Year 4 Annual Report

VECTORWORKS PROJECT

October 1, 2017 – September 30, 2018

USAID FROM THE AMERICAN PEOPLE

CDC Centers for Disease Control and Prevention

U.S. President's Malaria Initiative

VECTOR WORKS

Scaling Up Vector Control for Malaria Prevention

VECTORWORKS PROJECT

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JOHNS HOPKINS Center for Communication Programs

TROPICAL HEALTH

Swiss TPH
Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

MEDA
Mennonite Economic Development Associates

Tulane University

psi
Healthy lives. Measurable results.

VECTOR WORKS by the Numbers

Selected achievements 2014-2018

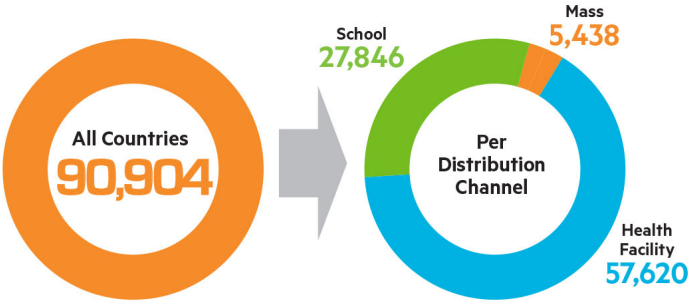
VectorWorks has worked in

15 countries

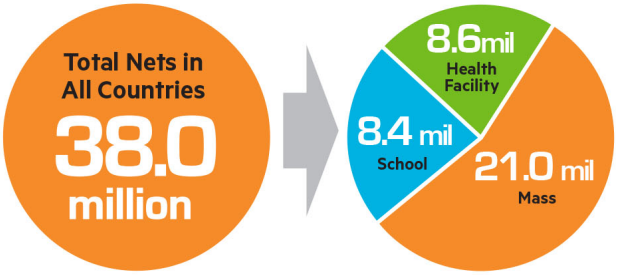
Angola, Benin, DRC, Ghana, Guinea, Kenya, Liberia, Malawi, Mozambique, Myanmar, Nigeria, Senegal, Tanzania, Uganda, Zimbabwe

15 peer reviewed journal articles produced and disseminated by **VectorWorks**

People trained in ITN distribution



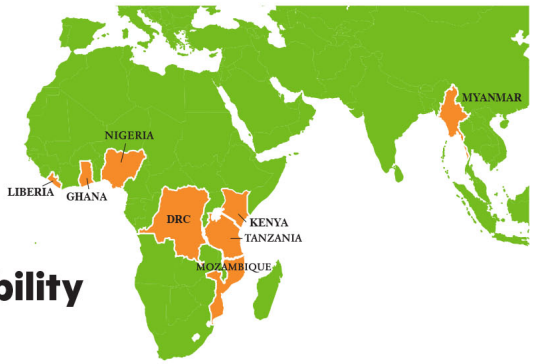
Number of ITNs distributed with VectorWorks support



11 studies conducted for improving insecticide-treated net (ITN) access and use

8 countries since 2014

VectorWorks has conducted ITN **durability monitoring**



VectorWorks supports social behavior change communication activities for **ITN use in 5 countries**

Liberia
Ghana
Guinea
Tanzania
Zimbabwe

VectorWorks has created **ELEVEN TOOLS** to improve ITN access and use

Country Highlights

In Tanzania, the costs of school distribution has gotten much more efficient due to programmatic adjustments. Delivery costs decreased from **$5.83** to **$1.57** per net between 2015 and 2017.

In Ghana, the % of PW who receive a net at ANC increased from **51%** to **89%** nationwide from 2014-2018. This was matched with an increase for children receiving immunizations from **73% to 87%** in the same time period.

A study in Madagascar found that one year after a mass campaign, malaria incidence decreased by **14%** in areas served by a community-based distribution program, while sites without it saw a **12% increase**. This is the first study showing how continuous distribution leads to continued reduction in malaria cases.
https://www.sciencedirect.com/science/article/pii/S2589537018300099

In Tanzania, the project has successfully scaled up school distribution from ~0.5 million ITNs issued in 2015 to **~3.5 million** in 2018.

Contents

Abbreviations

ABCDR	Attrition, Bioefficacy, Chemistry, Degradation, and Insecticide Resistance
AIS	Accountability information system
AMP	Alliance for Malaria prevention
ANC	Antenatal care
AOR	Agreement Officer's Representative
ASTMH	American Society of Tropical Medicine and Hygiene
BEMIS	Basic Education Management information System
CAMRE	Center for Applied Malaria Research and Evaluation
CCP	Center for Communication Programs
CD	Continuous distribution
CDC	Centers for Disease Control and Prevention
CHIMT	County Health Integrated Monitoring Teams
CHMT	County Health Management Team
CIHO	Communication for Improved Health Outcomes
CMS	Central Medical Store
CODE	Conference of Directors of Education
CRSPC	Country/Regional Support Partner Committee
CWC	Child Welfare Clinics
DFID	Department for International Development
DHS	Demographic and Health Survey
DM	Durability Monitoring
DRC	Democratic Republic of Congo
EIWG	Emerging Issues Working Group
EMIS	Education Management Information System
EMMR	Environmental Monitoring and Mitigation Report
EPI	Expanded Programme on Immunization
EWSA	Early Warning Systems Alert
FDA	Food and Drug Administration
FHD	Family Health Division
FHU	Family Health Unit
GES	Ghana Education Service
GFATM	Global Fund for AIDS, Tuberculosis and Malaria
GHS	Ghana Health Service
GMP	Global Malaria Programme
GoG	Government of Ghana
GoT	Government of Tanzania
HCW	Health care workers
HMIS	Health management information system
HWG	Harmonization Working Group
ID	Institutional delivery
IFRC	International Federation of the Red Cross
IHI	Ifakara Health Institute
IMaP	Integrated Malaria Program
INS	Instituto Nacional de Saúde
IPT	Intermittent preventive treatment
IRB	Institutional Review Board

IRS	Indoor residual spray
ITN	Insecticide-treated mosquito nets
JHSPH	Johns Hopkins University School of Public Health
KSPH	Kinshasa School of Public Health
LLIN	Long-lasting insecticide-treated net
LMIS	Logistics management information system
LOP	Life of project
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and evaluation
MaVCOC	Malaria Vector Control Oversight Committee
MCH	Maternal and child health
MCSP	Maternal and Child Support Project
MERG	Monitoring and Evaluation Reference Group
MIS	Malaria Indicator Survey
MoEVT	Ministry of Education and Vocational Training
MOH	Ministry of Health
MoHSW	Ministry of Health and Social Welfare
MOP	Malaria Operational Plan
MORE	Monitoring, operations research, and evaluation
MPAC	Malaria Policy Advisory Committee
MSD	Medical Stores Department
N&MC	Nurses and Midwives Council
NHMT	National Health Management Team
NMCP	National Malaria Control Program
NMEP	National Malaria Elimination Program
NMIMR	Noguchi Memorial Institute for Medical Research
NMT	National Monitoring Team
PAMCA	Pan African Mosquito Control Association
PHE	Population, Health, and Environment
PMD	Point mass distribution
PMI	President's Malaria Initiative
PMP	Performance monitoring plan
PO	Program officers
PSI	Population Services International
PSMP	Private Sector Malaria Prevention
PTA	Parent-Teacher Association
RBM	Roll Back Malaria
RCH	Reproductive and child health
RCT	Randomized control trials
RHMT	Regional Health Management Team
SBC	Social behavior change
SBCC	Social behavior change communication
SHEP	School Health Education Program
SNP	School Net Program
SRN	Sub-regional Network
STPHI	Swiss Tropical and Public Health Institute
TMEMS	Tanzania Monitoring and Evaluation Management System
TRP	Technical Review Panel

UNICEF	United Nation Children's Fund
VCTEG	Vector Control Technical Expert Group
VCWG	Vector Control Working Group
WHO	World Health Organization
ZAMEP	Zanzibar Malaria Elimination Program
ZMEAC	Zanzibar Malaria Elimination Advisory Committee

EXECUTIVE SUMMARY

Background

VectorWorks is a five-year global malaria prevention project funded by the U.S. President's Malaria Initiative (PMI) through the U.S. Agency for International Development (USAID). The purpose of the VectorWorks project is to support countries to achieve and maintain high levels of coverage and use of long-lasting insecticide-treated mosquito nets (ITNs) as well as to facilitate the adoption of proven alternative vector management interventions, including those targeting specific sites or populations. VectorWorks activities focus on three main areas: policy, monitoring and evaluation (M&E), and implementation support.

Project Objectives

Objective 1: Policy. Develop and promote policies at both the international and national levels to encourage sustained, high levels of coverage and use of long-lasting ITNs and/or alternative vector management interventions.

Objective 2: Monitoring and evaluation. Design, conduct, and analyze results from monitoring, evaluation, and operational research activities to improve current best practices of long-lasting ITNs and/or alternative vector management interventions.

Objective 3: Implementation. Promote and support country-level implementation of malaria prevention activities to ensure sustained high-level coverage and use of long-lasting ITNs and, as needed, targeted coverage and appropriate use of alternative vector management interventions.

Executive Summary

VectorWorks is moving smoothly towards successful completion of our key objectives. Operating in 12 PMI focus countries in Year Four, we have strong demand from USAID missions for our technical assistance, especially for Durability Monitoring (eight countries) and ITN distribution technical assistance (seven countries). We are on track to complete the project at our ceiling of 60 million USD, and are consolidating the evidence on costs and operational considerations for mass and continuous ITN distribution, strengthening capacity for mass distribution, and providing critical thought leadership on pragmatic solutions to reach and maintain universal ITN access and use.

Policy

VectorWorks continues filling in the evidence base for continuous ITN distribution through schools, health facilities, and community channels. All of the pilot continuous distribution evaluations are now published (or in press), and our work on the cost-effectiveness of different combinations of mass and continuous distribution strategies was presented at the Vector Control Working Group (VCWG) and is being written up for publication. Our research on using population ITN access as the key indicator for universal coverage has informed World Health Organization (WHO) policy on universal access to malaria interventions. PMI's Technical Guidance and procurement policies are grounded in our research on quantification, continuous distribution, preferences for net attributes, and net care. We continue to work closely with WHO and The Global Fund to Fight AIDS, Tuberculosis and Malaria on ways to improve ITN access at the policy and M&E levels.

Monitoring & Evaluation

VectorWorks completed 36-month and 24-month data collection for Durability Monitoring (DM) activities in DRC, Mozambique, Myanmar, Nigeria, and Zanzibar in the second half of Year Four, and began baseline fieldwork for new DM activities in Ghana, Kenya, and Liberia. Our meeting at the 2017 American Society of Tropical Medicine and Hygiene (ASTMH) for DM investigators and our subsequent webinars are well attended, and the DM email listserv now has 241 subscribers. We have provided distance technical assistance to durability monitoring teams in Mali and Zambia, ensuring adherence to the standard protocol and questionnaires. The project also finalized modeling analysis of the first eight PMI durability studies, presented at VCWG, showing that using nets – even if holed – was the most important protective measure, and that improving net condition or overall lifespan would not be as helpful as improving consistent net use. As data continues to roll in from the current crop of monitoring activities, VectorWorks will compile and update recommendations for PMI with regards to vector control decisions and procurement policies.

VectorWorks is now analyzing the data collected on human behavior and vector biting behavior to assess the relative importance of residual indoor exposure and residual outdoor exposure for malaria transmission. The data will also inform prioritizing subsequent action – whether this is to continue to improve consistent ITN use, or to ramp up focus on peridomestic bite prevention. The study in Zanzibar has completed data collection, conducted an analysis workshop in Quarter Three, and following the completion of the data analysis will disseminate the findings both within Tanzania and globally.

Implementation

The project supported the distribution of a total of over 17.5 million ITNs in Year Four across Ghana, Guinea, and Tanzania. In Ghana we provided TA to assist the NMCP's distribution of nets through health facilities and mass campaign (11,192,498), while in Guinea (21,617) and Tanzania (6,329,884) VectorWorks conducted the actual distribution of ITNs through school, community, and health facility channels.

VectorWorks provided technical assistance to the Ghana NMCP for planning and implementing the ITN point mass distribution (PMD) pilot in two districts each in the Volta Region (South Tongu and Akatsi North) and Eastern Region (New Juaben and Asuogyaman) from September 2017 to January 2018. The pilot was necessary because of the shift from paper-based household registration and distribution to the introduction of an app on mobile devices for household registration and distribution. During the pilot, the National Malaria Control Program (NMCP) and partners delivered a total of 202,725 ITNs to 116,013 households. The project provided key support to Ghana's mass campaign by testing and refining the "NetApp" used for household registration and ITN distribution, along with ongoing coordination support to Ghana NMCP and Ghana Health Service (GHS).

In Tanzania, VectorWorks completed the fifth round of school net distribution early in Year Four, and supported the Smart Push (the initial delivery of ITNs to health facilities in a region) and subsequent resupply of over 2.5 million ITNs to 17 regions supported by PMI and the Global Fund. By the end of Year Four, VectorWorks had also delivered 1,372,616 ITNs through SNP6, completing 8 of 14 regions. The costs associated with ITN distribution through schools has decreased overtime from USD $5.83 (SNP3) to USD $1.57 (SNP6) per net. Factors that contributed to cost savings are; less time for planning and training as many regions have been implementing school distribution for year or more, delivering nets directly to schools rather than first to district stores, and integrating into existing infrastructure systems. VectorWorks has now supported the distribution of ITNs to all 26 regions on the mainland, and delivered 229,400 ITNs to 171 health facilities in Zanzibar, where health facility and community-based ITN distribution were revitalized with

support from VectorWorks. In conjunction with these distributions, VectorWorks also supported social behavior change communication (SBCC) to encourage proper net use.

VectorWorks completed a pilot for school distribution in Boké, Guinea, distributing over 21,000 ITNs and will evaluate the ITN coverage in Quarter Three. VectorWorks also provided technical assistance for DRC's planned school distribution, and led several partners in the process of planning Mozambique's first school distribution pilot in May 2018 in Zambezia Province. Through the pilot in Mozambique, 26,690 long-lasting insecticide-treated nets were successfully distributed to students from 134 primary schools. School Councils fully participated in the distribution and ensured its success, with 93.3 percent of the student population reached. VectorWorks will conduct a final evaluation after the second round of distribution near the end of Year Five.

VectorWorks supported an International Federation of the Red Cross (IFRC)-led training of mass campaign consultants in January, bringing together experienced and newer Alliance for Malaria prevention (AMP) consultants to ensure that technical assistance is consistent and high quality, while also expanding the pool of trained consultants.

Dissemination

VectorWorks also continues to ensure PMI-funded results are brought to international attention through VCWG/AMP meetings, and through participation in global level policy discussions at WHO and GFATM meetings and presentations. We have a strong and continuing presence in work stream leadership, and in-country participation in the AMP and VCWG meetings.

VectorWorks published two new peer-reviewed papers in Year Four, "Impact of a 15-month multi-channel continuous distribution pilot on ITN ownership and access in Eastern Region, Ghana" by Celine Zegers de Beyl et al, in Malaria Journal; and "Design, Implementation, and Evaluation of a School ITN Distribution Program in Cross River State, Nigeria", in *Global Health Science and Practice*. Two more papers on ITN access and from qualitative research into net care and repair in Tanzania were in press at the end of Year Four. For full list and hyperlinks of published articles, go to Section 2.4 of the PMP.

VectorWorks had nine posters and one oral presentation at the American Society of Tropical Medicine & Hygiene meeting in November 2017 in Baltimore. In addition, VectorWorks team members made four presentations at the AMP meeting in February 2018.

Challenges

Delays in obligations from USAID forced VectorWorks management to issue Stop Work orders for several country programs from December 2017 through February/March of 2018. While the project was able to continue with staff and reporting duties during that time, significant delays in implementation did impact our ability to provide deliverables on schedule. The baseline report for the Mozambique school pilot evaluation, Ghana's net use gap study, health facility supervision, and school SBCC activities, Tanzania SBCC activities, and Liberia supervision visits for health facilities distribution were all pushed back until the funding situation became more certain. A significant amount of staff time was spent planning and prioritizing budgets and activities in response to the delays in funding. This impeded progress on Core deliverables, including the misuse toolkit, ITN access paper, ITN seasonality analysis, and continuous distribution decision tree.

Late arrival of ITNs at port in Tanzania and slow clearing of the ITNs through port and customs delayed the project's ITN delivery timelines for schools and for health facilities. Delays in clearing and transport of ITNs in Liberia have also made implementation of SBCC to support the mass campaign more challenging.

We have not, to date, been able to address the activity area mentioned in Objective One, "facilitate the adoption of proven alternative vector management interventions, including those targeting specific sites or populations" as part of our core agenda. This is due to a lack of WHO-approved alternative vector control tools during the project time-period. We discussed monitoring approaches for piperonyl butoxide (PBO) nets in Tanzania with PMI, but decisions were made not to conduct any monitoring.

Opportunities

The culmination of the project in the remaining 15 months of implementation will focus on consolidating lessons learned from three key areas. First, our research on ITN distribution strategies and the costs of implementing those strategies gives us a comprehensive database. This allows us to model the best strategies for ITN distribution in particular transmission zones and for particular operating environments. We plan to disseminate our findings on CD implementation through a variety of channels and materials, targeting our dissemination to country decision-makers who can use the information for improving malaria vector control in their countries. Second, our research on ITN durability will be consolidated to inform global procurement practices, as well as to inform local procurement strategies, in places where ITNs last longer or shorter than the three year average. Finally, the body of knowledge on ITN use and its influencing factors will be complete by the end of Year Four and published in Year Five. Disseminating the programmatic implications of this research – tailored for individual country programs – will be a key activity in the remainder of the project. Likewise, the knowledge gained on granular ITN use from the residual transmission research in Zanzibar and elsewhere will provide a framework to identify important (and less important) behavioral gaps crucial for malaria control and elimination. This information in turn will help to prioritize additional vector control tools in various settings.

Next-generation nets are on the horizon. The project continues to engage with global leaders to identify the nuts and bolts issues for distributing these nets, and to monitor modeling studies and randomized control trials (RCTs) that will inform where they are best used.

We are hopeful that with the Roll Back Malaria (RBM) Country/Regional Support Partner Committee (CRSPC) in place with reconfirmed co-chairs, that the project will be able to disseminate key lessons learned and new tools (NetCALC Lite) at CRSPC meetings and Mock Technical Review Panel (TRP) meetings, which have not been possible in recent years due to the RBM reorganization.

Finally, in coordination with PMI, we are planning to submit key research noted above at the 1-2 remaining Technical Expert Group on Malaria Vector Control (VCTEG) and Malaria Policy Advisory Committee (MPAC) meetings. Consolidating our findings into published manuscripts as well as WHO policy guidance is crucial for widespread uptake of the evidence-base generated from the project.

CORE

Objective 1: Develop and Promote Policies at International and National Levels (PC)

PC.1 Roll Back Malaria Support

PC.1.A Vector Control Working Group Secretariat Support

Brief activity description: The annual Roll Back Malaria Vector Control Working Group (RBM VCWG) is a high-priority annual meeting for VectorWorks; it brings together many key stakeholders to discuss issues related to insecticide-treated nets (ITNs), and it provides extremely valuable opportunities for intellectual sharing and learning. In past years, VectorWorks contributed to the costs of maintaining the Secretariat for the working group, which the Swiss Tropical and Public Health Institute hosts. In recent years, the Swiss Development Cooperation has increased their contributions, reducing the need for VectorWorks' support.

Status: The Swiss Tropical and Public Health Institute successfully organized and conducted the annual meeting, and disseminated the proceedings through the Secretariat. In Year Four, VectorWorks did not provide funding to the Secretariat, because Swiss Tropical had sufficient funds from other sources.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: PC.1.A.1, VCWG meeting organized. Completed in Year 2: PC.1.A.2, VCWG meeting organized. Completed in Year 3: PC.1.A.3, VCWG meeting organized.				
4. VCWG meeting organized and conducted; proceedings posted	Implementing partners and malaria technical community, RBM partners	Quarter 2	VCWG and greater RBM electronic mailing lists	Completed 2/8/2018

[Completed in Year 2: PC.1.B RBM Board Participation.]

PC.1.C Vector Control Working Group Annual Meeting Support

Brief activity description: The RBM VCWG held their annual meeting this year in Geneva on February 7–9, 2018. VectorWorks actively participated in the meeting, presenting lessons learned from our research and pilot activities, and exchanging insights with implementers. VectorWorks attended RBM VCWG to meet with the PMI and partner representatives from countries supported by VectorWorks to develop priority activities for the long-lasting insecticide-treated net (LLIN) Priorities Work Stream and the New Challenges, New Tools in Vector Control Work Stream. At the meeting, our presentations focused on key ITN issues for mass campaigns, continuous distribution, net durability, and next-generation nets.

Status: Complete. VectorWorks representatives from Johns Hopkins Center for Communication Programs (CCP) Baltimore, Ghana, and Tanzania, as well as representatives from Tropical Health, attended the 2018 annual RBM VCWG meeting. At the LLIN Priorities Work Stream meeting, VectorWorks presented findings from the cost-effectiveness study for continuous distribution and mass campaigns and the durability monitoring thresholds for action; we also facilitated the work stream conversations around operational

considerations for rotation or mosaic distribution of next-generation nets and the prequalification processes. At the end of the work stream meeting, co-chairs led a short discussion about the 2018 work plan activities. Suggestions included (1) how to restore people's faith in nets, (2) how to evaluate at what point pyrethroid-only ITNs no longer have a public health value, (3) and how to create systems that would translate these data into answers. Both work streams facilitated conference calls during Quarter One, in preparation for in-person meetings in Geneva. During a visit to Tanzania in Quarter Three, Dr. Koenker met with Dr. Ikupa Akim, the new co-chair of LLIN Priorities, and they updated the work plan.

Deliverables	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: PC.1.C.1 and PC.1.C.2, Presentations and trip report; PC.1.C.3, Priority issues for work streams; PC.1.C.4, VCWG meeting report. Completed in Year 2: PC.1.C.3 and PC.1.C.4, Trip report and presentations; PC.1.C.5, Work Stream priority issues. Completed in Year 3: PC.1.C.6, Presentations and trip report; PC.1.C.7, LLIN Priorities Work Stream work plan.				
8. New Challenges New Tools Work Stream work plan for 2017	VCWG members, WHO/GMP, and USAID malaria implementing partners	Quarter 2	Share with PMI by email and VCWG electronic mailing list	Approved by PMI June 12, 2018 (combined 2017/2018 work plan)
9. Presentations and trip report 2018	PMI	Quarter 2	Email and VCWG electronic mailing list	Acknowledged by PMI: March 5, 2018
10. LLIN Priorities Work Stream work plan for 2018	VCWG members; WHO GMP; USAID malaria implementing partners	Quarter 2	Email and VCWG electronic mailing list	Submitted
11. New Challenges New Tools Work Stream work plan for 2018	VCWG members; WHO GMP; USAID malaria implementing partners	Quarter 2	Email and VCWG electronic mailing list	Approved by PMI June 12, 2018 (combined 2017/2018 work plan)

PC.1.D Alliance for Malaria Prevention Participation

Brief activity description: VectorWorks participated in the Alliance for Malaria Prevention (AMP) annual partners' meeting, February 5–6, 2018, to facilitate information sharing and lessons learned from mass campaigns with field implementers and global policymakers, and to share research evidence on topics of importance to ITN distribution implementers. VectorWorks will continue to participate in weekly AMP coordination calls regarding revisions to the AMP Mass Distribution Toolkit (see IM.12) and trainings (see IM.13.A/B), as well as to participate at the AMP Core Group meeting in mid-August 2018. This is when technical assistance needs are mapped out, key ITN distribution issues are discussed, and work stream agendas are revised and prioritized.

Status: VectorWorks core funding supported nine VectorWorks staff to attend the AMP annual partners' meeting. We actively participated in the meeting, specifically by chairing a session on increasing population access, presenting on the ITN misuse drivers and next steps from Malawi, and presenting on the trends in all-cause attrition and the relationship to how many nets are actually misused. VectorWorks also participated in all the working lunch groups on monitoring, operations research, and evaluation (MORE); emerging issues; and a discussion on school-based ITN distribution programs. VectorWorks participates in the weekly AMP coordination calls and provides updates on Liberia and Ghana, continuous distribution, and AMP *Mass Distribution Toolkit* chapters and trainings.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: PC.1.D.1, Presentations; PC.1.D.2, Trip report. Completed in Year 2: PC.1.D.3–5, Toolkit updates, AMP presentations, and trip report. Completed in Year 3: PC.1.D.6–7, Presentations, trip report for AMP annual partners' meeting.				
8. Presentations	PMI and AMP	Quarter 2	Email and AMP electronic mailing list	Acknowledged by PMI: March 5, 2018
9. Joint trip report for AMP annual partners' meeting	PMI	Quarter 2	Email	Acknowledged by PMI: March 5, 2018
10. Joint trip report for AMP Core Group meeting	PMI	Quarter 4	Email	Acknowledged by PMI September 25, 2018

PC.2 Input into Global Policy

[Completed in Year Two: PC.2.A.1 Building the Evidence Base for Geographic Targeting of Vector Control Interventions.]

PC.2.B Articulating the Process of Moving from Campaign to Continuous Distribution

[Completed in Year 2: PC.2.B.2–3, Coordination meetings with GMP, Global Fund, subregional networks (SRNs), and Harmonization Working Group (HWG).]

[Completed in Year 3: PC.2.B.4–5, Coordination meetings with GMP, Country/Regional Support Partner Committee (CRSPC), Global Fund; PC.2.B.6, Support to Global Fund concept notes.]

[Canceled in Year 4: PC.2.B.1, Articulating the Process of Moving from Campaign to Continuous Distribution]

[Completed in Year 3: PC.2.C Policy Statement on Repurposing ITNs.]

PC.2.D Maintaining Communication with Global Policy Stakeholders

Brief activity description: VectorWorks will collaborate closely with key stakeholders in global malaria policy to ensure that activities are complementary and findings are effectively disseminated at the country level. The Global Malaria Programme (GMP) is the primary institutional partner for ensuring policy uptake of project results, but VectorWorks will also stay in close communication with representatives of the Global Fund and the RBM Country/Regional Support Partner Committee (CRSPC), which are responsible for assisting countries in accessing and maintaining access to funds from the Global Fund. Dr. Ato Selby, of VectorWorks, will continue to participate in this role, which he had as a member of the Harmonization

Working Group (HWG), prior to the formation of the CRSPC. The CRSPC held fewer meetings than expected in Year Three, but we expect CRSPC will continue to be active in 2017–2018, and will plan on Dr. Selby participating in both global- and subregional-level meetings, expecting that those meetings will continue under the new mechanism. VectorWorks will also continue to have one senior manager monitor Malaria Policy Advisory Committee (MPAC) meetings and participate, as needed, as an observer to identify appropriate input on ITN-related issues being discussed by MPAC.

Status: The RBM partner committees, including the CRSPC, are now operational but moving slowly. The CRSPC constituted its steering committee and four workstreams: Country Resource Mobilization, Implementation Support, Program Review and National Strategy Plans, and Regional Representation. Through periodic bulletins shared via mail, CRSPC continues to update its members on on-going activities and plans. Sub-regional Network (SRN) meetings for the National Malaria Control Programs (NMCP) and partners are planned for October 2018. Dr. Koenker met briefly with the World Health Organization (WHO) and the Global Fund during a short visit to Geneva in June to discuss continuous distribution.

Deliverable	Audience	Timing	Dissemination Plan	Status
Canceled in Year 3 (Modification 3): PC.2.D.1–2, CRSPC, SRN, and MPAC meetings.				
3. Trip reports from CRSPC and SRN meetings	PMI	Quarters 1–4	Email	No meetings held in Year 4

PC.3 Promoting Key Indicators

PC.3.A Improving Use of the ITN Population Access Indicator at the Country Level

Brief activity description: VectorWorks drafted a paper with co-authors from the Monitoring and Evaluation Reference Group (MERG) on the importance of using the population ITN access indicator as the "best" indicator for universal coverage. This is in line with WHO guidance. WHO also requested support from VectorWorks for a consultative meeting on universal access.

Status: VectorWorks presented and discussed the manuscript at the October 2017 MERG meeting in Senegal, and circulated it for co-author comment in early December 2017. We compiled the comments and edits during Quarter Two, held a discussion with PMI leadership in Quarter Three, and submitted the manuscript for peer review soon after that. Dr. Koenker also presented at the WHO Technical Consultation on universal access to core malaria interventions in high-burden countries on "determinants to access for ITNs and recommendations." The key determinants to access are the time since the last major distribution (e.g., wear and tear and ITN attrition) and household size. Larger households seldom receive the correct number of ITNs during mass campaigns because of decisions to set a maximum number of nets based on the national average household size. At current modalities for procuring and distributing ITNs, countries will continue to fail to meet ITN coverage targets. At the meeting, Dr. Koenker presented recommendations for adjusting maximum number of nets given per household to reflect the regional demographic variations. A corresponding data file was integrated into the manuscript as an additional file, and further discussions on quantification and capping will be scheduled with PMI in early Year Five and at the 2019 AMP meeting.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: PC.3.A.1, Training materials for MIS; PC.3.A.2, Updated HWG guidance. Completed in Year 2: PC.3.A.3, Presentation to MERG. Canceled in Year 3: PC.3.A.4, Tools for M&E program staff on the RBM and VectorWorks website. Canceled in Year 3: PC.3.A.5, Publishable paper on the new calculation of ITN access.				
6. Publishable-quality paper making the case for the population access indicator as the key universal coverage indicator for ITNs	PMI, NMCPs, malaria community	Quarter 1	*Malaria Journal*	Approved by PMI; August 6, 2018
7. TBD activity to support WHO access analysis	PMI, WHO	Quarter 1	WHO meeting	Approved by PMI: February 19, 2018

PC.3.B Source of Nets Analysis Plan

Brief activity description: In Year Four, when the Demographic and Health Survey (DHS), Malaria Indicator Survey (MIS), and Multiple Indicator Cluster Surveys are released, VectorWorks will make periodic updates to the report on the source of nets. This report includes examples of how to use the DHS and MIS data to answer questions about the performance of a country's ITN distribution strategy.

Status: The report was submitted in Year Three for PMI review, but not approved. It used DHS and MIS data to explore the reach of key distribution channels across PMI countries. It was also presented at the MERG meetings in Dakar and Tanzania, and then revised to include additional countries. VectorWorks has made periodic updates to the report on the source of nets as new data were released. We are making final revisions to the next iteration of the report, which will be submitted to fulfill PC.3.B.2. A request to cancel PC.3.B.3 was made in the Year Five work plan.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 2: PC.3.B.1, Source of nets analysis plan.				
PC.3.B.2, Source of Net Report for PMI countries	PMI, NMCPs	Q1 Year Five	PMI, VCWG Continuous Distribution Work Stream, AMP	Delayed
3. Updates to the source of nets report as new data are available in Year 4	PMI, NMCPs	Ongoing	PMI, VCWG Continuous Distribution Work Stream, AMP	Ongoing

PC.3.C MERG Meeting Attendance

Brief activity description: Drs. Koenker and Olapeju participated in the 28th MERG meeting in October 2017, in Senegal. Dr. Olapeju presented on the source of nets report and Dr. Koenker presented on the draft manuscript on population ITN access as the "best" indicator of universal coverage. At the 29th MERG meeting in September 2018, held in Dar es Salaam, Dr. Olapeju and Ms. Monroe presented on the source of nets update and proposed indicators for measuring human vector interaction.

Status: During the 2017 MERG, the group discussed how the revised question to determine the source of nets in DHS and MIS surveys was working. The standardized question approach now provides better clarity for ITN distributions through mass campaigns, antenatal care (ANC) and Expanded Programme on Immunization (EPI) services, and schools. Participants at the MERG favorably received Dr. Koenker's presentation, and MERG added the publication of the manuscript into their work plan. Several MERG members signed on as co-authors. In the 2018 MERG meeting, Dr. Olapeju facilitated discussions around the measurement, analysis, and interpretation of the source of the net question. To accurately interpret the report findings, key issues include the need for triangulation with relevant programmatic or contextual information. Ms. Monroe proposed indicators for measuring human-vector interaction. These indicators provide valuable information on the proportion of exposure that can be prevented by ITN use, as well as indoor and outdoor gaps in protection, calculated based on local vector and human behavior.

Deliverable	Audience	Timing	Dissemination Plan	Status
PC.3.C.1. Trip report including copy of presentation(s) if on agenda	AOR	Quarters 1–3	PMI AOR	Approved by PMI: October 14, 2018.

PC.4 ITN Misuse for Fishing and Local Solutions

PC.4.5 Set of Survey Instruments

Brief activity description: VectorWorks is revising the discussion guides and observation checklists used in the Malawi rapid assessment, incorporating key findings from the Malawi data analysis.

Status: VectorWorks shared draft survey instruments for input with PMI and stakeholders in October 2016 and used the survey instruments for fieldwork in February and March 2017 (see PC.4.7). We made minor revisions during the first days of fieldwork to improve usability. VectorWorks is revising the discussion guides and observation checklists used in the Malawi rapid assessment, incorporating key findings from the Malawi data analysis. These tools are complete and we will submit them with the *Complete ITN Misuse Toolkit* (see PC.4.9) early in Quarter One of Year Five.

PC.4.6 Summary Process Manual

Brief activity description: A key output for VectorWorks' efforts in ITN misuse for fishing will be a short manual for PMI country teams and other stakeholders that outlines the key steps in analyzing and responding to mosquito net fishing in their countries. The manual will describe steps to assess the problem, set up collaborations with other stakeholders, and plan a strategic approach for mitigation.

Status: Canceled, Modification 3, Year 4

PC.4.7 Rapid Assessment in Malawi

Brief activity description: To better understand the drivers behind the misuse of ITNs for fishing in Malawi, and to gauge the magnitude of the problem, VectorWorks conducted a rapid assessment in February and March 2017. This assessment included focus group discussions with community leaders (men and women), observations at fishing beaches and in markets, and key informant interviews. The results of this assessment will enable the team to work with local stakeholders to determine if and what tools and interventions to put into place.

Status: Complete. VectorWorks submitted the *Malawi Rapid Assessment Final Report* on October 23, 2017; PMI approved the report on November 21, 2017.

PC.4.8 Final Decision Tree

Brief activity description: This decision tree is a graphic depiction of the process outlined in the *Complete ITN Misuse Toolkit* (described in PC.4.9), with decision points highlighted and likely options (at a general level) proposed. The decision tree is an example of how the process could unfold, and should provide useful guidance to planners.

Status: Delayed to Quarter One, Year Five. VectorWorks drafted the decision tree and will submit it in Year Five, Quarter One, as part of the *Complete ITN Misuse Toolkit* (PC.4.9).

PC.4.9 *Complete ITN Misuse Toolkit*

Brief activity description: VectorWorks will compile a *Complete ITN Misuse Toolkit* to share the process used and the knowledge gained from the Malawi rapid assessment, highlighting the benefits of this activity for other countries.

Status: Delayed to Quarter One, Year Five. VectorWorks shared a draft with PMI on May 31, 2018, and revisions are ongoing.

[Completed in Year 3: PC.4.10 Malawi Planning Visit]

[Completed in Year 4: PC.4.11 Global Initiative Planning and Organization]

PC.4.11.A. Identify an Institutional Home for the Global-Level Mosquito Net Fishing Initiative

Brief activity description: Although the issue of ITN misuse for fishing has surfaced in the last several years, to-date no one has scheduled a subnational or international meeting to bring together stakeholders from all relevant sectors to discuss the issue. VectorWorks plans to participate in and facilitate an international meeting to bring together stakeholders from a wide variety of disciplines—including biology, fisheries, malaria, and the environment—to discuss their observations and research findings related to fishing with ITNs, and to collectively assess options for mitigating ITN fishing.

Status: Complete. VectorWorks continues to work with organizations to determine how best to integrate the misuse of ITNs for fishing into an existing structure. With the focus on economic stress and food security, as documented in the Malawi rapid assessment, VectorWorks met with the USAID Bureau of Economic Growth, Education and Environment, Office of Forestry and Biodiversity to discuss next steps. The Office of Forestry and Biodiversity held a meeting on September 13, 2018, inviting implementing partners under USAID's Food for Peace initiative to further discuss the role of fisheries in Food for Peace activities. Because sufficient space was not available for VectorWorks to participate in person, we participated on the conference line.

PC.4.11.B. Stakeholder Convening for Mosquito Net Fishing

Brief activity description: VectorWorks planned to participate in and facilitate an international meeting to bring together stakeholders from a wide variety of disciplines—including biology, fisheries, malaria, and the environment—to discuss their observations and research findings related to fishing with ITNs, and to collectively assess options for mitigating of ITN fishing.

Status: Canceled, Modification 3, Year 4.

PC.4.12 Cross-border Enforcement Case Studies

Brief activity description: Because enforcement is one of the elements we need to consider in response to ITN misuse for fishing, VectorWorks will conduct interviews with key informants in Burundi, Tanzania, and Mozambique who can describe the policies and enforcement process of reducing mosquito net fishing and, then, documenting the reported outcomes of these enforcement activities from each site.

Status: Complete. In August, 2018, Mr. Matthew Lynch conducted a rapid assessment of the ITN misuse situation on the Tanzanian side of Lake Malawi/Lake Niassa. This sought to review the policies around ITN misuse for fishing and the enforcement mechanisms in place to curb this practice. The results from this rapid assessment show that ITN misuse for fishing is not an issue on the Tanzanian side of the lake, which has less population pressure and less food insecurity and economic stress. Tanzanians can legally use a smaller mesh fishing net to fish the smaller sardine species, "dagaa". Respondents stated that ITNs are not strong enough and would make poor fishing nets. Additionally, beach management committees on this part of the lake provide the communal enforcement needed. In the rare case that someone misuses their ITN for fishing, they can be arrested and sent to jail for up to six months. These results are completely different than those from Malawi. This is an important reminder that interventions to stop the misuse of ITNs for fishing will probably not be one-size-fits-all. Mr. Lynch's trip report for this activity was received; PMI acknowledged it on September 27, 2018.

PC.4.13 Identify Partnership/Inclusion of Population, Health, and Environment Projects into ITN Misuse

Brief activity description: VectorWorks proposes formalizing its relationship with the greater Population, Health, and Environment (PHE) umbrella of activities and working to include malaria and mosquito net fishing in discussions.

Status: On schedule. VectorWorks attended one meeting of the PHE group on June 12, 2018. While PHE schedules quarterly meetings, others have been canceled because of conflicting travel schedules. The PHE team was very interested in VectorWorks presenting the results of the Malawi rapid assessments and to continue discussions on how this issue can be integrated into existing or future PHE work. Pending that quarterly meeting, VectorWorks aims to schedule this presentation by the end of the 2018 calendar year.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 2: PC.4.1, Literature review; PC.4.2, GIS population estimate; PC.4.3, Pesticide toxicity report; PC.4.4, Small-mesh fishing gear report. Completed in Year 3: PC.4.10, Malawi planning visit.				

5. Set of survey instruments	AOR	Quarter 1	AOR	Delayed to Year 5
6. Summary process manual	PMI resident advisors, NMCPs, relevant stakeholders		AOR	Canceled
7. Pilot test of qualitative instruments for Malawi with report	PMI	Quarter 1	AOR	Approved by PMI: November 21, 2017
8. Final decision tree	PMI resident advisors	Quarter 1	PMI	Delayed to Year 5
9. Complete ITN Misuse Toolkit	PMI	Quarter 1	PMI	Delayed to Year 5
11. Global Initiative planning and organization A. Trip report on Oxford policy meeting and FAO visit B. Workshop report including case studies, presentations, mitigation options, prioritized list of knowledge gaps and research needs, participant list of stakeholders	PMI and other relevant stakeholders	Quarter 3	PMI	A. Acknowledged by PMI: February 26, 2018; B. Canceled
12. Enforcement case study report comparing Tanzania, Malawi, Mozambique, and Burundi experiences	PMI and other relevant stakeholders	Quarter 3	PMI	Complete
13. Report summarizing opportunities for broader partnership with implementing partners from other sectors	PMI and other relevant stakeholders	Quarter 1	PMI	Delayed to Year 5

PC.5 Malaria in Pregnancy

[Canceled in Year 1: PC.5.1, US–Malaria in Pregnancy trip report.]

[Completed in Year 1: PC.5.2, Trip report and presentation.]

[Completed in Year 2: PC.5.3, Advocacy strategy; PC.5.4, Malaria in pregnancy trip report.]

[Canceled in Year 2: PC5.5, follow-up malaria in pregnancy advocacy case studies.]

[Canceled in Year 3: PC.5.6, Tracking ANC attendance in Tanzania before and after ITN distribution.]

[Completed in Year 3: PC.5.7, Translate Malaria in Pregnancy Advocacy Toolkit into French.]

PC.6 Identifying Alternative Distribution Strategies in Urban Areas

Brief activity description: In collaboration with the AMP Emerging Issues Working Group, in Year Two, VectorWorks led a process to describe the process of urban distribution in many countries. During interviews with AMP consultants and contacts in-country, the project documented the planning decisions and implementation challenges faced.

Status: The report titled *Strategies in Urban Distribution Strategies of Insecticide-Treated Nets* was submitted to PMI and approved on July 30, 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
Working paper on alternative distribution strategies in urban areas	PMI, GMP, AMP, and VCWG	Quarter 1	Share by email lists	Approved by PMI: July 30, 2018 and disseminated.

