with the national program and partners to verify if the dashboard reflects the latest available information.
Malaria Behavior Survey (MBS)	For selected countries, Malaria Behavior Surveys offer data on access to and usage of mosquito nets, care-seeking behavior for fever, and utilization of ANC services.	The MBS offers valuable context for indicators related to case management, IPTp, and ITN usage.	Malaria Behavior Surveys were funded by PMI and may not be updated moving forward. As the data becomes less recent, alternative sources may need to be consulted.
ClimateSERV	ClimateSERV provides rainfall data at the country, admin1, and admin2 levels.	Reviewing ClimateSERV data can be useful for identifying potential correlations or trends between rainfall patterns and malaria case incidence.	
Funding Landscape	This dashboard presents a comprehensive view of the funding landscape in each country, including PMI funding and government resources. It enables drill-down analysis to assess funding allocated to each intervention category.	Since the Global Fund is not the sole funder of malaria interventions, understanding the roles of other funders and how funding changes may influence malaria elimination progress is crucial, even if Global Fund resources remain constant.	

Appendix E: Essential Questions to Frame Discussions with PRs

The analyses presented in the previous sections offer valuable insights into grant performance; however, they should serve as a starting point rather than an endpoint. Follow-up discussions with PRs should build on these findings, incorporating additional context and information to support data-driven decision-making. These conversations are essential opportunities to collaborate with the PR, identify any shifts in needs, and explore how planned grant activities might be adjusted in response to new developments.

The following sections outline key discussion topics and guiding questions to help structure these conversations. When preparing for meetings with the PR, it is important to review these topics in the context of your performance framework analysis and prioritize those that are most relevant.

Overarching Topics for Discussion

❖ **Data Quality**

Indicators are only as reliable as the data underlying them. If data quality has been identified as a potential concern, it is important to explore this issue further to understand the specific challenges and how they are being addressed.

- What steps are being taken to improve data quality?
- What are the biggest challenges that remain for improving data quality?

❖ **Landscape: Climate, Conflict, Political Instability, Biological Threats, etc.**

When assessing trends across indicators, especially when considering how intervention-specific performance translates into impacts, it is crucial to consider the context in which the interventions are occurring. Achieving target ITN coverage may no longer produce the same effect on the face of insecticide resistance. Similarly, population mobility, especially in the face of conflict or natural disaster, may mean that the number of nets needed to meet target coverage at the time of planning is no longer sufficient.

When meeting with PRs, it is essential to ask about any relevant contextual changes and bring relevant data to the conversation to jointly interpret how these changes may explain patterns in the indicators and subsequently, what these patterns may mean for program implementation.

- Are there any changes to the landscape that may affect your ability to implement your grant and achieve the proposed impact as planned?
- What changes to the implementation plan are required to adapt to these changes?

❖ **Budget Absorption**

If a country is failing to meet its performance targets, consider if allocated resources are being absorbed at the expected rate. If this analysis reveals insufficient budget absorption, this should be probed further in your discussions with the PR.

- If resources are not being allocated at the planned rate, what barriers are preventing expected budget absorption?
- What steps can be taken to improve budget absorption, or, if required, to reprogram the budget if planned activities are no longer feasible?

❖ **Supply Chain & Stock Management**

Many interventions rely on having access to the appropriate commodities – ITNs, RDTs, ACTs, chemoprevention drugs, etc – to be successful. It is essential to consider the functioning of the supply chain and stock management systems. If stock outs are common occurrences, it is important to discuss the root of the problem.

- Is quantification inaccurate? If so, what steps are being taken to improve accuracy?
- Are there delays in shipments? If so, what actions can be taken to improve timeliness?
- Are logistics systems delaying distribution to health facilities? What steps are being taken to improve logistics management?

❖ District Performance

When reviewing country performance, it is essential to examine indicator performance not only at the national level but also at the subnational level. Indicators CM-7, CM-8, SPI-4, SPI-5, VC-7, and O-11 provide some insight into district performance; however, these additional questions can offer a more comprehensive picture of which districts may require targeted support or where alternative approaches should be considered.

