STRENGTHENING HEALTH SYSTEMS
THROUGH EFFECTIVE, INNOVATIVE MALARIA CONTROL AND ELIMINATION

A CRITICAL ENTRY POINT

At least half of the world's population lacks access to quality essential healthcare. Meanwhile, for the first time this century, malaria is on the rise. Following more than 15 years of progress – including a 40% decrease in cases and a 60% decrease in deaths – we saw an estimated 14 million more malaria cases and 47,000 more deaths in 2020 than in the previous year.[1]

PSI sees malaria interventions as a critical entry point for strengthening health systems more broadly through public, private, and community networks at each level of the health system.

In 2015, global leaders adopted the United Nations Sustainable Development Goals (SDGs), committing to "ensuring healthy lives and promoting the well-being for all at all ages" and achieving universal access to essential healthcare without financial hardship by 2030. SDG Target 3.3 calls to "end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases." Pillar 1 of the World Health Organization (WHO) Global Technical Strategy for Malaria shares the same objective of ensuring "access to malaria prevention, diagnosis, and treatment as part of universal health coverage."

To achieve these goals, PSI is reimagining how to bring quality healthcare closer to those who need it most. The vision is of robust and resilient health systems providing both quality, respectful, affordable primary healthcare (PHC) and disease prevention services.

PSI is working closely with governments and other key stakeholders and strategic partners to strengthen the health systems that deliver this quality primary healthcare. Health systems strengthening (HSS) consists of "permanently making the [health] system function better, not just filling gaps or supporting the system to produce better short-term outcomes."[2]

To achieve this, PSI elevates consumer and market insights; facilitates integrated quality care networks; and digitizes engagement and health system coordination. We place the individual at the center of universal health coverage and use our understanding of consumer and market behavior to harness innovations that move quality care closer to those who need it most.

PSI uses four criteria for assessing whether an activity can be labeled as HSS:

- Does the activity have cross-cutting benefits beyond a single disease?
- Does the activity address policy and organizational constraints or strengthen relationships between the WHO health system building blocks (i.e., service delivery; health workforce; information, pharmaceutical and medical technology; financing; and leadership and governance)?

1   WHO Global Malaria Program. 2020. World Malaria Report 2021.

2   Chee, G., Pielemeier, N., Lion, A., Connor, C. (2013). Why differentiating between health system support and health system strengthening is needed. *International Journal of Health Planning and Management* 2013; 28:85–94

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- Will the activity produce permanent systemic impact beyond the term of the project?
- Is the activity tailored to country-specific constraints and opportunities, with clearly defined roles for country institutions?[3]

PSI supports national malaria control and elimination programs across 27 countries to deliver next-generation malaria vector control and innovative chemoprevention interventions; move quality malaria care closer to patients and caregivers; and create response-driven surveillance systems.

IMPROVING THE REACH OF HIGH-QUALITY MALARIA PREVENTION AND CARE

Ministries of Health (MOHs) effectively scaled up interventions across malaria-endemic sub-Saharan Africa. However, "by 2020, some 35% of homes did not have at least one insecticide-treated mosquito net (ITN), and care was not sought for more than 30% of children with fever. Where care is available, critical gaps persist in quality, including malaria testing and treatment practices, and in the deployment of optimal mosquito nets to address insecticide resistance."[4]

PSI is moving beyond a simple focus on access to malaria control and elimination interventions to proactively reach all populations in need with equitable and expansive PHC services. In these efforts, malaria programs are the entry point. After supporting universal coverage of affected populations for key malaria interventions, PSI can address other PHC needs. These include extending quality health interventions to other disease areas, as well as strengthening service provision and the relationships between WHO building blocks. We leverage our extensive network of locally rooted, globally connected organizations to identify the unreached, understand their goals and needs, and involve them in design and implementation.