PC.7 Maps for PBO Net Pilot Areas

[Completed in Year 2.]

Objective 2: Design, Conduct, and Analyze Results from Monitoring, Evaluation, and Operational Research Activities to Improve Current Best Practices

ME.1 ITN Durability Monitoring

Brief activity description: VectorWorks leads ongoing durability monitoring activities in Democratic Republic of Congo, Nigeria, Mozambique, Myanmar, and Tanzania (Zanzibar). In Year Four, planning began for implementing baseline and 12-month rounds in Ghana, Liberia, and Kenya. By mid-Year Four, we completed the baseline and 12-month surveys in the first five countries, and we are concluding the Institutional Review Board (IRB) preparations in the three new countries. VectorWorks collaborates with the NMCP and research partners in each country to strengthen capacity for future durability monitoring. We also provide distance support to other implementing partners conducting this activity.

Status: In November 2017, VectorWorks published recommendations for action at different thresholds of results for physical and insecticidal durability. We presented them to PMI staff and implementing partners at the American Society of Tropical Medicine and Hygiene (ASTMH) Annual Meeting on November 5–9, 2017, during the durability monitoring side meeting. VectorWorks updated the durability monitoring study manual and disseminated announcements to the mailing list. Additional status updates are listed below.

ME.1.1 Guidelines for Data Collection

[Completed in Year Two – templates for protocol, questionnaires, consent forms, data collection tools, training manual and materials, budget, FAQ.]

ME.1.2 Standardized Tools for Data Analysis and Reporting

[Completed in Year Two: ME.1.2, Standardized tools for data analysis and reporting – analysis plan, data cleaning and prep do files, report and chart templates, interpretation guidance.]

[Completed in Year Three: ME.1.2.D and ME.1.2.E, Publication guidance and key indicator submission.]

ME.1.3 Data Management, Submission, and Pooled PMI Durability Data

[Completed in Year Three: ME.1.3.A, Data sets submitted to PMI; ME.1.3.B, Data submission guidelines (minimal standards for key variables, recommendations for data structure for submission to PMI; ME.1.3.D, Eight-country pooled data cleaning.]

ME.1.3.C, Dedicated website for data, tools, instructions and resources

The dedicated website was set up in Year One and populated in Year Two with the tools listed above. We will seek approval for the deliverable in Year Five.

ME.1.3.E OpenMalaria Modeling on the PMI Pooled Durability Data Set

Dr. Olivier Briet of Swiss Tropical and Public Health Institute completed the report on findings from the pooled data from previous PMI durability studies. Dr. Briet presented the findings at VCWG during the LLIN Priorities Work Stream. Dr. Briet did this modeling study to provide ITN programs with guidance as to whether they should prioritize investment in improving physical durability, chemical durability, net use, or ITN survival. Using data from seven ITN durability studies, Dr. Briet estimated the impact of mass distributed ITNs in these studies on vectorial capacity, both for a pyrethroid resistant and for a susceptible *Anopheles gambiae* population, and compared it to several hypothetical scenarios. In each hypothetical scenario, one durability outcome measure was set at the best possible level, while keeping the others as observed in the durability monitoring studies. This analysis suggests that the non-use of study ITNs is the most important factor in reducing ITN impact on vectorial capacity over time, generally outweighing the effects of attrition, hole formation (degrading physical integrity), and decaying insecticide content. However, this conclusion is probably biased because of a lack of information on the use of non-study nets. Attrition may have been reduced because of a study effect in these prospective durability studies. For five out of eight ITN types, the impact of preventing ITN insecticide decay was larger than the impact of preventing physical decay. For Olyset, DuraNet, and PermaNet 3.0, the impact of preventing physical decay was generally larger—yet the impact of preventing physical decay was not significantly different from zero for DuraNet and PermaNet 3.0 in any of the studies.

ME.1.3.F OpenMalaria Decay Modeling

The work for this activity is included under ME.1.3.E.

[Canceled in Year 2: ME.1.4 Resistance to Damage Score Validation.]

ME.1.5 Risk Index for Environmental and Behavioral Determinants for ITN Durability

Using available data, VectorWorks has further refined a risk index that will predict the likelihood of increased ITN damage, based on environmental, socioeconomic, household, and attitudinal factors. From preliminary data analysis, it is likely that a set of factors measured at baseline will be able to predict median ITN life span reasonably well, such that different regions could be classified into higher or lower risk for net damage.

VectorWorks further refined the risk index after collecting 24-month data and submitted it as a poster to ASTMH for 2018. VectorWorks will also need to validate it against PMI durability data not collected by VectorWorks, which we expect to do in Year Five.

ME.1.6 Thresholds for Action

VectorWorks published the *Interpreting Durability Monitoring Data for Programmatic Action* guidelines on October 25, 2017. We presented the thresholds and actions steps at the ASTMH Annual Meeting on November 5–9, 2017, during the durability monitoring investigator side meeting and in a webinar on December 7, 2017. The guideline is intended to provide PMI with a set of references when viewing interim durability monitoring reports, in order to evaluate whether the interim results are within normal expectations, somewhat below expectations (indicating a possible problem), or far below expectations. The guidelines include subsequent investigation steps to determine the potential cause(s) of the below-expectation results, as well as action steps for any specific problems identified.

ME.1.7 Durability Monitoring Webinar

[Completed in Year 2.]

ME.1.8 ASTMH and 7th Multilateral Initiative on Malaria Pan African Malaria Conference Durability Monitoring Investigators' Meetings

VectorWorks organized a meeting of durability monitoring investigators during the ASTMH Annual Meeting on November 5–9, 2017, in Baltimore, Maryland. Dr. Koenker presented updates to the durability monitoring toolkit and presented and discussed recommendations for interpreting the interim results. Seventy-five people registered for the meeting and approximately 35 attended, including many PMI resident advisors and durability monitoring implementing partners. Questions and points raised during the meeting included the need to consider *use* when assessing factors associated with increased or decreased life span; how to target messages to NMCPs that may want to use the results (preliminary or otherwise) to positively select a certain net product; consider timing fieldwork rounds vis-à-vis local farming and travel schedules; how countries compile and share data; and if any countries are monitoring "naked nets" or nets without packaging. The meeting was an opportunity to reinforce the basic principles of durability monitoring and to clarify definitions of the major indicators of attrition and surviving nets.

ME.1.9 Durability Monitoring Capacity-Strengthening Case Study

In Quarter One, VectorWorks drafted a case study about capacity strengthening in Mozambique for durability monitoring. We revised it to include examples from additional countries and will submit it early in Quarter One of Year Five.

ME.1.10 Durability Monitoring Webinars Year Four

VectorWorks hosted a webinar on December 7, 2017, to introduce the *Interpreting Durability Monitoring Data for Programmatic Action* guidelines, described in ME.1.6. Additional webinars will be held in Quarters One and Four of Year Five to present the first and, then, final rounds of results from the eight monitoring activities VectorWorks is leading.

ME.1.11 Testing Insecticidal Content of Stored Attrition, Bioefficacy, Chemistry, Degradation, and Insecticide Resistance ITNs

VectorWorks identified several bales of stored ITNs (three different brands) that have been in ideal storage conditions for more than four years—currently in Bagamoyo, Tanzania—for the Attrition, Bioefficacy, Chemistry, Degradation, and Insecticide Resistance (ABCDR) project. Maximum daily temperature recordings are available for the warehouse for the entire period. We engaged Ifakara Health Institute to test subsamples

of each brand (cone bioassay) and to generate data on bioefficacy after long-term storage. The testing was conducted in Quarter Four and we are waiting for the report. VectorWorks discussed this activity description with the AMP Emerging Issues Working Group (EIWG) members because they are working on ITN container issues. VectorWorks will share the results with the EIWG team as they are finalized. Additional samples from these nets were sent to Centers for Disease Control and Prevention (CDC) for chemical testing in late September; we will follow up to update the report when and if we receive the chemical testing results.

Deliverables	**Audience**	**Timing**	**Dissemination Plan**	**Status**
Completed in Year 2: ME.1.1, Guidelines for data collection; ME.1.2, Standardized tools for data analysis and reporting. Canceled in Year 2: ME.1.4, Resistance to damage score validation. Completed in Year 3: ME.1.2.D–ME.1.2.E, Publication guidance and key indicator submission, ME.1.3.A, Data sets submitted to PMI; ME.1.3.B, Data submission guidelines; ME.1.3.D, Eight-country pooled data cleaning, ME.1.7 Webinar on use of durability monitoring toolkit.				
3.E–F. Model pooled eight-country PMI data with Swiss TPH	PMI, durability monitoring principal investigators, NMCPs, CDC, other durability monitoring stakeholders	Quarter 1	Email	Approved by PMI March 15, 2018
5. Develop an index for environmental and behavioral risk	PMI, durability monitoring principal investigators, NMCPs, CDC, other durability monitoring stakeholders	Year 5	PowerPoint summary via email	On schedule
6. Thresholds for action document	PMI country teams, WHO/GMP & PQ, DM investigators, private sector manufacturers	Quarter 1	Durabilitymonitoring.org; PMI listserv	Finalized and published October 25, 2017; formally approved June 13, 2018
8. ASTMH durability monitoring principal investigators' meeting	PMI, durability monitoring principal investigators, NMCPs, CDC, other durability monitoring stakeholders	Quarter 1	Email to PMI	Completed November 6, 2017
9. DM capacity-strengthening case study	PMI	Quarter 1	VectorWorks website, electronic mailing lists	Delayed to early Quarter 1, Year 5
10. Webinars	PMI, durability	Quarter	Email to PMI, NMCP,	Webinar

promoting use of standardized processes and tools and data interpretation	monitoring principal investigators, NMCP officers	3	implementing partner, principal investigators	completed December 7, 2017
11. Insecticidal content and bioassay testing for ABCDR stored nets	PMI	Quarter 2	Email	In process

ME.2 Alternative Vector Control Tools

[Completed in Year 1: ME.2.A Landscape Report on Alternative Vector Control Tools.]

ME.2.B Quarterly Updates on Alternative Tools

Brief activity description: Since July 2015, VectorWorks has disseminated a quarterly newsletter that summarizes findings from relevant studies and highlights possible interpretations and implications, including gender considerations for new tools, when applicable. To develop the newsletter, we use a systematic search in key databases to identify literature from the last three months on alternative tools and paradigms identified in the *Landscape of New Vector Control Products*. We present the summary of findings in a user-friendly newsletter format that enables readers to quickly scan for key new developments and study, in detail, in the referenced literature. Through the VectorWorks and PMI websites, we share each quarterly update with the general VCWG mailing list and PMI field staff and headquarters staff.

Status: The quarterly update is ongoing; every three months we review, summarize, format, and disseminate new articles. VectorWorks released the first report of Year Four in February 2018, covering October to December 2017. In May 2018, we released the second report that included the articles from Quarter One (July–September 2017) and Quarter Three (January–March 2018). Because of an oversight, Quarter One was not sent. Finally, in September, VectorWorks sent Quarter Four, which covers April to June 2018. The updates include suggestions from the user survey from Year Three: a WHO Pesticide Evaluation Scheme box highlight any products—for example, piperonyl butoxide and next generation nets that receive interim or full approvals—and links to relevant new policies and guidance that WHO issued.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: ME.2.B.1, Two newsletters. Completed in Year 2: ME.2.B.2, Four newsletters. Completed in Year 3: ME.2.B.3, Four newsletters; ME.2.B.4, User survey.				
5. Quarterly newsletter summarizing recent literature on alternative vector control tools (electronic format)	Innovative Vector Control Consortium, VCWG, PMI technical and resident advisors, implementing partners	Oct., Jan., April, July	VCWG electronic mailing list, potentially also to PMI field and core electronic mailing lists; link on PMI website; post to VectorWorks and RBM websites	Ongoing

ME.3 Issues in Costing ITN Distribution

ME.3.A Continuous Distribution Costing Analysis

Brief activity description: Building on the work in Ghana, VectorWorks conducted a cost analyses of school-based, health facility–based, and community-based distribution programs—either as a stand-alone strategy (for example, school-based distribution in Tanzania and health facility–based distribution in Mali) or in combination with other strategies (for example, in Ghana and Zanzibar).

Status: VectorWorks submitted the reports for the Tanzania School Net Program Round 3 (SNP3), Zanzibar, Ghana, and Mali, and received approval from PMI. We also submitted the Tanzania health facility costing and SNP5 report to PMI. We received and reviewed two of the manuscripts (7 and 8); they are in advanced stages and we expect to submit them to PMI in Quarter One of Year Five.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 2: ME.3.A.2, Tanzania School Net Program costing report; ME.3.A.5, Zanzibar costing report. Canceled in Year 2: ME.3.A.1, Madagascar costing report. Completed in Year 3: ME.3.A.4, Mali costing report.				
3. Ghana health facility costing update	VectorWorks project team, PMI AOR	Quarter 1	Internal report for preparation of a summary report or article	Approved by PMI: September 25, 2018
6. Mainland Tanzania health facility costing report	VectorWorks project team, PMI AOR	Quarter 1	Limited internal report for Malaria Operational Plan planning and preparation of a summary report or article	Submitted to PMI October 22, 2018
7. Summary manuscript for continuous distribution costs based on deliverables 1–6	HWG consultants, PMI leadership, PMI resident advisors	Quarters 2–3	Manuscript	In process
8. Manuscript of meta-analysis comparing continuous distribution and mass campaign costs	Donors and implementers	Quarter 4	Manuscript	In process
9. Manuscript connecting continuous distribution costs to transmission modeling	Donors and implementers	Quarter 4	Manuscript	In process

10. Tanzania: Costing School Net Program Round 5 (SNP5) and comparison to School Net Program Round 2 (SNP2): measuring the gains of learning by doing	VectorWorks project team, PMI AOR	Quarters 3–4	Internal report for preparation of a summary report or article	Submitted to PMI October 22, 2018

ME.3.B Experimental Auctions

[Completed in Year 2: ME.3.B.1, Trip report.]
[Completed in Year 3: ME.3.B.2, Study report; ME.3.B.3, Paper #1.]

[Canceled in Year 4: ME.3.B.4 Discrete choice experiment paper #2.]

ME.4 External Review of a Durable Wall Lining Study in Tanzania

[Completed in Year 1: ME.4.1, Trip report.]

[Completed in Year 2: ME.4.2, Trip report.]

ME.5 Continuous Distribution Evidence Base

[Completed in Year 2: ME.5.A NetCALC 3.0.]

ME.5.B Dissemination of NetWorks Continuous Distribution Findings: Papers on Continuous Distribution Pilots in Madagascar, Ghana, South Sudan, and Nigeria

Brief activity description: VectorWorks is publishing intervention descriptions and results from the Madagascar, Ghana, and South Sudan continuous distribution pilots.

Status: VectorWorks submitted the Ghana Eastern Region paper to the *Malaria Journal* in October 2017. We received comments and addressed them in March 2018; the journal published the paper the same month. A webinar that included the results ran on October 3, 2018. The evidence review for the WHO Technical Expert Group on Malaria Vector Control (VCTEG) was initially planned for late Year Four or early Year Five after completing the costing papers. They did not meet in 2018. However, Dr. Yukich shared a draft of the meta-analysis costing paper with WHO in October 2018. In Year Five, VectorWorks will request an evidence review at VCTEG, or a similar committee, to generate a policy recommendation about continuous ITN distribution.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: ME.5.B.3, Nasarawa continuous distribution report. Completed in Year 3: ME.5.B.1, Madagascar community-based distribution pilot; ME.5.B.4, South Sudan community-based pilot				
2. Publishable-quality manuscript on school-based distribution in the Eastern Region of Ghana	NMCPs, HWG and HWG consultants, VCWG, PMI	Quarter 1	Peer-reviewed journal, VCWG	Published March 23, 2018
5. Webinar summarizing results	NMCPs, HWG and	Quarter 2	Webinar	Completed

of published studies	HWG consultants, VCWG, PMI			October 1, 2018
6. Evidence review at VCTEG	VCTEG	Late Year 4–Year 5	VCTEG minutes	Postponed to Year 5

ME.6 Publication Fees for NetWorks Articles

Brief activity description: VectorWorks will complete several articles drafted during the NetWorks Project.

Status: VectorWorks received and addressed comments on the Nigeria Cross River school distribution paper in January 2018 and the *Global Health: Science and Practice* journal promptly accepted the paper, but delayed in sending proofs. The paper was published in June. In discussions with PMI, the Hole Index paper was considered to not be crucial for policy purposes, as the proportionate Hole Index methodology is now widely used and accepted as the standard approach for evaluating physical damage to ITNs. To focus on completing other deliverables, the paper was canceled.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: ME.6.2, Hang up; ME.6.3, Ghana outdoor sleeping; ME.6.4, Nigeria durability; ME.6.5, Uganda care repair. Completed in Year Two: ME.6.1, Campaign strategies paper.				
6. Nigeria Cross River schools (final draft completed in Year 1, rejected from *Malaria Journal* in Year 2, revised and submitted to *Global Health: Science and Practice* journal late in Year 3)	Malaria technical community, PMI	Quarter 1	Peer-reviewed journal, VCWG	Completed July 31, 2017; published June 6, 2018 in GHSP
7. Hole Index Methods (first draft completed in Year 1)	Malaria technical community, PMI	Quarter 4	Peer-reviewed journal, VCWG	Canceled in Year 4 Mod. 3: September 12, 2018

ME.7 Subnational Analysis of Use-to-Access Ratio

Brief activity description: VectorWorks is collaborating with the DHS Program, using DHS and MIS data sets and rainfall data to more closely examine rates of ITN use and access based on subnational time frames for the dry season, early rains, and late rains. We will analyze all PMI countries within the last five years (where data are available). We will also continue to update the *ITN Access and Use Report* and associated maps with new data as they become available, working with Breakthrough ACTION to disseminate the findings more widely.

Status: VectorWorks worked closely with Ms. Cameron Taylor at the DHS Program to extract ITN use and access data from 35 data sets, and to extract rainfall data, by cluster, for each of the survey fieldwork periods. We made considerable progress in Year Four, building on the previous work. We shared preliminary data from the seasonal analysis at the ASTMH Annual Meeting, as well as during the ITN Use and Access

webinar hosted by Breakthrough ACTION in February 2018, where we highlighted the importance of subnational audience segmentation, particularly as it relates to the seasonality of ITN use. We are prioritizing finalization of the subnational analysis paper in the first half of Year Five.

VectorWorks continues to update the *ITN Access and Use Report* as the DHS Program releases new data. We posted updates in September and November 2017, and in January, April, May, June, and September 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: ME.7.1, Year 1's *ITN Access and Use Report*. Completed in Year 2: ME.7.3, Year 2's *ITN Access and Use Report*; ME.7.4, Annex with maps. Completed in Year 3: ME.7.5, Year 3's *ITN Access and Use Report*, with maps.				
2. Publishable-quality paper analyzing use-to-access ratio by season	Malaria technical community	Quarter 2	VCWG, *Malaria Journal*	In process
6. Updated PMI report on access indicator showing stratification by region, season, and risk group, with updated maps	PMI field teams, AMP, VCWG, SBCC working group	Ongoing updates to be made as new data sets are released; Quarter 2 before Malaria Operational Plan season	AOR to circulate to wider PMI team and resident advisors; in-country presentations during technical advisor visits	Ongoing

[Completed in Year 2: ME.8.A Expert Committee Meeting; ME.8.B Concept Notes and IRB Preparation for Identified Study Topics.]

ME.9 Net Preference Literature Review

[ME.9.1 Completed in Year 2: Net preferences literature review for VCTEG.]

[ME.9.2 Completed in Year: Paper published.]

ME.10 Break-Even Analysis for Procurement of Conical Nets

[Completed in Year 2.]

ME.11 Characterizing Risk of Outdoor Malaria Transmission

Brief activity description: In Year Three, VectorWorks reviewed published literature on human behavioral drivers of residual malaria transmission. The review included searches through PubMed and cited references in identified articles. VectorWorks selected studies if they included a malaria endemic setting in sub-Saharan Africa and a description of specific human behaviors occurring during times when malaria transmission can occur. In Year Four, VectorWorks will finalize the review for publication in a peer-reviewed journal.

Status: In Year Four, VectorWorks completed the review and shared the document internally for input, including through the CCP Malaria Community of Practice. VectorWorks submitted the literature review to PMI in May 2018 and received feedback in June 2018. Based on this feedback, VectorWorks revised the

review, with a particular focus on expanding synthesis of study findings. In addition to incorporating PMI feedback, VectorWorks updated the review from December 31, 2016, to December 31, 2017, which allowed for identifying and including additional articles. The review will be sent for PMI technical review in Quarter One of Year Five and then submitted for publication in a peer-reviewed journal.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Publishable-quality review of literature on outdoor malaria transmission, characterizing outdoor activities that may present risks for malaria transmission, via Outdoor Transmission work stream	PMI and VCWG	Quarter 1	Peer-reviewed publication	Submitted May 14, 2018; feedback received June 12, 2018; to be sent for technical review in Quarter 1, Year 5

ME.12 Revisions to the Malaria Social Behavior Change Communication Indicator Guide

Brief activity description: VectorWorks updated the guide based on feedback from members of the RBM Social Behavior Change Communication (SBCC) Working Group. Key changes included adding data sources other than large national surveys, addressing the contribution of health care provider behaviors, updating knowledge indicators to reflect diagnostics, and guiding how to select and prioritize indicators. The guide also contains mini-case studies/examples of how various countries and programs have used and adapted the content in the guide.

Status: PMI approved the content for the guide at the end of Year Three. VectorWorks funded the copyediting and gave it to CCP's Health Communication Capacity Collaborative (HC3) for French and Portuguese translation. After translation, HC3 modified the documents to meet 508 accessibility standards. Further dissemination of the guide was done during the SBCC Working Group meeting.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Revised *Malaria SBCC Indicator Guide*	PMI, SBCC WG, and AMP	Quarter 2	SBCC WG, Springboard, AMP, and RBM	Completed 9/28/2017, then translated

ME.13 IRS and ITN Technical Assistance

[ME.13.1 Completed in Year 2: ITN use in the context of indoor residual spray (IRS) report.]

ME.14 Residual Transmission Meeting Planning

Brief activity description: In Year Four, VectorWorks worked with the VCWG New Challenges, New Tools Work Stream to coordinate information sharing on methods and best practices for residual malaria transmission research. This includes participating in a workshop on residual malaria transmission in sub-Saharan Africa, funded by the WHO (and others) Special Programme for Research and Training in Tropical

Diseases (TDR). This activity was put forward by the VCWG New Challenges, New Tools Work Stream and it is included in the Work Steam's 2017/2018 work plan.

Status: VectorWorks participated in the TDR workshop held in November 2017 in Dar es Salaam, Tanzania, which Ifakara Health Institute hosted. The workshop brought together more than 40 experts on residual malaria transmission, representing more than 20 countries and all WHO regions. The workshop included presentations on results from residual malaria transmission studies across a variety of settings, and discussions around key issues for residual malaria transmission research. VectorWorks shared a detailed trip report on the meeting in December 2017.

Based on the success of this meeting, TDR indicated interest in funding future additional workshops on this topic. TDR is providing a platform for discussion and information sharing on this topic; therefore, VectorWorks will continue to coordinate with the VCWG New Challenges, New Tools Work Stream, TDR, and other organizations engaged in residual malaria transmission activities. To avoid duplication of efforts, VectorWorks will not plan a separate meeting and will continue to contribute actively through the existing platforms. PMI acknowledged completion of this activity in June 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 3: ME.14.2 VCWG work stream presentation.				
1. Planning memo for expected attendees and outputs of an African Outdoor Transmission Network workshop	PMI, VCWG	To be determined	Email to PMI and network members	Carried out by TDR; completion of activity acknowledged June 12, 2018
3. Report on key outcomes of the residual malaria transmission workshop	PMI, VCWG	Quarter 4	Email to PMI and work stream members	Submitted to PMI on December 12, 2017, and acknowledged January 3, 2018; completion of activity acknowledged June 12, 2018

ME.15 Counterfeit Nets

Brief activity description: Anecdotal evidence suggests that, in a number of countries, counterfeit ITNs and nets with misleading labeling (e.g., untreated nets suggesting that they are ITNs) have appeared in markets. However, little is known about the severity and magnitude of this problem, or whether it requires greater attention from VectorWorks, PMI, or the malaria community, in general. This activity provides qualitative and semi-quantitative data for this question from three countries: Nigeria, Tanzania, and Ghana. VectorWorks conducted fieldwork in Nigeria and Tanzania in Year Three. Study activities slated for Year Four include data collection in Ghana, compilation of results, and development of a summary report for all three countries.

Status: In February 2018, VectorWorks conducted fieldwork in Ghana. A summary report was drafted for all three countries and is undergoing final revisions. The report highlights the magnitude of counterfeiting as a problem in each country; the types of counterfeiting violations, in categories; and the perspectives of key stakeholders, such as net wholesalers and retailers.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Summary report from three countries; recommendations for next steps	PMI and VCWG	Quarter 2	Share by email	Ongoing

ME.16 Secondary Analysis of Net Use in Key Countries

Brief activity description: The ITN use-to-access ratios are below target levels in a number of sub-Saharan African countries. A more nuanced understanding of the driving factors underlying subpar use-to-access ratios is important to efficiently plan ITN distribution and to inform the design of SBCC strategies in these settings. PMI Ghana, PMI Nigeria, and their partners requested this information. In Year Three, VectorWorks drafted a memo for Ghana using the 2014 DHS data, prior to the release of the 2016 MIS data sets.

Status: VectorWorks submitted the updated *Ghana Malaria Indicator Survey (MIS) 2016* report on ITN use in Quarter One and the *Nigeria Malaria Indicator Survey (MIS) 2015* report on ITN use in Quarter Two. Specific analyses covered in the reports include the following:

- Net use by gender and age
- Net use in indoor residual spray (IRS) areas and comparable non-IRS areas
- Net use and prevalence, as a proxy for perceived malaria risk
- Net use and season.

The results are an evidence base for specific recommendations on how to address and/or mitigate the low use rates.

Deliverables	Audience	Timing	Dissemination Plan	Status
Completed in Year 4: ME.16.1, Ghana ITN Use memo; ME.16.2 Nigeria ITN Use memo				
1. Ghana 2014 DHS report on ITN use	PMI and NMCP	Quarter 1	Share by email	Approved by PMI October 19, 2017
2. Nigeria 2015 MIS report on ITN use	PMI and NMCP	Quarter 1	Share by email	Approved by PMI June 12, 2018

ME.17 Who Buys Nets: A Multi-Country Analysis

Brief activity description: To better understand the current role and extent of ITN purchases, VectorWorks will conduct a multi-country analysis of who buys nets—by socioeconomic status, urban or rural status, level of education, and any other key demographics that are identified. Where available, we will include trends over time. We have 16 countries included in the updated source of net report and these countries will be included in the paper.

Status: VectorWorks presented a poster for this activity at the ASTMH Annual Meeting in Quarter One of Year Four. The data analysis and manuscript writing are currently ongoing.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Publishable-quality paper on who buys nets; a multi-country analysis	PMI, Global Fund, DFID, and NMCPs	Quarter 3	Share by email	Ongoing

ME.18 Age and Gender Patterns of ITN Use

Brief activity description: Previous analyses have indicated that ITN use patterns by age and gender reveal important trends when stratified by household ITN supply. VectorWorks aims to analyze data sets from PMI countries to produce graphs of ITN use by age group and gender, stratified between households that own enough ITNs and those that own one ITN, but not enough. We will also present the findings in a manuscript to illustrate any gender or age gaps and programming implications.

Status: VectorWorks drafted the manuscript in Quarter Two and included an analysis of MIS and DHS data from 29 countries. The manuscript includes country-level graphs of ITN use by age group and gender; country-level adjusted odds ratios of ITN use among household members, controlling for household ITN supply; and a meta-analysis of the adjusted odds ratios across all countries. As anticipated, most countries consistently prioritized ITN use for children under five and women of reproductive age; ITN use is lowest among school-aged children. The manuscript was submitted and accepted by the *Malaria Journal* and is undergoing edits per the journal's suggestions.

Deliverable	Audience	Timing	Dissemination Plan	Status
[Completed in Year 4: ME.18 Age and gender patterns of ITN use.				
1. Publishable-quality paper on age and gender patterns of ITN use, a multi-country analysis	PMI, Global Fund, DFID, NMCPs	Quarter 2	Email, online publication	Approved by PMI September 12, 2018

ME.19 NetCALC Lite

Brief activity description: VectorWorks is investigating the usability issues with the current version of the NetCALC tool and training package and designing a more user-friendly Microsoft Excel-based tool. This entails gathering inputs from users of NetCALC, reimagining the tool to make it more user-friendly, hiring an expert in Excel with skills in front-end design, usability testing, data visualization, and launching the "new" NetCALC Lite.

Status: VectorWorks has been working with a consultant on the development of this more user-friendly tool, consulting with users of the tool along the way. The team has also integrated elements of the CD decision tree into the tool. We have pretested an early version of the tool with VectorWorks staff. Based on those comments, VectorWorks modified the tool's interface; the consultant is currently making additional adjustments to the macros and other technical and design elements. The consultant will send the final prototype to the VectorWorks team in late October 2018. The VectorWorks team will pretest the tool during the AMP consultant trainings during the week of November 5, 2018. Based on that pretest, the team will make final modifications to the tool and disseminate widely, conducting outreach to PMI, AMP, VCWG, RBM

CRSPC, and the Global Fund for dissemination support. In addition to the upcoming AMP trainings, VectorWorks will consider leveraging the upcoming AMP/VCWG meeting in January 2019 and upcoming RBM CRSPC Mock TRPs.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. NetCALC Lite	NMCPs, HWG and HWG consultants, VCWG, PMI	Quarter 4	VectorWorks channels (e.g., email, website), *Continuous Distribution Toolkit*, NMCPs, CRSPC, AMP, VCWG, PMI	In process

ME.20 Net Motion Sensor Study

Brief activity description: VectorWorks is conducting laboratory testing to validate the ability of a net motion sensor to accurately describe human behavior as it relates to ITN use. Specifically, we expect motion sensors to determine four key actions: (1) when nets are tied up, (2) when nets are untied or unfurled, (3) when nets are entered and exited, and (4) when the bed is occupied. Based on lab testing, VectorWorks is developing a model to interpret the motion sensor data and distinguish and differentiate the actions.

Phase Two implementation will depend on the successful outcomes from Phase One testing. Given the timeframe, VectorWorks will not implement any potential Phase Two activity; the Centers for Disease Control and Prevention (CDC)/PMI have not decided on the country for implementation.

Status: VectorWorks carried out a bidding process in July 2017, selected Liverpool School of Tropical Medicine as a research partner, and set up a contract. In Year Four, Liverpool developed a protocol for Phase One based on the request for proposals and input from PMI and CCP and submitted it to Liverpool's IRB in October 2017. VectorWorks also submitted an IRB authorization form to Johns Hopkins University's IRB at that time, allowing CCP to defer to Liverpool's IRB. Liverpool received three rounds of comments from the IRB committee, which delayed Phase One lab testing. VectorWorks worked with Liverpool to address the comments and revise the study protocol and tools. Liverpool's IRB issued approval in April 2018 and lab testing was carried out May–July 2018. Liverpool submitted a first draft of Phase One; in September 2018, CCP and PMI provided written feedback and facilitated a call to discuss feedback. VectorWorks also facilitated bi-weekly conference calls to facilitate discussion and coordination throughout the process. Next steps: the final Phase One report is expected in Quarter One of Year Five. PMI officially canceled the Phase Two research protocol in September 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Report on Phase 1 methods and results	PMI	Quarter 2	Email to PMI	Delayed to Quarter 1 of Year 5
2. Phase 2 research protocol	PMI	Quarter 2	Email to PMI	Deliverable canceled September 12, 2018

ME.21 Digital Health technologies for ITN Distribution

Rationale: Using Digital Health Technologies during LLIN distribution (routine and continuous) has become more common in recent years. Both implementing partners and Ministries of Health have developed or deployed different technologies to help facilitate each stage of the campaign process (planning, logistics, communication, and distribution), support continuous distribution channels, and more securely pay staff through mobile money platforms. Existing repositories, such as the Digital Health Atlas, do not document whether platforms or tools are used for ITN distribution specifically.

Status: VectorWorks will carry out a coordination activity in Year Five to collate technologies used in LLIN distribution. We will leverage our role within the RBM Vector Control Working Group and the AMP to coordinate with countries and partners to ensure a comprehensive list of technologies used are catalogued. The project will focus on collating three different technology areas: (1) Digital Health platforms used for LLIN distribution, (2) mobile money (eCash) applications used to pay campaign staff, and (3) other technologies used in non-LLIN campaigns (e.g., EPI) that could be applicable for LLIN delivery. This activity will be supported jointly by the International Federation of the Red Cross and Red Crescent (IFRC) and will be implemented in two phases. (IFRC has already developed a list of EPI and emergency management technologies that will be responsible for area 3.)

In Phase One, VectorWorks developed a template and matrix through the AMP and Emerging Issues Working Group. Input was solicited from ITN distribution implementing partners and through the Global Digital Health NetWork, and we received feedback from more than 10 organizations—ranging from those who are responsible for LLIN campaigns and continuous distribution to financial mechanisms, manufacturers, and technical support organizations. In Quarter One of Year Five, VectorWorks and IFRC will summarize all the platforms to be included. Phase Two will be completed by Quarter Three of Year Five; it will focus on publishing and disseminating these results.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Matrix of 1) Digital Health platforms used for LLIN Distribution, 2) mobile money (eCash) applications used to pay campaign staff	NMCPs and LLIN distribution partners	Year 4, Quarter 4	Email to PMI and relevant parties involved in the collating the activities	Delayed to Quarter 1, Year 5
2. Dissemination of the Digital Health technology compendium	NMCPs and LLIN distribution partners	Year 5, Quarter 1	1. Presentation at AMP/RBM meeting 2. Push through other vector control channels	Delayed to Quarter 3, Year 5

Objective 3: Promote and Support Country-Level Implementation of Malaria Prevention Activities (IM)

IM.1 Revise the ANC-EPI Guide ("Keep-Up Guide")

[Canceled in Year 2; included in IM.8, Continuous Distribution Toolkit.]

IM.2 Community Distribution Guide

[Completed in Year 2.]

IM.3 Usability Testing for Online Continuous Distribution Toolkit

[Completed in Year 2.]

IM.4 Integrating Care SBCC into Implementation

[Completed in Year 2.]

IM.5 Designing Accountability Mechanisms for ITN Distribution

[Completed in Year 3.]

IM.6 Update School Distribution Guide

[Canceled in Year 2; included in IM.8, Continuous Distribution Toolkit.]

IM.7 Assessing the Utility of Validation Exercises for School Distribution

[Completed in Year 3.]

IM.8 Online Continuous Distribution Toolkit

[Completed in Year 2: IM.8.1, Continuous Distribution Toolkit outline.]

[Completed in Year 3: IM.8.2, Continuous Distribution Toolkit.]

IM.8.3 Decision Tree for ITN Distribution

Brief activity description: VectorWorks will draft a decision tree that will take users through a series of questions, ultimately resulting in a suggested output of viable mass and continuous distribution options.

Status: VectorWorks drafted the decision tree and obtained feedback from the Global Fund and PMI. The tree was presented at the CD Webinar and will be used during the AMP trainings in Year Five, where we will obtain additional feedback and finalize it.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 2: IM.8.1, Continuous Distribution Toolkit outline. Completed in Year Three: IM.8.2, Continuous Distribution Toolkit.				
3. Continuous Distribution Toolkit decision tree	Implementing partners, PMI, NMCP	Quarter 3	Toolkit, email, newsletter, social media, webinars, electronic mailing lists	Submitted August 10, 2018 for PMI feedback

IM.9 Private Sector Approaches and Considerations

[Completed in Year 3: IM.9.1 Private Sector Model Design; IM.9.2 Landscape Market Analysis; IM.9.3 Operational Issues for the Introduction of Next-Generation Nets; IM.9.4 Manufacturer Follow-Up.]

IM.10 ITN Distribution Technical Assistance Emergency Fund

[Completed in Year 2.]

IM.11 Determining Minimum Data Requirements for Mass Distribution Campaigns

Brief activity description: VectorWorks is supporting an AMP consultant to complete the documentation of current practices and data requirements for mass campaign distribution by finalizing a desk review and analysis of survey data across relevant stakeholders. The consultant will consolidate key findings and share them with the MORE Working Group for discussion and input. Finally, the consultant will work with the Minimum Data Requirements Work Stream co-chairs to produce a guidance document and build consensus around minimum data requirements and data management for mass distribution campaigns.

Status: In Year Four, VectorWorks completed a bidding process and identified an AMP consultant to support the minimum data requirements activity. The AMP consultant completed the document review, analyzed online survey data, and conducted follow-up key informant interviews. VectorWorks and the AMP consultant presented the preliminary findings during the MORE Working Group meeting at the AMP annual meeting in February 2017. The AMP consultant drafted a report based on the findings and key recommendations. VectorWorks provided significant input on the report and facilitated regular conference calls with the consultant and Minimum Data Requirements Work Stream co-chairs throughout the process. VectorWorks submitted the final report to PMI in September 2018. Key findings will be presented on an AMP call in Quarter One of Year Five; the report will be included as a brief in Chapter 8 of the AMP toolkit.

Deliverable	Audience	Timing	Dissemination Plan	Status
Report summarizing key findings and recommendations for minimum data requirements	PMI, AMP, national governments, country implementing partners	Quarter 4	Email, PMI, and AMP electronic mailing list	Approved by AOR on September 25, 2018

IM.12 AMP Mass Distribution Toolkit, Third Revision

Brief activity description: VectorWorks is working with AMP to update their *Mass Distribution Toolkit*. VectorWorks' update of the toolkit focuses on the communication chapter, including advocacy, as well as the microplanning and training briefs.

Status: VectorWorks worked with three highly specialized and experienced consultants to complete the communication, microplanning, and training briefs. The briefs will be submitted to PMI early in Quarter 1 Year Five, and posted to the AMP website upon approval.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Draft text for communication chapter of toolkit	PMI, AMP, national governments, country implementing partners	Year 3, Quarter 4	Email PMI and AMP	Delayed to Year 5, Quarter 1
2. Draft text for the microplanning section of the toolkit	PMI, AMP, national governments, country implementing partners	Year 3, Quarter 4	Email PMI and AMP	Delayed to Year 5, Quarter 1
3. Draft text for advocacy section of the toolkit	PMI, AMP, national governments, country implementing partners	Year 3, Quarter 4	Email PMI and AMP	Delayed to Year 5, Quarter 1
4. Draft text for the training section of the toolkit	PMI, AMP, national governments, country implementing partners	Year 3, Quarter 4	Email PMI and AMP	Delayed to Year 5, Quarter 1

IM.13 Training for Improved ITN Distribution

IM.13.A AMP Consultants Training

Brief activity description: VectorWorks will support AMP in organizing and facilitating a refresher training for the AMP consultants on updated best practices for mass and continuous distribution. The training will focus on the contents of the updated AMP *Mass Distribution Toolkit* and the recently completed *Continuous Distribution Toolkit*. The objectives of the training include reviewing AMP activities and the challenges and lessons learned, reviewing and agreeing on reporting requirements, reinforcing skills and practices around macroplanning, budgeting and finance management, microplanning, training, logistics and rapid monitoring of household registration, communicating, and determining the best way to share documents and resources among the AMP consultants.

Status: The training took place in Geneva, Switzerland, at the International Federation for the Red Cross, from January 31 to February 3, 2018. Fifteen of the most knowledgeable consultants in the area of ITN mass campaigns met for a four-day refresher training, which covered all the critical steps involved in a mass ITN campaign, including an introduction to continuous distribution. The training gave the consultants an opportunity to share lessons learned on distributing ITNs across countries, as well as how to select the best tools and templates, and AMP recommendations for countries. The participants had overwhelmingly positive feedback and reported that the objectives of the training were “achieved” or “mostly achieved.” A key output of the training was creating an internal knowledge management system to help in the continuous sharing of knowledge and best practices among AMP consultants.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Translated training materials in English, French, and Portuguese	PMI, AMP	Quarter 2	Email to PMI and AMP, AMP website, VectorWorks website	Canceled in Modification 1, Year 4; approved May 8, 2018
2. AMP consultant training report	PMI, AMP	Quarter 2	Email to PMI and AMP	Approved on June 12, 2018

IM.13.B Regional NMCP and Partner Trainings

Brief activity description: VectorWorks will support two regional trainings—one in English, one in French—for countries that have mass campaigns planned for 2019 and 2020. Each regional training will be four days and will focus on the critical steps in a mass campaign, such as macroplanning, microplanning, monitoring and evaluation (M&E), logistics, SBCC, leadership and management, and continuous distribution. To ensure the lessons are used in future campaigns, trainings will highlight successful country experiences and package them for replication.