- Which districts are failing to meet the target?
- Compared to the last review, are the same districts consistently missing the target?
- In districts that are missing the target, by how much are they missing the target?
- In districts that are missing the target, has the gap between actual performance and the target shrunk over time?
- What steps are being taken to improve performance in districts that are failing to meet performance targets?

❖ Progress Towards Overarching Goals

While it is essential to determine whether PRs are indeed implementing the activities outlined in their grant through the coverage indicators, the primary purpose of these activities is to reduce malaria mortality and morbidity, ultimately leading to malaria elimination. As such, it is crucial to examine holistically how performance on coverage indicators appears to be affecting these key impact indicators.

- Based on current burden patterns, what adjustments to intervention strategies or geographical targeting are being considered to achieve greater impact?

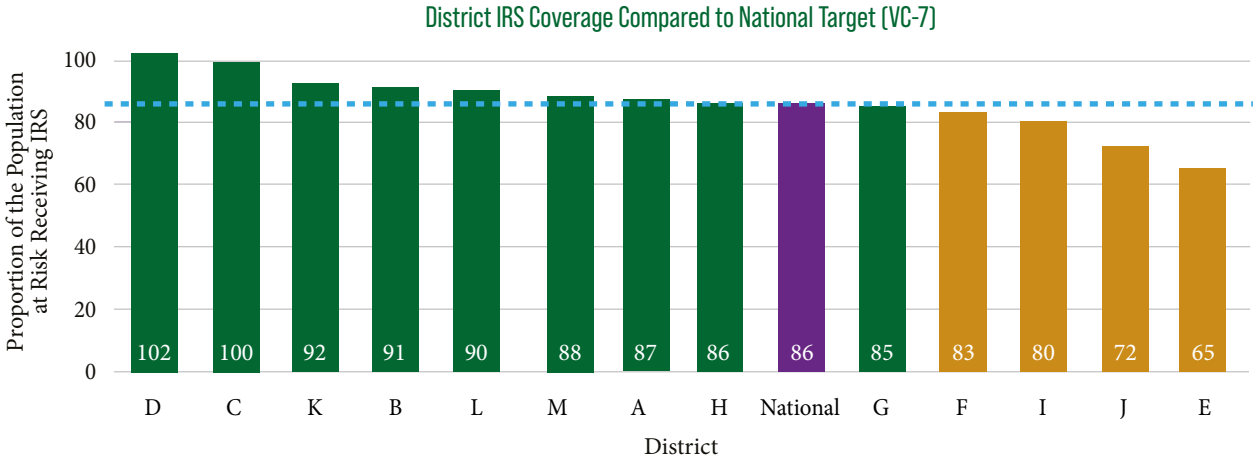
Appendix F: Additional Analyses

All Interventions

Review indicator performance in conjunction with budget absorption data

Analyzing budget absorption alongside performance indicators is essential for accurate program assessment. Low absorption rates often signal implementation delays or capacity constraints that directly cause underperformance, meaning poor results may reflect operational issues rather than ineffective interventions. Conversely, higher-than-expected absorption may indicate cost overruns or unsustainable spending that threatens program continuity as resources are prematurely depleted. Without this financial context, performance data can be misleading—strong results achieved through accelerated spending may not represent sustainable program effectiveness or provide reliable baselines for future planning.

Detailed District Performance (CM-6, CM-7, VC-7, SPI-4, SPI-5, O-11)



Description: For all district-level indicators (CM-6, CM-7, VC-7, SPI-4, SPI-5, O-11), additional information should be requested from the PR to better understand the performance of individual districts and how far they are from meeting the targets. Where possible, historical data should also be collected to assess whether the same districts have consistently underperformed over time.

This graph shows the proportion of the population at risk receiving at least one round of IRS within the last 12 months within each district for a given year. This graph provides more information than available in VC-7, in that it provides the specific coverage values for each district, showing which ones are much lower or higher than the target. It also provides specific district names which can be useful in guiding discussions with PRs. While this is not a specific indicator, information like this obtained from NMPs or PRs can be very useful for program monitoring. For example, in this example we can see that 4 districts in Country X failed to meet the target, but District F missed the target by 2 percentage points while District E missed it by 20 percentage points.