PSI does this in line with MOH priorities and builds on both global best practice and the latest thinking around HSS. PSI strengthens health systems by providing quality malaria services as a part of a "package of high-quality tools and interventions"[5] delivered through public, private, and community channels. This includes collaboration with – and support for – community health workers (CHWs) to identify and correctly treat malaria and other infectious diseases, including pneumonia and diarrhea, and to recognize danger signs and refer cases of severe malaria.[6]

SPOTLIGHT: INNOVATIVE TRAINING AND SUPPORTIVE SUPERVISION

PSI malaria programs incorporate Outreach, Training, and Supportive Supervision Plus (OTSS+), a facility-level approach aimed at improving the skills of health system actors through competency-based supportive supervision, troubleshooting, coaching, and on-the-job training. Central to OTSS+ success is the fact that it does not pull health system actors and staff into classrooms away from their facility and patients. Rather, health system supervisors conduct efficient, targeted outreach through in-person visits and tailored on-the-job training. At the end of each

3   Chee, G., Pielemeier, N., Lion, A., Connor, C. (2013). Why differentiating between health system support and health system strengthening is needed. *International Journal of Health Planning and Management* 2013; 28:85–9

4   Emerson C, Meline J, Linn A, et al. End malaria faster: taking lifesaving tools beyond "access" to "reach" all people in need. *Glob Health Sci Pract*. 2022;10(2):e2200118. doi.org/10.9745/GHSP-D-22-00118

5   Emerson C., 2017.

6   WHO/UNICEF. 2012. Joint statement on Integrated Community Case Management (iCCM). An equity-focused strategy to improve access to essential treatment services for children.

visit, action planning outlines specific work that can be done to improve service quality. Mentorship is often focused on health system actors and facilities with poor performance.

Despite COVID-19 related challenges, the Impact Malaria (IM) project, funded through the U.S. President's Malaria Initiative (PMI) and led by PSI, successfully supported 10 countries in organizing more than 6,100 OTSS+ visits in more than 2,700 public and private health facilities. In PMI countries with longstanding OTSS+ programs, results of these interventions show that a high percentage of health workers scored at or above the competency threshold of 90% for managing uncomplicated malaria. Furthermore, three countries that are newly implementing OTSS+ under the project (Côte d'Ivoire, Madagascar, and Niger) greatly improved competency in the management of uncomplicated malaria over three successive OTSS+ rounds.

SPOTLIGHT: EMBEDDING QUALITY CASE MANAGEMENT INTO COMMUNITIES

Proactively reaching community members where they reside rather than waiting for them to seek care strengthens the ability of health systems to extend coverage beyond the facility level. This is vital for rural, hard-to-reach urban, and high-risk populations.[7] In Cameroon, IM worked closely with the national malaria program to address identified gaps in CHW supervision checklists for integrated community case management (iCCM) of malaria, pneumonia, and diarrhea. These checklists were found to not conform to the national supervision guidelines and had a limited focus on monitoring the competency of CHWs. The local IM team and national malaria program filled this gap by integrating a competency-based evaluation checklist into the iCCM supervision toolkit and digitizing it using the data collection app KoboCollect.

The project is testing this approach in 20 sub-districts to provide practical experience for its use – to strengthen health system supervision for malaria, as well as for diarrheal disease and pneumonia services provided by CHWs. In supported districts, the percentage of CHWs
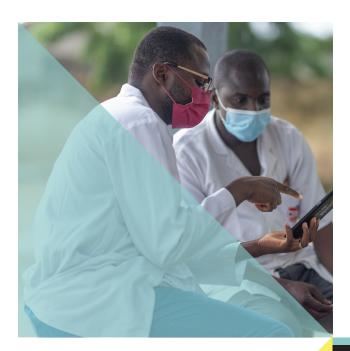
who received at least one supportive supervision visit during the first quarter of 2021 was very high: 96.6% in the Far North and 94.6% in the North, compared to the national average of 38.7%.

SPOTLIGHT: PILOTING AND EXTENDING NEW COMMUNITY–BASED APPROACHES

To strengthen the analysis of OTSS+ data, IM digitized each country's paper-based supervision checklists using an Android tablet-based application called Health Network Quality Improvement System (HNQIS). Developed to link with district health information systems (DHIS2), HNQIS allows for on-site support and feedback as well as automatic upload of data into health management system dashboards for responsive analysis. The project developed and refined OTSS+ and HNQIS-specific training materials in English and French for end-user training and training of trainers, focusing on delivery through virtual formats. IM also supported country stakeholders in developing basic OTSS+ dashboards tailored to country needs. This

7   Emerson C., 2017.

included setting custom indicators – in addition to the core IM indicators – and multiple thresholds to allow monitoring of performance against global and local standards. Each of the 10 countries using HNQIS for OTSS+ now has at least one advanced dashboard. Some have two – one clinical dashboard and one laboratory dashboard. Others have even more (e.g., where a country-specific checklist requires three or more dashboards to adequately demonstrate the unique checklist's sections and indicators).