Status: VectorWorks planned to support the regional trainings in Year Four, but to meet the organizers' schedules and ensure enough time to thoroughly prepare for the trainings, we postponed them to early Year Five. The dates for the English training are November 5–9, 2018, and the French training will be on November 13–16, 2018. Each training will be four days and co-facilitators will include VectorWorks; International Federation for the Red Cross (Marcy Erskine, Melanie Caruso); and selected AMP consultants (Miko Thomas, Jean Marc Gregoire, and Alain Daudrumez). Participants will include representatives from 22 invited countries which have scheduled ITN mass campaigns for 2019 and 2020.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Training curriculum	PMI, NMCP	Quarter 1	Email	Delayed to Quarter 1, Year 5. Due to the busy mass campaign schedule, the regional training will take place in November of Year 5
2. Finalized training materials in English and French	PMI, NMCP	Quarter 3	Email	Delayed to Quarter 1, Year 5
3. Anglophone training report, Francophone training report	PMI, NMCP, implementing partners	Quarter 4	PMI, NMCP, updated resources added to the AMP *Mass Distribution Toolkit* and *Continuous Distribution Toolkit*	Delayed to Quarter 1, Year 5

IM.14 Planning Ahead for Mosaic or Rotation Distribution of Next-Generation Nets

[Canceled in Year 4: IM.14 – report on operational considerations for various mosaic distribution strategies being modeled for next generation nets.]

IM.15 Support to Roll Back Malaria SBCC Working Group

IM.15.1 Co-Chair Key Task Forces

Brief activity description: VectorWorks staff are co-chairs on two task forces—Vector Control and M&E—and on the steering committee. In Year Four, VectorWorks continues to ensure strong leadership of these two task forces by coordinating task force conference calls, hosting webinars on key topics of interest for members, and liaising with outside working groups. Each task force aims to hold at least five webinars or conference calls, including a topic discussed on the SBCC Working Group's general call. The task force co-chairs will facilitate WhatsApp groups, which are designed to engage task force members, remind them about calls, and stimulate additional discussion and exchange. The co-chairs will also facilitate discussions on Springboard and participate at the annual meeting.

Status: The M&E Task Force hosted two calls during this reporting period. Presentations included an analysis on the impact of social behavior change (SBC) on Malaria in Pregnancy behaviors in Madagascar and the limitations of using survey data; another focused on the use of the dipstick survey method to conduct outcome monitoring in Uganda. The Vector Control Task Force hosted one call during this reporting period on the use of a human-centered design process to develop ITN use messaging. At the September meeting in Lusaka, the steering committee re-organized the sub-structure of the working group, replacing the task forces with deliverables-focused technical committees. VectorWorks will continue to be involved in the new technical committee focused on identifying a subset of useful malaria knowledge/attitude questions to serve as an optional MIS/DHS module.

IM.15.2 Disseminate Key Resources

Brief activity description: PMI asked VectorWorks to revise, rebrand, and disseminate the M&E tools developed under NetWorks and VectorWorks. We will make minor updates and repackaging for the guide, specifically for developing M&E plans, reporting checklist, and research agenda documents. We will also support dissemination of the M&E tools and other resources to NMCP program managers, SBCC focal persons, and M&E focal persons.

Status: The documents were revised and submitted to PMI on October 3, 2018.

IM.15.3 SBCC Toolkit for ITNs

Brief activity description: All PMI countries use messages on net use, but it is hard for implementers to find authoritative, practical guidance, and examples. VectorWorks is developing a toolkit to provide implementers with a comprehensive one-stop shop on ITNs, synthesizing state-of-the-art knowledge, including from NetWorks and VectorWorks.

Status: The toolkit was drafted and has completed an internal review. A few formatting edits are needed and it will be sent for copyediting and then PMI review. The toolkit was also briefly discussed with some members of the PMI SBC team during the RBM SBCC Working Group meeting. Their suggestion of including a decision tree is being incorporated.

IM.15.4 Consensus Statement on ITN Repurposing

Brief activity description: In the past few years, many questions have been raised about the repurposing and/or misuse of ITNs, after a household decides the ITNs are no longer viable. VectorWorks drafted a consensus statement on this issue, based on discussions with a consortium of ITN partners, which included the AMP's Emerging Issues Working Group, VCWG, and RBM's SBCC Working Group.

Status: PMI incorporated the consensus note recommendations from VectorWorks into its technical guidance document in 2018. The SBC Working Group will disseminate the document in early Quarter 1, Year Five, to be followed by dissemination through the AMP and VCWG.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Facilitate 5 webinars or conference calls for Vector Control and M&E task forces	Vector Control and M&E Task Force members; AMP and VCWG, as appropriate	Ongoing	Email minutes to task force members and post on Springboard	On schedule
2. Disseminate key resources	Vector Control and M&E Task Force members; AMP and VCWG, as appropriate	Ongoing	Email to task force members, AMP, VCWG	On schedule
3. Create SBCC Toolkit	PMI resident advisors, NMCPs, implementing partners	Quarter 2	Webinar; presentation to AMP and VCWG; email to NMCP program managers, M&E and ITN focal persons, implementing partners, and PMI resident advisors; presentation at SBCC Working Group	On schedule
4. Consensus statement on ITN repurposing	PMI resident advisors, NMCPs, implementing partners	Quarter 1	Webinar; presentation to AMP and VCWG; email to NMCP program managers, M&E and ITN focal persons, implementing partners, and PMI resident advisors; presentation at SBCC Working Group	On schedule

Project Management

PM.1 Start-Up

[Completed in Year 1.]

PM.2 Knowledge Management and External Communications

PM.2.A Website Enhancements and Maintenance

Brief activity description: VectorWorks keeps the VectorWorks website (www.vector-works.org) up-to-date with new resources, blog posts, and country information, when available. VectorWorks also hosts M&E malaria SBCC and NetCALC online training modules through the Johns Hopkins University CoursePlus site. VectorWorks continues to regularly add new followers and "likes" to Facebook and Twitter through continued posting and promoted postings on Facebook.

Status: VectorWorks adds new items to the website when PMI approves blog posts and deliverables. In addition, in February 2018, VectorWorks moved all three websites to a new server platform to increase performance. Now all sites are opening faster and updating the sites will be much faster.

Website Statistics: October 1, 2017–September 30, 2018[1]

Site	Page Views[a]	Bounce Rate[b]	Average Session Duration
DurabilityMonitoring.org	3,066	51.75%	3:09
Vector-Works.org	12,029	60.31%	2:19
Continuousdistribution.org	4,447	27.35%	2:00

[a] Page views: the total number of pages viewed; repeated views of a single page are counted.
[b] Bounce rate: the percentage of single-page visits (i.e., visits when the person left the site from the entrance page without interacting with the page).
[c]This number is much lower than in the past because the period between January 1 and March 1, 2018, was not tracked—Google analytics was down for an unknown reason.

Deliverables	Audience	Timing	Dissemination Plan	Status
VectorWorks website	PMI, implementing partners, NMCPs, malaria technical community	Ongoing	Including website address in correspondence and project documents; maintaining an electronic mailing list	On schedule
Online training modules for SBCC M&E and NetCALC	PMI, implementing partners, NMCPs, malaria technical community	Yearly	Share by electronic mailing lists, social media	On schedule

[1] For all sites, from January to February 2018, the Google Analytics plugin was not functioning; therefore, we were unable to record data during that time.

PM.2.B Knowledge Management Dissemination and Improved Communication

Brief activity description: The VectorWorks project employs digital media to support dissemination and promotional efforts via email announcements, regular blog posts, success stories, electronic mailing lists, communities of practice, newsletters, social media, and new tools.

Status: We are posting new content daily to the Facebook and Twitter accounts. The VectorWorks Twitter account (@vectormalaria) had 704 followers at the end of Quarter Four, and the VectorWorks Facebook page had 930 likes. Facebook and Twitter continue to bring visibility to VectorWorks. We gain new followers daily and create innovative content to bring in new followers/likes. PhotoShare is up-to-date with our photographs of Year Four activities. Currently, we have several blog posts and success stories in the works and have published nine in Year Four and one photostory through Exposure.co. For additional exposure, VectorWorks was featured in four CCP articles on ccp.jhu.edu.

Twitter Monthly Statistics, October 1, 2017–September 30, 2018, Total Followers = 704

Monthly	New Followers	Impressions	Profile Visits
October	21	8,254	325
November	27	18,500	518
December	3	4,896	177
January	12	10,200	248
February	8	6,877	482
March	14	8,211	322
April	32	12,300	379
May	14	5,568	187
June	16	4,955	124
July	16	5,741	114
August	6	4,170	232
September	6	5,524	134

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: PM.2.B.1, Internal procedures manual; PM.2.B.2, Dissemination strategy; PM.2.4, Contact list. Completed in Year 2: PM.2.B.3–6, Newsletter, contact list, social media, and PhotoShare update. Due to substantial overlap, PM.2.B.8 (blog posts) are now included within PM.2.B.7 (success stories).				
3. Newsletter	RBM partners and working groups, other vector control actors	Ongoing, quarterly	Electronic mailing lists, social media	Quarter 1: January 3 Quarter 2: April 12 Quarter 3: June 14 Quarter 4:

				September 27
5. VectorWorks Twitter and Facebook accounts	RBM partners and working groups, other vector control actors, PMI	Ongoing, monthly	Social media	On schedule
7. Blog posts and success stories	PMI, implementing partners	Ongoing	Social media, electronic mailing lists	On schedule
9. Success stories production schedule	PMI	Quarter 1	Email to PMI	Approved by PMI: June 12, 2018

PM.2.C American Society of Tropical Medicine and Hygiene

Brief activity description: The ASTMH Annual Meeting is an opportunity for researchers and programmatic staff to share best practices and discuss challenges and successes with their peers. Malaria investigators from around the world attended the 2017 ASTMH Annual Meeting on November 5–9, 2017, in Baltimore, Maryland. VectorWorks submitted abstracts for oral presentations and posters and organized a lunch to discuss field issues with durability monitoring investigators.

Status: Nine VectorWorks team members attended the meeting, representing CCP Baltimore, CCP Tanzania, PSI, and Tulane University. The project director, Dr. Koenker, delivered an oral presentation on ITN indicators titled, "Population Access to ITN is a better indicator of universal coverage than household ownership of 1 ITN for 2 people." In addition, VectorWorks shared project work with nine posters:

- Quantifying seasonal patterns of ITN use across sub-Saharan Africa
- Streamlining operations and reducing costs in school ITN distribution in Tanzania: 2013–2017
- Costs of continuous ITN distribution channels: a multi-country case series
- Characteristics of households that have purchased nets in six countries in sub-Saharan Africa
- Challenges and recommendations for urban ITN distribution via mass campaigns
- Feasibility assessments for continuous ITN distribution in Kenya and Guinea
- "Sleep is leisure for the poor"—understanding perceptions, barriers, and motivators to net care and repair in southern Tanzania
- Beneficial, neutral, or harmful: repurposing of worn out mosquito nets in Malawi
- Climate change, poverty and hunger: drivers behind the misuse of ITNs for fishing in Malawi

The durability monitoring investigator's lunch took place on November 6, 2017; 35 durability monitoring investigators, program staff, and PMI resident advisors participated in the event. Participants discussed how to interpret the data for programmatic use, field challenges, and data sharing and dissemination. Participants were very positive about the event. VectorWorks followed the event with a durability monitoring webinar in December 2017 that discussed many of the same challenges and questions mentioned during the meeting.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 2: PM.2.C.1, Trip report. Completed in Year 3: PM.2.C.2, Trip report.				
3. Trip report, including outcomes from durability monitoring investigators meeting and LLIN Priorities meeting	AOR	Quarter 1	Email	Acknowledged by PMI: February 27, 2018

PM.3 Gender Aspects of ITN Distribution and Use

[Completed in Year 1: PM.3.A Gender analysis; PM.3.B Gender strategy.]

[Canceled in Year 2: PM.3.C Gender Analysis Toolkit for Country-Level ITN Distribution Programs.]

[Completed in Year 2: PM.3.D Gender Trainings for VectorWorks Field Staff.]

[Completed in Year 3: PM.3.E Gender Reporting for Year 3.]

PM.3.F Gender Reporting for Year Four

Brief activity description: In Year Four, VectorWorks built on our work in the first three years to systematically integrate gender across project activities and operations. VectorWorks' gender team developed and provided a checklist to VectorWorks staff and partners for incorporating gender into activities at the Year Four Partners' Meeting in June 2017. The checklist included suggestions for gender considerations and integration for research and programmatic activities, as well as for workshops and events. As the planning and implementation progressed, the gender team met with project staff throughout the year to provide feedback and guidance on gender considerations for activities.

Status: VectorWorks integrated gender across key technical areas, facilitated training, and disseminated gender work. This included investigating how gender norms can impact the risk of malaria exposure, ITN use, and misuse, and a multi-country analysis of age and gender trends in insecticide-treated net use in sub-Saharan Africa. Members of VectorWorks' gender team facilitated a gender training at CCP in February 2018 for approximately 15 staff members, including two from the VectorWorks team. VectorWorks published a blog post in November 2017 highlighting the work of the Ghana gender champions, who were selected in Year 2. Program Officer, Mr. Eric Filemyr, gave an oral presentation on gender and malaria at the SBCC Summit in Indonesia on April 17, 2018, highlighting examples from the VectorWorks project. In June 2018, the gender team provided a presentation at the Year Five work planning meeting on VectorWorks' gender work to-date, and facilitated a group activity to identify additional opportunities to strategically integrate gender and disseminate the project's gender work in Year Five.

Deliverables	Audience	Timing	Dissemination Plan	Status
Gender report section in semiannual reports; completion rate and description of activities	PMI	Quarters 2 and 4	Semiannual reports	Included herein

PM.4 Project Communications, Coordination, and Reporting

Brief activity description: The VectorWorks project implements robust systems to coordinate its own staff, assess its performance, and document progress.

Status: VectorWorks continues to meet every week to review pertinent administrative, technical, and operational aspects of the project. We submit financial reports quarterly, and we submit narrative progress reports twice a year. Oversight, planning, and management of collaborative activities in many of our country programs benefit from supervisory visits by either the project director, senior technical advisor, or program officer leads. Generally, we incorporate supervisory visits into technical assistance trips. During this reporting period, while not all financed through core funding, VectorWorks staff made trips to Angola, Ghana, Guinea, Tanzania, and Zambia. The Project Director went on two core-funded supervision-specific trips to Tanzania and Ghana. The senior management team meets weekly to discuss all issues around oversight, planning, and management of the project.

Deliverables	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: PM.4.5, CCP worldwide meeting, PM 4.6, Finance orientation for subaward monitoring. Completed in Year 2: PM.4.10, Project supervision Ghana trip report. Completed in Year 3: PM.4.11, Financial training workshop for field officers on compliance and new Office of Management and Budget regulations.				
1. Weekly internal conference call (annotated agendas)	VectorWorks team	Weekly	Share by email	On schedule
2. Weekly coordination call with PMI project director/deputy director (minutes)	AOR, project director, deputy director	Weekly	Share by email	On schedule
3. Annual project work plan planning meeting	Partners, PMI project team	Quarter 4	PMI project team	On schedule
4. Internal planning meeting	CCP VectorWorks team	Quarter 3	n/a	On schedule
7. Bimonthly PMI update meetings	PMI	Bimonthly	PowerPoint	On schedule
8. Narrative progress reports	PMI	Due from partners end of October and end of April; due to USAID on November 15 and May 15	Share by email	On schedule
9. Financial reports	PMI	Quarterly	Share by email	On schedule

10. Project supervision (trip report)	AOR, PMI Ghana, PMI Tanzania	Quarter 3	Email	On schedule

PM.5 Leadership and Strategic Health Communication Workshop

[Completed in Year 2.]

PM.6 Production Schedule for Success Stories

[Completed in Year 3; now included as standard part of PM.2.B.]

PM.7 Writing Retreats

Brief activity description: VectorWorks continues to have key deliverables each year that require focused writing time—away from the daily flood of emails, meetings, phone calls, and urgent requests. While we have increased staff to relieve some of this pressure, we believe that scheduling protected writing time is the only way to effectively move forward on the many written manuscripts and analyses that we need to complete to move ITN policy forward.

Status: Since the beginning of Year Four, VectorWorks has held 11 one-day writing retreats that included intense writing and deliverable completion. Following are the exact dates:

- Friday, November 17, 2017
- Friday, December 8, 2017
- Thursday, February 15, 2018
- Friday, March 16, 2018
- Friday, April 13, 2018
- Friday, May 15, 2018
- Friday, June 29, 2018
- Thursday, July 12, 2018
- Friday, August 17, 2018
- Friday, September 7, 2018

PM.8. Participation in the 2017 Roll Back Malaria SBCC Working Group Meeting

[Completed in Year 3.]

Cost Share Update

As of September 30, 2018, we calculated the cost share contributions for VectorWorks (see table). With the signature of the UK Department for International Development (DFID) grant for the Private Sector Malaria Prevention (PSMP) project in Ghana on July 27, 2015, we anticipate meeting 100% of VectorWorks cost share requirements with those funds—approximately 5 million British Pound Sterling in the coming years.

Category	Description	Doc Number	Type	Valuation Method	Value	Date Added
Funded Project Cost	Entire DFID grant 116667- Oct 2014- Jun 2015 less items from prior periods	Entire grant Oct14-Jun15 less prior period amts	Other Expenses	Actual Cost	$ 549,739.13	7/27/2015
Funded Project Cost	Entire DFID grant 116667- Jul 2015-Sept 2015	Entire grant Jul15-Sep15	Other Expenses	Actual Cost	$ 328,006.44	11/2/2015
Funded Project Cost	Severance Expenses for DFID grant (116667) which were funded from discretionary	115158674	Salary	Actual Cost	$ 45,000.00	11/2/2015
Funded Project Cost	Trailing Severance Expenses for DFID grant (116667) which were funded from discretionary	115163231	Salary	Actual Cost	$ 367.76	11/2/2015
Funded Project Cost	Entire Agreement 123843 DFID PSMP - Jul 2016 - Sep 2016 Inception period invoice - fixed amount per budget		Other Expenses	Exchange rate of contractual cost	$ 2,589.75	10/31/2016
Funded Project Cost	PSI contributed Cost Share (October 2014-September 2015)		Sub-award Contribution	PSI Letter	$ 44,595.00	2/3/2017

Category	Description	Doc Number	Type	Valuation Method	Value	Date Added
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Oct - Dec 2016 (Omitted Exchange Loss)		Other Expenses	Actual Cost	$ 242,800.55	2/3/2017
Funded Project Cost	Tropical Health October 2014 - September 2016		Other Expenses	Actual Cost	$ 134,757.75	6/2/2017
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Jan - Mar 2017 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$ 302,885.61	6/2/2017
Funded Project Cost	PSI contributed Cost Share (October 2015-September 2016)		Other Expenses	Actual Cost	$140,000.00	6/29/2017
Funded Project Cost	PSI contributed Cost Share (October 2016-September 2017)		Other Expenses	Actual Cost	$237,396.00	11/10/2017
Funded Project Cost	Tropical Health October 2015 - September 2017		Other Expenses	Actual Cost	$26,887.50	11/20/2017

Category	Description	Doc Number	Type	Valuation Method	Value	Date Added
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Apr-Jun 2017 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$316,582.56	2/1/2018
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Jul - Sept 2017 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$368,173.90	2/1/2018
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Oct - Dec 2017 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$317,354.66	3/29/2018
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Jan – Mar 2018 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$417,297.59	07/13/2018
Funded Project Cost	Entire Agreement 123843 DFID PSMP- Apr – June 2018 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$391,416.42	07/13/2018
Funded Project Cost	Entire Agreement 123843 DFID PSMP- July - Sept 2018 (Omitted Fees & Exchange Loss)		Other Expenses	Actual Cost	$352,802.55	10/10/2018
Funded Project Cost	Tropical Health October 2017 - September 2018		Other Expenses	Actual Cost	$91,360.00	08/20/2018

Category	Description	Doc Number	Type	Valuation Method	Value	Date Added
Funded Project Cost	PSI contributed Cost Share (October 2017 - September 2018)		Other Expenses	Actual Cost	$379,965.00	10/24/2018
Total					**$ 4,689,978.17**	
Required cost share per VectorWorks obligations through Sept 30, 2018**					$5,098,266.10	
Percent of required cost share achieved as of September 30, 2018					91.99%***	

*Note: Required cost share is 10% of obligated costs, therefore it will change as obligation is added

**Includes funds released through September 30, 2018.

***Includes invoices for DFID through September 30, 2018.

Core Deliverables Table

This table includes active deliverables in Year Four. It does not include deliverables completed in Years One, Two, and Three.

Code	Deliverable	Status	Year Started	Date Completed (Submitted)	Date Approved
PC.1.A.4	VCWG meeting conducted	Completed	4	2/26/2018	3/5/2018
PC.1.C.8	New Challenges New Tools work stream work plan for 2017	Completed	3	4/13/2018	6/12/2018
PC.1.C.9	Presentations and trip report 2018	Completed	4		3/5/2018
PC.1.C.10	LLIN Priorities Work Stream work plan for 2018	Submitted	4	10/17/2018	
PC.1.C.11	New Challenges New Tools Work Stream work plan for 2018	In Process	4	4/13/2018	6/12/2018
PC.1.D.3	Revised AMP Toolkit	In Process	1		
PC.1.D.8	AMP Presentations 2017	Completed	4	2/26/2018	3/5/2018
PC.1.D.9	AMP trip report 2017	Completed	4	2/26/2018	3/5/2018
PC.1.D.10	Joint trip report for AMP Core Group meeting	Completed	4	9/6/2018	9/25/2018
PC.2.B.1	Manuscript on transitioning from campaigns to CD	Canceled	1		9/12/2018
PC.2.D.3	Trip reports from CRSPC and SRN meetings	No meetings held	4		
PC.3.A.6	Publishable-quality paper making the case for the population access indicator as the key universal coverage indicator for ITNs	Completed	3		8/6/18
PC.3.A.7	TBD activity to support WHO access analysis	Completed	4		2/19/2018
PC.3.B.2	Report on PMI countries utilizing the analysis plan	Submitted	3	10/19/2018	
PC.3.B.3	Updates to the source of nets report as new data are available in Year Four	Ongoing	3		
PC.3.C.1	MERG Trip report including copy of presentation(s) if on agenda	Completed	4	10/8/2018	10/14/2018
PC.4.5	Set of survey instruments	In Process	2		
PC.4.6	Summary process manual	In Process	2		
PC.4.7	Pilot test survey instruments in two sites (TBD) report	In Process	2		
PC.4.8	Final decision tree	In Process	2		

Code	Deliverable	Status	Year Started	Date Completed (Submitted)	Date Approved
PC.4.9	Complete net misuse toolkit	In process	2	7/18/2018	
PC.4.11.A	Trip report on Oxford policy meeting and FAO visit	Completed	3	2/26/2018	
PC.4.11.B	Workshop report	Canceled	3		
PC.4.12	Enforcement case study report comparing Tanzania, Malawi, Mozambique and Burundi experiences	Completed	4	9/14/2018	9/24/2018
PC.4.13	Report summarizing opportunities for broader partnership with implementing partners from other sectors	In Process	4		
PC.6	Working paper on alternative distribution strategies in urban areas	Completed	2	5/23/2018	7/30/2018
ME.1.3.E-G	Modeling work using pooled Durability Monitoring data	Completed	3		3/15/2018
ME.1.5	Develop an index for environmental and behavioral risk	In Process	3		
ME.1.6	Develop thresholds for action based on key results at each monitoring assessment	Completed	3	2/28/2018	6/13/2018
ME.1.8	ASTMH durability monitoring principal investigators' meeting	Completed	4		11/6/2017
ME.1.9	DM capacity-strengthening case study	In Process	4		
ME.1.10	Webinars promoting use of standardized processes and tools and data interpretation	1st webinar completed	4		12/7/2017
ME.1.11	Insecticidal content and bioassay testing for ABCDR stored nets	In Process	4		
ME.2.B.5	Quarterly newsletter alternative vector control tools	Ongoing	4		
ME.3.A.3	Ghana health facility costing update	Completed	1	2/23/2018	9/25/2018
ME.3.A.6	Mainland Tanzania Health Facility Costing	Submitted	3		
ME.3.A.7	Summary manuscript for continuous distribution costs based on deliverables 1–6	In Process	3		

Code	Deliverable	Status	Year Started	Date Completed (Submitted)	Date Approved
ME.3.A.8	Manuscript of meta-analysis comparing continuous distribution and mass campaign costs	In Process	3		
ME.3.A.9	Manuscript connecting continuous distribution costs to transmission modeling	In Process	3		
ME.3.A.10	Tanzania: Costing SNP5 and comparison to SNP2: measuring the gains of learning by doing	Submitted	4		
ME.3.B.4	Discreet Choice Experiment (DCE) paper #2	Canceled	3		7/20/2018
ME.5.B.2	Manuscript on Ghana school distribution pilot	Completed	1		3/23/2018
ME.5.B.5	Webinar summarizing results of published studies	Completed	4		10/1/2018
ME.5.B.6	Evidence review at VCTEG	Postponed	4		
ME.6.6	Nigeria Cross River schools published	Completed	1	Accepted by journal 1/10/2018	
ME.6.7	Hole Index Methods paper published	Canceled	1		9/12/2018
ME.7.2	Subnational use of use:access ratio published	In Process	1		
ME.7.6	Updated PMI report on access indicator showing stratification by region, season, and risk group, with updated maps	Ongoing	4		
ME.11	Publishable review of literature on outdoor malaria transmission	Resubmitted	2	9/10/2018	
ME.12	Revised Malaria SBCC Indicator Guide	Completed	4		9/28/2017
ME.14.1	Planning memo for expected attendees and outputs of an African Outdoor Transmission Network workshop	Completed	3	4/13/2018	6/12/2018
ME.14.3	Report on key outcomes of the residual malaria transmission workshop	In Process	4		6/12/2018
ME.15	Counterfeit Nets: Summary report from three countries; recommendations for next steps	In Process	3		

Code	Deliverable	Status	Year Started	Date Completed (Submitted)	Date Approved
ME.16.1	Ghana 2014 DHS report on ITN use	Completed	3		10/19/2017
ME.16.2	Nigeria 2015 MIS report on ITN use	Submitted	3	2/7/2018	6/12/2018
ME.17	Publishable-quality paper on who buys nets, a multi-country analysis	In Process	3		
ME.18	Publishable-quality paper on age and gender patterns of ITN use, a multi-country analysis	Completed	4		9/12/2018
ME.19	NetCalc Lite	In Process	4		
ME.20.1	Report on Phase 1 methods and results	In Process	4		
ME.20.2	Phase 2 research protocol	Canceled	4		9/12/2018
ME.21	Digital Health Technologies for ITN Distribution	In Process	4		
IM.8.3	Decision Tree for ITN Distribution	Submitted	4	8/10/2018	
IM.11	Minimum Data Requirements for Mass Campaigns report	Completed	3	9/10/2018	9/25/2018
IM.12.1	AMP Mass Distribution Toolkit – text for chapter on communications	Completed	3	10/11/2018	10/14/2018
IM.12.2	AMP Mass Distribution Toolkit – text for microplanning section	Completed	3	10/11/2018	10/14/2018
IM.12.3	AMP Mass Distribution Toolkit – text for advocacy section	Completed	3	10/11/2018	10/14/2018
IM.12.4	AMP Mass Distribution Toolkit – text for the training section	In Process	3		
IM.13.A.1	Translated training materials in English, French, and Portuguese	Canceled	4		
IM.13.A.2	AMP consultant training report	Completed	4	3/30/2018	6/12/2018
IM.13.B.1	Regional AMP NMCP Partner Training curriculum	In Process	4		
IM.13.B.2	Finalized training materials in English and French	In Process	4		
IM.13.B.3	Anglophone training report, Francophone training report	In Process	4		
IM.14	Report on operational	Canceled	4		6/12/2018

Code	Deliverable	Status	Year Started	Date Completed (Submitted)	Date Approved
	considerations for various mosaic or rotation distribution strategies being modeled for next-generation nets				
IM.15.1	Facilitate 5 webinars or conference calls for Vector Control and M&E task forces	In Process	4		
IM.15.2	RBM SBCC M&E Tools rebranding	In Process	3		
IM.15.3	SBCC Toolkit for ITNs	In Process	4		
IM.15.4	Consensus statement for ITN repurposing	Completed	4	10/8/2018	10/14/2018
PM.2.A.1	Website	Ongoing	1		
PM.2.B.3	Newsletter	Ongoing	2		
PM.2.B.5	VectorWorks Twitter and Facebook Account	Ongoing	2		
PM.2.B.7	Blog posts	Ongoing	3		
PM.2.B.9	Success stories for PMI	Completed	4	3/22/2018	6/12/2018
PM.2.C.3	Trip report, including outcomes from durability monitoring investigator's meeting, and LLIN Priorities meeting	Completed	4		2/27/2018
PM.3.F	Gender report section in semiannual reports; completion rate and description of activities	Completed	4		
PM.4.1	Weekly internal conference call agendas	Ongoing	1		
PM.4.2	Weekly PMI/VectorWorks coordination call	Ongoing	1		
PM.4.3	Annual work plan meeting	On schedule	1		
PM.4.4	Internal planning meeting	On schedule	1		
PM.4.7	Bimonthly PMI update meetings	Ongoing	1		
PM.4.8	Narrative progress reports	Ongoing	1		
PM.4.9	Financial reports	Ongoing	1		
PM.7	Writing retreats	Ongoing	3		

Environmental Monitoring and Mitigation Report (EMMR)

VECTORWORKS COOPERATIVE AGREEMENT (VMCA)
Environmental Monitoring and Mitigation Report (EMMR) EMMR part 3 of 3: Reporting form

List each Mitigation Measure from column 3 in the EMMR Mitigation Plan **(EMMR Part 2 of 3)**	**Status of Mitigation Measures**	**List any outstanding issues relating to required conditions**	**Remarks**
1. APPLIES ONLY IN COUNTRIES WHERE VECTORWORKS DISTRIBUTES LLINS AND IS RESPONSIBLE FOR BCC MESSAGING: Appropriate BCC messaging is distributed with LLINs	**GHANA:** Education through schools and health facilities on correct method of washing ITNs (per WHO guidelines): • In Year 4, VectorWorks distributed 23,204 copies of the teacher's communication guide to 11,602 primary schools in the 7 regions targeted for school SBCC. • A total of 1,416,295 pregnant women who reported at ANC clinics and mothers/caregivers of children due for measles 2/rubella vaccine at CWCs were educated on ITN use and care using the SBCC materials. • VectorWorks trained 17,202 Ghana Education Service district and circuit officers, as well as school health teams on skills to effectively incorporate education on malaria and its prevention into the primary schools SBCC activities.	• Washing ITNs in streams, rivers, and ponds that serve as a water source for communities. • Using ITNs to sieve cassava dough or cover fruits and food crops.	From 2017-2018, 6,005 health facility ITN distribution points in the country received the Handbook for Health Workers at Antenatal Care and Child Welfare Clinics. This handbook has key messages on ITN use and care, which includes messages on proper ITN washing practices. VectorWorks distributed posters and reminder cards on the key facts on ITN use and care to primary schools for use as part of the school SBCC program.

List each Mitigation Measure from column 3 in the EMMR Mitigation Plan (EMMR Part 2 of 3)	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
	GHANA: Coordination: In Year 4, the NMCP and partners (including VectorWorks) implemented the 2018 mass ITN distribution. The target was to distribute up to 15 million ITNs to households in 9 regions (All regions except Upper West Region). VectorWorks stressed the need to include messages on proper ITN washing, consistent with WHO recommendations, and guidance on appropriate disposal of plastic ITN packaging material. The specific messages centered on: -Effect of disposal of insecticides (through net washing) on aquatic life and pollution. -The importance of washing nets in basins and not in water bodies and appropriate disposal of water after washing. These messages were incorporated in the mass campaign SBCC toolkit and used during training of regional, district, and sub district SBCC focal persons and community mobilizers.	• Disposing water into rivers and ponds after washing ITNs • Using ITNs for fishing and covering of food crops • Inappropriately disposing non-biodegradable plastic ITN packaging material	Key talking points were printed on "Reminder cards" for use by SBCC attendants at all ITN distribution points during the mass campaign to remind community members of the importance of proper ITN use and care. SBCC training slides for the mass campaign, developed with support from VectorWorks, highlighted the importance of appropriate disposal of water after washing ITNs, which included strict caution against disposal into rivers and other freshwater bodies. The training also highlighted the importance of appropriate disposal of plastic ITN packaging material, by

List each Mitigation Measure from column 3 in the EMMR Mitigation Plan (EMMR Part 2 of 3)	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
			burying it at landfill sites, and cautioned against the use of ITNs for fishing and garden fencing.
	TANZANIA: In Year Four, VectorWorks was tasked by PMI with net promotion messages. These were conveyed using radio spots and experiential activities (road shows), which were implemented by the sub-contractor Pijei Amusement Company Limited. The Environmental Mitigation Monitoring Plan (EMMP) requires that messages on LLIN washing promote use of basins (or a similar container) for washing and not in water streams. A total of 772,941 people (314,073 males and 458,868 females) were reached through road shows with messages on consistent and proper ITN use, care and repair as well as washing of ITNs in non-water masses. In mainland Tanzania, a total of 645,888 people were reached through community road shows designed for promotion of re-introduced health		VectorWorks will continue to provide SBCC related to promoting appropriate ITN use (including washing behaviors) in Year Five of the project.

List each Mitigation Measure from column 3 in the EMMR Mitigation Plan (EMMR Part 2 of 3)	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
	facility based distribution in 7 regions (Katavi, Kigoma, Morogoro, Pwani, Shinyanga, Simiyu, and Tabora) and 49 district councils, while in Zanzibar, awareness and promotion activities covered 5 regions and a total of 11 district council reaching an aggregate of 127,053 people. Zanzibar activities began in the second half of YR4.		
	Guinea: 713 total reached through SBCC messages on ITN use and care, particularly washing of nets. This was through training and workshops of prefectural focal persons, health facility staff, and school directors and teachers.		
2. APPLIES ONLY IN COUNTRIES WHERE VECTORWORKS DISTRIBUTES LLINS AND IS NOT RESPONSIBLE FOR BCC MESSAGING: Active coordination with BCC partner to ensure messaging is adequate and comprehensive.	N/A – this year, VectorWorks was responsible for the BCC messaging where we delivered nets.		
3. APPLIES ONLY IN COUNTRIES	In the Durability Monitoring Baseline		This is consistently included

List each Mitigation Measure from column 3 in the EMMR Mitigation Plan (EMMR Part 2 of 3)	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
WHERE VECTORWORKS IS ASKED TO CONDUCT A SURVEY, AND/OR HELP DESIGN A SURVEY, THAT COVERS LLIN USE: Measure LLIN care/use practices	Questionnaire, there are few questions that measure LLIN care/use practices to help understand washing procedures and net care. However, one question really looks at how nets are being washed which is line with the EMMP. The question is: • Q67: What is the recommended way to wash a mosquito net? The possible answers are, with EMMP relevant bolded: • Gently • **In a basin** • With mild soap • Only when dirty • No more than once every 3 months • **Not in the stream** • Other, specify:		in our Durability Monitoring Baseline questionnaire. In Year Four, we used this survey in Liberia and Kenya.
	The Evaluation of pilot school ITN distribution in Boké region, Guinea survey included standard questions around net use. One question examined how the household was washing their nets. The question is:		

List each Mitigation Measure from column 3 in the EMMR Mitigation Plan (EMMR Part 2 of 3)	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
	• Q58: How do you usually wash this net? The possible answers are, with EMMP relevant bolded: • Gently • **In a basin** • With mild soap • Only when dirty • No more than once every 3 months • **Not in the stream** • Other, specify:		
4. PROJECT-WIDE: Development of environmental mitigation and monitoring plan	Plan was developed and finalized in July 2015.		
5. PROJECT-WIDE: Development and implementation of environmental mitigation and monitoring report.	Submitted as part of annual report November 2018.		

ANGOLA

AN.IM.1 ITN Strategy Support

[Completed in Year Three.]

AN.IM.2 Technical Assistance for ITN Distribution

[VectorWorks recoded activity AN.IM.2 as activity AN.IM.3 in Year Three. PMI approved the modification on January 30, 2017.]

AN.IM.3 Technical Assistance for Mass ITN Campaign

[Completed in Year Three.]

AN.IM.4 Communications Strategy and SBCC Materials

[Completed in Year Three.]

AN.IM.5 Evaluation for Mass ITN Campaign

[Completed in Year Three: AN.IM.5.A Process Evaluation for Mass ITN Campaign.]

AN.IM.5.B Post-Mass ITN Distribution Campaign Survey and Workshops

Brief activity description: In Year Three, VectorWorks completed a process evaluation of the first round of the insecticide-treated nets (ITN) mass distribution campaign. To further inform future phases of the mass ITN campaign, as well as future mass ITN campaigns, VectorWorks will conduct two lessons learned surveys and lessons learned workshops.

Status: VectorWorks contracted with a local and international consultant at the end of 2017 to support the lessons learned survey and workshops and created a draft post-campaign survey and workshop tools in January 2018.

VectorWorks completed a process evaluation in Phase I of the campaign. PMI agreed that VectorWorks would not implement lessons learned workshops in Phase II of the campaign and would implement two workshops—one in Huambo and one in Cuando Cubango—during Phase III of distribution. Phase III of the campaign, unfortunately, was delayed because of insufficient ITNs. VectorWorks, therefore, delayed its lessons learned survey and workshop to align with the delayed implementation of the mass ITN campaign.

VectorWorks completed the first of two lessons learned informal surveys at the end of July 2018 in Huambo. The informal survey was conducted via telephone with municipal- and provincial-level workshop participants and explored the primary lessons learned from the campaign. VectorWorks used the findings to inform topic areas for exploration during the implementation of the first lessons learned workshop in Huambo in August 2018. The National Malaria Control Program (NMCP) supported implementation of the activity and PSI, the campaign implementing partner, was actively involved. The workshop included individuals from the municipal and provincial campaign involved in communications, household registration, logistics, and distribution from both the municipal and provincial levels. A report that included the key findings and recommendations was submitted to PMI on August 24, 2018.

Participants in the Huambo lessons learned workshop reported good mobilization of community members and an ability to adapt to the changing demands of the campaign. The participants also described how the limited resources for the campaign created challenges for implementation and emphasized the need to strengthen internal communication between the campaign stakeholders.

The second lessons learned survey and lessons learned workshop will be completed in Quarter One of Year Five in Cuando Cubango.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Workshop briefs (x2)	PMI, NMCP, implementing partners	Quarters 2 & 3	Email PMI, NMCP, and implementing partners	Submitted August 24, 2018 and Cuando Cubango delayed to Quarter 1, Year 5
2. Campaign lessons learned report	PMI, NMCP, implementing partners	Quarter 4	Email PMI, NMCP, and implementing partners	Delayed to Quarter 1, Year 5

AN.IM.6 ANC ITN Distribution Support

AN.IM.6.A Field Assessment and Implementation Guidelines of ANC/EPI ITN Distribution

Brief activity description: VectorWorks worked with the NMCP, donors, and implementing partners to conduct a field assessment of ITN distribution through ANC and the Expanded Programme on Immunization (EPI) services. VectorWorks, the NMCP, donors, and implementing partners used the findings of the field assessment to develop implementation guidelines for ANC and EPI ITN distribution.

Status: PMI requested that VectorWorks add EPI into the originally programmed assessment of ANC ITN distribution.

VectorWorks developed an agenda, terms of reference, and an assessment guide for the field assessment. These documents were submitted to PMI on February 27, 2018, and shared with the NMCP for feedback; final versions were submitted on July 25, 2018. To prepare for the implementation of the assessment, VectorWorks gathered resources at the national level and conducted a site visit to Lunda Sul in March 2018 with PMI. During the site visit, VectorWorks conducted preliminary observations and gathered implementation tools.

From June 25 to July 20, VectorWorks completed the assessment of the ANC/EPI ITN distribution systems in Angola. The assessment included key stakeholder meetings and a field visit in Huambo, Malanje, and Lunda Sul provinces at the provincial-, municipal-, and health facility–levels. The NMCP, the Sexual and Reproductive Health Department (DSSR), the Expanded Program on Immunization (PAV), and PSI were active participants in the field assessment.

The findings of the assessment were used during a one-day writing workshop to draft ANC/EPI ITN distribution guidelines. Participants included VectorWorks, the NMCP, DSSR, and the Health Promotions Department. Unfortunately, PAV was unable to participate in the initial draft writing, but VectorWorks had an individual meeting with the representative and director of PAV to receive feedback and inputs into the guidelines.

The guidelines describe the planning, coordination, logistics, distribution, SBCC, reporting, monitoring, and training for ANC and EPI distribution. It emphasizes the need for early planning and a strong coordination mechanism led by the NMCP. Additionally, it highlights the need for integration of activities across departments and the use of existing structures to encourage sustainability.

The draft distribution guidelines were presented to the larger stakeholder group on July 13, 2018, and further revisions and inputs were completed the following week. The NMCP circulated the final draft ANC/EPI ITN distribution guidelines to key stakeholders for feedback in August 2018. The guidelines will be finalized in coordination with the NMCP in Quarter One of Year Five.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Field assessment tools	PMI, NMCP, implementing partners	Quarter 1	Email PMI, NMCP, and implementing partners	Submitted to PMI: July 25, 2018
2. PowerPoint presentation of preliminary findings and outline of draft implementation guideline outline	PMI, NMCP, implementing partners	Quarter 3	In-person presentation and email to PMI, NMCP, implementing partners	Delayed to Quarter 1, Year 5
3. Field assessment report	PMI, NMCP, implementing partners	Quarter 3	Email PMI, NMCP, implementing partners	Submitted to PMI: July 25, 2018
4. Final draft of implementation guidelines for ANC and EPI ITN distribution	NMCP, PMI, implementing partners	Quarter 3	In-person presentation and email to PMI, NMCP, implementing partners	Submitted to PMI: July 25, 2018

Program Management

AN.PM.1 Work Plan and Reporting

VectorWorks will work with the U.S. Agency for International Development (USAID) and PMI Angola to draft an annual work plan before the start of each year. VectorWorks understands that we may need to provide information, as needed, for the PMI annual reports, strategic planning, VIP visits, and congressional reports.