Reporting Timeliness & Completeness

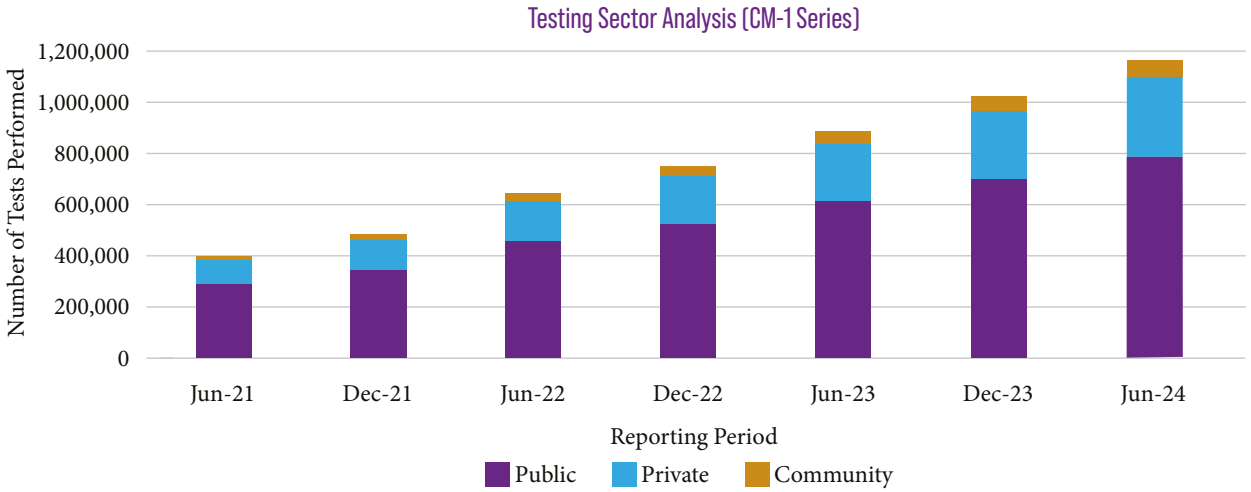
If the grant includes RSSH funding, it is valuable to review RSSH/PP M&E-1 and RSSH/PP M&E-2.

- **RSSH/PP M&E-1:** Completeness of reporting: Percentage of expected monthly reports (for the reporting period) that are actually received.
- **RSSH/PP M&E-2 Timeliness of reporting:** Percentage of submitted monthly reports (for the reporting period) that are received on time per the national guidelines.

Monitoring these two indicators over time can provide valuable context for interpreting trends in other malaria indicators. For example, a significant increase in reporting completeness may explain a rise in the number of individuals tested under case management—suggesting improved data capture rather than an actual increase in testing activity or a disease outbreak.