National malaria programs are now transferring HNQIS tools and dashboards to localized systems. Zambia transitioned their historical data, checklists, and dashboards to a server hosted by the MOH through a local data center. The DRC and Mali have cloud-based country-specific OTSS+ DHIS2 systems that only contain their data and checklists, enabling local stakeholders to have even greater access to the system. Niger procured physical servers and is setting up their country specific DHIS2 for OTSS+ at the MOH office. Ghana and Sierra Leone initiated the process to set up cloud based OTSS+ DHIS2 systems, while Madagascar is migrating their historical data, checklists, and dashboards to the existing MOH national DHIS2. The project supported the continuous transfer of knowledge and data systems maintenance skills through weekly training sessions to empower country teams to adopt and

implement these functions. IM also made progress in transitioning components of HNQIS into core DHIS2 infrastructure. By enabling out-of-the-box DHIS2 to support health service quality improvement, national malaria programs can conduct supportive supervision using digitized checklists directly from the DHIS2 Android Capture app. Building on PSI's close working relationship with the University of Oslo, the creator and administrator of the DHIS2 software, many features available on PSI's custom HNQIS Android app are now part of the core DHIS2.

SPOTLIGHT: LEVERAGING E−LEARNING TO ENHANCE PROVIDER TRAINING

In Angola, PSI and the MOH co-developed the e-learning platform KASSAI to standardize and enhance the quality of training for malaria case management. KASSAI is now a core component of MOH quality improvement. Its content is aligned with national guidelines and includes modules organized by learning objectives and interactive exercises.

There is also a pre-test and post-test to assess knowledge improvement. Through USAID's Health For All (HFA) program, PSI Angola completed the roll-out of KASSAI in the six PMI-focus provinces of Cuanza Norte, Lunda Norte, Lunda Sul, Malanje, Uíge, and Zaire. A combination of KASSAI self-guided and blended learning tools, which are aligned with COVID-19 safety protocols, provided additional training capabilities at substantially lower cost than in-person only trainings. Training results from these tools exceeded expected results across all indicators. KASSAI is now available to public and private health system actors in all Angolan provinces. Access to KASSAI is free through a partnership with the country's largest telecom provider, UNITEL.

Building on its success for malaria training, KASSAI now also provides courses in family planning, COVID-19, and maternal and child health. This reduces training silos and provides cross-cutting benefits beyond a single disease.

HFA also demonstrated the links between these training and supportive supervision activities and

health outcomes. These connections were established using robust analytics and integration with HNQIS supervision, health commodity stockout data, and district health information system (DHIS2) health outcomes. This analysis also responds to country-specific constraints and opportunities by improving targeted approaches to training and supervision. Furthermore, it assists health facility clinical directors in ensuring accountability in the improvement of health services. This supports the MOH to target training to the providers who need it the most, when they need it, and with the specific information they require based on their test scores and supervision records.

INNOVATIVE USE OF DATA, INCLUDING DATA TO IDENTIFY THE UNREACHED

To make complex decisions and effectively target interventions, Ministries of Health increasingly need access to a wide range of data. These include epidemiological, entomological, and program metric data to understand where disease transmission is taking place and which populations are affected, as well as to ensure those at-risk populations are receiving services. At the community level, "data can contribute to the continuous improvement of outcomes in a community when the data are used to monitor quality and quantity of service delivery and then adjust case management practices, stock levels, and management, or density or location of service provision."[8] Ensuring access to comprehensive, quality data and using these data effectively can optimize operational feasibility.

PSI gathers data and generates valuable insights – either directly from the consumer or from other actors in the health system. We elevate those insights, share them with key health system actors (including policy makers, implementers, donors, and health financing entities), and use them to support national efforts to shape and strengthen health systems.