Deliverable	Audience	Timing	Dissemination Plan	Status
Year 4 work plan	PMI	Quarter 1	Email to PMI	Approved by PMI: October 27, 2017
Quarterly financial	PMI	Quarters 1–4	Email to PMI	On going

reports				
Semiannual progress report	PMI	Quarter 3	Email to PMI	Approved by PMI: July 18, 2018

BENIN

BE.1 Assistance to Outdoor Sleeping and Net Use Study

Completed in Year Four. Approved April 3, 2018 by mission.

BE.2 Integrated Vector Control Strategy

Brief activity description: Malaria cases have declined in Benin during the past 10 years. The country, which is committed to sustaining the gains, is moving toward pre-elimination between 2030 and 2040. To support that progress, VectorWorks will conduct an integrated vector control assessment to help the Benin National Malaria Control Program (NMCP) determine which vector control measures are likely to work best in the country's different environmental zones. This assessment will guide the medium term—the next two to three years—and will include cost-effectiveness information for the positive and negative aspects of each measure, where available.

Status: The strategy workshop is complete and PMI acknowledged the trip report on June 13, 2018. During ongoing discussions with PMI Benin, VectorWorks will continue to work with the NCMP and the President's Office on activity BE.3 (see below). The completed report for this activity will include options for malaria vector control in Benin.

Deliverable	Audience	Timing	Status
BE.2.1 Brief memo assessing options for malaria vector control in Benin's varying epidemiological zones	NMCP and PMI	Year 5, Quarter 1	Delayed to Quarter 1
BE.2.2 Facilitation of two-day strategy workshop in Cotonou to present and discuss findings and recommendations	NMCP and PMI	Quarter 2	Completed in Year 4, Quarter 2

BE.3 Malaria Impact Simulation Modeling

Brief activity description: Following the in-country workshop in Benin to discuss preliminary findings for a Benin-specific Integrated Vector Control Strategy, VectorWorks learned that Benin's President's Office is working toward an integrated strategy to eliminate HIV/AIDS, tuberculosis, and malaria by 2030. The President's Office, in coordination with the NMCP and PMI, requested VectorWorks' assistance to provide simulated modeling data for an integrated strategy, looking toward what targeted interventions are needed for the 2030 elimination. The Swiss Tropical and Public Health Institute (STPHI), a member of the VectorWorks consortium, will model the data, looking toward elimination, to provide the President's Office and the NMCP documentation to support the selection of strategies and interventions to move Benin closer to its 2030 elimination target.

Status: Beginning in May 2018, VectorWorks, PMI Benin, the NMCP, and consultants working for the President's Office began discussing the requested modeling work. To begin, VectorWorks supplied the in-country team with data collection templates that needed to be completed before the modeling work could begin. There were some delays in collating the data collection forms; some of the data were more challenging to collect, especially at the regional or health facility level. After all the data were collected, VectorWorks, through STPHI, completed a several week-long process of setting the parameters and running the data through the modeling tool.

A meeting of the Scientific Committee, where VectorWorks would present the modeling data, was scheduled for mid-September. After making travel arrangements, this meeting was canceled. However, Ms. Emilie Pothin, of STPHI, traveled from Geneva to Cotonou to meet with the in-country team during a two-day meeting to talk through the results, their implications in Benin, and additional data that will be needed to make any programmatic and policy changes.

Following this two-day meeting with the in-country team, VectorWorks and PMI Benin decided that VectorWorks would continue to work on additional modeling scenarios during the next several months. At this time, the scheduled work is on track.

Deliverable	**Audience**	**Timing**	**Status**
BE.3.1. Travel to Cotonou for dissemination workshop	NMCP, PMI	Year 4, Quarter 4	Completed Year 4, Quarter 4
BE.3.2. Initial modeling analysis report	NMCP, PMI	Year 5, Quarter 1	On time
BE.3.3. Final report	NMCP, PMI	Year 5, Quarter 3	On time

DRC

DRC.1 ITN Durability Monitoring

Brief activity description: VectorWorks supports insecticide-treated nets (ITNs) durability monitoring in the Democratic Republic of Congo (DRC) at two sites: the provinces of Sud-Ubangi and Mongala, which share a border. VectorWorks primary monitoring and evaluation partner—Tropical Health—with local partner, Kinshasa School of Public Health (KSPH), completed baseline data collection in October 2016. All campaign ITNs in these households were labeled with a unique identification number for follow up and analysis.

To assess the physical and insecticidal status of cohort ITNs, the KSPH team will continue to conduct data collection annually until 36 months post-distribution. At each follow up, data collectors also select a sample of 30 additional campaign ITNs from each monitoring site for a laboratory assessment of insecticidal effectiveness (bioassay). At all follow-up points, KSPH data collectors monitor environmental and behavioral risk factors for ITN durability. The ITN brands being monitored are the polyester DawaPlus 2.0 and the polyethylene DuraNet.

Status: VectorWorks has completed data collection through 24-month follow up. Data collectors completed fieldwork for the 24-month follow up on May 30, 2018; VectorWorks submitted a preliminary 24-month follow up report to PMI on August 24, 2018; this report included all collected data except the bioassay results. Bioassays are currently in process and VectorWorks will include those results in the final 24-month report, when they become available. After 24 months of follow up, ITN median survival is reported as 1.9 years in Sud-Ubangi and 1.4 years in Mongala. VectorWorks plans to conduct the final round of data collection in February 2019.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 3: DRC.1.1 Baseline report. Completed in Year 4: DRC.1.2 12-month report. Completed in Year 4: DRC.1.3 Data Analysis Workshop Report				
4. 24-month report	PMI, NMCP, implementation partners	Quarter 1	Share by email with PMI	Preliminary report shared with PMI: August 24, 2018
5. 36-month report	PMI, NMCP, implementation partners	Quarter 3	Share by email with PMI	On schedule

DRC.2 School ITN Distribution Technical Assistance

[Completed in Year Three.]

DRC.3 School ITN Distribution Technical Assistance (Year Four)

Brief activity description: This activity follows the successful completion of deliverable DRC.2, which was Year Three technical assistance in school-based distribution planning and the production of a school-based distribution implementation guide. For Year Four, PMI-DRC requested that VectorWorks provide additional

assistance to the United Nation Children's Fund (UNICEF) and the National Malaria Control Program (NMCP) in the areas of social and behavior change communication (SBCC) and evaluation of distribution. In 2018, VectorWorks will provide on-going technical assistance to UNICEF and the NMCP to design communications materials for the school-based ITN distribution program scheduled for three provinces. This work included participating in a January 2018 SBCC materials design workshop. VectorWorks will work with partners to develop a communications strategy for the school-based ITN distribution that includes messages and guidance on materials and dissemination channels. Additionally, VectorWorks will work with UNICEF and the NMCP to provide input into designing the distribution evaluation, determining what baseline data should be used, and determining which, if any, pre- and post-evaluation tools are needed.

Status: Following Ms. Sara Berthe's technical assistance visit to Kinshasa, in January 2018, to participate in the UNICEF and NMCP message design and materials development workshop—focusing on school-based distribution—she continued to liaise with UNICEF and the NMCP for any needed follow up. The communication materials developed during the workshop were quickly validated, printed, and disseminated in May to school-based distribution provinces.

During the same technical assistance visit in January, Ms. Berthe met with the UNICEF malaria focal point, Dr. Patience Mashako, to discuss the distribution evaluation and to share French-language protocols and questionnaires. Ms. Berthe provided French-language versions of all campaign evaluation documents. Because of the staff turnover at UNICEF, as well as the outbreak of the Ebola virus disease in the DRC, finalizing these tools in-country was delayed. VectorWorks followed up numerous times with UNICEF to determine if additional technical assistance or guidance was needed for the evaluation, protocol, and questionnaires. The documents were validated in-country between May and June 2018.

PMI DRC provided approval for this entire activity on July 31, 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Finalized SBCC messages and materials	PMI, UNICEF, NMCP	Quarter 3	Share by email with PMI	On schedule
2. Finalized evaluation methodology	PMI, UNICEF, NMCP	Quarter 3	Share by email with PMI	On schedule
3. Finalized school-based distribution assessment tool	PMI, UNICEF, NMCP	Quarter 3	Share by email with PMI	On schedule

DRC.PM.1 Work Plan and Reporting

Brief activity description: VectorWorks provides an annual work plan for approval by PMI, as well as quarterly financial and semiannual progress reports. VectorWorks understands that USAID may ask us to provide information, as needed, for the PMI annual report, strategic planning, VIP visits, congressional reports, and other purposes.

Status: On September 5, 2017, VectorWorks submitted the Year Four work plan to PMI DRC for review; it was approved on October 2, 2017. A work plan modification, to add activity DRC.3, was approved on January 22, 2018. All quarterly financial reports were submitted. This document is the Year Four semiannual report.

Deliverable	Audience	Timing	Dissemination Plan	Status
Work plan	PMI	Quarter 1	Share by email with PMI	Submitted to PMI: September 5, 2017; modification approved: January 22, 2018
Quarterly financial reports	PMI	Quarters 1–4	Share by email with PMI	On schedule
Semiannual progress reports	PMI	Quarters 2 and 4	Share by email with PMI	Herein

GHANA

Summary of Year Four Activities

In Year Four, VectorWorks' program implementation priorities focused on (1) understanding and addressing the gap between access and use of insecticide-treated nets (ITNs) through qualitative research to discover the barriers and motivators to ITN use; (2) supporting national efforts for scaling up current ITN distribution interventions to reach a larger percentage of the population through mass campaigns and continuous ITN distributions; and (3) creating partnerships with local stakeholders to promote the sustainability and transferability of successful VectorWorks activities. The project has largely achieved these objectives despite funding delays from the U.S. President's Malaria Initiative (PMI), wherein funding for the project year was not received until February 2018, and this affected the implementation of activities during Quarter One and part of Quarter Two. Despite the delay, VectorWorks completed most of its activities planned for Year Four.

VectorWorks and the Noguchi Memorial Institute for Medical Research (NMIMR) completed a qualitative study on ITN use and submitted a final report to PMI on August 27, 2018. Additionally, VectorWorks and NMIMR disseminated the key findings from the study with the National Malaria Control Program (NMCP) on July 5, 2018. The study revealed the following three key factors for low ITN use:

(a) ITNs characteristics and perceptions—itching, burning sensation, and strong chemical scent

(b) Sleeping space characteristics—heat due to restricted airflow and congestion and the perception that net use is not possible within certain context, such as outdoor or cramped sleeping spaces

(c) Perceived net use futility—sleeping under a net is pointless because of the exposure to mosquitoes before bed time and different understandings of how malaria is transmitted.

Subsequently, VectorWorks developed a memo outlining key social and behavior change (SBC) activities to address sub-target ITN use among those with access to an ITN; we shared it with PMI on July 12, 2018, and with the NCMP on August 22, 2018. Findings from the net use study will help inform malaria control SBC policy and strategy in Ghana, as well as influence SBC implementation strategies of the NMCP and other PMI-funded projects.

Throughout Year Four, VectorWorks and other partners supported the NMCP with planning *and* implementing the point mass distribution (PMD) pilot and scale up in Ghana. From September 2017 to January 2018, VectorWorks provided technical assistance to the NMCP for planning and implementing the PMD pilot in two districts each in the Volta region (South Tongu and Akatsi North) and the Eastern region (New Juaben and Asuogyaman). The pilot was needed because of the shift from paper-based household registration to electronic devices (tablets) with an app (NetApp) for data collection; it was an opportunity to identify and address challenges associated with using the app. It also informed the selection of the most appropriate mobile electronic device for household registration and ITN distribution. VectorWorks provided technical assistance in the functionality assessment of the app through VectorWorks' partner, Tropical Health. VectorWorks had a coordination and facilitation role in forming four subcommittees—planning and coordination, social mobilization, logistics, and monitoring and evaluation (M&E)—to provide critical oversight for the key components of the campaign. These subcommittees also developed materials and tools for the pilot and scale up. For the PMD scale up, VectorWorks supported training and implementation in seven regions, as of the end of September 2018 (Brong Ahafo, Central, Eastern, Northern, Upper East, Western and Volta regions); and assisted with the distribution of 10,158,227 ITNs (as at October 04, 2018, 09.45 hrs.). In Year Five, the campaign will continue in the final two regions—Ashanti and Greater Accra—with an expected completion by the end of December 2018.

VectorWorks, NCMP, and partners increased access to ITNs through health facilities for continuous distribution at child welfare and antenatal clinics in all 10 regions of the country by ensuring the delivery of a year's worth of stock to health facilities in 9 out of 10 regions. Plans are underway to supply the Upper West region with adequate stock to last for one year, as well. VectorWorks provided funding between April and August 2018 for one round of supportive supervision by district monitoring teams in 8 of the 10 regions: Ashanti, Brong Ahafo, Central, Eastern, Northern, Upper East, and Upper West, and Volta. The district monitoring teams visited 3,980 health facilities and coached 10,990 staff; 4,084 (37%) coached staff were new and had not been previously trained or coached. The district monitoring teams used a checklist to assess health facility performance in logistics and supply chain management, including updating bin cards and providing suitable storage spaces for ITNs, and ensuring continuous availability through prompt requisition and adherence to minimum and maximum stock levels and reorder protocols. Teams also assessed documentation for the ITNs distributed using service delivery and end-of-month reporting tools.

VectorWorks made progress in its three-year plan to train selected district officers, all circuit supervisors, head teachers, and school-based School Health Education Programme (SHEP) coordinators in all districts in Ghana, covering 11,602 public and private schools. A total of 24,366 school head teachers and SHEP coordinators in 103 districts were trained to implement effective SBCC activities that address the gap between ITN access and use in schools and the community for the 2017/2018 academic year and beyond. Trainees from all schools were tasked to form a school health team if the teams did not already exist, or make the existing teams functional. The mandate for each school health team is to develop an activity plan for health activities and education, including malaria prevention, in the school and during Parent-Teacher Association (PTA) meetings and community outreach programs. In Year Five, the project will complete a two-level cascade training for district and circuit officers, who will then train head teachers and school-based SHEP coordinators in the remaining 41 districts, which include all the districts in Greater Accra, Upper East, Upper West, and Kumasi Metro.

Policy Activities (PC)

GH.PC.1 Coordination

GH.PC.1.A ITN Subcommittee Meetings

Brief activity description: With the NMCP and partners, VectorWorks contributes to facilitating and funding quarterly ITN subcommittee meetings. The NMCP chairs this subcommittee and will fund it beginning in Year Five. The key objectives of the ITN subcommittee meetings are to discuss national ITN policies, based on all the ITN distribution activities. The subcommittee also seeks to review implementation strategies, considering the existing opportunities and challenges. In place of the regularly scheduled quarterly meetings, the ITN subcommittee organized planning and coordination meetings to prepare for the 2018 PMD and preceding pilot. For enhanced outcomes after the ITN distribution, the NMCP invited a number of partners to participate in these planning meetings.

Status: The ITN subcommittee did not have quarterly meetings during the year; however, they were replaced by meetings focused specifically on the PMD. Notable meetings were (1) the PMD planning meetings held at the Mensvic Hotel in Accra on October 12–13, 2017, to plan the PMD pilot; (2) the PMD pilot review meeting held on January 11, 2018, at Sunlodge Hotel in Accra; (3) the PMD review meeting—post-implementation of four regions—held on July 25, 2018; and (4) the PMD meeting on Ashanti region distribution strategy held on September 26, 2018. VectorWorks staff participated in all meetings and contributed to the planning and reviewing of the PMD activities.

In addition to these meetings, PMD focus area subcommittees held four additional meetings to plan and review tools for the PMD campaign. These focus area subcommittees are planning and coordination, SBCC,

logistics management, and M&E/information technology. Each subcommittee includes a representative from VectorWorks, who provided technical inputs. These four meetings resulted in the development of tools for the campaign as well as focused area planning. In addition to these meetings, post-campaign review meetings were held in each region after the distribution exercises to identify lessons for improving future campaign outcomes.

Deliverables	Audience	Timing	Dissemination Plan	Status
Quarterly reports	PMI, GHS, NMCP, ITN subcommittee members	Quarters 1–4	NMCP to share by email	Hard copies shared at meetings on January 11, 2018; and April 26, 2018

GH.PC.1.B Malaria Vector Control Oversight Committee Meetings

Brief activity description: VectorWorks continues active participation in the quarterly Malaria Vector Control Oversight Committee (MaVCOC) meetings to ensure enhanced synergies, prevent implementing partners from duplicating effort, and promote effective implementation of activities. To promote best practices, this participation will enable VectorWorks to report on and share lessons learned from its ITN continuous distribution activities with other stakeholders in the malaria vector control community. The team also has the opportunity to discuss holistic vector control strategies, taking into consideration the insecticide resistance trends documented by the National Insecticide Resistance Monitoring Project at sentinel sites around the country, including its policy implications.

Status: VectorWorks participated in three MaVCOC meetings convened by the NMCP on January 11, 2018, at the Sunlodge Hotel in Accra, July 26, 2018 and September 20, 2018, both at the NMCP conference hall. The meetings included updates on key vector control activities implemented by the NMCP and its partners during the last quarter. The NMCP shared lessons learned from the pilot implementation of the PMD campaign—using an app on mobile devices—in the Eastern and Volta regions and updates on PMD scale-up activities in Ashanti, Brong Ahafo, Central, Northern, Upper East, Western, and Volta regions. VectorWorks supported both the PMD pilot and scale-up activities. The NMIMR shared its latest report on the nationwide insecticide resistance monitoring activities, highlighting the high levels of pyrethroid resistance observed across the 10 sentinel sites around the country; however, they showed significant reversals when tests were repeated with ITNs using the pyrethroids in combination with piperonyl butoxide (PBO). VectorWorks provided updates on its activities, including funding and technical assistance, to district teams to provide supportive supervision to health facility ITN distribution in eight regions (Ashanti, Brong Ahafo, Central, Eastern, Northern, Upper East, Upper West, and Volta), support for the PMD campaign, findings from the net use and counterfeit net studies, and status of durability monitoring activities.

Deliverables	Audience	Timing	Dissemination Plan	Status
Quarterly reports	PMI, GHS, NMCP, MaVCOC members	Quarters 1–4	Shared by NMCP via email	Minutes from Quarters 1, 2, 3 meeting shared on January 10, 2018; July 20, 2018; and September 20, 2018, respectively.

GH.PC.1.C Alliance for Malaria Prevention and Vector Control Working Group Meeting in Geneva

Brief activity description: One representative from MaVCOC, the VectorWorks chief of party, and senior technical advisor participated in the Alliance for Malaria Prevention (AMP) and Vector Control Working Group (VCWG) meetings to share experiences from Ghana's continuous distribution program and the PMD campaign pilot, and to learn about ITN distribution planning and implementation from other countries. The AMP and VCWG meetings provide the vector control community—researchers, donors, policy makers, and country program managers—the opportunity to share experiences and make recommendations to policy makers for implementing vector control activities.

Status: The VectorWorks chief of party, senior technical advisor, and the NMCP M&E officer (the MaVCOC representative) participated in the 2018 AMP and VCWG meetings in Geneva from February 5–9. During the AMP and VCWG meetings, VectorWorks specifically looked for opportunities to share lessons learned from the successful 2017 school-based distribution campaign and its accompanying SBCC activities; we also learned from the experiences of other countries that have successfully implemented school-based distributions. Upon the team's return, VectorWorks shared information about the meeting with MaVCOC members to encourage participation among the broader vector control community in Ghana.

Deliverables	Audience	Timing	Dissemination Plan	Status
Trip report	PMI, GHS, GES	Quarter 2	Share by email	Trip report submitted: February 26, 2018; acknowledged by PMI: March 5, 2018

GH.PC.1.D Malaria SBCC Subcommittee Meeting Participation

Brief activity description: The NMCP's malaria SBCC subcommittee oversees malaria SBCC activities in Ghana, including activities focused on ITN distribution, use, and care. The subcommittee meetings are an important platform for influencing SBCC policy based on lessons learned and best practices. VectorWorks staff participate in these meetings to provide input on malaria SBCC policy related to ITN distribution. The meetings also enable VectorWorks to learn firsthand about new SBCC policies as they arise and to use applicable information to inform SBCC considerations for continuous distribution.

Status: The malaria SBCC subcommittee met on March 20, 2018; April 11, 2018; and April 17, 2018, in the NMCP conference room to plan for the World Malaria Day 2018, "End Malaria for Good." This year's commemoration event was held on Wednesday, April 25, 2018, at Ashaiman, near Accra, in a densely populated community, and focused on malaria, HIV/AIDS, and tuberculosis screening. The chief of party and two program officers represented VectorWorks at the SBCC subcommittee meetings and the commemoration event.

Other participants at the meetings included representatives from government institutions (Ghana Health Service public relations directorate, health promotion division), the private sector (AngloGold Ashanti malaria control, Zoomlion Pest Control & Waste Management Company[2]), the media, and PMI/USAID projects (Communicate for Health (C4H), and Systems for Health (S4H)).

[2] Zoomlion Pest Control & Waste Management Company is a private registered company in Ghana involved in waste and pest control activities.

The following committees were formed to lead specific World Malaria Day event components:

- Media events—Use existing media arrangements with C4H to promote the World Malaria Day commemoration and to create awareness of malaria prevention and control.
- Events line-up—Outline activities to commemorate World Malaria Day.
- Corporate partnership—To attract more private sector partners into the fight against malaria, identify and showcase corporate bodies implementing malaria prevention activities in media events and publications.

VectorWorks was part of the events line-up and corporate partnership committees.

Deliverables	Audience	Timing	Dissemination Plan	Status
Quarterly reports	PMI, GHS, NMCP, SBCC subcommittee members	Quarters 1–4	Shared by NMCP via email	Minutes from the meeting shared on March 26, 2018

[GH.PC.1.E West African Regional Network Meeting Participation: Canceled in Year Three]

GH.PC.1.F American Society of Tropical Medicine and Hygiene

Brief activity description: The VectorWorks Ghana chief of party planned to attend the American Society of Tropical Medicine and Hygiene (ASTMH) conference in November 2017 to network and share the successes of VectorWorks' continuous distribution activities in Ghana and to learn from other's experiences. Additionally, the chief of party would have also been exposed to new strategies for improved implementation of vector control activities to augment the work that VectorWorks is currently doing.

Status: Trip canceled in favor of PMD campaign pilot activities.

Deliverables	Audience	Timing	Dissemination Plan	Status
Trip report	PMI	Quarter 1	Share by email	Trip canceled

GH.PC.1.G Coordination with the NMCP to Inform Ghana's ITN Strategy

Brief activity description: VectorWorks started engaging the NMCP in a series of meetings to discuss the future landscape of ITN distribution in Ghana. During these meetings, VectorWorks shared information on the history of ITN distributions in Ghana since 2011, including findings from NetCALC analyses and a costing study that VectorWorks completed in Year Four. The goal of this engagement is to determine the best combination of channels and at what scale to implement them after the 2018 PMD. Ghana currently uses a combination of mass and continuous ITN distribution channels to achieve universal coverage.

Status: VectorWorks held the first meeting in March 2018 with the program manager of the NMCP and VectorWorks chief of party, senior technical advisor, and technical director. During the meeting, VectorWorks briefed the NMCP program manager, Dr. Malm, on the importance of reviewing the ITN distribution strategy to meet the country's needs, based on cost effectiveness. Dr. Malm asked VectorWorks to schedule an in-

depth follow-up discussion in Quarter Three. The proposed follow-up discussion was postponed; however, VectorWorks shared a set of PowerPoint slides with the NMCP manager on August 23, 2018 for her review, prior to the planned meeting. VectorWorks updated the slides based on Dr. Malm's feedback and is planning follow-up meetings early in Year Five.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Summary report on meetings	PMI, GHS, MaVCOC	Quarter 4	Share by email	Report shared on March 21, 2018
2. Updated ITN Strategy	PMI, GHS, MaVCOC	Quarter 4	Share by email	Pending; follow-up discussion between Hannah & Keziah scheduled for ASTMH—October 2018

Implementation and Capacity-Building Activities (IM)

GH.IM.1 Support for Health Facility–Based ITN Distribution

[GH.IM.1.A Formation and Orientation of National-Level ITN Monitoring Team. Completed in Year One.]

[GH.IM.1.B Re-orientation of Regional and District Health Management Teams for Monitoring of Health Facility–Based ITN Distribution. Completed in Years One, Two, and Three.]

GH.IM.1.C Supportive Supervision of Health Facility–Based Distribution

Brief activity description: VectorWorks continues to support routine integrated health facility–based supportive supervision by district teams in 10 regions. The aim of the supportive supervision is to address challenges faced when implementing multiple interventions at the health facility level, including those related to ITN distribution. The integrated monitoring approach ensures the judicious use of limited resources by enabling district teams to review and support other health implementation activities in the field, while also focusing on malaria prevention initiatives.

Status: The supportive supervision activity was postponed to Quarters Three and Four because of delayed PMI funding and the competing priority of the PMD. Funding of supportive supervision and technical assistance to district teams was undertaken as follows:

- Quarter Three—Ashanti, Brong Ahafo, Greater Accra, Upper East, and Upper West regions
- Quarter Four—Central, Eastern, Northern, Volta, and Western regions

Supportive supervision activities for the Western and Greater Accra regions were postponed until Year Five because of competing PMD activities and other programs of the regional health directorates. However, VectorWorks, using data from District Health Information Management System 2 (DHIMS2), provided remote support to districts in the two regions by sharing analyzed data from DHIMS2 and identifying districts with

ITN distribution performance below 80%. In these districts, antenatal care (ANC) and Expanded Programme on Immunization (EPI) (measles/rubella 2 coverage) registrants were compared with distribution data and gaps were identified; district teams followed up.

The VectorWorks team also worked with the USAID's Global Health Supply Chain-Procurement and Supply Management (GHSC-PSM) to improve the Early Warning Systems Alert (EWSA) and to use the existing database of health worker phone numbers to introduce message alerts aimed at ensuring effective stock management, documentation, and record keeping. Although the system began successfully in 2010, health worker responses to the message alerts has been extremely slow, and in most cases, there was no response. PSM, in collaboration with the Supplies Services Department of the Ghana Health Service, is currently prioritizing the set up and implementation of a comprehensive logistics management information system (LMIS), which will replace the EWSA.

Reports from district teams and VectorWorks' own monitoring reports show remarkable improvement in documentation and accountability for ITNs. In addition to other factors that may have improved reporting, data from DHIMS2 suggest that the supportive supervision focused on ITN distribution may have improved the completeness of reports for ANC from 79.3% (2016) to 89.9% (2017).[3] Inventory control cards are available to document ITNs received; service delivery record books—registers, tally books and health record cards of pregnant women and children receiving measles and rubella vaccine—are being used for documentation to indicate who received the ITNs. There's also improvement in reporting of ITNs distributed in DHIMS2 because of timely and accurate reporting of distribution monthly. Data from DHIMS2 suggest that the supportive supervision focused on ITN distribution may have stimulated improved timeliness of reporting on other indicators as well, from 18% (2015) to 92.6% (2017) for Child Welfare Clinics (CWC).

Please note that the first deliverable on the following table was submitted to PMI on October 19, 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
Report on on-site supportive supervision of health facility level ITN distribution in 10 regions	PMI, Regional Health Management Team (RHMT), NMCP, maternal and child health (MCH), EPI	Quarter 4	Share by email	Delayed to Year 5, Quarter 1
Report on the improved EWSA system as well as a number of text messages disseminated by quarter	PMI, RHMT, NMCP, MCH, EPI	Quarter 4	Share by email	Delayed to Year 5, Quarter 1

[GH.IM.1.D Regional Review. Completed in Years One, Two, and Three.]

[GH.IM.1.E Promotion of Health Facility–Based SBCC for Malaria Prevention—Integrated into GH.IM.1.C Supportive Supervision of Health Facility–Based Distribution in Year Two.]

GH.IM.1.F Partnership with Health Training Institutions

Brief activity description: VectorWorks, in partnership with the NMCP Malaria in Pregnancy Working Group, is advocating for including content on ITN distribution and SBCC into pre-service midwifery training, while also working on a longer-term goal of incorporating it into the Nurses and Midwives Council's (N&MC) standard curriculum. VectorWorks has similarly engaged with PMI-funded organizations involved in pre-

3 Data from 2018 is still incomplete in DHIMS2.

service health worker training, such as Maternal and Child Support Project (MCSP), to share VectorWorks' training materials at a pre-service training. The aim of this effort is to provide comprehensive education on ITN distribution and SBCC to community health nurses, midwives, and other health professionals before they deploy to their jobs.

Status: The VectorWorks project and MCSP held meetings on November 7 and 16, 2017, to share information on how the two projects can best collaborate to ensure that education on health facility ITN distribution is incorporated into the routine trainings offered by the MCSP projects for nursing and midwifery institutions. Additionally, they put together a plan to inform review of the N&MC's nursing and midwifery schools' training curricula in 2019 to include ITN distribution—target, documentation and reporting—use and care.

As a follow-on to previous meetings with MCSP, on December 12, 2017, VectorWorks and MCSP held a one-day orientation session for staff of MCSP involved in pre-service trainings; representatives of the N&MC and the Ministry of Health also participated. Participants learned about the rationale for distributing ITNs through ANC and child welfare clinics as a keep-up strategy; service delivery documentation of ITN distribution and reporting requirements; inventory management; and ITN use, care, and misuse. Trainees received adequate knowledge of health facility ITN distribution for pre-service trainings. During the review of the N&MC's nurses and midwives training curriculum, participants from the Ministry of Health and the N&MC's were encouraged to advocate for including the ITN content.

Since this training, using a draft training module developed by VectorWorks, MCSP incorporated ITN distribution in health facilities into its pre-service trainings.

Please note that the following deliverables were submitted to PMI on October 19, 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
Report of meeting with MCSP	PMI, RHMT, NMCP, MCH, EPI	Quarters 1–4	Share by email	Delayed to Year 5, Quarter 1
Draft of training module	Preservice health worker training institutions, PMI, RHMT, NMCP, MCH, EPI	Quarter 4	Share by email	Delayed to Year 5, Quarter 1

GH.IM.2 Support for Mass ITN Distribution

Brief activity description: VectorWorks continues to support the 2018 PMD by bringing together key players and implementing partners to contribute their expertise and resources toward deploying a successful nationwide campaign. Included in this role is ensuring that the campaign steering committee is functioning optimally and supporting the development and review of campaign planning and implementation tools. VectorWorks is also supporting field implementation by facilitating sessions and participating in regional informative meetings; microplanning meetings; trainings of regional, district, and subdistrict teams; trainings of registration assistants and distribution point attendants; as well as household registration and distribution exercises.

Status: To ensure accountability; ease of implementation; and improve data capture, storage, and retrieval, the NMCP and partners piloted the use of a locally developed mobile application (NetApp) on mobile devices for household registration and distribution. The pilot was conducted in two districts each in the Volta region (South Tongu and Akatsi North) and Eastern region (Asuogyaman and New Juaben) from October 2017 to January 2018. The pilot distribution exercise distributed 202,725 ITNs to 116,013 households in the four

districts. VectorWorks' support focused on planning, developing campaign guidelines, participating in meetings with regional health management teams to brief them on the campaign, microplanning, training the district- and subdistrict-level, and supervising training sessions for registration and distribution point assistants. The team also supervised household registration, ITN distribution activities, and data validation.

Although the pilot was successful, the mobile application and the phones used for data collection and the ITN distribution caused the following challenges:

1. Delays in the procurement process made it impossible to use the tablets earmarked for use in data collection for the pilot. Therefore, the Ghana Health Service provided some Huawei smart phones available for the pilot data collection and distribution exercise.
2. The phones from the Ghana Health Service were too small and data capture was difficult for the registration assistants, resulting in some data entry errors.
3. The NetApp mobile application, which was fully developed by a team of Ghanaian information technology specialists, had initial set up gaps that were identified at different stages of the pilot exercise. This was further aggravated by internet connectivity challenges in many communities where data was being collected. For instance, if a data collector accidentally logged out of the system, it was extremely difficult for them to log in again. The collectors could only log in if the internet connection was strong; in some places, logging in was only possible at dawn.
4. Distribution point attendants could not easily retrieve household data; in some cases, data on an entire community was missing.
5. During distribution, some household registration data was still on personal phones and was not synchronized because some registration assistants used their personal phones because of challenges with the phones provided.

As a result of these challenges, the NMCP and partners organized a "lessons learned" meeting on January 9, 2018 to identify challenges and best practices that would improve the processes and outcomes during the scale up. VectorWorks participated in this meeting and made critical recommendations for technical improvement and process augmentation.

The key lessons learned from the PMD pilot, with particular focus on NetApp, led to the following recommendations for implementation during the scale up:

- Use an updated code card that captures the name of the household head, as well as the community name. The code on the card also changed from alphanumeric to simple numeric coding. This eliminated errors in reading the code and consequent challenges in retrieving household data from the system during distribution.
- Introduce a structured daily data tracking system for registered households to detect missing data after synchronizing the data at the end of each day.
- As a cost saving measure, at the ITN distribution points, decrease the number of assistants from four to three. The assistants were (1) a distribution assistant in charge of data retrieval from the tablet, (2) a logistics focal person, and (3) an SBCC and crowd control person. During the pilot, two different people handled the roles of SBCC and crowd control, respectively.

VectorWorks procured technical assistance for NetApp testing from Tropical Health who identified and fixed all identifiable functionality challenges. Tropical Health successfully completed the testing and VectorWorks shared a report with the NMCP on March 20, 2018.

For the scale up, VectorWorks provided technical assistance in six regions (Brong Ahafo, Central, Eastern, Northern, Volta, and Western) between February and September 2018. VectorWorks is involved in the

planning for implementing the campaigns in the Ashanti and Greater Accra regions which has started, with an expected completion by the end of December 2018.

VectorWorks provided technical support in all seven regions through field supervision of training activities at the regional and district levels, monitoring of household registration activities, planning and coordination activities at the national levels, and supervision of SBCC activities. 10,188,117 ITNs were distributed in the seven regions. The following table summarizes the ITNs distributed per region:

Region	Nets Distributed	Status
Volta	1,431,959	Complete
Eastern	1,553,781	Complete
Northern	1,448,240	Complete
Central	1,508,974	Complete
Western	1,963,988	Complete
Brong Ahafo	1,628,041	Complete
Upper East	653,134	Complete
Ashanti	**	In progress
Greater Accra	**	In progress
Total	**10,188,117**	

Deliverables	Audience	Timing	Dissemination Plan	Status
Report on best practices and lessons learned from the PMD pilot	NMCP, PMI, CCP	Quarter 1	Share by email	Report shared with PMI: March 30, 2018
Report on best practices and lessons learned from the full-scale PMD	NMCP, PMI, CCP	Quarter 4	Share by email	Delayed to Year 5, Quarter 2

[GH.IM.2.C Revision of Mass ITN Distribution Guidelines. Completed in Year Two.]

[GH.IM.2.D Lead Mass ITN Distribution in Upper East Region. Completed in Year Two.]

GH.IM.3 Community Mobilization and Behavior Change Communication

[Completed in Year One.]

[GH.IM.3.A Peers for Regular Use of Nets (Peers Run) Program for Schools and Communities-Closeout, Completed in Year One.]

[GH.IM.3.B Community Mobilization for Point Mass Distribution, GH.IM.3.C Parent Teacher Association Malaria Update Meetings. Discontinued at the end of Year One by PMI.]

[GH.IM.3.D Publication of Ghana Malaria Action Alert. Discontinued at the end of Year One by PMI.]

GH.IM.4 Support for School-Based ITN Distribution

[Year Two, Three, and Five Activities: GH.IM.4.A–C School Distribution Activities.]

GH.IM.4.D Promotion of School-Based BCC for Malaria Prevention: ITN Use and Care

Brief activity description: In Year Three, VectorWorks introduced the training of circuit and district officers and school health teams to teach them the information and skills to effectively incorporate education on malaria and its prevention into the schools' activities and, then, to appropriately report on them. The goal is to train these cadres of Education Service Officers in all 216 districts across the country by the end of Year Five. In Year Three, 21,773 school head teachers and school-based SHEP coordinators from 72 districts were trained. In Year Four, VectorWorks trained district and circuit officers and school health teams in 103 districts; we will train the remaining 41 districts in Year Five. Of the 103 districts planned for Year Four, VectorWorks trained 50 districts in Quarter Two and the remaining 53 districts in September/October 2018.

The objective of these trainings is to teach teachers and students in primary schools about malaria prevention and ITN use and care so they can advocate for proper use and care of ITNs among their peers and the community through PTA meetings and community outreach malaria prevention programs. As part of the training, attendees are taught how to form or re-energize school health teams. A school health team comprises the head teacher, school-based SHEP coordinator, teacher responsible for culture, teacher responsible for physical education, and two pupil representatives—a boy and a girl. Forming school health teams and student clubs ensures malaria and other health education programs are well planned and implemented. The school health teams and clubs plan activities in school and the community aimed at promoting household ITN use and care; they use the handbook, *Promoting Malaria Prevention Through Primary Schools—Communication Guide for Teachers.* Both the health teams and clubs will also enhance awareness creation in schools and in surrounding communities on malaria and its prevention to promote school–community interface in malaria prevention activities. The school health teams and clubs are vehicles through which all other school health programs are planned and implemented.

Status: In Year Four, VectorWorks facilitated the training of 25,811 personnel within the Ghana Education Service (GES) in 103 districts, located in seven regions: Ashanti, Brong Ahafo, Central, Eastern, Northern, Western, and Volta. This number included 1,445 district education officers and circuit supervisors from the GES, as well as malaria focal persons and health promotion officers from the District Health Directorates in each of the 103 districts. Within the same jurisdiction, 24,366 head teachers and school-based health coordinators from 11,602 schools were also trained.

Trainees learned about cause and mode of malaria transmission, impact of malaria, benefits of malaria prevention, malaria prevention messages for key audiences (e.g. students, teachers, parents, and community members), activities for assembly and classroom sessions, and community outreach. A key classroom activity introduced in this year's trainings is the teacher-pupil net use interaction session; this enables teachers to follow up on children who do not use ITNs in their homes, and identify and resolve barriers to net use in the household. Circuit supervisors as trainers of school head teachers and school-based SHEP coordinators are also responsible for supervising the forming of school health teams; preparation of activity plans for each term; and implementation of school SBCC in schools, PTA meetings, and community outreach. This is to ensure the integration of school SBCC into circuit level routine supervision and to foster ownership and sustainability.

Additionally, the creation and reviving of school health teams ensures that a functional school-level committee drives all health promotion activities. The approach ensures that health promotion finds space within the school's academic programming.

Each training lasted only one day. National and regional officers facilitated the training sessions for the district- and circuit-level officers; circuit supervisors and district officers conducted the training of head teachers and school-based SHEP coordinators. Trainings in the first 50 districts (17 from Ashanti, 15 from Brong Ahafo, 8 from Central, and 10 districts from Western) took place between February and mid-March, 2018. Trainings for 27 districts (14 districts in Eastern and 13 districts in Volta) were held between May 21, 2018 and June 8, 2018. Trainings for the last 26 districts of the Northern region took place from September 11 to October 5, 2018.

Please note that the following deliverables were submitted to PMI on October 19, 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
Report on training of regional & district GES officers, and school health teams	PMI, NMCP, GES	Quarters 1–4	Share by email	Delayed to Year 5, Quarter 1
Report on monitoring of activities of school health teams and clubs and teacher-student net use follow-ups	PMI, NMCP, GES	Quarters 1–4	Share by email	Delayed to Year 5, Quarter 1

GH.IM.4.E Promotion of Malaria Prevention in Schools and Communities—Collaboration with Peace Corps Ghana

Brief activity description: VectorWorks and SHEP work with Peace Corps volunteers' "Standing with Africa to Terminate Malaria" initiative and the Grassroots Soccer activities to scale up promotion of malaria prevention education in schools and communities. Grassroots Soccer, a nonprofit organization, uses soccer to empower communities to stop the spread of HIV. Through this platform, Peace Corps volunteers reach the audience through messages about HIV prevention, malaria prevention and, in particular, information about ITN use and care.

Status: Peace Corps volunteers are facilitators for the school and community stencil-tracing activity and they supervised the training of school head teachers and school-based SHEP coordinators in the circuits where they work. The stencil-tracing activity educates students and the community about malaria prevention and ITN use and care in an interactive way. Following collaboration between VectorWorks, Peace Corps volunteers, and SHEP coordinators in Years Two and Three, this activity was brought to scale; teachers in all school SBCC trainings are taught how to use local materials to create stencils and wall paintings. Paintings on walls create excitement and discussion leading to the acceptance of malaria prevention messages. In Year 4, Peace Corps Volunteers carried out the stencil-tracing activity in 25 communities in seven regions (Ashanti, Brong Ahafo, Central, Upper East, Upper West, Western and Volta), and engaged 5,200 school children. Two Peace Corps volunteers were also engaged in the PMD campaign pilot in the Eastern region and have been an integral part of monitoring household registration and distribution in the Eastern region communities where they work.