Case Management Additional Analyses

Proportional Contribution of Public, Private, and Community Sectors

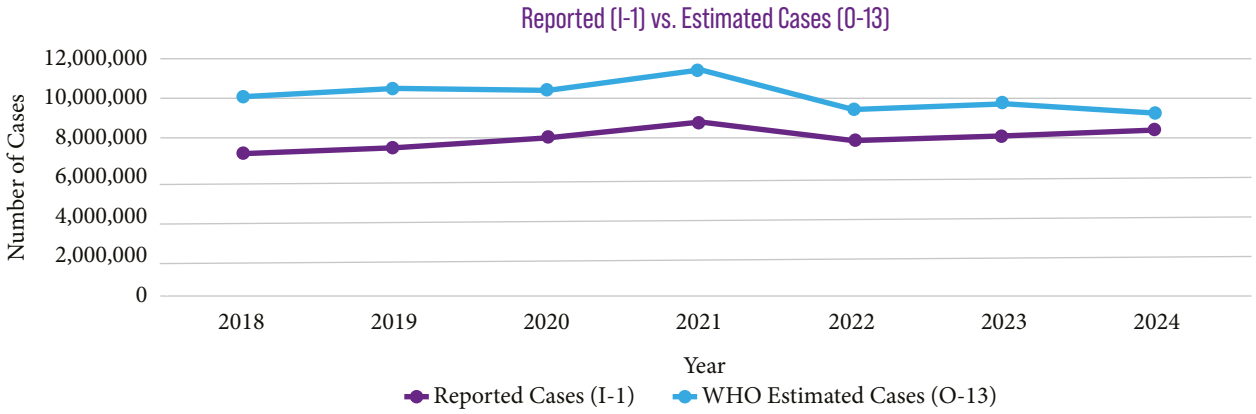


Description: It is helpful to visualize the actual number of tests performed by each sector in relation to the total number of tests, to understand the proportional contribution of each sector. In this analysis, we have combined the numerators of CM-1A, CM-1B, and CM-1C to show how many tests were conducted by the **public**, **private**, and **community** sectors. The public sector consistently performs the majority of tests, followed by the private sector and then the community sector. While testing volumes are increasing across all sectors over time, the public sector remains the dominant contributor.

If there has been significant investment in private or community-based testing, we would expect a greater share of testing from these sectors, warranting further review. Additionally, it is important to verify the completeness of reporting from all sectors, particularly the private and community sectors.

A similar analysis should be conducted for the CM-2 indicator series to understand the proportional contribution to treatment by sector.

Reported vs. Estimated Cases

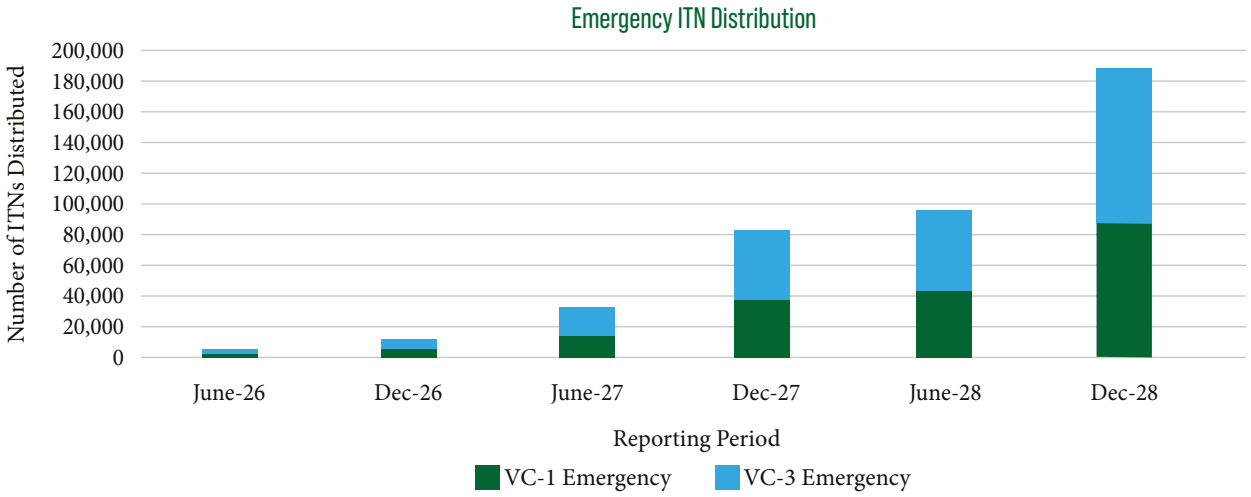


Description: This graph compares the number of reported malaria cases (both presumed and confirmed) from all reporting sectors nationwide (I-1) with the World Health Organization (WHO) estimated number of cases (O-13 denominator). Differences may reflect inadequate testing, underreporting, shifts in malaria burden, or potential inaccuracies in the modeled estimates.