Between 2015 and 2022, PSI supported private sector providers in Cambodia, Lao People's Democratic Republic (or Laos), Myanmar, and Vietnam to test, treat, and report malaria cases into national surveillance systems through the Bill & Melinda Gates-funded Greater Mekong Subregion Elimination of Malaria through Surveillance (GEMS) program. The GEMS program involved comprehensive support to providers that included:

- training, supervision, monitoring, and motivation;
- maintaining an active register of those providers;
- ensuring availability of sub-national staff to support the collection of forms;
- supervising and monitoring quality data entry;
- allowing a flexible approach to reporting mechanisms that work within the existing systems; and
- leveraging previous work with private sector providers that built trust and established networks.

8   U.S. President's Malaria Initiative (PMI). 2022. PMI Technical Guidance for FY 2023.

As the number of cases declines and national malaria control programs move closer to elimination, it becomes increasingly important to incorporate malaria interventions alongside other primary healthcare activities. This will allow for the leveraging of broader CHW and health provider networks to incorporate the detection and management of dwindling numbers of cases. Building on this GEMS program experience in Vietnam and Myanmar and the tools used there for reporting malaria surveillance data into the national system, PSI expanded this work to incorporate other febrile illnesses and notifiable diseases. We were also able to pivot the digital tools to COVID-19 at the start of the pandemic. PSI is also exploring further integration of the private provision of health services into broader health financing mechanisms in GEMS countries, to support the continuation of program outputs and outcomes even after donor funding ends.

SPOTLIGHT: IMPROVING DATA QUALITY FOR DECISION-MAKING

Through Health For All, PSI Angola supports the MOH in improving data quality and use for decision making. HFA developed a digital tool to conduct rapid data quality assessments in coordination with the national malaria program, the MOH Departments of Information Technology and Planning and Statistics, and PMI. Once ministry staff have established the use of the new digital tool in PMI provinces, it can easily expand to non-PMI provinces or other health areas. HFA trained 135 ministry staff – including 60 municipal statisticians, 60 municipal malaria supervisors, and 15 provincial staff – and provided or updated tablets to use the new digital tool. The new digital tool standardizes and automates data quality assessments, making results immediately visible in DHIS2 to all levels of the MOH (municipal, provincial, and central).

SPOTLIGHT: INCREASING DECISION-MAKING THOUGH D2A

PSI developed and refined data-to-action (D2A) frameworks to improve the use of data for decision making in supported countries. Our D2A approach covers all elements of the data cycle. This includes data collection and reporting; data use, response, and feedback; the promotion of data-informed decisions on site during data entry; and follow-up during review and planning meetings. It also incorporates live course correction during OTSS+ visits. These tools are further supported by digital applications and automated suggested actions generated on a routine basis by actionable DHIS2 dashboards. PSI also embedded D2A frameworks into DHIS2 analytics or other management information systems to support capacity building for dashboard development and effective use for decision-making. For each key performance indicator, the D2A framework supports effective responses to results by identifying whether indicators are on track with targets and suggesting management interventions to improve or maintain performance. With PSI's successful implementation, WHO added D2A as a critical component and standalone section in the recently updated WHO Surveillance Monitoring and Evaluation Reference Manual.

IMPROVING COVERAGE AND USE OF CORE HEALTH INTERVENTIONS THROUGH STRENGTHENED COMMUNITY SYSTEMS

Insecticide-treated mosquito nets (ITN) and indoor residual spraying (IRS) are core vector control interventions that contributed to averting 78% of malaria clinical cases since 2000.[9] In spite of this, in recent years, ITN access plateaued and subsequently began to drop. At the same time IRS coverage also steeply declined.[10]

9 Bhatt, S. et al. 2015. The effect of malaria control on *Plasmodium falciparum* in Africa between 2000 and 2015. *Nature.*

10 WHO Global Malaria Program. 2020. World Malaria Report 2021.

PSI supports community-based delivery of ITNs in several countries. In Madagascar, the team assisted in developing and disseminating operational guidance for national continuous community distribution (CCD)., The guidance addresses planning, roles and responsibilities for CCD actors, eligibility criteria, quantification, geographic prioritization, ITN transport, storage, distribution tracking tools, and monitoring and evaluation. PSI Madagascar supports the national malaria program to deliver ITNs via community channels. As networks of CHWs and supply chains strengthen, they can extend to include iCCM as described above and broader PHC prevention and care interventions.