Deliverables	Audience	Timing	Dissemination Plan	Status
Annual report (number of communities engaged and number of school children and community members reached)	PMI, Peace Corps, CCP	Quarter 4	Share by email	Included in annual report

GH.IM.4.F Support for Quality ITN Quantification Data for School Distributions

Brief activity description: An accurate quantification system for ITN school-based distribution is imperative. The Education Management Information System (EMIS) collects ITN distribution data directly from schools. However, this system has faced challenges in recent years because of the late release of data and because it does not capture non-registered schools, which account for 15% of schools receiving ITNs. To improve ITN quantification for distribution in schools in Year Five, VectorWorks formed a task force with representation from the NMCP, GES, GHSC-PSM, and VectorWorks to develop an improved system of ITN quantification for school distributions.

Status: VectorWorks had discussions with the NMCP, GHSC-PSM, and SHEP, which led to forming a task force for the 2019 school ITN distribution. The NMCP leads the committee and VectorWorks, SHEP, and PSM-GHSC participate as partners. The committee met on two occasions—July 3 and September 13, 2018—to discuss data quality, timelines for the campaign, and making a presentation to education directors at the 2018 Conference of Directors of Education (CODE) conference on August 17, 2018. Additionally, the leadership of VectorWorks, NMCP, and SHEP met the deputy director general of the GES on May 23, 2018 to discuss plans to develop an improved system for quantification of ITNs for school distribution. The GES deputy director general and team assured the VectorWorks team of plans to improve the process of enrollment data collection that will guarantee quality. The ultimate goal is to have on-line enrollment data that can be updated frequently and validated by a collation and analysis of weekly school attendance data; this will be submitted by all primary schools around the country. It will eliminate the element of inflated enrollment data and will ensure data integrity. The GES shared the 2017/2018 enrollment data in September 2018; the taskforce reviewed and discussed it. The GES indicated that a validated version of the primary schools' enrollment data for 2018/2019 will be released by March 2019. However, the proposed timeline for the release of 2018/19 academic year enrollment data is unfavorable for quantification for the 2019 school distribution exercise; therefore, the data the GES shared in September 2018 will be the basis for quantification for the 2019 school distribution exercise. As a result of the information from the GES deputy director general that there is already a plan in place to improve school enrollment data, the two deliverables associated with this activity were cancelled.

Please note that VectorWorks Ghana had a call with PMI on November 14th, during which it was agreed that the following two deliverables would be replaced with 1.) a document explicating the standard operating procedures for school distribution, and 2.) a report on engagement with the GES deputy director general about processes and procedures for school distribution ITN quantification.

Deliverables	Audience	Timing	Dissemination Plan	Status
Terms of reference and timeline	USAID, PMI, NMCP, GES, GHSC-	Quarter 4	Share by email	Replaced with a document explicating the standard operating procedures for school

	PSM, SHEP, EMIS			distribution, Year 5, Quarter 2
Report on processes and actions toward establishment of improved quantification system	USAID, PMI, NMCP, GES, SHEP, GHSC-PSM, EMIS	Quarter 4	Share by email	Replaced with a report on engagement with the GES deputy director general about processes and procedures for school distribution ITN quantification, Year 5, Quarter 2

GH.IM.4.G School Distribution Evaluation Conceptualization

Brief activity description: In Year Four, VectorWorks worked with the NMCP, PMI, GES, and partners to draft an evaluation protocol for the school distribution channel. Since the inception of Ghana's school-based ITN distribution, the distribution channel has not been evaluated. As Ghana looks to determine the most effective combination of ITN distribution channels, moving forward it is imperative to evaluate the school distribution. The primary outcome measures are the reach of the school channel (percentage of households that received an ITN from school distribution), and the efficacy of the channel (percentage of households with a child in class 2 or class 6 that received an ITN through school distribution).

Status: This activity was put on hold given the focus on the PMD, and because an evaluation of the school channel would only be possible following the 2019 school distribution. Late in Year Four, VectorWorks began developing the protocol, which will be finalized in Quarter 1 Year Five and reviewed with NMCP and PMI and Global Fund. The protocol will be adapted from existing evaluations of school channels in other countries and tailored for the Ghanaian context.

Deliverables	Audience	Timing	Dissemination Plan	Status
Evaluation protocol and illustrative timeline	USAID, PMI, NMCP, GES, SHEP, EMIS	Quarter 4	Share by email	Delayed to Year 5, Quarter 2

GH.IM.5 Technical Assistance to Ghana NMCP

[GH.IM.5.1 Technical Assistance for Development of Global Fund to Fight AIDS, Tuberculosis and Malaria Concept Note. Completed in Year Three.]

[GH.IM.5.2 Analysis Plan to Evaluate Ghana's Continuous Distribution Strategy. Canceled in Year Three.]

[GH.IM.5.3 Evaluation of Ghana's Mixed School and Mass Distribution, and Implication for Coverage and Value-for-Money. Canceled in Year Three.]

Research, Monitoring and Evaluation

GH.ME.1 Formative Research on Barriers and Facilitators to Net Use

Brief activity description: VectorWorks carried out a qualitative study to understand the gap between ITN access and use in Ghana. The study aimed to provide a deeper understanding of the motives, decision

making, and practices around ITN use. This information will inform effective SBC messaging and innovative approaches to addressing the net use gap.

Status: In Year Four, VectorWorks designed the study protocol, obtained appropriate Institutional Review Board (IRB) approvals, and identified and contracted with a local research partner, NMIMR. CCP and NMIMR led data collector training and carried out fieldwork in March 2018. Fieldwork was done in three purposively selected sites (Gomoa West in the Central region, Fanteakwa in the Eastern region, and Savelugu in the Northern region) across the three ecological zones. In total, 18 focus group discussions and seven case studies were conducted. Data analysis, preparation, and submission of the final report were done in the final half of Year Four.

VectorWorks presented preliminary findings to the NMCP and the Malaria Operational Plan (MOP) team during Ghana's MOP stakeholders' meeting, held on March 28, 2018; we shared an accompanying study brief. Dr. Collins Ahorlu, NMIMR's lead researcher, presented the final results at the NMCP office on July 5, 2018. Following the presentation, VectorWorks shared a list of illustrative activities for addressing the ITN use gap, based on the study findings; they were grouped by short-, medium-, and long-term timelines. These recommendations were then incorporated into the final study report. PMI approved the final report in September 2018. VectorWorks submitted an abstract for the study to the American Society of Tropical Medicine and Hygiene meeting and the results will be presented during a poster session in October 2018.

Among participants who did not consistently use an ITN, heat was the most frequently listed reason. A combination of heat and lower perceived risk contributed to low reported ITN use during the dry season, compared to the rainy season. Barriers to ITN use throughout the year included skin irritation even after airing the ITN; congestion; lack of airflow in the sleeping space; the perception that ITNs provide limited value because of exposure to mosquito bites during early evening hours and nighttime activities; and, in some cases, a lack of information on the connection between the use of ITNs and malaria prevention. Having a traumatic experience getting malaria, or having a loved one fall ill from malaria, were the most powerful motivators for consistent ITN use. Growing up using an ITN, or developing a habit of ITN use, were also listed as facilitating factors. Regular users described the benefits of a good night's sleep and the value ITNs play in not being disturbed by mosquitoes and other insects throughout the night. They also discussed the economic benefit of prevention over treatment and not losing time from work or other productive activities. Participants reported gender differences in ITN use, noting that men were more likely to stay outdoors late at night and more likely to sleep outdoors.

The ITN use, as described by study participants, was not binary (user versus nonuser); ITN use could vary throughout the night, across seasons, and over time. The study results suggest that the greatest gains could be made by promoting consistent use throughout the year among occasional and seasonal users. This work identified opportunities for improving communication messages, as well as structural approaches to enhance the usability of ITNs in challenging contexts. Examples include positioning ITN use within the broader context of malaria prevention; increasing the importance of malaria risk; updating messaging to increase airing time before first using the ITN; highlighting the cost and time/productivity benefits of prevention over treatment; developing an ITN use culture beginning in primary schools; increasing knowledge of malaria transmission; and identifying and promoting solutions for using ITNs in outdoor or challenging environments. The gendered dimensions of ITN use suggest the need to focus on promoting ITN use for all family members and identifying messages and channels that will resonate with both males and females.

Deliverables	Audience	Timing	Dissemination Plan	Status
Presentation on preliminary results	PMI, C4H	Quarter 2	In-person presentation	Shared with PMI on March 29, 2018

Final report	PMI, C4H	Quarter 4	Share by email	Shared with PMI on August 27, 2018; approval received on September 25, 2018

GH.ME.2 ITN Durability Monitoring

Brief activity description: VectorWorks will implement ITN durability monitoring to look at the field performance of ITNs from the 2018 PMD. The design will follow standard PMI guidelines. Researchers will collect data on the physical state of cohort nets and information on behavioral and household factors that are known to affect the durability of ITNs. In addition, data collectors will take campaign nets for bioassay to study the insecticidal integrity of nets.

Status: VectorWorks selected a local partner, NMIMR, who will be responsible for the studies' data collection. The NMIMR and VectorWorks finalized the study contract in May 2018 and, with approval from NMCP, initially selected Lower and Upper Manya Krobo districts in the Eastern region as the study districts with a plan to start baseline data collection in August 2018. Despite the submission of the study protocol to IRB in May 2018, delays in obtaining IRB approval from the NMIMR IRB will force VectorWorks to postpone training and baseline data collection until November 2018. VectorWorks, PMI, the NMCP and NMIMR will discuss final study selection sites in early Year 5 to finalize preparation for the activity.

After the baseline data collection, analysis, and report, the remainder of the study will transition to the PMI VectorLink Project, which will continue the Durability Monitoring study after VectorWorks ends in September 2019. To ensure a seamless transition, VectorLink will be invited to participate in all durability monitoring activities in Year Five.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. JHU and local IRB approved protocol	PMI	Shifted to Quarter 1, Year 5	Share by email with PMI	Delayed to Quarter 1, Year 5
2. Durability monitoring baseline report	PMI	Shifted to Quarter 1, Year 5	Share by email with PMI	Delayed to Quarter 3, Year 5
3. Durability monitoring data analysis workshop report and agenda	PMI	Quarter 2, Year 5	Share by email with PMI	Delayed to Quarter 3, Year 5

Project Management (PM)

GH.PM.1 Operations

GH.PM.1.A Headquarters Staff

Status: Technical, administrative, and high-level management support from VectorWorks headquarters in Baltimore focuses on responding to field office project implementation and administrative needs. Danielle

Piccinini and April Monroe provide administrative and technical backstopping, while Margie Wild provides financial administration. Hannah Koenker, Matthew Lynch, and Andrea Brown provide higher-level management support.

The VectorWorks Ghana team holds weekly conference calls between headquarters and field teams to discuss project activities and updates.

GH.PM.1.B Field Operations

Status: Dr. Ato Selby, field operations director for VectorWorks, provides technical assistance and field operations support for the project.

GH.PM.1.C Field Staff

Status: Sylvester Segbaya is the chief of party for the project and manager of field staff and operations. The senior technical advisor, Prince Owusu, organizes and supervises field operations. Five program officers assigned to specific regions for their operations undertake the organization and monitoring of field programs in their assigned regions: Victor Laryea, Vivian Abiwu, Mavis Osafo, Miriam Gyasi, and Robert Opoku. Phyllis Amartey-Agyeman provides financial administration management with support from a financial and administrative assistant (Medudzi Agbe) and front desk officer (Rita Abakah). An IT manager, Roland Nerrison-Ankrah, provides overall IT support for all project activities; and Richard Kpabitey, M&E manager, provides research, monitoring, and evaluation support.

GH.PM.1.D Field Office

Status: The VectorWorks Ghana field office operating costs include fuel, vehicle insurance, vehicle maintenance, office rent, generator hire, fuel for the generator, and maintenance of the facilities.

GH.PM.1.E Local Travel

Status: VectorWorks uses project vehicles for activities and operations: two Ford Explorer SUVs (2013) and two Nissan Patrol Cross Country vehicles (2016). Occasionally, air travel is needed for trips to the northern part of the country.

GH.PM.1.F Vehicle Repair

Status: The project repaired three vehicles to ensure safe and reliable local transportation for project activities. The two Ford Explorer vehicles (2013) continue to age and, therefore, often breakdown, requiring minor repairs after field trips.

GH.PM.2 Technical Assistance and Travel

GH.PM.2.A Technical Assistance Trips—Project Director

Status: Dr. Hannah Koenker, VectorWorks project director, visited the VectorWorks Ghana project from October 9–13, 2017. During this visit, Dr. Koenker supported the planning for Ghana's PMD by reviewing the M&E, SBCC, logistics and planning, and coordination plans. Dr. Koenker drafted the waste management section of the PMD campaign and developed a checklist for validating household registration data to ensure data are consistent with average household sizes, as indicated in MIS 2016.

Dr. Koenker also held separate meetings with the NMCP and PMI to discuss durability monitoring and she agreed to conduct the study in the Eastern region. They also discussed the counterfeit net study and the net use gap study.

GH.PM.2.A Technical Assistance Trips—Field Operations Director

Status: Dr. Ato Selby paid three separate visits to Ghana in January 7–13, 2017; March 20–31, 2018; and July 2–15, 2018.

During the first trip, Dr. Selby participated in a review meeting of the Eastern and Volta regions PMD pilot. The meeting discussed findings from the independent assessments contracted by the NMCP to provide information about the pilot planning and implementation processes. Dr. Selby also facilitated the review of roles and responsibilities of all key partners in the mass campaign and supported updating the template that shows the state of preparedness of the country teams for PMD planning and implementation**.**

During the second visit, Dr. Selby met the NMCP program manager and discussed supervision and quality assurance for household registration for PMD, and participated in the PMI Implementation partners' meeting and MOP stakeholders meeting. Dr. Selby also undertook a field visit to supervise household registration in the Eastern region and debriefed the district teams (Akwapim South and Fanteakwa) and VectorWorks and NMCP teams (Vector Control and IT lead on NetApp).

During Dr. Selby's third visit, he worked with the Ghana VectorWorks team to conceptualize the Year Five work plan, after holding prior meetings with the NMCP program manager to discuss Year Five priorities. He also participated and made inputs into the School-Based ITN Distribution Special Task Force meeting, convened by the NMCP to plan effectively for the Year Five school distribution; and, finally, assessed processes at distribution points during the Central region mass distribution campaign from July 11–13, 2018. He also met with NMCP M&E officers to discuss the use of DHIS2 dashboards for monitoring ITN distribution at the health facility level.

GH.PM.2.B Technical Assistance Trips—Program Officer

Status: Danielle Picinnini traveled to Ghana from July 2–19, 2018, during which time she provided support for the VectorWorks Ghana Year Five work planning and budgeting activities; participated in the Net Use Gap study dissemination meeting at NMCP on July 5, 2018; observed and assessed PMD activities in the Central region; and followed up on some Year Four activities and related deliverables.

GH.PM.2.B Technical Assistance Trips—Research

Status: April Monroe made one trip, in March 2018, to support planning and data collection for the qualitative research study. Key activities during this visit included a meeting with the lead researcher of the NMIMR, Dr. Collins Ahorlu, a representative from the NMCP (George Adu), and Sylvester Segbaya of VectorWorks, to plan the data collectors' trainings and subsequent data collection.

April Monroe traveled to the three sites from March 2–17, 2018 to supervise data collection. The sites included Savelugu district in the Northern region, Fanteakwa district in the Eastern region, and Gomoa West district in the Central region. Each team in all sites comprised three data collectors, a team supervisor, and a driver. A debriefing meeting with PMI was held on March 16, 2018.

GH.PM.2.C VectorWorks Annual Meeting

Status: In June 2018, the VectorWorks Ghana chief of party and senior technical advisor traveled from Accra to Baltimore for the VectorWorks Annual Meeting. During this meeting, the global VectorWorks team met to discuss the lessons learned from Year Four and began planning for Year Five. A key feature of the discourse during the work planning was to identify the project's legacy products and how to successfully disseminate these products as part of the project's transition plans.

Summary of International Travel

Trip Purpose	Traveler	Number of Trips	Remarks
ASTMH	VectorWorks chief of party	1	Trip canceled in order to prioritize PMD pilot activities
VCWG (budgeted under code GH.PC.1.C)	MaVCOC representative, VectorWorks chief of party, senior technical advisor	3	Three person/trips: • February 9–13, 2018
VectorWorks Annual Meeting	Chief of party and senior technical advisor	2	Two person/trips: • June 5–8, 2018
Leadership in Strategic Communication Workshop	Chief of party	1	One trip: • July 6–27, 2018
Supervision and technical assistance	Project director	1	One trip: • October 9–13, 2017
Supervision and technical assistance	Field operations director	6	Three trips: • January 7–13, 2018 • March 20–31, 2018 • July 2–13, 2018
Supervision and technical assistance	Program officer	2	One trip: • July 2–19, 2018 (Danielle Piccinini)
Oversight of formative research study	Program officer	1	One trip: • March 1–17, 2018 (April Monroe)
Total trips		17	12

GH.PM.3 Work Plan and Reporting

In Year Four, the VectorWorks project provided the following to PMI Ghana:

- Work plan and performance monitoring plan
- Quarterly financial reports
- Semi-annual progress report
- Monthly activity plans with dates
- Meeting and training notes, as applicable
- Annual report.

GUINEA

GN.1 Initial Stakeholder's Meeting

[Completed in Year Two.]

GN.2 Detailed Continuous Distribution Assessment

[Completed in Year Three.]

GN.3 Support to Malaria Strategy Review

[Cancelled per PMI email March 28, 2018.]

GN.4 School-Based BCC Message Development Workshop

[Completed in Year Three.]

GN.5 Continuous Distribution Pilot (2017–2018)

Brief activity description: In 2016, the Guinea National Malaria Control Program (NMCP) began considering the addition of other continuous distribution channels as part of their new national insecticide-treated net (ITN) distribution strategy. After discussions with PMI and the NMCP, VectorWorks identified Boffa as a feasible district for implementing a school distribution pilot. VectorWorks was tasked with implementing and coordinating malaria partners in Guinea for this activity.

Status: VectorWorks and partners conducted the school distribution in April 2018 (see the details in the previous semiannual report). Ms. Bolanle Olapeju and Ms. Danielle Naugle of VectorWorks facilitated a training for the local research firm from *cabinet d'étude et recherché et de conseils* (CERCO) from April 30–May 4, 2018. During this training, the facilitators focused on the principles of ethical research, study methodology, and familiarizing data collectors with the study tools. They trained 12 data collectors and 2 supervisors.

CERCO data collectors surveyed 1,044 households in Boffa Prefecture (intervention site) and Dubreka (control site) in the 10 days following the training. The evaluation team found that, after the pilot, 58% of the population in the intervention zone had access to an ITN compared to 38% in the control zone. This trend continued with ITN use, with 47% of Boffa residents sleeping under an ITN the previous night compared to 24% in Dubreka.

The evaluation also found that 56% of households in the intervention site had heard about the school ITN distribution, compared to only 3% in the control site. Boffa households (48%) were also more likely to have heard messages about ITN use, care, and repair than Dubreka (6%) households.

VectorWorks is finalizing the last evaluation report and will share findings with the NMCP, PMI, and other national stakeholders at a dissemination workshop in Guinea on October 23, 2018 in Conakry. VectorWorks will host a similar dissemination workshop in Boffa prefecture on October 25, 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
5.1 Trip report from scoping visit	NMCP	Quarter 2	Share by email with PMI and NMCP	Acknowledged by PMI: November 28,

				2017
5.2 Detailed timeline of implementation and evaluation	NMCP, PMI, and implementing partners	Quarter 2	Share by email with PMI and NMCP	Approved by PMI: June 12, 2018
5.3 Final SBCC materials for pilot	NMCP and PMI	Quarter 2	Share by email with PMI and NMCP	Approved by PMI: June 12, 2018
5.4 Final training materials, agendas, and participants list	NMCP and PMI	Quarter 2	Share by email with PMI and NMCP	Approved by PMI: June 12, 2018
5.5 Final evaluation report	NMCP, PMI, and implementing partners	Quarter 3	Dissemination meeting with NMCP, PMI, and key malaria stakeholders	Delayed until Year 5 Quarter 1

GN.PM.1 Work Plan and Reporting

Brief activity description: VectorWorks will provide PMI with an annual work plan (for approval by PMI Guinea), quarterly financial reports, and semiannual progress reports. VectorWorks understands that PMI may ask for further information, as needed by USAID, for the PMI annual report, strategic planning, VIP visits, and congressional reports.

Status: VectorWorks' submitted the Year Four work plan on August 31, 2017, and received approval on October 3, 2017. Quarterly financial reports are on schedule.

Deliverable	Audience	Timing	Dissemination Plan	Status
Annual work plan	PMI	Quarter 1	Share by email with PMI	Approved on October 3, 2017
Quarterly financial reports	PMI	Quarters 1–4	Share by email with PMI	On schedule
Semiannual progress reports	NMCP, PMI, and implementing partners	Quarters 2 and 4	Share by email with PMI	Quarter 4: Report submitted (herein)

KENYA

KY.1 Initial Meeting to Review Existing and Draft ITN Strategies, Guidelines, and Plans, and to Determine Technical Assistance Needs

[Completed in Year Three.]

KY.2 Desk Review of Documents Related to ITN Distribution Since 2010

[Completed in Year Four.]

KY.3 Field Assessment to Determine Operational Parameters of Current and Potential Channels for ITN Continuous Distribution at County and Sub-County Levels

[Completed in Year Four.]

KY.4 Meeting to Consolidate Findings from Desk Reviews, Field Assessments, and Other Studies

[Cancelled per email with PMI on November 13, 2017.]

KY.5 Develop a Guidelines Document for ITN Distribution in Kenya

[Completed in Year Four.]

KY.6 Technical Assistance for Pilot Implementation of Selected Channel(s) for ITN Distribution

[Cancelled per email with PMI on November 13, 2017.]

KY.7 ITN Durability Monitoring

Brief activity description: VectorWorks oversees durability monitoring of insecticide-treated nets (ITNs) that were distributed as part of the 2017 mass campaign in Kenya. VectorWorks, working with Tropical Health and Pan African Mosquito Control Association (PAMCA), will follow DawaPlus 2.0 and DuraNet ITNs in Busia and Kwale counties. This consortium is studying the physical durability of campaigns nets and they are conducting bioassays to examine the insecticidal integrity of campaign nets. The U.S. President's Malaria Initiative (PMI) guidelines suggest that nets be followed prospectively for three years. VectorWorks will manage baseline and the first round of follow up before the remainder of this activity is transferred to the PMI VectorLink Project.

The primary objectives of the ITN durability monitoring are to:

- Monitor the physical and insecticidal durability of ITNs in two locations in Kenya during a three-year period and estimate the median ITN survival.
- Compare results with findings from other locations across Africa with similar net brands.
- Strengthen the capacity of the National Malaria Control Program (NMCP) and other partners in the designing, implementing, analyzing, and interpreting ITN durability monitoring, based on PMI guidelines.
- Describe major environmental and behavioral aspects of net use, care, and repair, as well as their impact on the physical durability.

Status: VectorWorks facilitated durability monitoring baseline training in Kisumu, Kenya from April 23–26, 2018. PAMCA data collectors began fieldwork immediately following the training, first in Busia county and then in Kwale county. Data collectors were surprised to encounter Dawa Plus 2.0 nets in Busia county instead of Duranet. Based on conversations with long-lasting insecticide-treated net (LLIN) campaign organizers, the research team expected DuraNet and had built that into the study design. PMI and VectorWorks decided to move forward with the study. Fortunately, the two study sites are very similar in terms of behaviors expected to influence LLIN durability; the study team expects the results to still be interpretable and of high programmatic value. The durability monitoring team viewed baseline data collection as a success. In total, 288 households and 739 ITNs were enrolled across both sites.

VectorWorks will organize the first refresher training for November 12–14, 2018 in Kwale County. Data collectors will conduct the 12-month field work in the two weeks following the training. To ensure a smooth transition of this activity to the new mechanism, VectorWorks will collaborate with PMI and the PMI VectorLink project to share key study documents and involve key personnel during this round of training and field work.

Deliverable	Audience	Timing	Dissemination Plan	Status
7.1 Final study protocol and tools approved by IRB	PMI, local research firm, NMCP, MOH	Quarter 2	Share by email	Complete
7.2 Baseline report	PMI, local research firm, NMCP, MOH	Quarter 4	Share with PMI by email	Shared with PMI on August 15, 2018
7.3 12-month report	PMI, local research firm, NMCP, MOH	Year 5 Quarter 4	Share with PMI by email	On schedule

KY.8 ITN Durability Monitoring Data Analysis Workshop (Year Five)

[Cancelled per email with PMI on August 21, 2018.]

KY.PM.1 Work Plan and Reporting

Brief activity description: VectorWorks provides PMI with an annual work plan, quarterly financial reports, and semiannual progress reports for approval.

Status: VectorWorks has submitted all reports on time.

Deliverable	Audience	Timing	Dissemination Plan	Status
Annual work plan approved by PMI Kenya	PMI	Quarter 1	Share by email	Approved by PMI: December 11, 2017

Quarterly financial reports	PMI	Quarters 1 to 4	Share by email	On schedule
Semiannual and annual progress reports	PMI	Quarters 2 and 4	Share by email	Herein

LIBERIA

L.IM.1 County- and Health Facility–Level Orientations

[Completed in Year Three.]

L.IM.2 Monitoring of ANC/ID LLIN Distribution

Brief activity description: VectorWorks is conducting monitoring of county health personnel to reinforce the on-the-job orientations (L.IM.1), and to ensure that distribution of LLINs at antenatal care (ANC) visits and institutional delivery (ID) is operating smoothly. The goal is to ensure the quality of service delivery and reporting. Although VectorWorks expects health workers to conduct distribution processes properly after they receive training, monitoring and supervision of LLIN distribution activities in health facilities is essential. With financial and technical support from VectorWorks, the NMCP is assisting the County Health Management Team (CHMT) in monitoring health facility–based LLIN distribution at health facilities in six priority southeast counties. In addition, the National Health Management Team (NHMT) conducts semiannual monitoring of the health facility-based LLIN distribution at the county, sub-county, and health facility levels.

Status: VectorWorks and NMCP have completed the Year Three and Four monitoring visits. All reports were submitted and approved. VectorWorks collaborated with members of the CHMTs and NMCP to complete the reports.

In Year Four, VectorWorks, with the NMCP and NHMT, prioritized the monitoring of six counties in the southeast, including Grand Gedeh, Grand Kru, Maryland, River Cess, River Gee, and Sinoe. In collaboration with the NMCP, Family Health Division (FHD), Supply Chain Management Unit (SCMU)-Ministry of Health (MOH), VectorWorks completed the monitoring visits in River Cess and Sinoe counties during March 4-10, 2018.

The findings from the monitoring visits showed that out of the four health facilities monitored in Sinoe County, three health facilities had ITNs in stock and one never had ITNs in stock. In response to the stockouts, the national monitoring team assisted in transporting one bale of ITNs and other commodities to the health facility that was out of ITNs and other commodities. The monitoring team found inconsistencies in the ledgers for recordkeeping of ANC LLINs issued, but all health facilities had LLINs in stock.

In River Cess County, the team found that three out of the four health facilities visited had no LLINs in stock. The monitoring visits found LLINs at all the county depots, but only a few health facilities had received LLINs despite Last Mile Health and World Health Organization (WHO) partners in the area. The monitoring team mentored the Maternal Child Health Supervisor staff from each facility on how to request additional LLINs and how to engage implementing partners in the area to support the delivery of nets. The stockouts at the health facilities are *probably* because of a change in the delivery system. Previously, the USAID | DELIVER PROJECT distributed nets to the health facilities; but, under the current mechanism, the GHSC-PSM project only delivers to the county level and they rely on implementing partners or the health facility workers to manage or pay for the transport from the county depots to the facility.

As part of the monitoring effort in Year Three, VectorWorks supported the NMCP in mapping the partners so implementing partners in the counties can help deliver LLINs from the county depots to the health facilities; and so they can monitor the distribution and reporting process of LLINs given at ANC visits and institutional

delivery. After the recent monitoring visit in River Cess, it was clear that implementing partners Last Mile Health, County MOH, and WHO have not supported the transporting of nets from the county depot to the health facility. VectorWorks will follow up with PMI and the GHSC-PSM project on solutions for getting nets to the health facilities in River Cess County.

VectorWorks provided mentoring and coaching for improved data recording and education on net use and care to all eight health facilities visited. VectorWorks is summarizing all data from the monitoring visits in one table, for all the counties monitored, for discussion with the NMCP and GHSC-PSM project.

The second monitoring visit in the South East was from April 7–15, 2018, and included Grand Kru, Maryland, River Gee, and Grand Gedeh counties, respectively. The findings from these counties showed that all the six health facilities visited were recording the ANC LLINs correctly in the ledgers. However, some health facilities like the Gbeabo Health Center in River Gee and the Newaken Clinic in Grand Kru were still using the old ledgers for delivery. In response to this, the National Monitoring Team (NMT) recommended that the County Reproductive Health Supervisor ensure she delivers ledgers to these health facilities and others.

Health cards/booklets (big belly cards) for pregnant women were available in all facilities visited. Job aids on the use and proper care of LLINs were not visible or available at most of the facilities; only Fish Town Hospital in River Gee had a physical demonstration showing the proper use of a mosquito net. Internal requisition forms for nets were not available at the health facilities. Intermittent preventive treatment (IPT) in pregnancy was available at all health facilities. IPT in pregnancy administration and recording in the ANC ledgers were done properly in all facilities except the JJ Dossen Hospital, which never issued the health management information system (HMIS) data for ANC/ID to beneficiaries nor the IPT HMIS data for the review period (i.e., October, November, and December 2017). The NMT reminded the county health teams to keep track of LLINs delivered to the county depot and publish the consumption data of the number of LLINs they deliver to health facilities, just as they do for other health facility supplies. The NMT also recommended that the county reproductive health supervisors have a routine supervisory schedule posted in the health facilities in their counties. The NMT also recommended that the IPT in pregnancy schedule be written and placed on the wall in the screening room so other ANC service providers could see it when they come in. They also recommended that the pharmacy department staff attend the regular LLIN trainings, as well as the review meetings. Outside the scope of VectorWorks, but worthy to note: Antimalarial drugs for pregnant women were available at some of the health facilities. However, Fish Town Hospital never had oral quinine in stock, only the intramuscular injections.

The following table summarizes the monitoring visits, including dates, counties visited, and number of health facilities visited.

Dates of Monitoring Visit	Counties Visited	Number of Health Facilities Visited
November 14–23, 2016	Grand Cape Mount, Bomi, Gbarpolu, Bong, Grand Bassa	30
January 26 to February 8, 2017	Montserrado	5 hospitals
April 15–23, 2017	River Gee, Grand Gedeh, Maryland, Grand Kru	16
June 12–16, 2017	Nimba	13
July 31 to August 4, 2017	Margibi and Montserrado	5 hospitals
December 2017	Montserrado	2 health facilities and 1 hospital (St. Joseph

		Catholic Hospital and Duport Road Health Center)
March 4–10, 2018	River Cess, Sinoe	8
April 7–15, 2018	Grand Gedeh, River Gee, Maryland, Grand Kru	6
June 14-15, 2018	Montserrado	4 health facilities

Deliverable	Audience	Timing	Dissemination Plan	Status
2A. Quarterly monitoring reports (submitted by CHMTs)	NMCP, FHU, and PMI	Quarters 1–4	Share by email with NMCP and PMI	Monitoring visits took place in 8 health facilities in 2 counties; submitted report from Sinoe and River Cess: March 30, 2018; received acknowledgement from PMI: April 2, 2018 Second monitoring visit in 4 counties where 6 health facilities were monitored; report was submitted and received acknowledgement from PMI August 8, 2018
2B. Semiannual NHMT monitoring report	NMCP, FHU, and PMI	Quarters 1 and 4	Share by email with NMCP and PMI	The NHMT continues to monitor health facilities in Montserrado

L.IM.3 County Review Meetings on ANC/ID LLIN Distribution

Brief activity description: VectorWorks is working with the NMCP, Family Health Unit (FHU), and CHMTs to conduct review meetings and comprehensive assessments of the trainings conducted, health workers' knowledge of the health facility–based LLIN distribution process, and logistics management and reporting of LLIN distribution in each of the six southeast counties.

Status: VectorWorks, NMCP, SCMU, and Family Health Division (FHD) supported and led the review meeting for two counties: Sinoe and River. The meeting took place on March 7, 2018, and brought together 27 participants (15 men, 12 women). Out of the 27 participants, 18 were reproductive health supervisors from

the two counties. The second review meeting was on April 12, 2018. It brought together four counties, including River Gee, Grand Gedeh, Maryland, and Grand Kru and it had 36 participants (11 men, 25 women).

Using a presentation template from VectorWorks, each county made a presentation on the LLIN distribution process and the status. The meetings went well, with full participation from all reproductive health supervisors present and other implementing partners, including Jhpiego and WHO.

Achievements recorded from the meetings showed that most of the health facility staff understand the distribution protocol of giving one LLIN at the first ANC visit and again at delivery at the health facility. The county health workers reported that WHO and Jhpiego are assisting Sinoe cCounty, and Last Mile Health and WHO in River Cess, to deliver nets from the county depot to the health facilities, although there was no actual plan for the support.

Challenges identified include the maternal child health (MCH) workers are not asking for additional LLINs when their stock is low or is depleted. Sinoe County does not have reproductive health supervisors at the district level, which changes the reporting roles and responsibilities compared to other counties. In River Cess, the report collection is slow because of the long distances to some of the health facilities and the lack of fuel supply. VectorWorks noted that requests for LLINs and other commodities should include consumption data, which has not been done. For both Sinoe and River Cess counties, the health facility workers are working from an old delivery ledger without space to enter the data for nets distributed after delivery at some health facilities. The monitoring team advised them to add a column in the ledger to record these distributed nets.

On April 12, 2018, the Second County Review Meeting, conducted by the National Monitoring Team, took place with Grand Kru, Maryland, River Gee, and Grand Gedeh counties.

In River Gee County, the facility staff reported a decrease in the diagnosis of malaria in pregnancy and a decrease in the number of pregnant women who were diagnosed with malaria during pregnancy but were not treated in a timely manner; the health workers also administered IPT to pregnant women who were not malaria positive. The county also faces other challenges, such as transportation of LLINs to health facilities in the districts, because a vehicle is not available for the supply chain program in the county when the partners are not available. The facilities used motorbikes to supply, which was difficult for the staff and more expensive for the county. Four of the 19 health facilities did not properly record the number of postpartum nets issued because the postpartum ledger does not have a column to capture this information; the delivery ledger did not have a column to capture information on nets that were issued after delivery.

In Maryland County, the number of health facilities that are properly recording and reporting LLIN use is 18 out of 25 or 72%. Several challenges included report collection from the seven health facilities that had not reported on antenatal care and institutional delivery. It was reported that the long distances to some of the health facilities, and an inconsistent fuel supply, hindered transportation of nets to health facilities, resulting in stockouts. Poor communication was reported between the officers in charge of health facilities and the county reproductive health supervisor about the request for LLINs and other commodities from the county pharmacist/logistician in an untimely manner.

In Grand Kru County, achievements included the county reproductive health supervisors getting/receiving timely and accurate reports from 10 out of the 19 health facilities on the nets that had been distributed through antenatal care and institutional delivery. But, Grand Kru faced challenges—most of the health care facilities workers did not report stockouts and did not request supplies on time. There was limited gasoline

for supervisors to do their routine field visits, and almost all Grand Kru county health team vehicles were inoperable, which made it difficult to transport LLINs to the health facilities.

Last, Grand Gedeh County participated in the review meeting; one of their achievements included the county reproductive supervisor conducting a round of supervision on LLINs at 21 health facilities. Challenges included four health facilities that were not properly recording the nets issued because of staff attrition, new staff had not been trained in the HMIS ledger tool, and service providers had not been trained on malaria in pregnancy. Also, logistical support was not available for supportive supervision.

The following table summarizes the review meetings, including dates and the number of counties present for each meeting.

Date of Review Meeting Visit	Counties Present
April 17, 2017	Maryland, River Gee, Grand Gedeh, Grand Kru
July 17, 2017	Bong, Lofa, Margibi, Nimba
August 31, 2017	Montserrado
March 5, 2018	Sinoe and River Cess
April 12, 2018	Grand Gedeh, River Gee, Maryland, Grand Kru (information to be reported in the next annual report)

Deliverable	Audience	Timing	Dissemination Plan	Status
County review meeting reports	NMCP, FHU, and PMI	Quarters 3 and 4	Share by email with NMCP and PMI	Completed Sinoe and River Cess review meeting and submitted report on March 30, 2018 Submitted review meeting report for Grand Gedeh, Grand Kru, Maryland, and River Gee on August 08, 2018

L.IM.4 Post-Net-Process

[Completed in Year 2.]

L.IM.5 Revision of LLIN Continuous Distribution Documentation Job Aid

[Completed in Year 3.]

L.IM.6 Print Big Belly Cards and Postnatal Care Ledgers

[Completed in Year 3.]

L.IM.7 Capture Data on the ID Nets Distributed

[Completed in Year 3.]

L.IM.8 Orientation of Implementing Partners on ANC/ID Distribution

Brief activity description: The NMCP, FHU, and VectorWorks will conduct a one-day orientation for identified national-level implementing partners working with health facility personnel in the counties. They will learn about the processes and protocol for distributing LLINs at ANC and ID, how to use a checklist to conduct a comprehensive supportive supervision visit, and how to work with health workers to improve data capture and reporting. The orientation will include strategizing how to ensure nets get from the county depots to the health facilities. After the orientation, implementing partners will work with County Health Integrated Monitoring Teams (CHIMTs) to plan supervision visits to health facilities and share quarterly reports on the supervision of LLIN distribution at ANC visits and ID in health facilities in their counties.

Status: Due to both a delay in funding and a donor request, this orientation has been delayed to Year Five. On December 2, 2017, VectorWorks issued a stop work order for all activities in Liberia, due to a delay in USAID funding. Additionally, PMI requested that implementing partners prioritize the national LLIN mass campaign before conducting this orientation. VectorWorks plans to conduct the orientation at PMI's next quarterly implementing partners' meeting.

The mapping of implementing partners is updated regularly with the new implementing partners added as they engage. VectorWorks plans to revise and share with the PMI before the implementing partners' orientation.

Deliverable	Audience	Timing	Dissemination	Status
Final mapping of implementing partners working with health facilities in counties	NMCP, FHU, PMI	Quarter 1	Share by email	Ongoing
Orientation reports, attendance list	NMCP, FHU, PMI	Quarter 2	Share by email	Delayed to Quarter 1, Year 5

L.IM.9 Forecasting of LLIN Stocks and Resupply

Brief activity description: VectorWorks will work with the NMCP and FHU to use available HMIS data (for, at least, the past two years) on annual attendance for the ANC first visit and ID to quantify the average monthly and annual LLIN needs for each health facility and aggregated for each county. The Central Medical Stores (CMS) and Global Health Supply Chain Program-Procurement and Supply Management (GHSCP-PSM) will use this LLIN quantification information to supply LLINs to each county, based on their logistics management plan.

Status: The forecasting of LLIN stocks and resupply will be canceled. PMI has informed the project that the

forecasting of LLIN stocks and resupply support will be conducted by another project.

Deliverable	Audience	Timing	Dissemination	Status
Quantification of average monthly/ annual LLIN needs for all counties and health facilities	NMCP, FHU, CMS, GHSC-PSM, CHIMTs, implementing partners, PMI	Quarter 1	Share by email	To be canceled

L.IM.10 SBCC for ANC/ID LLIN Distribution

Brief activity description: VectorWorks and the monitoring team, which includes NMCP and FHU, will reinforce the existing social and behavior change communication (SBCC) materials, including the continuous distribution job aid, developed in Year Three, that educates health workers, mothers, and communities on LLIN distribution during ANC visits and at institutional ID and the benefits of LLIN use.

Status: VectorWorks continues to include SBCC for ANC and ID as part of the monitoring visits (L.IM.2) and review meetings (L.IM.3). VectorWorks and the monitoring team check on the health facility workers' understanding of the SBCC messages and what materials each health facility has available for ANC and ID. The SBCC component is included in the monitoring checklist. The monitoring team reinforces the messages and demonstrates interactive ways to communicate to pregnant women, such as net hanging demonstrations.

L.DM LLIN Durability Monitoring

Brief activity description: VectorWorks will support the implementation of durability monitoring for mass campaign LLINs, based on standard PMI guidelines for durability monitoring. This activity will provide the NMCP and PMI with valuable information about the performance of LLINs distributed during the 2018 mass campaign, as well as strengthen in-country capacity to undertake durability monitoring. Based on the findings from this study, VectorWorks will do the following:

1. Monitor the physical and insecticidal durability of LLINs in Liberia during a three-year period and estimate the median LLIN survival;
2. Compare results with findings from other locations across Africa with similar net brands;
3. Strengthen the capacity of NMCP and other partners in the design, implementation, analysis, and interpretation of LLIN durability monitoring, based on PMI guidelines;
4. Describe major environmental and behavioral aspects of net use, care, and repair; and their impact on the physical durability.

Status: PMI, NMCP, and the study team selected Lofa and Grand Gedeh counties as the study sites for durability monitoring. VectorWorks received Institutional Review Board (IRB) approval from University of Liberia and Johns Hopkins University in July 2018. Dr. Albert Kilian facilitated the durability monitoring baseline training from July 23–27, 2018. Participants from the NMCP, University of Liberia-Pire, PMI, and PMI VectorLink took part in the four-day training. Data collectors and supervisors moved to the field and began data collection during the rainy season; they were able to work around the inclement weather and successfully completed the data collection on August 15, 2018. In total, 300 households were enrolled in the study.