As shown in the graph, the gap between reported cases and WHO estimates is initially wide but narrows over time. However, the WHO estimate consistently remains higher than the reported case numbers. When interpreting this trend, it is important to understand the methodology used to calculate the WHO estimate. Countries often express concerns that the estimate may overstate the true burden of malaria. Despite these concerns, this comparison remains a useful tool to understand malaria trends and highlight possible gaps in case testing or reporting.

Vector Control Additional Analyses

Emergency Distribution Trends



Description: The emergency distribution disaggregation is a new addition in GC8. Its purpose is to track the number of ITNs distributed in response to outbreaks over time, helping to explain potential fluctuations in **VC-1** and **VC-3** indicators that may be linked to emergencies. Additionally, this disaggregation helps monitor whether the frequency of outbreaks is increasing over time due to factors such as climate change, conflict, or population displacement. The graph shows a significant upward trend in the number of ITNs distributed in emergency contexts. This information is critical for ITN supply planning and can also support advocacy efforts by highlighting growing needs in response to emergencies.

Expected ITN Coverage with ITN Decay Calculation

In the absence of survey data, estimating potential ITN coverage can offer valuable insights. However, assuming no decay or loss of ITNs is unrealistic. Therefore, estimates should account for gradual net loss or degradation over time. This calculation is based on the standard assumption that one ITN covers two people.

The follow formula is used to calculate potential coverage:

$$\text{ITN Coverage}_{\text{Decay}} = ((Y1 * 0.92) + (Y2 * 0.80) + (Y3 * 0.50)) * 2 / \text{population at risk}$$

YEAR	DECAY RATE
Year 1 (Current)	0.92
Year 2 (Last year)	0.80
Year 3 (Two years ago)	0.50

Example calculation:
Population at risk (2023) = 10,000,000

YEAR	ITNS - MASS CAMPAIGNS	ITNS - CONTINUOUS DISTRIBUTION	TOTAL ITNS	TOTAL X DECAY RATE
2023	0	200,000	200,000	200,000 x 0.92 = 184,000
2022	600,000	1,200,000	1,800,000	1,800,000 x 0.80 = 1,440,000
2021	800,000	1,700,000	2,500,000	2,500,000 x 0.50 = 1,250,000
			Total	184,000 + 1,440,000 + 1,250,000 = 2,874,000

Assume one ITN covers two people: 2,874,000 x 2 = 5,748,000
Divide by the population at risk: (5,748,000 / 10,000,000)x100 = **57%**

This calculation incorporates continuous distribution and mass campaigns conducted over the past three years and estimates that approximately 57% of the total population at risk is currently covered by ITNs. This figure is useful for planning purposes, particularly in projecting future ITN needs while accounting for the gradual decline in ITN availability over time. It is important to note that this estimate assumes ITNs, once distributed, remain in households. Whenever possible, this calculated coverage should be compared with survey data for validation.

ITNs Necessary for Universal Coverage

Calculating the number of ITNs required for universal coverage, assuming one ITN protects two people, is a valuable step. By comparing this number to the estimated current ITN coverage (calculated earlier), we can identify the coverage gap and determine how many additional ITNs are needed.

- Population at risk (2023): 10,000,000
- ITNs needed for universal coverage: population at risk ÷ 2 = 10,000,000 ÷ 2 = 5,000,000
- Coverage gap: ITNs needed for universal coverage - potential coverage assuming ITN decay = 5,000,000 – 2,874,000 = **2,126,000**

This means an additional 2,126,000 ITNs must be distributed to achieve universal coverage. Understanding this gap is crucial for planning future campaigns and continuous distribution efforts.