INTEGRATED, SYSTEMS–BASED APPROACHES FOR STRENGTHENING HEALTH SYSTEMS AND HEALTH SECURITY

MOHs, donors, and other key stakeholders recognize that integrated, systems-based approaches for strengthening health systems are now more critical than ever due to COVID-19 and other pandemics. Experience has shown that reliable links between the public and private sectors, including communities, lead to more robust health systems. Moreover, locally led, inclusive HSS efforts that account for social behavior change lead to more sustainable results and greater self-reliance.

PSI engages health system actors, patients, and caregivers at each level to generate and share insights into the availability of, need for, and use of essential health services systematically and continuously. We work with emergency operations centers (EOCs) to improve their capacity to monitor, prepare for, and respond to disease outbreaks and other public health emergencies. This support includes enhancing data and management information systems and infrastructure; human resource development and training; standard operating procedure and regulation development for emergency response planning; improving decision-making and data visualization dashboards; and supply chain and logistics integration. This work is built on PSI's footprint in malaria surveillance; private sector and CHW networks; strong relationships with MOHs; and expertise in health management information system (HMIS) strengthening and digital health solutions. We are able to build health workforce capacity, disease surveillance, and HMIS function across several health areas.

SPOTLIGHT: LINKING PUBLIC AND PRIVATE HEALTH SECTORS

In Kinshasa, Democratic Republic of Congo, PSI implemented a market-shaping program to support a pilot by the national malaria program that was aimed at improving access to quality artemisinin-based combination therapy (ACT) in pharmacies, drug shops, and private health facilities. The program sought to address significant challenges of sub-standard and counterfeit ACTs, as well as the widespread availability of monotherapies and ineffective antimalarials. The program comprised contracting, capacity building, subsidizing ACT supplies, and promoting a "Green Leaf" status to indicate that outlets had undergone capacity building and could provide quality ACTs.

PSI worked closely with the national malaria control program and the national drug regulatory agency to overcome challenges related to improving quality ACT access. This was accomplished by: including the private sector in malaria rapid diagnostic tests (mRDT) to confirm the presence of malaria parasite; facilitating new market entrants to reduce the use of monotherapies, and ineffective and untested antimalarials; increasing the availability of quality-assured ACTs (QAACTs) at affordable prices; and increasing mRDT use. Four new QAACT brands were successfully registered and brought to market. In the

private sector, QAACT availability increased from 22% to 55%, prices dropped by over $3 USD, and QAACT market share increased from 2% to 14%. Funding for the mRDT component of the program was available for one year, during which mRDT use among participating pharmacies rose from 0% to 24%.

SPOTLIGHT: INTEGRATING COVID−19 QUALITY IMPROVEMENT IN THE OTSS+ PLATFORM

In Cameroon, the DRC, and Ghana, Impact Malaria modified the OTSS+ framework to implement quality improvement activities for COVID-19. IM country teams developed modules on personal protection, biosafety, patient triage, and specimen handling to pair with their supervision of clinical staff management of malaria cases. In Cameroon, the IM team also supported the national malaria control program in updating the laboratory OTSS+ checklist to include modules specific to COVID-19. These updates enable the assessment of laboratory readiness in biosecurity, COVID-19 testing, and laboratory technicians' competency in the collection of nasal and throat swab specimens. The checklist was digitized into the HNQIS tool to be ready for use in-country.

SPOTLIGHT: SUPPORTING NATIONAL GOVERNMENTS TO MANAGE PUBLIC HEALTH EMERGENCIES

PSI is implementing health security initiatives in Cambodia, Laos, and Myanmar to strengthen Public Health Emergency Operations Centers (PHEOC) and improve national governments' capacity to monitor, prepare for, and respond to disease outbreaks. In Laos, the vision for a strengthened PHEOC was born from the desire of policymakers to establish a "war room" where surveillance experts have the necessary resources and infrastructure to effectively coordinate the national malaria response. By further elevating malaria elimination and establishing a robust subnational network of functional PHEOCs, we are establishing mechanisms for a more transversal approach in support of last-mile malaria elimination in Laos. Additionally, these investments improve capacity for all-hazards emergency response,

including natural disasters and other emergencies, which are handled by an overarching national EOC. In early 2020, the national PHEOC became the focal point for coordinating the country's COVID-19 response. The successful containment of COVID-19 in Laos is partly due to this strong coordination and early MOH response, namely through the PHEOC, which was given a clear mandate as a coordinating body during the emergency response phase.

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