VectorWorks is currently writing the baseline report and will submit it to PMI within 90 days of the end of the fieldwork. The next round of data collection is scheduled to take place in March 2019, 12 months post-distribution. After the 12-month data collection, analysis, and report, the remainder of the study will transition to the PMI VectorLink Project.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. JHU and local IRB approved	NMCP, PMI	Quarter 3	Share by email	Completed
2. Durability monitoring baseline report	NMCP, PMI	Quarter 4	Share by email	Expected Quarter 1 of Year 5

L.MA.1 Support to Mass LLIN Distribution Activities—Before, During, and After Campaign

Brief activity description: VectorWorks, in collaboration with the International Federation of the Red Cross (IFRC) and AMP, and in coordination with the NMCP, provides complementary technical assistance and quality control to the NMCP and Plan International in facilitating the planning, training, transportation, and distribution efforts related to the mass distribution campaign in 2018.

Status: VectorWorks was involved in the beginning stages of planning for the 2018 mass campaign that began in March 2017. VectorWorks joined NMCP and AMP consultants for a two-day macroplanning meeting in Margibi and Katata on March 23–24, 2017. We also participated in a six-day SBCC workshop on materials and message development for the 2018 LLIN mass distribution campaign on September 11–16, 2017. Unfortunately, the SBCC subcommittee stopped meeting after the workshop because meetings were not scheduled and the NMCP had busy schedules. VectorWorks also did not insist on continuing the meetings because the project SBCC leader, VectorWorks LLIN manager, Ms. Marietta Yekee, had a stroke and was unable to participate or provide ongoing guidance. VectorWorks support was, therefore, limited in its SBCC advisor capacity from October to December 2017.

In December, Ms. Andrea Brown met with the NMCP and Plan International during a short-term technical assistance visit to discuss the communication plan and to identify gaps and potential SBCC challenges, such as a funding shortage to complete the advocacy meetings across the country, and to elaborate a plan for how best to manage households missed during the registration phase and overall LLIN shortages.

After many delays and challenges in obtaining a visa, two AMP technical assistance providers—Mr. Kamel Maina and Jeronimo Zandamela—arrived in Liberia in February 2018 as the universal coverage campaign planning intensified. VectorWorks participated remotely in the weekly international coordination calls remotely, as well as the weekly AMP partners' call and provided support when asked. Unfortunately, with Ms. Yekee on medical leave, VectorWorks did not attend any in-country coordination meetings from February to March 2018. In early March 2018, PMI and the AMP technical assistance providers identified issues with the communication component of the campaign. These issues included (1) limited visible

communication accompanying the campaign, (2) communication not being incorporated into the training upstream that prevented households from getting messages around distribution points, (3) incorrect messaging in some counties, and (4) the general lack of leadership and coordination at the national level for all SBCC activities. VectorWorks responded by sending Ms. Brown to Liberia to put a plan in place and identify tasks and assign roles and responsibilities for VectorWorks and the NMCP to address the communication implementation challenges.

In the end, VectorWorks was fully engaged in the weekly coordination meetings and provided more hands-on support to the NMCP by drafting communication concept notes and media plans, and hiring a short-term consultant to more thoroughly support the SBCC efforts for the universal coverage campaign.

Deliverable	Audience	Timing	Dissemination Plan	Status
Review the AMP technical assistance report; provide support for mass campaign planning	PMI, NMCP, MOH, implementing partners	Quarter 4	Share by email with NMCP and PMI	Complete

L.MA.2 Support for LLIN Distribution to Identified Institutions

Brief activity description: VectorWorks drafted guidelines on distribution to institutions—including boarding schools and Army barracks—to incorporate into the planning of the 2018 mass LLIN distribution.

Status: On September 9, 2016, the NMCP made a one-time distribution of 467 bales of LLINs to 10 institutions. The NMCP and the IFRC will consider these private institutions after the mass distribution campaign and distribution at ANC visits and at ID, if any LLINs remain. VectorWorks developed guidelines for distributing LLINs to institutions and shared these guidelines with the NMCP and AMP for their consideration in planning after the national mass campaign. VectorWorks submitted the guidelines to PMI and is awaiting approval.

Deliverable	Audience	Timing	Dissemination Plan	Status
Guidelines on LLIN distribution to institutions	PMI, NMCP, MOH, institutions (boarding schools, Army barracks, etc.), implementing partners	Quarter 1	Share by email with NMCP and MOH	Complete; Shared draft with NMCP in 2017; submitted final guidelines to PMI on March 23, 2018; approved by AOR on June 21, 2018

L.MA.3 SBCC for LLIN Mass Campaign

Brief activity description: Liberia conducted a large-scale mass LLIN campaign and VectorWorks provided financial and technical support for the NMCP to conduct district-level advocacy meetings in seven hard-to-reach counties, including Rivercess, Sinoe, Grand Gedeh, Grand Kru, Maryland, River Gee, and Gbarpolu. The objective of these meetings was to inform local authorities about the upcoming LLIN mass distribution campaign and to gain their support. VectorWorks also provided support across radio spot development, dissemination, and monitoring in the seven southeast counties and Montserrado.

Status: VectorWorks, in partnership with NMCP and the National Health Promotion Division of the MOH, conducted advocacy meetings in 25 districts, within the seven targeted hard-to-reach counties, during 14 days between January 28 and February 10, 2018. These meeting took place in seven counties: Gbarpolu, Grand Gedeh, Grand Kru, Maryland, River Cess, River Gee, and Sinoe. In total, 14 meetings took place across the seven counties, with 658 participants attending the meetings.

These advocacy meetings taught participants about the new campaign strategy, including information on malaria prevention, universal coverage LLIN campaign, door-to-door registration of household members, the use of vouchers (one LLIN per voucher), and information around fixed distribution sites, which was new to Liberia. Supporting the advocacy meetings, VectorWorks produced three radio spots in both English and the local dialect for all seven counties. VectorWorks supported the radio spots to be separated into three distinct compact discs with a clear airing schedule for the stations. VectorWorks established a contract with 16 community radio stations in the six South East Counties and five urban radio stations in Montserrado to air the messages about the upcoming mass campaign, messages that ran during the campaign and different messages that aired three weeks post-campaign. VectorWorks developed a monitoring log tool to ensure that radio stations aired the messages correctly and that communities understood them. VectorWorks engaged the health promotion focal persons in each county to monitor the airing of these before, during, and after the messages.

Deliverable	Audience	Timing	Dissemination Plan	Status
In collaboration with NMCP and Plan International, VectorWorks will submit a report on the advocacy meetings	NMCP, GOF, PLAN, PMI	Quarter 2	Share by email	Complete; Submitted report to PMI on March 28, 2018; approved on October 14, 2018.

L.PC.4 VectorWorks Annual Partners' Meeting 2017

[Completed in Year 3.]

Follow-up Actions and Recommendations

VectorWorks continues to send PMI Liberia a weekly update that includes key updates, upcoming VectorWorks activities, deliverables pending, and deliverables with PMI for review. On August 7, 2018, VectorWorks provided a summary table highlighting any challenges and lessons learned from the health facilities that have been monitored with the NMCP and PMI. This summary table was sent with the submission of L.IM.2 (trip 3) Monitoring of ANC/ID LLIN Distribution.

MOZAMBIQUE

MZ.1 Technical Assistance for ITN Strategy Update

[Completed in Year One.]

MZ.2 ITN Durability Monitoring (Tropical Health)

Brief activity description: VectorWorks completed data collection for durability monitoring of insecticide treated nets (ITNs) in three sites across Mozambique with its primary monitoring and evaluation partner, Tropical Health, and with the Instituto Nacional de Saúde (INS). VectorWorks selected three monitoring sites (Inhambane, Nampula, and Tete) to maximize the potential differences in environment and ITN use practices.

Status: In November 2015, VectorWorks completed the first phase of the durability monitoring in all three sites: six months after the ITN distribution in Tete province and one month after the ITN distributions in Inhambane and Nampula provinces. We conducted the second wave of durability monitoring one year after distribution: in Tete in June 2016 and in Inhambane and Nampula in August 2016. We conducted the third wave of durability monitoring in May 2017 (Tete) and August 2017 (Inhambane and Nampula).

VectorWorks submitted the 24-month durability monitoring report toPMI for approval on January 5, 2018, and PMI approved the report on March 6, 2018.

VectorWorks completed data collection for the 36-month durability monitoring in Tete in May 2018 and Inhambane and Nampula in August 2018. The 36-month data collection completes the data collection for Mozambique durability monitoring. A trip report was submitted for the Tete and Inhambane and Nampula data collections and it was acknowledged on August 21, 2018. The 36-month bioassay results will be delayed due to the move of the INS to their new building. VectorWorks will submit a 36-month data collection report in Quarter Two of Year Five.

Deliverable	Audience	Timing	Dissemination Plan	Status
Completed in Year 1: MZ.2.1 durability monitoring protocol and research tools; MZ.2.2 schedule of fieldwork Completed in Year 2: MZ.2.3 schedule of fieldwork; MZ.2.4 Template for baseline report Completed in Year 3: MZ.2.5 schedule of fieldwork; MZ.2.6 Baseline survey report; MZ.2.7 12-month survey report.				
8. 24-month durability monitoring report	PMI, NMCP, INS	Quarter 1	Email to PMI, NMCP, INS	Approved by PMI: March 6, 2018
9. Trip report for 36-month data collection	PMI, NMCP	Quarter 3	Email to PMI	Acknowledged by PMI: August 21, 2018

MZ.3 Data Dissemination and Translation

[Completed in Year Two.]

MZ.4 Mass Campaign Technical Assistance

[Completed in Year Two.]

MZ.5 Mass and Continuous Distribution Capacity Building

[Completed in Year Two.]

MZ.6 Nampula Process Evaluation

[Completed in Year Three.]

MZ.7 School-Based ITN Distribution Pilot

MZ.7.A School-Based ITN Distribution Feasibility Assessment

Brief activity description: VectorWorks worked with the National Malaria Control Program (NMCP), PMI, and other partners to implement the first round of a school-based ITN distribution pilot in Zambezia province. To ensure the success of the pilot, VectorWorks conducted a feasibility assessment with the NMCP and the Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project.

Status: In Year Three, VectorWorks shared the feasibility assessment guides with the NMCP, PMI, and other partners. Implementation of the feasibility assessment was moved to a later date to accommodate the full approval of the pilot from the Ministry of Health and the NMCP. VectorWorks conducted the feasibility assessment with the NMCP and GHSC-PSM in early November 2017.

Before the fieldwork for the feasibility assessment, VectorWorks conducted a key stakeholders' meeting to introduce both the pilot distribution and the feasibility assessment. After the stakeholders' meeting, VectorWorks and partners conducted the feasibility assessment fieldwork in the implementation district (Namarroi), as well as a district with different characteristics (Gurúè), to ensure a more representative understanding of the province. We presented a PowerPoint presentation of preliminary findings from the feasibility assessment to PMI and the NMCP after the assessment was completed and submitted by email on November 10, 2017. VectorWorks submitted a trip report to PMI on November 17, 2017. On March 6, 2018, PMI approved the field assessment report, which was submitted on December 11, 2017. VectorWorks also submitted draft implementation guidelines to PMI on December 19, 2017. Final draft implementation guidelines will be formally submitted for approval in Quarter One of Year Five to support implementation of the second round of distribution.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. PowerPoint presentation of preliminary findings and draft implementation guidelines	PMI, NMCP, INS, Global Fund	Quarter 4, Year 3	In-person presentation, email to PMI and implementing partners	Submitted to PMI: November 10, 2017 (preliminary findings), December 19, 2017 (draft implementation guidelines)
2. Trip report	PMI	Quarter 4, Year 3	Email to PMI	Submitted to PMI: November 17, 2017
3. Field assessment report	PMI, NMCP, INS, Global Fund, implementing partners	Quarter 4, Year 3	Email to PMI and implementing partners	Approved by PMI: March 6, 2018

MZ.7.B School-Based ITN Distribution Evaluation (Tropical Health)

Brief activity description: PMI, the Mozambique NMCP, and the implementing partners implemented the first round of school-based ITN distribution in Namarroi district of Zambezia province in May 2018. To measure the outcomes from the school-based ITN distribution, VectorWorks and INS conducted a baseline survey and will conduct an endline survey in both the pilot district (Namarroi) and the control district (Mulevala).

Status: VectorWorks developed the survey protocol in close coordination with the NMCP and PMI and submitted it for approval in Quarter Four of Year Three. The survey received approval from the National Institute of Health of Mozambique Institutional Review Board on October 12, 2017, and exemption status from the Johns Hopkins Bloomberg School of Public Health Institutional Review Board on October 20, 2017.

VectorWorks conducted the baseline survey between November 28, 2017, and December 19, 2017. We sent preliminary findings to PMI and INS on December 18, 2017, in a Word document instead of a PowerPoint presentation.

VectorWorks sent a stop work email to partners on December 15, 2017, to suspend all activities because of a delay in receiving fiscal year 2017 activity funds. This suspension of activities caused a delay in writing the trip report and baseline survey report. VectorWorks Mozambique activities restarted on February 3, 2018.

The baseline report, with other implementation tools, was submitted to PMI on May 17, 2018, and approved on June 21, 2018.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Activity timeline	PMI, NMCP, INS, and implementing partners	Quarter 4, Year 3	Email to PMI, NMCP, INS, and implementing partners	Approved by PMI: June 21, 2018
2. Study protocol	PMI, NMCP, INS, and implementing partners	Quarter 4, Year 3	Email to PMI, NMCP, INS, and implementing partners	Approved by PMI: June 21, 2018
3. Training materials for data collection team	PMI, NMCP, INS, and implementing partners	Quarter 4, Year 3	Email to PMI, NMCP, INS, and implementing partners	Approved by PMI: June 21, 2018
4. Post-baseline implementation debrief PowerPoint presentation	PMI, NMCP	Quarter 1	Email to PMI, NMCP, INS, implementing partners	Approved by PMI: June 21, 2018
5. Trip report—Baseline	PMI, NMCP	Quarter 1	Email to PMI, NMCP, INS, implementing partners	Approved by PMI: June 21, 2018

6. Baseline Assessment Report	PMI, NMCP, implementing partners	Quarter 2	Email to PMI, NMCP, INS, implementing partners	Approved by PMI: June 21, 2018

MZ.7.C School-Based ITN Distribution Technical Assistance

Brief activity description: VectorWorks planned, implemented, evaluated, and provided technical support for school-based ITN distributions in numerous countries. VectorWorks provided technical assistance to the NMCP, PSI, Communication for Improved Health Outcomes (CIHO), and the Mozambique Integrated Malaria Program (IMaP) for the planning and implementation of the first round of a school-based ITN distribution pilot in Mozambique.

Status: VectorWorks provided technical support for the planning and implementation of Mozambique's school-based ITN distribution pilot. We disseminated various iterations of a project timeline, starting with the first iteration in July 23, 2017. A final version of the timeline for the first round of implementation was submitted on August 21, 2018 and approved September 25, 2018.

VectorWorks supported the NMCP and PMI in coordinating the numerous implementing partners for the first round of the school-based ITN distribution pilot. VectorWorks provided resources, technical assistance, and references to partners for developing planning tools and has worked with the NMCP and partners to finalize distribution, reporting, and supervision tools. With the NMCP and GHSC-PSM, VectorWorks also planned for and implemented microplanning and training of trainers.

VectorWorks completed a supervision/monitoring visit for the first round of distribution in May 2018. A trip report for the most recent technical support trip, including recommendations for the second round of distribution, was completed in Quarter Three and submitted in Quarter Four.

Deliverable	Audience	Timing	Dissemination Plan	Status
1. Project timeline	PMI, NMCP, INS, implementing partners	Quarter 1	Email to PMI, NMCP, INS, implementing partners	Approved by PMI: September 25, 2018
2. Monitoring Visit Report	PMI	Quarter 1	Email to PMI, NMCP, INS, implementing partners	Acknowledged by PMI: September 25, 2018

MZ.PM.1 Year One Work Plan and Reporting

[Completed in Year One.]

MZ.PM.3 Year Two Work Plan and Reporting

[Completed in Year Two.]

MZ.PM.3 Year Three Work Plan and Reporting

[Completed in Year Three.]

MZ.PM.4 Work Plan and Reporting

Brief activity description: VectorWorks bases its activities on PMI-approved work plans and adheres to reporting guidelines within the work plans.

Status: PMI approved the VectorWorks Mozambique Year Four work plan on September 28, 2017, the Year Three annual report on January 24, 2018, and the Year Four semi-annual report on July 18, 2018. VectorWorks continues to deliver quarterly financial reports to PMI for Year Four.

Deliverable	Audience	Timing	Dissemination Plan	Status
Year 3 annual report	PMI	Quarter 1	Email to PMI	Approved by PMI: January 24, 2018
Year 4 annual work plan	PMI	Quarter 1	Email to PMI	Approved by PMI: September 28, 2017
Year 4 semi-annual progress report	PMI	Quarter 1	Email to PMI	Approved by PMI: July 18, 2018
Quarterly financial reports	PMI	Quarters 1–4	Email to PMI	On going

MYANMAR

MM.1 ITN Durability Monitoring

Brief activity description: VectorWorks oversees durability monitoring for two brands of insecticide-treated nets (ITNs) at one site in Myanmar. This provides the National Malaria Control Program (NMCP), Roll Back Malaria (RBM) partners, and PMI with information on performance and the estimated "useful life" of ITNs that were distributed during the 2015 mass campaign. This also strengthens the in-country capacity to undertake future durability monitoring. Based on campaign distribution timing, high malaria-transmission potential, and logistic accessibility, the NMCP and PMI selected Tamu Township in Sagaing region as the site for durability monitoring. The Myanmar NMCP organized mass distribution of ITNs in November and December 2015; the distributed ITNs were evenly split between two brands: DawaPlus 2.0 and PermaNet 2.0. The primary objectives of the ITN durability monitoring were as follows:

- To monitor the physical durability of the two brands of ITNs and estimate the median ITN survival during a three-year period.
- To monitor insecticidal activity of the two ITN brands using bioassays and chemical testing.
- To strengthen the capacity of NMCP and in-country partners to independently conduct future durability monitoring.
- To assess major behavioral aspects of net care and repair and their impact on physical durability.

Status: PSI Myanmar completed 24-month fieldwork in Tamu Township in December 2017. VectorWorks submitted the 24-month interim report in March 2018; PMI approved the report on May 15, 2018. The project is now preparing for the final round of data collection. PMI Myanmar will facilitate the refresher training from December 3–5, 2018, and field work will immediately follow. VectorWorks will submit the final report within 90 days after the end of data collection.

Deliverable	Audience	Timing	Dissemination Plan	Status
MM.1.8 24-month assessment fieldwork	PMI, NMCP, and PSI Myanmar	Quarter 1	Audience members took part in or witnessed fieldwork	On schedule
MM.1.9 24-month assessment report	PMI, NMCP, PSI Myanmar	Quarter 2	Share with PMI via email	Delayed to Quarter 3

MM.2 Data Analysis and Dissemination Workshop

[Completed in Year Three.]

MM.3 ASTMH Attendance 2016

[Cancelled in Year Three per Modification 1, which was approved on June 30, 2017.]

MM.4 ASTMH Attendance 2017

[Completed in Year Four.]

MM.5 Chemical Testing

Brief activity description: PSI Myanmar durability monitoring field workers collected ITNs during 24- month durability monitoring follow up. Samples from these nets were tested for chemical residue at the Food and Drug Administration (FDA) lab in Nay Pyi Taw. This activity provides the PMI and NMCP with additional data to evaluate the performance of LLINs that were distributed during the 2015 mass campaign.

Status: The FDA lab completed the chemical analysis of the LLIN samples in September 2018. The results indicate that both DawaPlus 2.0 and Permanet 2.0, which were distributed during the 2015 mass campaign, still contained sufficient insecticidal content to be effective after 24 months post-distribution. VectorWorks analyzed the results and found that more than 98% of both brands had more than 0.37 g/kg deltamethrin. Above this cutoff, mosquito morbidity and mortality is expected. PSI Myanmar will share the results at the next dissemination workshop (MM.6), which is currently scheduled for November 2018.

MM.6 Durability Monitoring Dissemination Workshop

Brief activity description: VectorWorks will organize a dissemination workshop to share results from the December 2017 durability monitoring data collection. PSI Myanmar will present results to stakeholders, including PMI, NMCP, and the Ministry of Health and Sports, on physical integrity, bioassay results, and chemical tests. The workshop will be organized similar to the 2017 workshop, which stakeholders considered a success.

Status: VectorWorks completed the chemical analysis report and finalized the 24-month interim field report. PSI Myanmar is communicating with key stakeholders, including the Ministry of Health and Sports; and NMCP, to determine a suitable date for the workshop.

Deliverable	Audience	Timing	Dissemination Plan	Status
MM.6.1 Dissemination Workshop Agenda and Report	PMI	Quarter 3	Share via email with PMI	Delayed to Year 5 Quarter 1

MM.PM.3 Work Plan and Reporting

Brief activity description: VectorWorks provides PMI with an annual work plan, quarterly financial reports, and semiannual progress reports for approval. VectorWorks understands that USAID may request information, as needed, for the PMI annual report, such as strategic planning, VIP visits, and congressional reports.

Status: VectorWorks submitted its Year Four work plan to PMI for review on September 19, 2017, and PMI approved it on September 26, 2017. All quarterly financial reports are up-to-date; VectorWorks provided them to PMI through Quarter Two of Year Four.

Deliverable	Audience	Timing	Dissemination Plan	Status
Work plan	PMI	Quarter 1	Send by email to PMI	Approved by PMI: September 26, 2017
Quarterly financial reports	PMI	Quarter 1 to Quarter 4	Send by email to PMI	On schedule
Semiannual progress reports	PMI	Quarter 2 and Quarter 4	Send by email to PMI	Herein

NIGERIA

NG.1 ITN Durability Monitoring

Brief activity description: VectorWorks is supporting durability monitoring of DawaPlus 2.0 insecticide-treated nets (ITNs) in three sites across Nigeria—Zamfara, Oyo, and Ebonyi states—in collaboration with its primary monitoring and evaluation partner, Tropical Health, and the National Malaria Elimination Program (NMEP). Sites were selected to maximize the potential differences in the environment and ITN use practices and to build on previous durability studies. The primary objectives of ITN durability monitoring are to:

- Monitor the physical durability of DawaPlus 2.0 ITNs and estimate the median ITN survival during a three-year period.
- Use bioassays to monitor the insecticidal activity of ITNs.
- Strengthen the capacity of the National Malaria Control Program (NMCP) and in-country partners to independently conduct future durability monitoring in the future.
- Assess major behavioral aspects of net care and repair, and their impact on physical durability.

Status: Tropical Health facilitated the final durability monitoring refresher training in Nigeria from September 24–26, 2018. Data collection began on September 29 and the 36-month data collection is anticipated to be completed on October 19, 2018. The most recent estimates for medial survival rate were 5.6 years in Zamfara, 3.3 years in Ebonyi, and 2.7 years in Oyo state. VectorWorks will submit the final report for this activity toPMI by January 2018. The study team will write a manuscript to share the results from this study with the global malaria community in Year Five.

Deliverable	Audience	Timing	Dissemination Plan	Status
NG.1.4 36-month report (24-month report in Oyo State)	PMI, NMCP, and implementing partners	Year Five Quarter 2	Share via email with PMI	On schedule

NG.2 Data Analysis and Dissemination Workshop

[Completed in Year Three.]

NG.3 Data Processing Workshop

[Completed in Year Three.]

NG.4 Data Analysis Workshop (Year Four)

Brief activity description: VectorWorks facilitated a data analysis workshop prior to the last round of ITN durability monitoring data collection. Leading the workshop, Dr. Albert Kilian, from Tropical Health, focused on methods of analysis, preparing data, and writing succinct reports. This activity aims to increase the capacity of the NMCP to conduct durability monitoring independently in the future, including data analysis.

Status: Dr. Kilian facilitated the data analysis workshop on September 27–28, 2018 in Abuja, Nigeria. In total, 34 participants from the NMEP, State Malaria Eradication Programme (SMEP), USAID, VectorLink, and Nigerian research institutions took part in the training. Dr. Kilian stated that the participants showed a high level of motivation and that the training was a success.

Deliverable	Audience	Timing	Dissemination Plan	Status
NG.4.1 Data analysis workshop agenda and report	PMI, NMCP, and implementing partners	Quarter 4	Share via email with PMI	Approved by PMI: October 14, 2018

NG.5 Dissemination Workshop (Year Five)

Brief activity description: VectorWorks will complete ITN durability monitoring in October 2018. After data are collected and analyzed, VectorWorks will organize a workshop to disseminate the results. Dr. Kilian, or Mr. Emmanuel Obi of Tropical Health, will present and interpret results from the activity. The NMCP, state malaria programs, and other malaria partners in Nigeria will be invited.

Status: VectorWorks will organize this activity in Year Five of the project after data collection has concluded. Data collectors began the final round of data collection in late September 2018. VectorWorks will share the final report by January 2019. Organizers will then set a date for the dissemination workshop in coordination with PMI and key stakeholders.

Deliverable	Audience	Timing	Dissemination Plan	Status
NG.5.1 Dissemination workshop agenda and trip report	PMI, NMCP, and implementing partners	Year 5 Quarter 2	Share via email with PMI	On schedule

NG.6 Additional Chemical Testing

Brief activity description: Bioassay results from 12-month durability monitoring data collection indicated suboptimal insecticide effectiveness. PMI requested that further chemical testing be done at 12 months to assess the insecticidal content of the nets collected for bioassay.

Status: Tropical Health facilitated chemical testing at the Walloon Agricultural Research Center in Gembloux, Belgium. The research center received the samples on November 24, 2017 and completed the tests on February 26, 2017. VectorWorks will include the results in the final report.

Deliverable	Audience	Timing	Dissemination Plan	Status
NG.6.1 Chemical testing reports	PMI, NMCP, and implementing partners	Year 5 Quarter 1	Share via email with PMI	On schedule

NG.7 Support to PMI Planning

Brief activity description: Mr. Obi will provide support for planning requests from PMI in Year Four and Year Five. PMI asked Mr. Obi to travel and provide input during Year Three; this activity was developed in anticipation of similar requests during the remainder of the project.

Status: PMI has not yet requested Mr. Obi's support. No known trips for technical assistance are scheduled.

Deliverable	Audience	Timing	Dissemination Plan	Status
NG.7.1 Trip reports	PMI, NMCP, and implementing partners	Quarter 1–4	Share via email with PMI	On schedule

NG.PM.1 Work Plan and Reporting

Brief activity description: VectorWorks will provide an annual work plan for PMI Nigeria to approve, and quarterly financial and semiannual progress reports. VectorWorks understands that they may be asked to provide information to USAID, as needed, for the PMI annual report, strategic planning, VIP visits, congressional reports, among other activities.

Status: PMI approved the VectorWorks Year Four work plan on September 28, 2017. VectorWorks submitted quarterly financial reports through Quarter Four. This document serves as the Year Four semiannual report.

Deliverable	Audience	Timing	Dissemination Plan	Status
Work plan	PMI	Year 4 Quarter 1	Share via email with PMI	Approved by PMI: September 28, 2017
Quarterly financial reports	PMI	Quarterly	Share via email with PMI	On schedule
Semiannual reports	PMI	Quarter 2 and Quarter 4	Share via email with PMI	Herein
Trip reports	PMI	Within two weeks of travel	Share via email with PMI	Approved by PMI: October 14, 2018

TANZANIA

Summary of Year Four Activities

In Year Four, VectorWorks continued to support the government of Tanzania's shift from insecticide-treated net (ITN) mass distribution campaigns to continuous distribution. At the start of Year Four, VectorWorks completed the fifth round of the School Net Program (SNP5), distributing 2,094,470 ITNs through primary schools. Beginning in Quarter Two of Year Four, through Quarter Four, VectorWorks implemented SNP6 activities, which included planning and coordinating at the national and subnational level and the distribution of 1,372,616 ITNs in eight regions of mainland Tanzania. In addition to SNP, VectorWorks supported the distribution of ITNs through health facilities in mainland Tanzania and Zanzibar. The project also supported the government of Zanzibar in rolling out the community channel of ITNs distribution through a revised model of community coupons. The project supported the smart push—the initial delivery of ITNs to health facilities in a region—of 1,098,080 ITNs to 17 regions (5 PMI regions and 12 Global Fund regions); and resupplies of 1,629,028 ITNs to 14 regions of mainland Tanzania receiving support from PMI. VectorWorks also supported social and behavior change communication (SBCC) to encourage proper net use alongside these distributions.

VectorWorks also continued to conduct operational research on vector control. In the second quarter of Year Four, the project collected data for a Lot Quality Assurance Sampling (LQAS) pilot in Lindi, Mtwara, and Ruvuma regions to, potentially, provide a suitable alternative to monitoring net access in years without a Malaria Indicator Survey (MIS). The project completed data collection for the residual malaria transmission study in Zanzibar. In Quarters Three and Four, VectorWorks conducted Year Two follow-up data collection for Zanzibar's ITNs durability monitoring study.

Policy (PC)

PC.1 Advocacy, Engagement, and Macroplanning with All Stakeholders

[Completed in Year One.]

PC.2 Technical Coordination Meetings for Malaria Vector Control

Brief activity description: The VectorWorks project is engaged in coordination and technical working groups to share field implementation experiences; network with other implementing partners, donors, and the government of Tanzania; and align itself with the rest of the malaria control stakeholder's agenda in Tanzania.

Status: VectorWorks staff attended various malaria coordination and technical meetings. Under the leadership of the National Malaria Control Program (NMCP), VectorWorks was significantly engaged with coordination meetings targeted at planning for scaling up distribution in health facilities (called the *Chandarua Kliniki* program) from nine regions; initially, to all 26 regions in Tanzania. During these meetings, VectorWorks shared best experiences, beginning with the inception of the program in Mtwara and Mwanza regions in mid-2016 related to receiving, storing, and distributing ITNs through health facilities. VectorWorks participated in quantification exercises for discussions with the Medical Stores Department (MSD) to manage the logistics because the program was rapidly expanding.

On October 24, 2017, VectorWorks attended long-lasting insecticide-treated nets task force meeting during which the project team made presentations that highlighted the progress made on the SNP, health facility ITN distribution, and the private sector and performance assessment progress for the MSD. The NMCP held this meeting at their office venue and the program manager chaired the meeting. VectorWorks also attended other various meetings organized by the NMCP. Project staff also attended and facilitated a stakeholder's ITN plan workshop held in Bagamoyo in August 13–18, 2018, where participants discussed the new supplementary malaria strategic plan (2018–2020) for Tanzania. During this workshop, VectorWorks was instrumental in leading a discussion toward an amendment of the Tanzania ITN Plan (2018–2020) to ensure it is synchronized with the redefined strategic plan. During the workshop, for discussion and input, VectorWorks presented a draft of the implementation guideline for the commercial sector. The workshop secretariat submitted the final draft of the implementation guide to NMCP, including other documents, for review and endorsement.

Matt Lynch traveled to Tanzania to participate in the Tanzania Vector Control Expert Consultation Workshop held February 26–27, 2018. The workshop addressed concerns about whether the current emphasis on ITNs as a control measure was appropriate or should be reconsidered in favor of scaling up other tools. The participants at the workshop considered the current evidence and the government of Tanzania definitively endorsed the current strategy, with a recommendation to increase the use of local surveillance data in decision making.

VectorWorks engaged with the NMCP to prepare for the consultative malaria operations plan meetings and presented the accountability information system (*Chandarua Kliniki* dashboard) to the meeting participants. VectorWorks also participated in coordination meetings to plan and commemorate World Malaria Day. In Quarter Three of Year Five, VectorWorks will showcase the *Chandarua Kliniki* program and the accountability information system dashboard in a national event that will attract media attention.

VectorWorks participated in the Communication Technical Working Group of the NMCP to discuss its SBCC plans for Year Four and link with other SBCC projects to avoid duplication of efforts.

VectorWorks, with NMCP, started logistic preparations with the President's Office-Regional Administration and Local Government (PO-RALG) for a planned senior management briefing of malaria control activities, including VectorWorks project updates. The meeting plans are in the final stages and it is expected to take place in the first quarter of Year Five.

Deliverables	Audience	Timing	Dissemination Plan	Status
Presentations given by VectorWorks	NMCP, PMI	Quarters 1–4	Share by mail	Completed

PC.3 Development of Comprehensive ITN Strategy

[Completed in Year Two.]

PC.4 Finalize the ITN Strategy and Work Plan for Tanzania

[Completed in Year Three.]

Monitoring and Evaluation (ME)

ME.1.1 Internal Project Monitoring

[Completed in Year One.]

ME.1.2 Documentation and Dissemination

[Completed in Year Three.]

ME.1.3 Internal Project Monitoring

[Completed in Year Three.]

ME.1.4 Internal Project Monitoring

Brief activity description: In Year Four, VectorWorks Tanzania updated the existing performance monitoring plan with the targets for Year Four; the project's monitoring manager and regional managers will continue to monitor the implementation of project activities. The monitoring manager helps monitor activities based on the approved indicators and uploads relevant data to the quarterly PMI Tanzania Monitoring and Evaluation Management System (TMEMS) database.

Status: The updated performance monitoring plan is included in this report. In Year Four, VectorWorks distributed 1,498,781 ITNs purchased with U.S. Government funds through health facilities and 1,372,616 through schools. Additionally, VectorWorks distributed 1,364,080 ITNS purchased by the Global Fund through health facilities. VectorWorks submitted the performance monitoring plan (PMP) targets for Year Five with the Year Five work plan on September 21, 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
Updated performance monitoring plan	PMI	Quarter 3	Share by email	Complete

ME.2 Documentation and Dissemination of SNP3

[Completed in Year Two.]

ME 3.1 Process Monitoring of SNP3

[Completed in Year Two.]

ME.3.2 Process Monitoring of SNP4

[Completed in Year Three.]

ME.4 Accountability Information System for ANC-EPI Distribution and SNP

Brief activity description: In Year Four, VectorWorks, with the University of Dar es Salaam Health Information System Programme and the regional teams, conducted an evaluation of the *Chandarua Kliniki* dashboard in Mtwara region. The main objective of the evaluation was to assess the practicality, ease, and frequency of using the *Chandarua Kliniki* dashboard by the region and district health council personnel. VectorWorks used

a semi-structured survey to conduct interviews in the nine districts of Mtwara region. Interviewees included district medical officers, district health management information system (HMIS) focal people, and a district malaria focal person. The information from the survey improved the accountability information system (AIS).

Following the review of the *Chandarua Kliniki* dashboard, VectorWorks project scaled up dashboard training to the Regional Health Management Teams (RHMTs) and Council Health Management Teams (CHMTs) in the Lindi, Ruvuma, Mara, Simiyu, Geita, Kagera, Shinyanga, Morogoro, Pwani, Tabora, Kigoma, and Katavi regions, whereby 399 RHMTs/CHMTs were trained: 210 men and 189 women. The training focused on the navigation and use of the *Chandarua Kliniki* dashboard to help the teams make informed decision to avert situations in poor performing districts. To ensure proper accountability of ITNs in the country, the project also extended its training support to the 12 Global Fund regions: Dodoma, Singida, Manyara, Arusha, Kilimanjaro, Tanga, Rukwa, Mbeya, Songwe, Iringa, Njombe, and Dar es Salaam. A total of 427 RHMT/CHMT members attended (258 men and 169 women).

Status: Every month the district and RHMTs for all 26 regions log into the *Chandarua Kliniki* dashboard to view the ITN issuing performance trends for their respective district. In addition, they document the comments and recommendations to resolve issues and they print the monthly accountability report, which is shared with the CHMTs to enable them to make informed decisions to correct the situation.

VectorWorks regional managers continue to follow up with the district teams to make sure they log into the systems and make sure reports are being discussed at CHMT levels and reports filed. Once a month, the regional managers talk to the RHMT and CHMTs about the ITN performance trend in the number of antenatal care (ANC) first visits and measles-rubella-vaccinated children against the number of ITNs issued. The discussion, at all levels, is the basis for health facilities supportive supervisions.

Implementing the *Chandarua Kliniki* dashboard in Year Four has helped improve overall management of ITN distribution at the facility level. The dashboard increased data visibility and documentation of the performance trends of the program at the national, regional, and districts levels.

To strengthen accountability of distributed ITNs in Year Five, VectorWorks will train the PO–RALG team on the *Chandarua Kliniki* dashboard so they understand the performance of the councils and, to improve performance, they can follow up with poor performing regional and district teams.

Deliverables	Audience	Timing	Dissemination Plan	Status
Trend analysis	NMCP, PMI	Quarters 1–4	Share by email	Ongoing
Evaluation report	NMCP, PMI	Quarter 1	Share by email	Delayed

ME.5 Support Research Agenda for Outdoor Mosquito Biting in Zanzibar

[Cancelled in Year Two.]

ME.6 Monitoring Project Engagement Across Age and Gender

[Completed in Year Three.]

ME.7 Care and Repair Qualitative Study

[Completed in Year Three.]

ME.8 Zanzibar Continuous Distribution Process Evaluation

[Completed in Year Three.]

ME.9 Accountability Information System (AIS) for Zanzibar

Brief activity description: In Year Four, the VectorWorks project, in collaboration with the University of Dar es Salaam and the HMIS-Zanzibar, finished developing the accountability information system for Zanzibar—the *Chandarua Kliniki* dashboard—which accounts for all the ITNs issued through the reproductive and child health (RCH) and community channels. In addition, the project supported the Zanzibar Malaria Elimination Program (ZAMEP) in developing a coupon, which is used to exchange a net through the community distribution channel. This coupon has security features, including a unique numbering system that is specific to a district; the code, a quick response code, more commonly called simply a QR code, and a hologram validate the authenticity of the coupon. The Central Medical Store (CMS) scans the coupons when distributing them to the health facilities; district pharmacists scan the coupons when they are redeemed. This information is captured and visualized on a coupon dashboard that sits on the District Health Information System 2 (DHIS2) platform. The dashboards enable users to monitor the redemption rate of coupons through the community distribution channel and monitors coupon stock on hand from the district to the national level.

Before the scale up of *Chandarua Kliniki* and coupon dashboards in Zanzibar, a pretest was conducted that involved key level stakeholders, such as ZAMEP, CMS, and the Logistics Management Unit. The pre-test was done to solicit comments and recommendations on the visualizations, navigation, and use of the dashboard in making informed decisions. Before scaling up, orientation and advocacy meetings were conducted for 25 council directors and district medical officers on all aspects of the accountability systems to increase their understanding of the ITNs management and to enforce accountability of the ITNs for the district and health facility personnel.

Status: Currently, both dashboards are "LIVE" and training was conducted for all key central and district personnel; 89 people were trained. District health management officers were trained on how to navigate the dashboards, interpret the data, monitor performance trends, and print the quarterly accountability report. The printed report is shared with the District Health Monitoring Team (DHMT) team; they will discuss the variances seen on the dashboard and make informed decisions. The report will be filed later at the district level.

In Year Five, the VectorWorks project will conduct an evaluation of *Chandarua Kliniki* and coupon dashboards to assess the practicability, ease of use, and frequency of use of the dashboards by the district and central level personnel.

Deliverables	Audience	Timing	Dissemination Plan	Status
Training Reports on AIS development	ZAMEP, PMI	Quarter 4	Share by email	Delayed
Quarterly accountability Reports	ZAMEP, PMI	Quarters 1–4	Shared by email	On-going

ME.10 Zanzibar ITN Durability Monitoring

Brief activity description: VectorWorks is providing technical support to the ZAMEP in conducting durability monitoring in two sites in Zanzibar—Wete and North B—following the distribution of Olyset and PermaNet 2.0 ITNs during the 2016 mass distribution campaign. The monitoring includes 15 clusters with 10 households each in both sites, following 834 ITNs at baseline and an estimated 668 ITNs at the 36-month follow up. ZAMEP is leading the fieldwork, with Tropical Health providing technical oversight and training. Baseline data collection took place in Wete on Pemba Island and North B on Unguja Island from October 17 to November 11, 2016, approximately three months after distribution; 834 ITNs were tagged. As expected, the two sites were very similar in household characteristics and in knowledge and attitudes about ITN use, care, and repair. Only about 25% of the cohort ITNs were hanging; the others were still in the package. However, the hanging and use rate for other ITNs in the households was about 80% at both sites, suggesting that families preferred to use the ITNs they had, and that were already in place, before switching to the new ones. Attrition was low; 7% of ITNs were no longer in the households; of these, 85% had been given to others to use and only 0.1% were lost due to wear and tear (other reasons for loss could not be determined). Of the 834 ITNs tagged, 96% were in good condition and 99.2% were "serviceable" at baseline.

Status: VectorWorks conducted data analysis for the 12-month report and submitted the report to PMI on October 30, 2017. PMI approved the report on November 28, 2017. Follow up of the durability monitoring cohort in Unguja and Pemba was successful and the results for the physical durability were within the expected range in Unguja (PermaNet 2.0), but estimated to be slightly below the three year median lifespan in Pemba (Olyset). VectorWorks conducted data collection at 24 months and we will submit the 24-month report to PMI early in Year Five.