Specific Prevention Interventions Additional Analyses

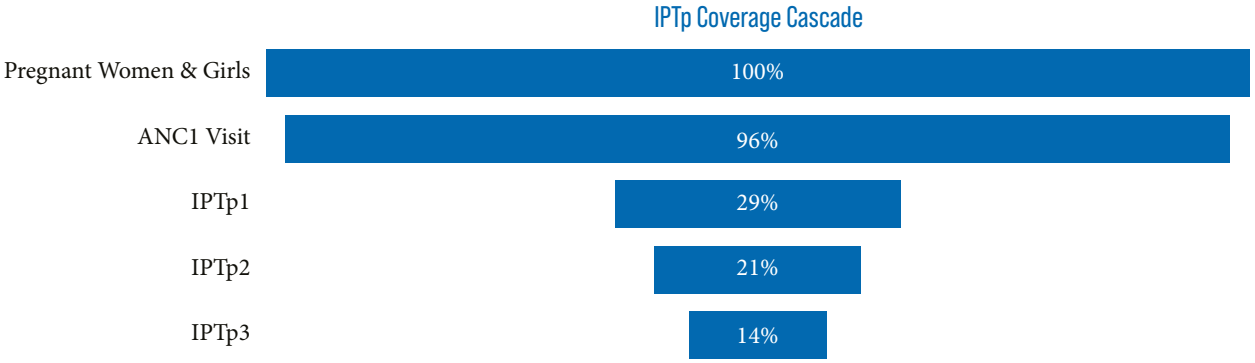
IPTp Additional Analyses

Identifying IPTp Bottlenecks

Proportion of Pregnant Women and Girls Receiving 3+ Doses of IPTp among those Receiving One Dose

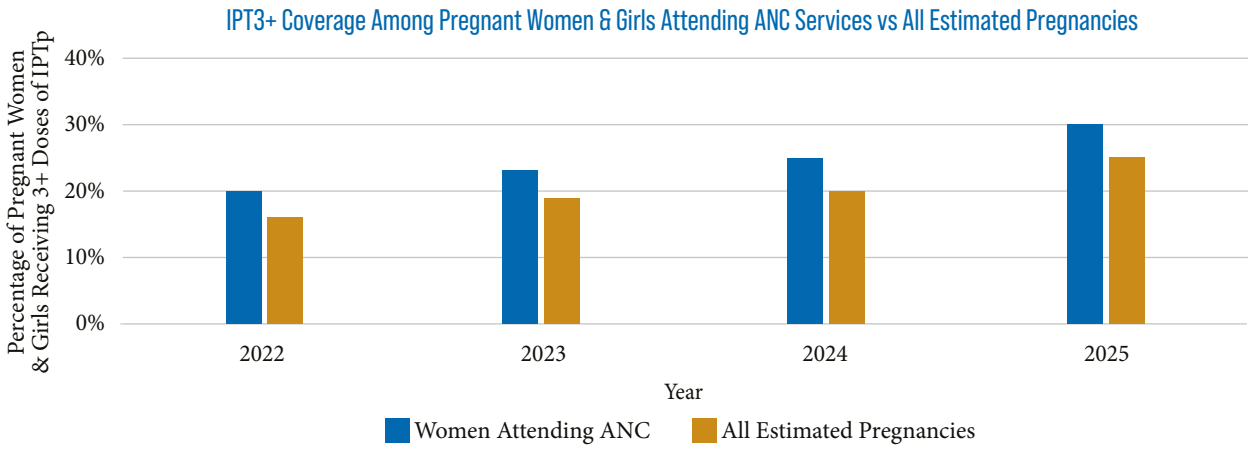
- Pregnant women and girls can only receive the target 3+ doses if they first receive one dose. Comparing the proportion of women receiving 3+ doses of IPTp to those receiving 1 dose can provide insight into how many pregnant women and girls initiate the IPTp series but do not complete it.
- **Numerator:** Number of pregnant women and girls receiving 3+ doses of IPTp (SPI-1 Numerator)
- **Denominator:** Number of pregnant women and girls receiving 1 dose of IPTp (Malaria O-17)

Coverage Cascade



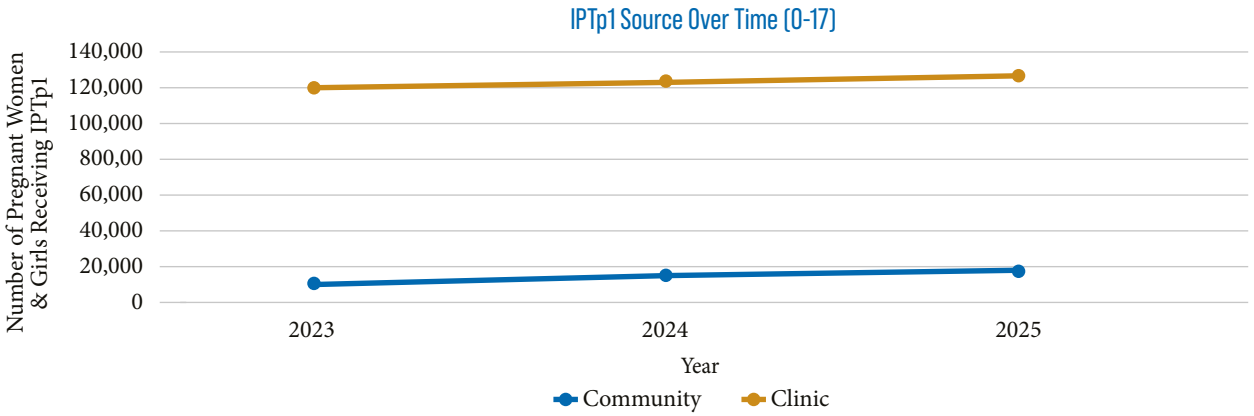
Description: Using recent survey data, such as from a recent DHS, it is valuable to consider where drop-offs are occurring from pregnancy to ANC1 attendance to IPTp1, IPTp2, and IPTp3. The figure above shows this analysis in three countries. Analyzing the data in this way can provide insight into where in the process interventions may be most impactful in increasing IPTp3 coverage. In this example, we can see that in this country, while most pregnant women and girls attend a first antenatal care visit, few receive the first dose of IPTp.

IPTp 3+ Coverage Among Women Attending ANC Service vs. Among All Estimated Pregnancies



Description: Indicator SPI-1 captures IPTp3+ coverage among pregnant women and girls attending ANC1 services. Especially if ANC attendance is not optimal, you may be interested in also looking at IPTp3+ coverage among all estimated pregnancies. This chart compares coverage rates among women attending ANC services (in **blue**) with coverage rates among all estimated pregnancies (in **gold**). While the two bars generally follow the same trend, we can see that using estimated pregnancies as the denominator rather than pregnant women and girls attending ANC services produces lower coverage rates.