Deliverables	Audience	Timing	Dissemination Plan	Status
Completed in Year Three: ME.10.1 Baseline report				
2. 12-month report	PMI, ZAMEP	Quarter 1	Share by email	Complete
3. 24-month report	PMI, ZAMEP	Quarter 1, Year 5	Share by email	In process
4. Final (36-month) report	PMI, ZAMEP	Quarter 4, Year 5	Share by email	Not started

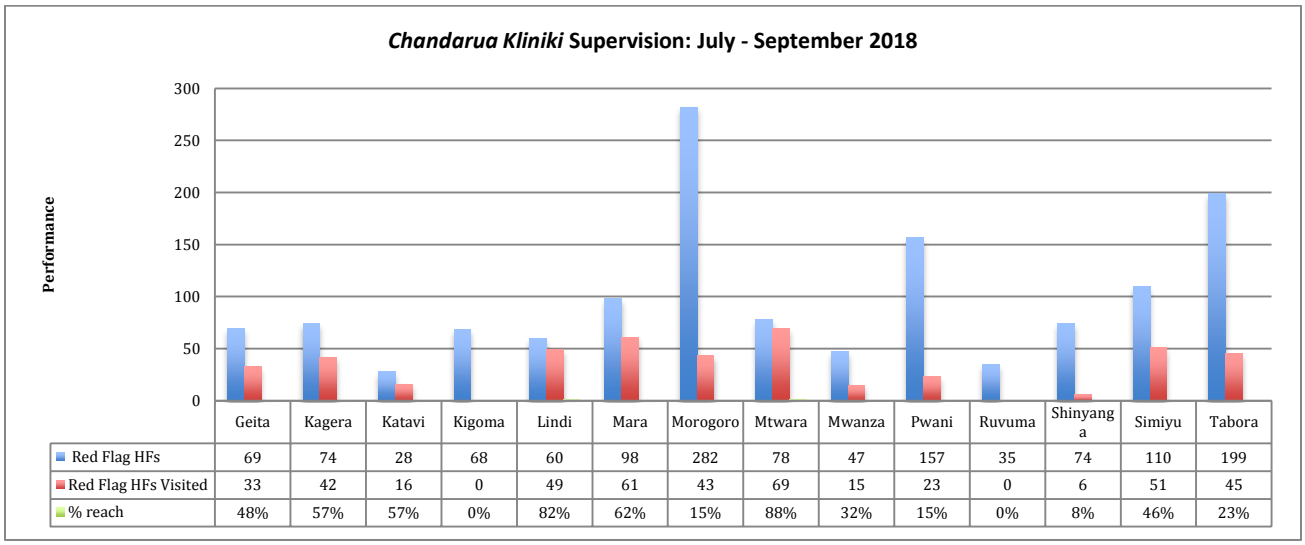
ME.11 Monitoring ITN Distribution and Issuing at Health Facilities

Brief activity description: VectorWorks supports the government to conduct follow ups and to supervise ITNs issuing at the health facility level. The project uses the *Chandarua Kliniki* dashboard in the DHIS2 to identify health facilities with issues and to prioritize facilities to visit, including key issues that supervision teams need to focus on at the health facility. These monitoring initiatives provided key issues for attention, such as reporting errors, no request submissions for restocking, poor recording in the different sources of data at health facilities, and data entry errors by DHIS focal persons at the district level. After subsequent supportive visits to the health facilities, data quality is improving. The regional review meeting in Mwanza and Mtwara in Quarter Two and in Ruvuma in Quarter Three, field visits, and data quality assessments by national level team in Morogoro (Kilosa district) and Pwani (Chalinze district) all recognized the importance of intensive CHMT's

attention and use of *Chandarua Kliniki* dashboard to follow up on issues at the health facility level in their respective councils.

Status: For their information and action, VectorWorks develops routine performance trend reports and shares data with Tanzania government authorities on ITN distribution and issuing trends. VectorWorks facilitated district teams to conduct monthly follow-up field visits to facilities with specific issues, following the trend reports. At the project level, in the last quarter of Year Four, VectorWorks started using a real-time online supervision tool to record monthly site team visits and findings from the field. VectorWorks conducts field-level monthly supportive and follow-up visits to all facilities, based on analyzed reports generated by the accountability information system (*Chandarua Kliniki* dashboard), which identifies all facilities with issues that require verification; the red-flagged facilities are the top priorities.

In the second quarter of Year Four, the VectorWorks regional manager for Kigoma, Tabora, and Katavi conducted spot checks to selected households in Kigoma to verify and determine beneficiaries recorded in DHIS books with the actual recipients in the community. In Quarter Four, he made the government in Tabora (regional authority and local governments) accountable to the *Chandarua Kliniki* program when he presented *Chandarua Kliniki* issues to the regional-level stakeholders meeting and ensured that *Chandarua Kliniki* issues are reflected in the meeting resolutions. In Quarter Four, VectorWorks visited 453 out of 1,379 red flagged health facilities in the 14 PMI regions (see the figure below). There were more flagged facilities than anticipated due to the delayed distribution of ITNs in Global Fund regions (Morogoro, Pwani, Shinyanga, Katavi and Tabora). Additionally, regional managers had their time divided due to an overlap of school-based distribution and health facility-based distribution, so they were not able to visit all the flagged facilities.



	Geita	Kagera	Katavi	Kigoma	Lindi	Mara	Morogoro	Mtwara	Mwanza	Pwani	Ruvuma	Shinyanga	Simiyu	Tabora
Red Flag HFs	69	74	28	68	60	98	282	78	47	157	35	74	110	199
Red Flag HFs Visited	33	42	16	0	49	61	43	69	15	23	0	6	51	45
% reach	48%	57%	57%	0%	82%	62%	15%	88%	32%	15%	0%	8%	46%	23%

Beginning in April 2018, VectorWorks conducted refresher trainings for selected RHMTs and CHMTs in the Katavi, Morogoro, Pwani, Shinyanga, and Tabora regions. These teams will conduct intensive supportive supervision visits to the health facilities in the five regions. In the past, the Global Fund supported the trainings in these regions, but PMI will now be the support. VectorWorks also supported the NMCP in training RHMTs and CHMTs in 12 Global Fund regions.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Annual supervision plan	NMCP, PMI	Quarter 1	Share by email	Completed
2. Report on semiannual meetings compiled for all regions	PMI, NMCP	Quarter 3	Share by email	Delayed

ME.12 Zanzibar Residual Malaria Transmission Study Fieldwork

Brief activity description: VectorWorks, including the Center for Communication Programs (CCP) and Ifakara Health Institute (IHI), worked with ZAMEP to design and implement a research study to better understand the magnitude and drivers of residual malaria transmission on Zanzibar. The study spanned two transmission seasons and included data collection in six administrative units (*shehia*); their selection was based on high malaria incidence and receipt of indoor residual spraying in 2016. The study included an entomology component and a human-behavioral component. In Year Four, VectorWorks completed fieldwork, carried out an analysis of entomological and human behavioral data, and began writing the results for publication and to disseminate findings.

Status: VectorWorks completed data collection for the study in December 2017 and mosquito larvae collections for insecticide resistance testing in September 2018, including eight nights of indoor and outdoor mosquito collection in each of the 135 study households. Approximately 700 household members were observed from the study households, during both the dry and the rainy season. In addition to household surveys and structured household observations, the team carried out 62 in-depth interviews and 19 semi-structured observations of community events.

The CCP and IHI, in partnership with ZAMEP colleagues, successfully carried out a data analysis workshop in April 2018 in Bagamoyo, Tanzania. The workshop included presentations on study results across entomological and human behavioral components, discussions, hands-on data analysis sessions, and discussions around opportunities to use the study findings. In addition to data analysis, VectorWorks drafted manuscripts for publication. This included a full draft of a qualitative human behavioral manuscript that was shared with co-authors for input, and a manuscript presenting entomological results, which is still in process. VectorWorks expects to submit both manuscripts to PMI in Quarter One of Year Five.

VectorWorks began disseminating results in Year Four, including a presentation in June 2018 at USAID headquarters, and a presentation at the Zanzibar Malaria Elimination Advisory Committee (ZMEAC) meeting, held in Zanzibar in August 2018. The ZMEAC meeting was an opportunity to present results to ZAMEP and key partners; it takes the place of a stand-alone dissemination workshop. VectorWorks organized a symposium that was accepted for the American Society of Tropical Medicine and Hygiene (ASTMH) meeting in October 2018. The symposium will include a presentation on the study results, titled “Why is Malaria Transmission Persisting in Some Contexts Despite High Coverage of Vector Control Tools, Such as LLINs and IRS? Results From Recent Studies Across Three WHO Regions.” VectorWorks also submitted three abstracts that were accepted for poster presentations.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Publishable-quality human behavior manuscript	PMI, ZAMEP, global malaria community	Quarter 4	Share manuscript with PMI and ZAMEP via email and submit to a peer-reviewed journal	Delayed to Quarter 1 of Year Five
2. Publishable-quality entomology manuscript	PMI, ZAMEP, global malaria community	Quarter 4	Share manuscript with PMI and ZAMEP via email and submit to a peer-reviewed journal	Delayed to Quarter 1 of Year Five
3. Trip report highlighting key outcomes of data analysis workshop	PMI	Quarter 2	Share trip report with PMI via email	Approved by PMI TZ on May 28, 2018; approved by AOR on May 29, 2018
4. Trip report highlighting key outcomes of dissemination workshop	PMI and ZAMEP	Quarter 4	Share trip report with PMI and ZAMEP via email	ZMEAC presentation to be submitted Quarter 1 of Year Five

ME.13 Tanzania Malaria Forum

Brief activity description: VectorWorks had planned to organize the 2017 Tanzania Malaria Forum, as part of World Malaria Day on April 25, 2017 (Year Three). The forum sought to bring together malaria stakeholders from academia, research, government, and other venues to deliberate on progress made, as well as challenges encountered in malaria control activities in Tanzania. VectorWorks was prepared to coordinate the 2017 Malaria Forum through joint meetings; the NMCP was also engaged and provided support for the coordination team. However, because of the ongoing writing of funding requests to the Global Fund (2018–2020), the NMCP advised VectorWorks to postpone the Malaria Forum activity. Most of the senior officials of the NMCP were focused on the funding request-writing process; therefore, they could only be minimally involved in the forum.

Status: VectorWorks did not hold the activity in Year Three at the request of the NMCP. The Forum was discussed with NMCP again in Year Four, but NMCP ultimately decided not to pursue it. Separate events, including the release of the MIS Key Indicator Report/World Malaria Day 2018, and deliberations on the updated national Malaria Strategic Plan, have accomplished the original goals of the forum. VectorWorks therefore requested that the activity be canceled; this was approved by PMI on Oct 2nd 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
Report on event activities	PMI, JHU, National Institute for Medical Research (NIMR)	Year 3	Share by email	Delayed

ME.14 Technical Assistance to ZAMEP for Entomology Data Systems and Analysis

Brief activity description: VectorWorks provided technical assistance and hands-on training to ZAMEP counterparts to learn to use a new data management system. VectorWorks and ZAMEP worked on the system for mosquito sorting and data entry for the residual malaria transmission study. We initiated tablet-based data collection to reduce the number of paper forms required for data collection. Using Microsoft Excel and R statistical package, VectorWorks provided training in basic data analysis skills to ZAMEP's entomology unit from both Unguja and Pemba Islands. VectorWorks also conducted a workshop, which ZAMEP's manager organized and co-facilitated, and ZAMEP members from all units attended. During the workshop, facilitators provided refresher materials on how to write reports, proposals, and manuscripts—including how to use EndNotes as a reference database, how to use Microsoft PowerPoint to prepare publishable figures in Excel and make them presentable, and how to develop posters for conference presentations. Finally, VectorWorks presented simple approaches based on standard assumptions that can be used—based on existing malaria cases—to forecast the expected number of malaria cases in the coming years.

Status: VectorWorks submitted the report on December 16, 2017; PMI approved it on March 5, 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
Report on technical assistance provided and key recommendations	PMI and ZAMEP	Quarter 1	Share by email	Approved March 3, 2018

ME.15 Coordination and Support for VectorWorks Tanzania Research Agenda

[Completed in Year Three.]

ME.16 Assessment of ITN Access and Ownership Among People Living with HIV/AIDS

Brief activity description: In addition to children and pregnant women, people living with HIV/AIDS (PLWHA) are biologically vulnerable to malaria. While the SNP and *Chandarua Kliniki* program target these first two vulnerable populations, we do not know how well continuous ITN distribution channels are serving PLWHA. To assess PLWHA's access to ITNs, VectorWorks reviewed data and is discussing access with stakeholders who work with PLWHA in Tanzania. If we find that PLWHA are underserved by current continuous distribution channels, we will propose alternatives to PMI for consideration. VectorWorks investigated the existing data sources to assess ITN ownership by PLWHA. The most recent data with HIV status are from the 2011–2012 Tanzania HIV/AIDS and management information system, which was conducted just after Tanzania's 2010–2011 universal coverage campaign. We found that households with PLWHA were more likely to have ITNs than households without PLWHA (94% versus 91%), and they were more likely to have at least one ITN for every two people (59% versus 51%). Overall, about 8% of households included at least one PLWHA. Household size is a major variable to having enough ITNs, but we found that households with PLWHA were similar in size to households without PLWHA. In the future, it will be important to continue monitoring access to ITNs through continuous distribution for PLWHAs. VectorWorks staff talked to Dr. Rugola Mtandu, who works on HIV programs for the government of Tanzania. He said that no program specifically targets PLWHA for ITN distribution, so they may be an important population to target. VectorWorks will compile this information and submit it to PMI in the first quarter of Year Four.

Status: VectorWorks will synthesize the findings and present a comprehensive report to PMI in Quarter One.

Deliverables	Audience	Timing	Dissemination Plan	Status
Report on access and ownership of ITNs among PLWHA	PMI and NMCP	Quarter 1	Share by email	Delayed to Quarter 1 Year 5

ME.17 Assessment of ITN Ownership Under Continuous Distribution

Brief activity description: With the shift from repeated mass campaigns to an ITN distribution strategy that relies primarily on continuous distribution channels, the question arises—how do we best monitor this new approach? Continuous distribution needs to be responsive to changes in ITN access to ensure that coverage is maintained at target levels, and this requires that data is available to verify whether the anticipated levels of ITN coverage are being reached. VectorWorks designed a study to compare the estimates of ITN access from an LQAS approach to those of the 2017 MIS in Lindi, Mtwara, and Ruvuma regions.

Status: VectorWorks applied LQAS methodology on the ITN ownership coverage in the three regions in Tanzania. We conducted data collection three months after the implementation of the 2017 MIS and, from LQAS, determined the results of pass/fail at various levels of coverage. We will compare these results to the MIS results when they are released (estimated Q1 Year Five).

Each region in the Southern zone of Tanzania is defined as a "lot," comprising Lindi, Mtwara, and Ruvuma. In each region, VectorWorks selected 19 clusters. In each cluster, using a list of households per cell obtained from the village leader, or listing done by the interviewer, we used the Random Household Selection App to select one household. The indicator for ITN ownership coverage was that at least 80% of people in the household have access to an ITN. At the regional level, we then determined ITN ownership coverage on a pass-fail basis.

VectorWorks conducted a one-day training for 12 data collectors. The data collectors, with supervisors from VectorWorks, interviewed 19 households, which were sampled in each of the three regions. Both Lindi and Mtwara regions had at least 60% to 80% ITN ownership coverage, and Ruvuma region had at least 40% to 60% ownership coverage. When the MIS findings are released, VectorWorks will compare these findings with the MIS findings to determine if the LQAS is a suitable substitute for net ownership in years when the MIS is not conducted. We will then complete and submit a final report to PMI.

Deliverables	Audience	Timing	Dissemination Plan	Status
Protocols	PMI, JHU, NIMR	Quarter 1	Share by email	Delayed
Presentation of baseline findings	NIMR, NMCP, PMI, PO-RALG	Quarter 3	In-person presentation to NMCP, NIMR, PO-RALG, and PMI; email presentation to NMCP and PMI	In process

Implementation (IM)

IM.1 Initial Meeting with SNP 1 and 2 Implementers on Lessons Learned, Best Practices, and Recommendations for Future Implementation

[Completed in Year One.]

IM.2 NetCALC Modeling of ITN Coverage Estimates for SNP3

[Completed in Year One.]

IM.3 Review and Printing of Standard Operating Procedures, Data Collection, Reporting, and Monitoring Forms

[Completed in Year One.]

IM.4 ITN Quantification and Validation of Quantification Data

[Completed in Year One.]

IM.5 Microplanning Meetings

[Completed in Year One.]

IM.6 Trainings and Orientations

[Completed in Year One.]

IM.7 Transportation and Storage of ITNs

[Completed in Year One.]

IM.8 Supervision

[Completed in Year One.]

IM.9 Assessment of Potential Continuous Distribution Channels for SNP Regions

[Canceled in Year One, Modification 2.]

IM.10 Qualitative Analysis Workshop

[Completed in Year One.]

IM.11 NetCALC Workshops for the 7 PMI Regions on Mainland Tanzania

[Completed in Year Three.]

IM.12 Health Facility Distribution

Brief activity description: VectorWorks continued with the routine distribution of ITNs through ANC and EPI services. In Quarter One of Year Four, VectorWorks expanded implementation into five more regions: Katavi, Morogoro, Pwani, Shinyanga, and Tabora. PMI is managing ITN distribution in a total of 14 out of 26 regions in-country.

Status: VectorWorks works closely with the Logistics Management Unit, MSD, and CHMTs to ensure that health facilities order on time through the electronic logistics management information system and deliveries

of their orders are conducted on time to prevent ITN stockouts at health facilities. From October 2017 to September 2018, VectorWorks distributed 1,629,028 ITNs as resupplies to public health facilities in 14 regions: Mwanza, Mara, Kagera, Kigoma, Simiyu, Geita, Ruvuma, Lindi, Mtwara, Shinyanga, Katavi, Tabora, Morogoro, and Pwani. In addition, VectorWorks supported the initial smart push distribution of 1,098,080 ITNs to 17 regions (5 PMI regions and 12 Global Fund regions). The 17 regions were Arusha, Dar es Salaam, Dodoma, Iringa, Katavi, Kilimanjaro, Manyara, Mbeya, Morogoro, Njombe, Pwani, Rukwa, Shinyanga, Singida, Songwe, Tabora, and Tanga. To-date all 26 regions are issuing ITNs to the targeted population at the health facilities.

Simba Logistics, a private transporter who delivers the ITNs, provides VectorWorks with report books and proof of delivery, including a distribution summary for all quantities it delivers to each region. Also, the transporter has an online application it uses to report distribution data electronically. In lieu of sending entire books of distribution reports and proof of delivery, VectorWorks will share the login information for Simba's dashboard.

Deliverables	Audience	Timing	Dissemination Plan	Status
Distribution report	NMCP, PMI	Quarter 3	Share by email with NMCP and PMI	Delayed
Proof of delivery	NMCP, PMI	Quarters 1–4	Share by email with NMCP and PMI	Delayed

IM.13 School-Based Distribution

Brief activity description: VectorWorks is supporting the government of Tanzania to distribute ITNs through primary schools as one of the ITN continuous distribution channels. In Year Four, VectorWorks planned to distribute 2,770,086 ITNs in 14 target regions. We conducted most of the activities in Quarters Three and Four: April to September 2018. Activities included quantification, planning, coordination, transporting and issuing ITNs, and reporting. VectorWorks contracted Simba Logistics to distribute ITNs through schools in all 14 regions: Morogoro, Pwani, Mtwara, Lindi, Ruvuma, Geita, Kagera, Shinyanga, Simiyu, Mwanza, Mara, Kigoma, Katavi, and Tabora.

Status: At the start of Year Four, VectorWorks completed the fifth round of the SNP5, distributing 2,094,470 ITNs through primary schools. VectorWorks also coordinated and conducted planning and coordination meetings for SNP6 implementation at the national and subnational levels. Between April and June, VectorWorks held feedback and planning meetings with regional and council coordination teams in all 14 regions, for a total of 487 participants (352 men and 135 women). VectorWorks hired a service provider who printed SNP reporting booklets and materials for the 14 SNP regions. The project distributed materials to 51 councils (in the eight regions mentioned below) and schools, including ITNs as per the distribution plan. From July to September, VectorWorks distributed 1,372,616 ITNs in eight regions of Morogoro, Pwani, Mtwara, Lindi, Ruvuma, Geita, Kagera, and Shinyanga; therefore, in Year Four VectorWorks distributed 3,467,086 ITNs through schools. Regional and council coordination teams visited 2,549 schools out of 5,381 (which is 47%) during ITNs issuing to pupils in the first eight regions.

Beginning in Quarter Two of Year Four through Quarter Four, VectorWorks implemented SNP6 activities, which included planning and coordinating at the national and subnational level up to the distribution of 1,372,616 ITNs in eight regions of mainland Tanzania. Although SNP6 is still ongoing, the implementation report is already underway to ensure a quick turnaround.

VectorWorks had hoped to identify a region whose capacity could be strengthened so that it could manage its own SNP distribution moving forward. Unfortunately, due to funding needing to be planned for and secured so far in advance, this was not possible.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Coordination and engagement meeting briefs	NMCP, PMI	Quarter 3	Share by email	Delayed
2. Final SNP6 implementation report	PMI, LLIN Task Force	Quarter 4	Share by email	Delayed
3. Report on experience/lessons learned from a self-managed SNP region	NMCP, PMI	Quarter 4	Share by email	Delayed

IM.14.A Conduct a Market Dynamics Landscape Assessment to Explore Retail Channels for ITNs in Tanzania

[Completed in Year Three.]

IM.14.B Hold a Stakeholder Workshop to Discuss Findings of the Market Dynamics Assessment

[Completed in Year Three.]

IM.15 Implementation Support and Technical Assistance for Zanzibar Continuous Distribution

Brief activity description: VectorWorks directly supports and oversees distribution of ITNs in Zanzibar through two channels, the RCH channel and the community channel. The RCH channel targets women at their first ANC visit and children at their first measles vaccination; the community channel targets community members who meet specific criteria (e.g., ITNs torn beyond repair, uncovered sleeping spaces, active case detection, and emergency situations).

Status: VectorWorks supported the integration of ITN continuous distribution into the current supply chain management system, known as the Zanzibar Integrated Logistics System. VectorWorks, in collaboration with ZAMEP, the CMS, and the Logistics Management Unit, successfully developed guidelines for both health facilities–based and community-based channels to ensure standard implementation of ITN continuous distribution in Zanzibar. A total of 486 health care workers received training from zonal and council health management teams, both in class and on-the-job, to ensure the proper management of issuing ITNs to beneficiaries, data documentation, reporting, and ordering ITNs for both RCH and community channels.

Implementation of ITN continuous distribution through the RCH started in December 2017; the community channel started in July 2018. To-date 229,400 ITNs have been distributed to 171 health facilities in both Unguja and Pemba Islands, including both smart push and resupplies for both channels.

VectorWorks coordinated and provided technical assistance to CMS on ITNs storage and distribution in both health facilities and communities, and strengthened the capacity of CMS to manage stock inventory, order processing, and resupply of ITNs to all health facilities in Zanzibar.

No deliverable is associated with this activity.

IM.16 Conduct ITN Quantification

[Completed in Year Three.]

IM.17 Establish Health Facility ITN Storage Space Requirement

[Completed in Year Three.]

IM.18 Adopt Just-in-Time Delivery Approach for School Net Program ITNs

[Completed in Year Three.]

IM.19 Private Market Shaping

Brief activity description: VectorWorks is working with the government of Tanzania, through the NMCP, to streamline the role of the private sector in making ITNs readily available for sale in the commercial sector. The revised Tanzania ITN Plan (2018–2020) recognizes three main channels for continuous distribution of ITNs, which include distributions through health facilities (*Chandarua Kliniki* program), distribution through primary schools (SNP), and distribution through the private sector (commercial sales). Based on the progress we made in Year Three conducting stakeholder workshops, VectorWorks is working with the NMCP and other key stakeholders to address some of the barriers to market entry, as identified by stakeholders in Year Three.

Status: VectorWorks, in collaboration with NMCP and the Tanzania Parliamentarians Against Malaria, initiated discussions with authoritative bodies broadly concerned with ITNs to convene a meeting to discuss barriers to market entry and forge solutions to address each individual challenge. The plan was to convene a meeting in Quarter Three to bring to the table the Tanzania Revenue Authority (taxes), Tanzania Bureau of Standards (untreated nets), Tanzania Pesticide Research Institute (ITN registration), Tanzania Fair Competition Commission (fair competition), net manufacturers, and Tanzania business (beneficiaries). Because of the review and development of the supplementary malaria strategic plan for Tanzania, NMCP and VectorWorks agreed to delay this meeting until the senior management of the Ministry of Health endorses the supplementary strategic plan (2018–2020). Expectations are that, the ministry will endorse the plan in the first quarter of Year Five.

VectorWorks provided technical assistance to NMCP to operationalize the ITN strategy for Tanzania. The project developed a draft commercial channel implementation guideline, which stipulates how the private sector will operate in the context of marketing elements and how other non-marketing issues will be resolved. VectorWorks presented the draft implementation guideline to, primarily, programmatic people during the ITN plan workshop held in Bagamoyo; it was officially submitted to NMCP for further review and endorsement. To-date the NMCP/Ministry of Health has not shared feedback on the progress made, so VectorWorks will move forward with submitting to PMI for approval.

To facilitate linkages to financing and marketing for ITNs, VectorWorks—through the Malaria Safe initiative—started discussions with members of the initiative, especially from the banking sector, to explore the possibility of creating a loan portfolio for traders who want to enter the ITN business.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. Presentations and meeting notes used/from the technical working groups	PMI	Quarters 1–4	Share by email	Completed
2. Report detailing the number of new ITNs registered in the market, ITNs sold by importers/wholesalers in the market, local ITNs distributors actively engaged in the market because of market linkages to finance, and new products designed by manufacturers following the human-centered design workshops	PMI	Quarter 4	Share by email	Delayed

IM.20 SBCC for *Chandarua Kliniki* Program

Brief activity description: VectorWorks is supporting the government of Tanzania through the NMCP to implement targeted and mass media SBCC activities that will promote the national-level distribution of ITNs in health facilities (*Chandarua Kliniki* program) and in schools (SNP). We implemented these targeted activities in the 14 regions with the highest malaria prevalence; consistent use of ITNs; and proper care, repair, and washing of ITNs in basins. We used experiential media to reach communities with key messages for each focus area—road shows and public announcements in selected regions, districts, and wards.

Status: In Year Four, VectorWorks conducted SBCC activities to promote the *Chandarua Kliniki* program and SNP to intensify program awareness about processes and eligibility for obtaining an ITN for both SNP and *Chandarua Kliniki*. The targeted regions were Katavi, Kigoma, Morogoro, Pwani, Simiyu, Shinyanga, Tabora, and Zanzibar. Through road show activities, VectorWorks reached 49 district councils in mainland Tanzania. We conducted 878 road shows, reaching 645,888 people (266,864 men and 379,024 women) through community events in various wards of the 49 district councils. In Quarter Three, VectorWorks deployed experiential activities through road shows in Zanzibar to support the reintroduction of community-based distribution of ITNs, as well as to share messages around general ITN use, care, and proper washing of ITNs.

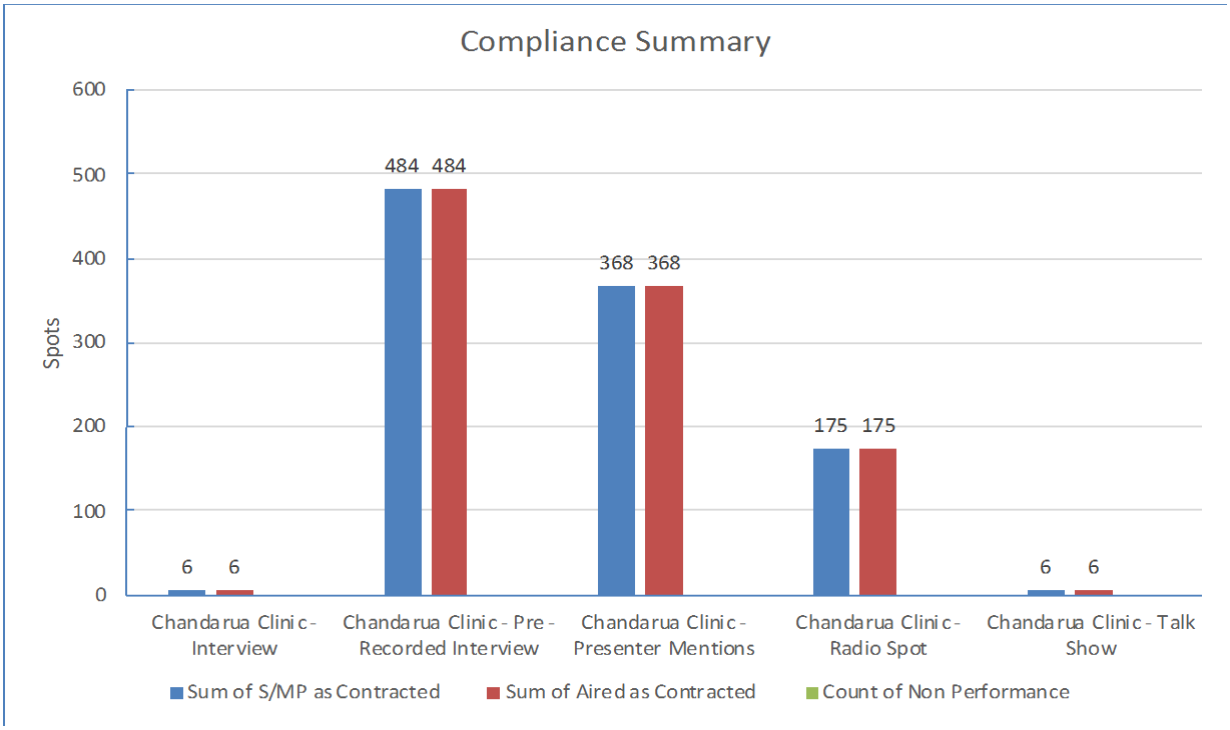
Activities in Unguja and Pemba started on August 24, 2018, and ended on September 22, 2018, having covered all 11 district councils: seven in Unguja and four in Pemba. In early September 2018, prior to conducting these activities, VectorWorks held an engagement meeting both in Unguja and Pemba; 22 officials, mostly district cultural officers, attended.

The following table shows the districts covered with activation road show activities; number of events conducted per district; and people that were reached directly, disaggregated by gender. In summary, a total of 290 were conducted in 11 districts covering 127,053 people (47,209 men and 79,844 women).

REGION	DISTRICTS	No OF SHOWS	PEOPLE REACHED		
			MALE	FEMALE	TOTAL
Mjini Magharibi	Mjini DC	28	4,555	8,960	13,515
	Magharibi A	28	4,910	7,850	12,760
	Magharibi B	25	4,390	7,950	12,340
Kaskazini Unguja	Kaskazini A	24	4,750	8,450	13,200
	Kaskazini B	24	6,125	12,000	18,125
Kusini Unguja	Kati	26	6,428	10,930	17,358
	Kusini	26	4,051	7,302	11,353
Kaskazini Pemba	Micheweni	26	3,150	4,470	7,620
	Wete	28	3,200	4,700	7,900
Kusini Pemba	Chake Chake	28	2,900	4,100	7,000
	Mkoani	27	2,750	3,132	5,882
TOTAL			47,209	79,844	127,053

In Year Four, VectorWorks implemented a radio campaign to promote a national scale up of the *Chandarua Kliniki* program. In mid-March 2018, Manyara was the last region to roll out the program. In the third quarter, VectorWorks engaged Clouds FM Radio, which has highest national coverage (47%); followed by Radio Free Africa (25%) and market share of 18% (15% for Radio Free Africa), based on more than 21 million listeners, according to Tanzania All Media Product Consumption Survey.

The campaign aired for four months, from June to September. VectorWorks contracted the radio stations to air a total of 4,630 spots classified as Radio Spots, Talk Shows, Interviews, Presenter Mentions, and Pre-recorded messages. VectorWorks engaged an independent media-monitoring agency (Infinite Media) to monitor and generate reports on media performance and compliance. Media monitoring reports showed very good messages broadcasting performance. Overall, the compliance rate for radio station-to-air contracted messages was 100%; 5,756 spots were aired, as per the media plans developed during the campaign period (June–September). This aggregate number of spots (5,756) aired reflects a bonus of 1,126 spots that we received free of charge. The following table shows messages broadcasting for August.



In Quarter Four of Year Four, VectorWorks put two questions (recall and knowledge of *Chandarua Kliniki*) into the Omnibus Survey machinery. It will tell us to what extent the campaign reached people, but will also draw more lessons after the demographics are analyzed properly. The report is due in the Quarter One of Year Five and the results will be shared in the semi-annual report for Year Five.

In Year Four, VectorWorks did not implement a specific radio campaign to promote ITNs as they entered the market. Only one brand of ITN (DawaPlus) was introduced into the market; however, penetration of the product into the supply chain market is still not well known and the scale of operations by the local importer (Motex LTD) to push it is currently low.

Deliverable	Audience	Timing	Dissemination Plan	Status
Dissemination plan, including number of documents to print and number of community events to conduct by region	NMCP and PMI	Year 4	Share by email	Delayed

IM.21 Demand Planning

Brief activity description: Using 2017 HMIS data, VectorWorks conducts annual quantitative analysis to forecast ITN needs for 2018, 2019, and 2020 in health facilities in all 26 regions of Tanzania. VectorWorks estimated a percentage increase of 9.2% through 2020 (by calculating the difference between 2016 and 2017 HMIS issued data). To determine the difference, we compared the HMIS-issued data with population projections data forecasted for the same years. (NMCP through Global Fund used the population projections

to procure ITNs for all 26 regions in the same years.) Beginning in 2019, PMI will not procure ITNs for the RCH channel and the Global Fund will procure all ITNs needed for the country.

Status: VectorWorks shared the costed quantification numbers with PMI for the 14 PMI regions for storage, receiving, dispatch, and distribution for approval. VectorWorks developed a supply plan and PMI procured and delivered 558,251 ITNs in February 2018. The Global Fund will procure the remaining ITNs (3,286,774) needed for 2018. We expect the first delivery of ITNs (2,274,553) to arrive in-country in September 2018 and the second delivery of ITNs (1,012,221) in December 2018.

VectorWorks recommends using HMIS data in the future to determine ITN needs for the country and the quantities of ITNs to procure. All regions have begun implementing the program and, therefore, HMIS data is more accurate than population data. In regions where VectorWorks implemented the ITN program for one year, there is a significant difference between the population data and the HMIS data.

The HMIS data is slightly higher than the population data, which indicates that the number of women attending their first ANC visits has increased since the *Chandarua Kliniki* program was implemented.

Deliverables	Audience	Timing	Dissemination Plan	Status
Annual ITNs supply plan	NMCP, PMI	Quarter 2	Share by email	Delayed
ITN costing for 14 regions	PMI	Quarter 2	Share by email	Delayed

IM.22 Technical Assistance to Medical Stores Department on Warehousing, Inventory Management, and Distribution

Brief activity description: VectorWorks currently works with the private sector to store and distribute ITNs. We hired private warehouses in different zones to store ITNs and we hired Simba Logistics to distribute the ITNs throughout the country.

The MSD receives ITNs through their systems, processes the orders, and submits sales invoices/proof of delivery to private transporters for distribution. For sustainability purposes, MSD will assume responsibility for the roles of storage and distribution of ITNs throughout the country.

Status: VectorWorks is providing technical assistance to MSD to enable them to become responsible for ITN storage and distribution. Two zones (Mwanza and Tabora) are now responsible for storage and one zone (Mwanza) is responsible for distributing to two districts (Ilemela and Nyamagana) in Mwanza region. However, all MSD zones are responsible for processing orders and preparing sales invoices/proof of delivery for all regions.

It has been a challenge for MSD to assume full responsibility for ITN distribution because of the inadequate number of vehicles available at MSD and within the zones. With support from the Global Fund, MSD received 181 vehicles of different sizes for direct delivery distribution of commodities. The fleet has not been allocated to the zones, but the president of Tanzania launched the vehicles at the central level on March 26, 2018, and we expect them to be allocated to the zones. Therefore, with this increase in vehicles, VectorWorks expects the MSD to increase their scope and take responsibility for distributing the ITNs.

VectorWorks plans to conduct quarterly performance assessments of the zones to assess their performance on storage and distribution and, where there are gaps, strengthen capacity. In May 2018, VectorWorks plans to organize a review meeting with all zonal managers and other related stakeholders for a joint review of their performance. The expected outcome of the meeting will be a plan for each zone on how they will assume full responsibility for the storage and distribution of ITNs by September 2018 when the MSD takes over this function.

Deliverables	Audience	Timing	Dissemination Plan	Status
Updates on the number of districts picked by MSD for distribution and storage	NMCP, PMI	Quarterly	Share by email	Submitted: Tabora zone is storing ITNs for Tabora, Katavi, and Kigoma regions. Mwanza zone is storing ITNs for Shinyanga region and distributing in two districts (Nyamagana and Ilemela) in Mwanza region.
Hire logistics advisor	NMCP, PMI	Quarter 2	Share by email	Complete

IM.23 Integrate Health Facility and Community ITNs into the Existing Logistics Structure in Zanzibar

Brief activity description: VectorWorks directly supports and oversees distribution of ITNs in Zanzibar through two channels: the RCH channel and the community channel. The RCH channel targets women at their first ANC visit and children at their first measles vaccination; the community channel targets community members who meet specific criteria (e.g., ITNs torn beyond repair, uncovered sleeping spaces, active case detection, and emergency situations).

Status: We supported the integration of ITN continuous distribution for both RCH and community channels through the health commodities ordering and reporting system—the Zanzibar Integrated Logistics System. As part of the integration process, VectorWorks collaborated with ZAMEP, CMS, HMIS, and the Logistics Management Unit to develop implementation guidelines for both RCH and community channels, which will ensure standard implementation of ITN continuous distribution in Zanzibar. Zonal and council health management teams trained 486 health care workers during in-class and on-the-job training sessions to ensure proper management of issuing ITNs to beneficiaries, data documentation, and reporting and requesting ITNs for both RCH and community channels.

Deliverables	Audience	Timing	Dissemination Plan	Status
Revised Zanzibar continuous distribution strategy	ZAMEP, PMI	Quarter 2	Share by email	Delayed

Revised Zanzibar implementation and training guidelines	ZAMEP, PMI	Quarter 2	Share by email	Delayed

IM.24 Develop a Short Course on Implementation and Management of ITN

Brief activity description: VectorWorks conducted trainings for health care workers (HCWs) on implementing the *Chandarua Kliniki* project. Health facilities have a high staff turnover; providing in-person training to all new staff would be costly and require a significant amount of effort. To provide quality, standardized training easily and inexpensively to new staff, VectorWorks is developing a short video training course on ITN management and documentation; this will replace formal, in-person trainings. The video will be shared with the HCWs to ensure the continuity of implementation standards, specifically for issuing the ITNs to the intended audience, documenting the data, and reporting.

Status: VectorWorks contracted with a video production company to create the course and began initial conversations to develop the course, but PMI recommended VectorWorks reprioritize for Year Five and this activity was not included in the approved Year Five work plan.

Deliverables	Audience	Timing	Dissemination Plan	Status
Training video	PMI, PO-RALG, NMCP	Quarter 4	Share by email	To be canceled

Project Management (PM)

PM.1.2 Program Management

Brief activity description: In Year Three, VectorWorks significantly expanded the project activities. We scaled up SNP to 14 regions (from seven) and expanded *Chandarua Kliniki* to nine regions (from two). In Year Four, with support from the Global Fund, VectorWorks planned to assist the NMCP to lead a similar set of activities.

Status: In the first half of Year Four, VectorWorks hired additional staff to support the growing project activities. We hired a regional officer to manage regional project activities and also to transition project management to the Tanzania government officials. The regional officer now manages the Morogoro and Coast regions.

We hired a private sector and public relations manager in the Dar es Salaam office. She is now in charge of the Malaria Safe initiative, which has a strong private sector component, and she engages with the government. We hired a program officer in Dar es Salaam who will provide technical assistance to strengthen the capacity of NMCP and MSD to assume full responsibility for receiving, storing, and distributing ITNs. The program officer will work with MSD and NMCP in 12 regions to implement health facility–based distribution, using the same standard operating procedures used in PMI-supported regions, which pioneered the *Chandarua Kliniki* health facility distribution program. VectorWorks procured 4 vehicles, which were delivered in August 2018.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. vehicles procured	NMCP, PMI	Quarter 34	Share by email	Complete August 19, 2018

PM.2.1 Project Reporting

Brief activity description: VectorWorks coordinates with PMI Tanzania to ensure close communication and adequate reporting. We do this through the USAID Tanzania Mission database—TMEMS—regular updates with PMI, and a quarterly joint program planning meeting with PMI. VectorWorks provides semiannual technical reports and quarterly financial reports to USAID headquarters, which we share with PMI Tanzania.

Status: VectorWorks Tanzania remains in close communication with PMI Tanzania and USAID Washington. In addition to the above-mentioned required updates and semiannual reports, VectorWorks short-term technical assistance travelers met with PMI Tanzania staff for debriefings. Several representatives of VectorWorks Tanzania attended the VectorWorks annual planning meeting in June 2018 in Baltimore. The Year Three annual report, Year Four work plan, and the Year Four semiannual report are complete and approved; VectorWorks continues to share quarterly financial reports.