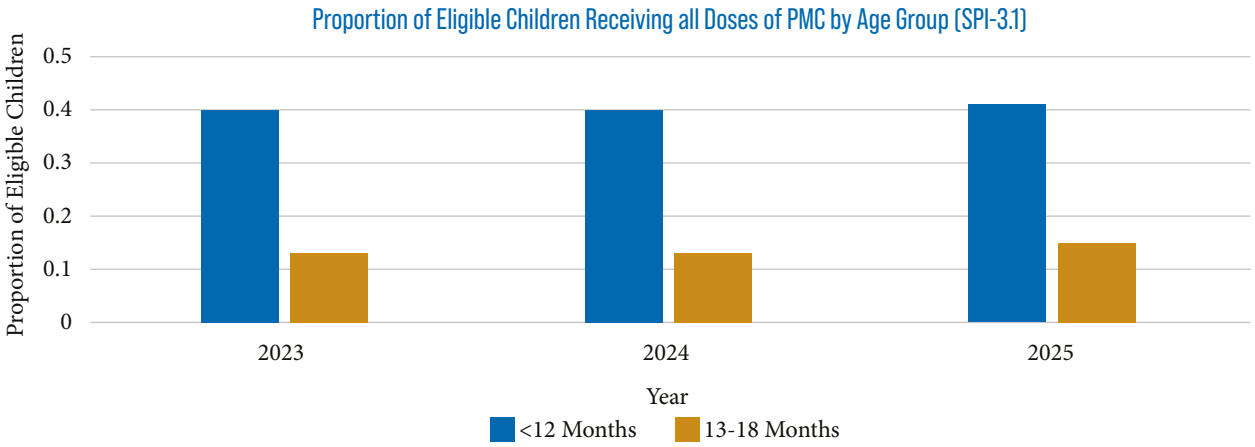
IPTp1 Source



Description: This graph shows the number of pregnant women and girls IPTp1 at an ANC clinic in **gold** and the number receiving IPTp1 in the community in **blue**. This graph uses disaggregated data based on indicators O-17 which would need to be specifically requested from the NMP, but which may be useful if a country has begun implementing community IPTp. In this example, we can see that the number of women receiving IPTp1 in the community has gradually increased since 2023, but it has coincided with a similar gradual increase in clinic-based IPTp1. It appears that, overall, community-based IPTp is helping to expand IPTp1 coverage.

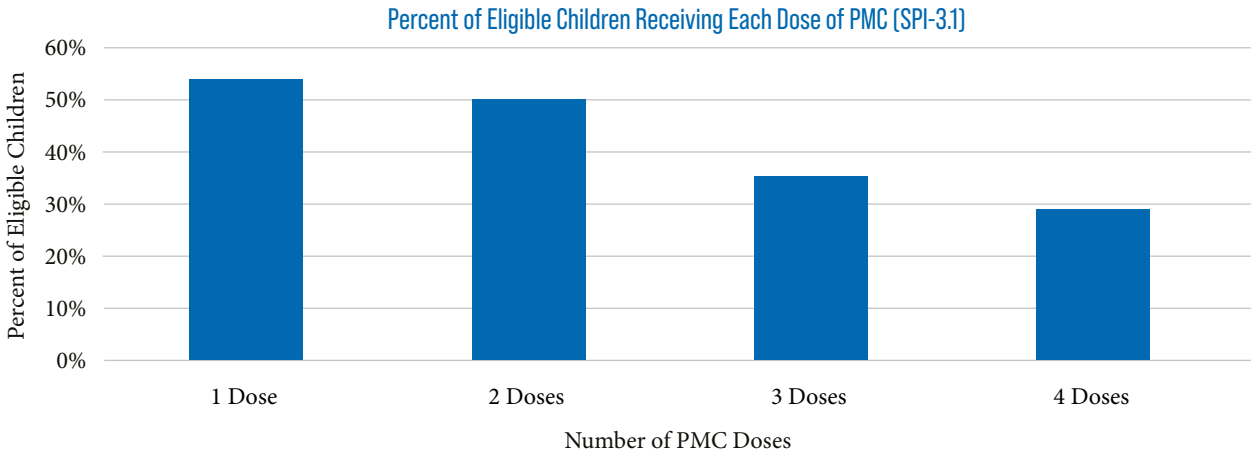
PMC Additional Analyses

PMC Age Disaggregated Analysis



Description: Indicator SPI-3.1 looks at the proportion of eligible children receiving the full number of doses of PMC according to national policy. Since the WHO recently changed its guidelines to allow more flexibility in terms of which children are eligible, some countries may be expanding the targeted age groups. Rather than targeting children up to 12 months, a program may expand to target children up to 18 months. This graph shows the proportion of eligible children receiving the full number of doses of PMC among children 12 months and under, the originally targeted age group (in **blue**), as compared to children 13-18 months, the newly expanded age group (in **gold**). We can see that coverage is higher among children under 12 months as compared to children 13-18 months, but in 2025, there was an improvement in coverage among this older age group.

PMC Breakdown by Dose



Description: Indicator SPI 3.1 looks at the proportion of eligible children receiving the full number of doses of PMC. It may be useful to look at the proportion of eligible children receiving each dose to understand where dropoffs are occurring. This chart shows the breakdown by dose in a country where the full number of doses is four. Among the eligible children who should have received four doses, more than 50% received one dose and 50% received 2 doses, but only 28% received 4 doses. We can see that the drop off between doss two and three is large and continues from dose three to four. While there is certainly room to increase the number of children getting their first dose of PMC, another important action step to improve coverage is to explore ways of increasing uptake of the 3rd and 4th doses.