Deliverables	Audience	Timing	Dissemination Plan	Status
1. VectorWorks Tanzania Year 3 annual report	PMI	Quarter 1	Share by email	Complete
2. Year 4 work plan	PMI	Quarter 1	Share by email	Complete
3. Quarterly financial reports	PMI	Quarters 1–4	Share by email	In process
4. VectorWorks Tanzania Year 4 semiannual report	PMI	Quarter 3	Share by email	Complete

PM.3 Planning for Scale-Up

[Completed in Year One.]

PM.4 International Travel

Brief activity description: VectorWorks staff will travel to Tanzania for short-term technical assistance, and Tanzania-based staff will travel to the United States for meetings and conferences, as well as to Switzerland for the Alliance for Malaria Prevention and Vector Control Working Group meetings.

Status: VectorWorks staff provided technical assistance throughout the reporting period during short-term technical assistance trips to Tanzania. All staff have submitted trip reports to PMI.

VectorWorks staff and the government of Zanzibar staff participated in the Alliance for Malaria Prevention and the Vector Control Working Group annual meeting in Geneva, in February 2018; and the American Society of Tropical Medicine and Health conference in Baltimore, Maryland, in November 2017. VectorWorks Tanzania staff traveled to Baltimore for the VectorWorks annual planning meeting in June 2018. VectorWorks will continue to notify PMI in advance of all international travel and to remind PMI's Tanzania bureau and the agreement officer's representative of the travel dates and scope, and to set up any necessary meetings. We plan to send this notification at least three weeks before travel.

The deliverable for this activity is the submission of trip reports, which are on schedule.

PM.5 Documentation and Dissemination

Brief activity description: During Year Four, VectorWorks contracted a videographer to document VectorWorks activities. Working in coordination with PMI, VectorWorks designed scripts for videos—one long and several short scripts—to spotlight VectorWorks and PMI's work with the government of Tanzania. In Year Four, we recorded ITN distributions and interviews with stakeholders and beneficiaries.

Status: VectorWorks completed four short videos and one longer video that served as an overview of the project's experience and innovations with continuous distribution. The four short videos were from the following perspectives: a nurse, a mother, a student, and an employee of SLES. The videos were used for World Malaria Day Activities in 2018 in both Kasulu, Tanzania (at the NMCP's national event organized by VectorWorks) and at a government event in Washington, DC. All the videos are now available online.

Deliverables	Audience	Timing	Dissemination Plan	Status
Finalized video showcasing the impact of continuous distribution	PMI, NMCP, PO-RALG	Quarter 3	Share by email	Complete

CORE PERFORMANCE MONITORING PLAN

Core Results Framework

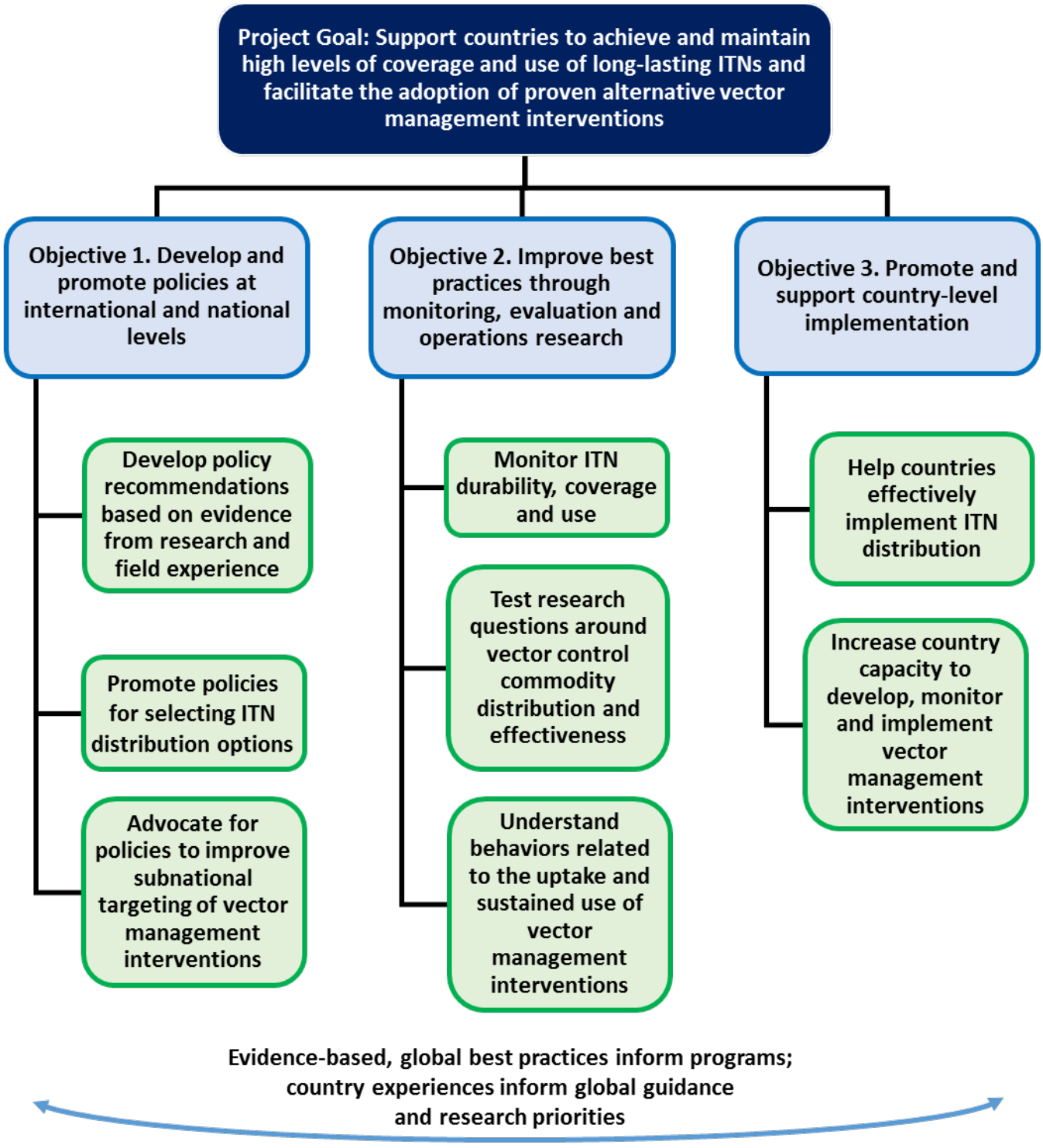
The VectorWorks results framework (see Figure 1) describes the pathways linking activities to the project goal of supporting countries to achieve and maintain high levels of coverage and use of ITNs and facilitate the adoption of proven alternative vector management interventions. In this framework, each activity contributes to the fulfillment of project objectives, which in turn contribute to the overall project goal.

The project will contribute to the goal through three objectives:

1. Develop and promote policies at international and national levels
2. Improve current best practices through monitoring, evaluation, and operations research
3. Promote and support country-level implementation

VectorWorks will develop and promote improved policy, standards, and guidance (Objective 1) via World Health Organization (WHO) and Roll Back Malaria (RBM) channels, informed by monitoring and evaluation activities undertaken under Objective 2, and issues and challenges from field implementation experience from Objective 3. Work in policy and research will bear fruit in Objective 3, when VectorWorks will strengthen country capacity to reach and sustain universal coverage with the right mix of distribution channels and approved alternative tools that are adapted to the country context, and closely coordinated with other vector control measures.

Figure 1. Results framework



Project Objectives and Related Performance Indicators

Objective 1: Develop and promote policies at both the international and national levels to encourage sustained, high levels of coverage and use of long-lasting ITNs and/or alternative vector management interventions.

Countries are now considering the use of ITN distribution channels beyond mass campaigns, and they need guidance on which channels to use, and when, where, how, and whether to use these channels alongside mass campaigns. Similarly, different contexts vary in their epidemiology, resources, and type of malaria vector, which may require adapting vector management strategies at regional and district levels. VectorWorks will use evidence-based and participatory approaches to advocate policies that provide countries with the guidance to (1) choose their mix of ITN distribution channels and (2) improve subnational targeting of vector management interventions. Using experience and evidence collected and analyzed under Objectives 2 and 3, VectorWorks will identify policy issues and engage relevant stakeholders in developing a common policy agenda. Next, VectorWorks will draft policy recommendations and circulate it among stakeholders for feedback. These two steps in particular will entail collaborating with and presenting to several working groups and target audiences. VectorWorks policy efforts will bear fruit when the Malaria Policy Advisory Committee (MPAC) at WHO, PMI, or the Harmonization Working Group (HWG) at RBM officially endorses the policy, opening the way for use of PMI and Global Fund resources for country implementation on a larger scale.

Indicator	Definition	Source, frequency, and reporting unit	Targets	Actuals
1.1 Number of VectorWorks-supported policy documents submitted to VCTEG	Number of VectorWorks-supported policy documents drafted and submitted to VCTEG.[a] Documents may be accompanied by presentations as part of the dissemination strategy or to promote them at VCTEG, but the deliverable to be counted is the number of policy documents.	• Source: Project reports • Frequency: Semiannual • Reporting units: Core	Year 1: 1 Year 2: 2 Year 3: 3 Year 4: 2 Year 5: 2 LOP: 10	Year 1: 0 Year 2: 1 Year 3: 1 Year 4: 0 Year 5: TBD LOP: TBD
1.2 Number of VectorWorks-supported policies endorsed by VCTEG	Number of VectorWorks-supported policies endorsed by VCTEG.[a] The policy must be endorsed in the VCTEG meeting reports.	• Source: VCTEG meeting reports • Frequency: Semiannual • Reporting units: Core	Year 1: 0 Year 2: 1 Year 3: 2 Year 4: 2 Year 5: 2 LOP: 7	Year 1: 0 Year 2: 0 Year 3: 1 Year 4: 0 Year 5: TBD LOP: TBD
1.3 Number of VectorWorks-supported policies endorsed by MPAC	Number of VectorWorks-supported policies endorsed by MPAC.[a] The policy must be endorsed in the MPAC meeting reports published in *Malaria Journal*.	• Source: MPAC reports • Frequency: Annual • Reporting units: Core	Year 1: 0 Year 2: 1 Year 3: 0 Year 4: 1 Year 5: 1 LOP: 3	Year 1: 0 Year 2: 0 Year 3: 0 Year 4: 1 Year 5: TBD LOP: TBD

1.4 Number of VectorWorks-supported policies incorporated into HWG or PMI guidance	Number of VectorWorks-supported policies incorporated into HWG or PMI guidance.[a] The policy must have been incorporated into the HWG or MOP guidance notes or circulated as PMI guidance.	• Source: HWG and PMI MOP guidance notes • Frequency: Semiannual • Reporting units: Core	Year 1: 2 Year 2: 1 Year 3: 0 Year 4: 1 Year 5: 1 LOP: 5	Year 1: 2 Year 2: 2 Year 3: 7 Year 4: 3 Year 5: TBD LOP: TBD
1.5 Number of PMI countries adopting at least one VectorWorks-supported policy or guideline	The number of PMI countries that have adopted VectorWorks-supported policies.[a] A country is considered to have adopted the policy if the PMI MOP states that they are following that guideline or if the USAID mission is funding its implementation.	• Source: Review of PMI MOPs • Frequency: Annual • Reporting units: Core	Year 1: 0 Year 2: 2 Year 3: 4 Year 4: 4 Year 5: 4 LOP: 14	Year 1: 18 Year 2: 18 Year 3: 21 Year 4: TBD Year 5: TBD LOP: TBD

[a] policy document is considered to have been supported by VectorWorks if VectorWorks provided funds for its drafting and presentation or if VectorWorks provided technical input on the draft.

Objective 2: Design, conduct and analyze results from monitoring, evaluation, and operational research activities in order to improve current best practices of long-lasting ITNs and/or alternative vector management interventions.

VectorWorks research activities will center on (1) monitoring ITN durability, coverage, and use; (2) testing research questions around commodity distribution and effectiveness; and (3) understanding behaviors related to the uptake and sustained use of vector management interventions. VectorWorks will choose monitoring, evaluation, and operations research activities based on the advice of its expert committee and in consultation with PMI. Such activities are selected based on priorities identified by national malaria control programs, PMI, international stakeholders (WHO, RBM, Global Fund), and the expert committee's assessment of their relevance to the project's scope and feasibility. Once VectorWorks has identified research topics, it will draft research protocols, collect data, and analyze and disseminate results. The project will use the results to inform global and national guidance and implementation.

Indicator	Definition	Source, frequency, and reporting unit	Targets	Actuals
2.1 Number of research protocols completed	The number of research protocols that have been completed, disaggregated by OR and non-OR protocols. An OR protocol is defined as complete when it has been submitted and approved by the PMI OR committee and Johns Hopkins University School of Public Health (JHSPH) Institutional Review Board (IRB). A non-OR protocol is defined as completed when it has been submitted and approved by the JHSPH IRB; non-OR protocols do not go through the PMI OR committee. The JHSPH IRB officially approves protocols upon internal review and upon receiving approval from in-country IRBs.	• Source: Research tracking spreadsheet • Frequency of reporting: Semiannually • Reporting units: Core and field sites	**OR** Year 1: 1 Year 2: 1 Year 3: 1 Year 4: 0 Year 5: 0 LOP: 3 **Non-OR** Year 1: 3 Year 2: 5 Year 3: 7 Year 4: 3 Year 5: 2 LOP: 20	**OR** Year 1: 0 Year 2: 1 Year 3: 2 Year 4: 2 Year 5: TBD LOP: TBD **Non-OR** Year 1: 0 Year 2: 6 Year 3: 7 Year 4: 10 Year 5: TBD LOP: TBD
2.2.1 Percentage of PMI-funded durability monitoring surveys with core indicator reports available online (Canceled Year 3)	**Numerator:** Number of durability monitoring surveys for which consistently defined core indicator reports have been posted on the website. Consistency is defined as a data collection or reporting method that is in line with PMI global guidance. **Denominator:** Total number of PMI-funded durability monitoring surveys.	• Source: Durability monitoring website • Frequency of reporting: Semiannually • Reporting units: Core	Year 1: 90% Year 2: 90% Year 3: 90% Year 4: 90% Year 5: 90% LOP: 90%	Year 1: 0% Year 2: 0% Year 3: N/A Year 4: – N/A Year 5: – N/A LOP: – N/A

2.2.2. Number of PMI-funded durability monitoring surveys with preliminary reports submitted within 90 days of data collection.	Each data collection time point (i.e., baseline, 12-month, 24-month, and/or 36-month) counts as an individual survey report. Preliminary reports should include results on survivorship, attrition and insecticidal activity. Approval can be granted outside the 90 day window.	• Source: Durability monitoring reports • Frequency of reporting: Semiannually • Reporting units: Core and Field	Year 1: 0 Year 2: 4 Year 3: 5 Year 4: 5 Year 5: 8 LOP: 22	Year 1: 0 Year 2: 1 Year 3: 1 Year 4: 6 Year 5: TBD LOP: TBD
2.3 Number of research reports produced and disseminated	The number of research reports that have been produced and disseminated. The report must have been posted on the VectorWorks website and shared through electronic mailing lists and in-person or remote presentations at least twice. The report can take the form of a full document or a presentation.	• Source: VectorWorks website; research tracking spreadsheet • Frequency of reporting: Semiannually • Reporting units: Core	Year 1: 2 Year 2: 5 Year 3: 7 Year 4: 10 Year 5: 10 LOP: 34	Year 1: 2 Year 2: 5 Year 3: 3 Year 4: 6 Year 5: TBD LOP: TBD
2.4 Number of peer-reviewed journal articles published	The number of peer-reviewed journal articles published for which VectorWorks funded significant inputs, such as data collection, analysis, or write-up.	• Source: Research tracking spreadsheet • Frequency of reporting: Semiannually • Reporting units: Core	Year 1: 5 Year 2: 4 Year 3: 4 Year 4: 4 Year 5: 6 LOP: 23	Year 1: 4 Year 2: 2 Year 3: 4 Year 4: 3 Year 5: TBD LOP: TBD

Objective 3: Promote and support country-level implementation of malaria prevention activities to ensure sustained high level coverage and use of long-lasting ITNs and, as needed, targeted coverage and appropriate use of alternative vector management interventions.

VectorWorks will provide assistance to national malaria control programs to develop and implement state-of-the-art practices for ITN distribution. Related activities will include technical assistance visits, development of implementation guides, documentation and sharing of country experiences, training implementers and supervisors, and direct implementation of ITN distribution programs.

Indicator	Definition	Source, frequency, and reporting unit	Targets	Actuals
3.1 Number of documents produced to improve implementation of vector management interventions	Number of documents produced by VectorWorks to improve implementation of vector management interventions. Documents can include guides, toolkits, case studies, and tools such as NetCALC. Journal articles are counted elsewhere and are not included in this indicator.	• Source: Semiannual report • Frequency of reporting: Semiannually • Reporting units: Core	Year 1: 3 Year 2: 7 Year 3: 7 Year 4: 7 Year 5: 9 LOP: 33	Year 1: 0 Year 2: 7 Year 3: 4 Year 4: 1 Year 5: TBD LOP: TBD
3.2 Number of USAID country missions that contribute funds	Number of USAID country missions that obligate funds to VectorWorks each year. Missions may be counted multiple times in the LOP total.	• Source: Cooperative agreement modifications • Frequency: Semiannually • Reporting units: Core	Year 1: 6 Year 2: 7 Year 3: 6 Year 4: 7 Year 5: 6 LOP: 32	Year 1: 6 Year 2: 13 Year 3: 10 Year 4: 10 Year 5: TBD LOP: TBD

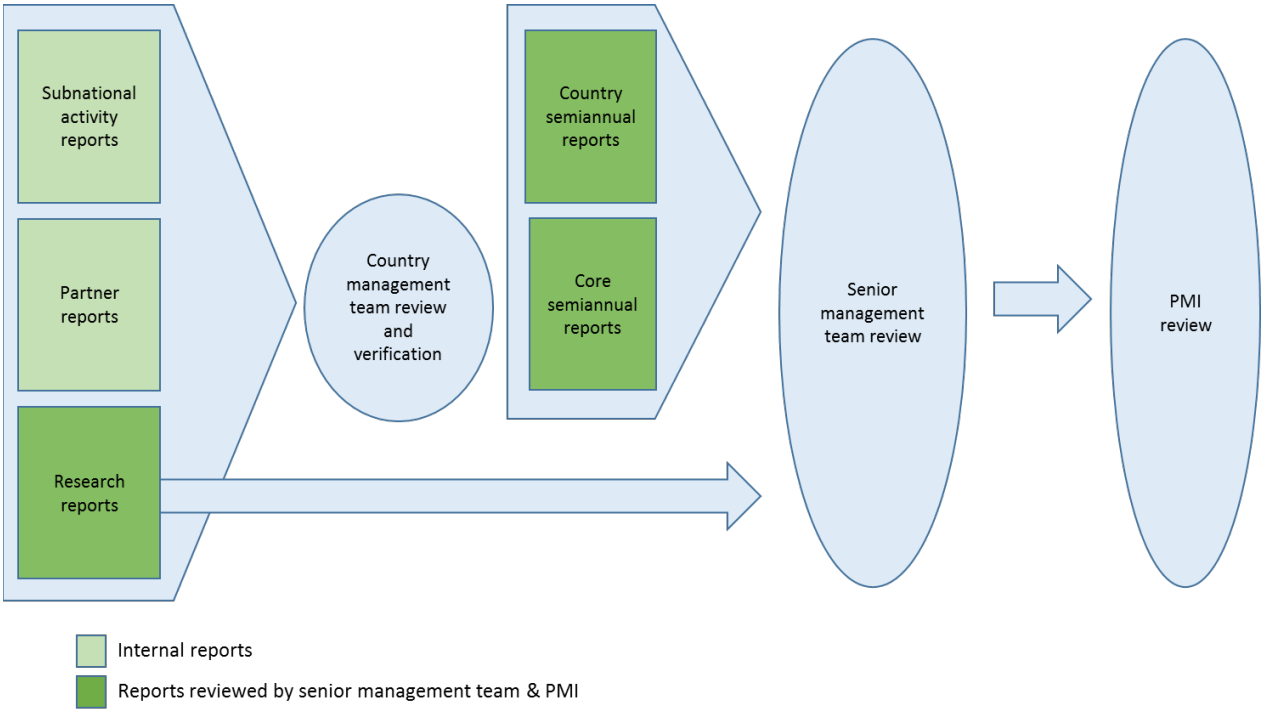
Research and Evaluation Plan

Descriptions of research and evaluation activities are found under Objective 2 of the work plan.

Reporting

The following reporting flow chart (Figure 2) illustrates the flow of data and levels of reporting, aggregation, and data quality assurance.

Figure 2. Reporting flow chart



Partners and activity managers will complete activity reports. Country management teams will be responsible for reviewing the reports and verifying the data reported by cross-checking primary data sources and summary forms. Team members on technical assistance visits will also check on data quality, reporting frequency, and completeness during their visits. Semiannual reports and accompanying PMPs drafted by country teams will summarize activity reports, partner reports, and research reports. Semiannual and research reports will receive final review by the senior management team before submission to PMI. The monitoring and evaluation officers or focal points for each program should archive supporting documents and data sets and provide them upon request to confirm the reported results.

Indicator Reference Sheets

Objective 1: Develop and promote policies at international and national levels

Indicator 1.1: Number of VectorWorks-supported policy documents submitted to VCTEG

Year	Target	Actual
1	1	0
2	2	1
3	3	1
4	2	0
5	2	–
Life of project	10	–

Unit of measure: Number

Disaggregation: None

Definition: The total number of VectorWorks-supported policy documents drafted and submitted to the Vector Control Technical Expert Group (VCTEG). A policy document is considered to have been supported by VectorWorks if VectorWorks provided funds for its drafting and presentation or if VectorWorks provided technical input on the draft. Documents may be accompanied by presentations as part of the dissemination strategy or to promote them at VCTEG but the deliverable to be counted is the number of policy documents.

Source: Project reports

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core

Notes:

Year One potential targets: Guidance on subnational targeting, vector control graduation document, and continuous distribution.

Year One actuals: The WHO Global Malaria Programme funded the vector control graduation document. Matt Lynch provided review comments to the draft version, but VectorWorks otherwise did not make substantive contributions. The document focused on removal of vector control interventions, but did not address scaling back, targeting, or replacing with less intensive interventions.

Year Two potential targets: School distribution, geographical targeting, mass campaigns in urban settings.

Year Two actuals: Net preferences (Note: It was submitted in Year 2 but VCTEG delayed the review to Year 3).

Year Three actuals: Repurposing (Note: Reviewed by the VCTEG in Q2; VCTEG declined to review the issue further and has delegated it to AMP and SBCC Working Group).

Year 4 actuals: The November 2017 VCTEG agenda did not address any areas of our research. VectorWorks anticipates submitting the cost-effectiveness of continuous distribution strategies for the next VCTEG. The 2018 VCTEG meeting was not organized by WHO, however the costing meta-analysis paper was shared with WHO for integration into a separate malaria prevention costing review.

Indicator 1.2: Number of VectorWorks-supported policies endorsed by VCTEG

Year	Target	Actual
1	0	0
2	1	0
3	2	1
4	2	0
5	2	–
Life of project	7	–

Unit of measure: Number

Disaggregation: N/A

Source: VCTEG meeting reports

Definition: The number of VectorWorks-supported policies endorsed by VCTEG. The policy must be endorsed in the VCTEG meeting reports. A document is considered to have been supported by VectorWorks if VectorWorks provided funds for its drafting and presentation or if VectorWorks provided technical input on the draft.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core

Notes:

Year One actuals: VectorWorks did not provide any substantial technical or financial input on any documents for the VCTEG this year.

Year Two actuals: None. We anticipated a VCTEG meeting on the net preferences paper in early Year 3.

Year Three actuals: Net preferences (Note: The study on net preferences was reviewed by VCTEG in Q2; universal coverage recommendations will be updated to include a paragraph on the main findings).

Year Four actuals: None. WHO's Recommendations for Achieving Universal Coverage were updated in December 2017 and included a recommendation derived from our work on net preferences (the work cited in the Year 3 actuals).

Indicator 1.3: Number of VectorWorks-supported policies endorsed by the Malaria Policy Advisory Committee

Year	Target	Actual
1	0	0
2	1	0
3	0	0
4	1	1
5	1	–
Life of project	3	–

Unit of measure: Number

Disaggregation: None

Source: MPAC reports

Definition: The number of VectorWorks-supported policies endorsed by MPAC. The policy must be endorsed in the MPAC reports published in *Malaria Journal*. A document is considered to have been supported by VectorWorks if VectorWorks provided funds for its drafting and presentation or if VectorWorks provided technical input on the draft.

Frequency of reporting: Annually

Reporting format: Annual report

Reporting units: Core

Notes:

MPAC endorsements, although powerful, are very high level and relatively infrequent. Hence, we do not anticipate frequent examples of such endorsements.

Year One actuals: VectorWorks did not provide any substantial technical or financial input on any documents for the MPAC this year.

Year Two: VectorWorks did not provide any substantive input on documents for the MPAC in this year. MPAC discussed the prioritization of vector control tools we provided, but it was not endorsed. Therefore, it does not meet the definition.

Year Three actuals: None

Year Four actuals: VectorWorks presented on ITN access and quantification for ITNs at the WHO meeting on Universal Access in Q2, and the resulting report from that meeting was on the agenda for review at the MPAC meeting in Q3. MPAC report is pending as of this report date.

Indicator 1.4: Number of VectorWorks-supported policies incorporated into Harmonization Working Group or PMI guidance

Year	Target	Actual
1	2	2
2	1	2
3	0	7
4	1	3
5	1	–
Life of project	5	–

Unit of measure: Number

Disaggregation: N/A

Source: HWG and PMI Malaria Operational Plan (MOP) guidance notes

Definition: Number of VectorWorks-supported policies incorporated into HWG or PMI guidance. The policy must have been incorporated into the HWG or MOP guidance notes or circulated as PMI guidance.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core

Notes:

Year One target: Carry-over from the NetWorks project—net misuse guidance and use-to-access ratio.

Year One actuals: Durability monitoring (MOP guidance); use-to-access ratio (MOP and HWG guidance).

Year Two actuals: school distribution (MOP guidance); net care (MOP guidance). VectorWorks also provided input on the Global Fund guidance.

Year Three actuals: VectorWorks provided language for the continuous distribution section of Global Fund's Guidance Note on Malaria (formerly the HWG Guidance Note). MOP guidance reflects previous inputs on school distribution, net care, and durability monitoring. VectorWorks also provided inputs on an update to WHO's Recommendations for Achieving Universal Coverage, drafting language on considering ITN preferences, avoiding top-up campaigns, avoiding door-to-door visits solely to improve ITN use.

Year Four actuals: Repurposing definitions, indicator reference guide, and key results from the cost analysis presented by Josh Yukich were added to PMI technical guidance

Indicator 1.5: Number of PMI countries adopting at least one VectorWorks-supported policy

Year	Target	Actual
1	0	18
2	2	18
3	4	21
4	4	TBD
5	4	–
Life of project	14	–

Unit of measure: Number

Disaggregation: By policy

Source: Review of PMI MOPs

Definition: The number of PMI countries that have adopted policies advocated by VectorWorks. A document is considered to have been advocated by VectorWorks if VectorWorks provided funds for its drafting and presentation or if VectorWorks provided technical input on the draft. A country is considered to have adopted the policy if the PMI MOP states that they are following that guideline or if the USAID mission is funding its implementation.

Frequency of reporting: Annually

Reporting format: Annual report

Reporting units: Core

Notes:

The Year One target was set to zero because the first set of MOPs that may reflect the influence of VectorWorks would not be released until November 2015 (Year Two). However, they were released before November 15, so VectorWorks was able to review them in time for the Year Two annual report submission.

Year 3 – PMI added three countries and Mekong was split into 3 individual country MOPs.

Year 4 - The FY19 MOPs were not yet posted as of October 29, 2018.

Annual results by country:

	Year 1	Year 2	Year 3	Year 4	Year 5
1. Angola	Durability monitoring is in the national strategy; PMI will fund technical assistance for continuous distribution (CD)	Shifted from a rolling campaign to a nationwide campaign.	UAR, Mass campaign process assessment measures, Net care, Repurposing and disposal		
2. Benin	Durability (past	School	UAR, DM, School		

	Year 1	Year 2	Year 3	Year 4	Year 5
	data being reviewed)	distribution, durability monitoring	distribution, Outdoor sleeping research		
3. Democratic Republic of the Congo	NMCP strategic plan 2016–2020 includes continuous distribution (all channels); PMI will fund continuous distribution	Not released as of Nov 12, 2016	DM School distribution SBCC to discourage misuse		
4. -Ethiopia	Continuous distribution by health extension workers	CD with HEWs	DM		
5. Ghana	Will continue continuous distribution	Net care SBCC	CD, UAR, Indicator guide, School BCC		
6. Mekong	Durability monitoring	-None-	-NA– split into multiple countries-		
7. Guinea	Durability monitoring	Durability monitoring	DM, school distribution		
8. Kenya	Continuous distribution	CD, durability monitoring	Community distribution, durability monitoring		
9. Liberia	None (continuing antenatal care clinic distribution, no durability monitoring)	Durability monitoring	Exploration of school distribution, monitoring of ANC distribution, durability monitoring		
10. Madagascar	Durability monitoring, expansion of CD	Durability monitoring expansion of community distribution	Community distribution, school distribution		
11. Malawi	Durability monitoring	Durability monitoring, net care SBCC	UAR, misuse		
12. Mali	None	Durability monitoring, net care SBCC	DM		
13. Mozambique	Durability	School	NetCALC, school		

	Year 1	Year 2	Year 3	Year 4	Year 5
	monitoring	distribution	distribution, durability monitoring,		
14. Nigeria	No MOP online as of November 13, 2015, but counted because Nigeria is funding durability monitoring	Durability monitoring, net care SBCC, CD mentioned but not enough nets available	CD, SBC for CD		
15. Rwanda	"Targeted" community-based distribution, net durability, care and repair	Net durability	DM		
16. Senegal	Durability monitoring, CD	net care SBCC	-None-		
17. Tanzania	CD & net care	CD & durability monitoring	DM, CD, SBC for CD,		
18. Uganda	CD (schools), net care, durability monitoring	Net durability, school distribution (traditional and "novel"), durability monitoring	UAR, CD, DM		
19. Zambia	CD, durability monitoring,	CD, durability monitoring	DM, CD		
20. Zimbabwe	CD, durability	Durability monitoring, SBCC for net durability	Rectangular nets SBC, community distribution, DM		
21. Burkina Faso			-None-		
22. Cameroon			-None-		
23. Cote D'Voire			DM (will be funded for the 2019 mass campaign)		
24. Cambodia			DM		
25. Burma			-None-		
26. Thailand			-None-		

Objective 2. Improve best practices through monitoring, evaluation, and operations research

Indicator 2.1: Number of research protocols completed, disaggregated by OR and non-OR protocols

Operations research:

Year	Target	Actual
1	1	0
2	1	1
3	1	2
4	0	2
5	0	–
Life of project	3	–

Non-operations research:

Year	Target	Actual
1	3	0
2	5	6
3	7	7
4	3	10
5	2	–
Life of project	20	–

Unit of measure: Number

Disaggregation: Disaggregated by OR and non-OR protocols, and source of funds

Source: Research tracking spreadsheet

Definition: The number of research protocols that have been completed, disaggregated by OR and non-OR protocols. An OR protocol is defined as complete when it has been submitted and approved by the PMI OR committee and the Johns Hopkins University School of Public Health (JHSPH) IRB. Non-OR protocols did not go through the PMI OR committee. Non-OR protocols have been defined as completed when they have been submitted and approved by the JHU IRB. The JHU IRB officially approves protocols upon internal review and upon receiving approval from in-country IRBs.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core and field sites

Notes: Targets based on previous experience under the NetWorks project

Year One actuals:

Operations research: VectorWorks submitted three concept notes, but the OR committee did not approve them.

Non-operations research: The JHSPH IRB considered only the Mozambique durability monitoring protocol to be research but had not approved it by the end of Year One.

Activities deemed non-research by the IRB (they do not count as OR or non-OR): Accountability report, Continuous Distribution Toolkit usability testing, the Zimbabwe process evaluation, and the cost analysis (provided by Tulane University).

Year Two actuals:

Operations research: Outdoor transmission in Tanzania

Non-operations research: Mozambique, Nigeria, Myanmar, DRC, and Zanzibar durability monitoring protocols and the DCE study.

Activities deemed non-research by the IRB (they do not count as OR or non-OR): Tanzania process evaluation (public health practice), and the Tanzania commodity management audit (public health practice), and the Zanzibar process evaluation (public health practice).

Year Three actuals:

Operations research: Outdoor transmission in Tanzania; net care and repair in Tanzania

Non-operations research: Mozambique, Nigeria, Myanmar, DRC, and Zanzibar durability monitoring protocols; Malawi ITN misuse study; Mozambique school pilot evaluation

Activities deemed non-research by the IRB (they do not count as OR or non-OR): Counterfeit nets study; Senegal social marketing household survey in Dakar

Year 4 actuals:

Operations research: Outdoor transmission in Tanzania; Net motion sensor study

Non-operations research: Mozambique, Nigeria, Myanmar, DRC, Zanzibar, Kenya, Liberia, Ghana durability monitoring protocols; Guinea school pilot evaluation; Mozambique school pilot evaluation;

Activities deemed non-research by the IRB (they do not count as OR or non-OR): Ghana net use qualitative research; Counterfeit nets study; Tanzania LQAS for ITN coverage; Tanzania ITN Misuse rapid assessment.

Indicator 2.2.1: Percentage of PMI-funded durability monitoring surveys with core indicator reports available online (Canceled in Year 3)

Year	Target	Actual
1	90%	0%
2	90%	0%
3	90%	0%
4	90%	–
5	90%	–
Life of project	90%	–

Unit of measure: Percentage

Disaggregation: None

Source: Durability monitoring website

Definition:

Numerator: The number of durability monitoring surveys for which consistently defined core indicator reports have been posted on the website. Consistency is defined as the data collection or reporting method being in line with PMI global guidance.

Denominator: All PMI-funded durability monitoring surveys.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core

Notes:

Year One actuals: PMI had not yet approved the durability monitoring protocol at the end of the fiscal year and the website was not yet live.

Year Two semiannual actuals: Baseline data from Mozambique and Nigeria are expected by the end of Year Two.

Year Three actuals: None (Note: In discussions with PMI in early Year 3, PMI determined that it is not advisable to post the durability monitoring reports online for public use. For this reason, several reports were submitted and remained internal to PMI and to VectorWorks: baseline reports Mozambique, Nigeria, and Myanmar have been submitted to PMI and approved. Baseline reports for DRC and Zanzibar have also been submitted)

Indicator 2.2.2: Number of PMI-funded durability monitoring surveys with preliminary reports submitted within 90 days of data collection.

Year	Target	Actual
1	0	0
2	4	1
3	5	1
4	5	6
5	8	--
Life of project	22	--

*Indicator introduced in year 3.

Unit of measure: Number

Disaggregation: None

Source: Durability monitoring reports

Definition: Each data collection time point (i.e., baseline, 12-month, 24-month, and/or 36-month) counts as an individual survey report. Preliminary reports should include results on survivorship, attrition and insecticidal activity. Approval can be granted outside the 90-day window.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core and Field

Notes:

This indicator replaced 2.2.1 in June 2017 (Year 3, Q3). In discussions with PMI in early Year 3, PMI determined that it is not advisable to post the durability monitoring reports online for public use.

Year One target was 0 because protocols were still in development.

Year Two actuals were back-calculated and first reported in Year 3: Burma/Myanmar baseline

Year Three actuals: Nigeria Oyo baseline.

Year Four actuals: DRC 12 and 24-month report, Nigeria 24-month report, Zanzibar 12 and 24-month report, and Mozambique 24-month

Gray boxes indicate completed reports.

Country	Baseline	12-month	24-month	36-month
Burma/ Myanmar	Fieldwork completed Aug 2016 Report submitted: Oct. 11, 2016 Report approved Feb. 27, 2017	Fieldwork completed Jan 2017 Report submitted: May 30, 2017 Report approved June 20, 2017	Fieldwork completed Dec 2017 Report submitted: April 26, 2018 Report approved: May, 15, 2018	Fieldwork scheduled for Dec 2018
DRC	Fieldwork completed Oct 2016 Report submitted March 21, 2017 Report approved: June 1, 2017	Fieldwork completed Sep 2017 Report submitted December 1, 2017 Report approved : May 24, 2018	Fieldwork completed May 2018 Report submitted August 24, 2018 Report with PMI awaiting approval	Fieldwork scheduled for February 2019
Mozambique	Fieldwork completed Nov 2015 Report submitted: Oct. 18, 2016 Report approved Dec. 12, 2016	Fieldwork completed Aug 2016 Report submitted: June 5, 2017 Report approved July 5, 2017	Fieldwork Completed in August 2017 Report submitted January 5, 2018 Report approved March 6, 2018	Fieldwork completed August 2018
Nigeria	Zamfara and Ebonyi fieldwork completed March 2016 Oyo fieldwork completed Dec 2016 Report submitted: March 3, 2017 Report approved March , 2017	Zamfara and Ebonyi fieldwork completed October 2016 Oyo fieldwork Completed October 2017 Report submitted May 5, 2017 Report approved August 30, 2017	Zamfara and Ebonyi completed October 2017 Oyo fieldwork completed October 2018 Report submitted January 17, 2018 Report approved March 6, 2018	Zamfara and Ebonyi fieldwork completed October 2018 No 36m Oyo fieldwork will take place
Zanzibar	Fieldwork completed Nov 2016 Report submitted: March 20, 2017 Report approved May 7, 2017	Fieldwork completed Aug 2017 Report submitted November 6, 2017 Report approved March 5, 2018	Fieldwork completed July 2018 Report submitted October 24, 2018 Report with PMI awaiting approval	Fieldwork scheduled for May 2019

Indicator 2.3: Number of research reports produced and disseminated

Year	Target	Actual
1	2	2
2	5	5
3	7	3
4	10	6
5	10	–
Life of project	34	–

Unit of measure: Number

Disaggregation: None

Source: VectorWorks website, research tracking spreadsheet

Definition: The number of research reports that have been produced and disseminated. The report must have been posted on the VectorWorks website and linked to from online mailing lists and in-person or remote presentations at least twice. The report can take the form of a full document or a presentation.

Frequency of reporting: Semiannually

Reporting format: Semiannual reports

Reporting units: Core

Notes:

Targets based on previous experience under the NetWorks project.

Year One targets: Nasarawa community-based distribution report; access-to-use ratio report.

Year One actuals: Nasarawa community-based distribution report; access-to-use ratio report.

Year Two actuals: Access:Use Ratio report; SNP3 costing report; Zanzibar costing report; ITN use in context of IRS report; and the net preferences report. (Note: several reports related to misuse were produced but remained internal to PMI and the project. These included: literature review summarizing evidence addressing LLIN misuse for fishing, GIS report on population estimates, potential harm from insecticide leaching report, and the potential harm from small-mesh nets report)

Year Three actuals: Access:Use Ratio report; Experimental auctions study report; Mali costing report

Year Four actuals: Malawi Net Misuse Rapid Assessment Report, Open Malaria Modelling on pooled PMI DM data sets; Access:Use Ratio report updated; Ghana report on ITN use; Ghana costing report; Senegal social marketing report.

In draft, in press, or submitted & needs approval: Source of nets report, Urban distribution report, Counterfeit nets; SNP5 costing; health facility costing; Nigeria 2015 MIS report on ITN use; Mozambique school pilot evaluation baseline; CD costing meta-analysis; CD cost effectiveness modeling; Who buys nets?;

Indicator 2.4: Number of peer-reviewed journal articles published

Year	Target	Actual
1	5	4
2	4	2
3	4	4
4	4	3
5	6	–
Life of project	23	–

Unit of measure: Number

Disaggregation: None

Source: Research tracking spreadsheet

Definition: The number of peer-reviewed journal articles published for which VectorWorks funded significant inputs such as data collection, analysis, or write-up.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core

Notes:

Targets based on previous experience under the NetWorks project.

Year One Actuals:

1. Scandurra, Leah, et al. "It is about how the net looks": a qualitative study of perceptions and practices related to mosquito net care and repair in two districts in eastern Uganda. Malaria Journal 13 (2014): 504.
2. Monroe, April, et al. Outdoor-sleeping and other night-time activities in northern Ghana: implications for residual transmission and malaria prevention. Malaria Journal 14 (2015): 35.
3. Helinski, Michelle H., et al. Impact of a behaviour change communication programme on net durability in eastern Uganda. Malaria Journal 14 (2015): 366.
4. Kilian, Albert, et al. Field durability of the same type of long-lasting insecticidal net varies between regions in Nigeria due to differences in household behaviour and living conditions. Malaria Journal 14 (2015): 123.

Year Two Actuals:

5. Beyl, Celine Zegers, et. al. Multi-country comparison of delivery strategies for mass campaigns to achieve universal coverage with insecticide-treated nets: what works best? Malaria Journal 15 (2016): 58.
6. Theiss-Nyland, Kathleen et al "Operational challenges to continuous LLIN distribution: a qualitative rapid assessment in four countries." Malaria Journal 15(1) (2016): 131.

Year Three Actuals:

7. Beyl, Celine Zegers, et al. "Evaluation of community-based continuous distribution of long-lasting insecticide-treated nets in Toamasina II District, Madagascar." Malaria journal 16.1 (2017): 327.
8. Gingrich, Chris D., et al. "Demand and willingness-to-pay for bed nets in Tanzania: results from a choice experiment." Malaria journal 16.1 (2017): 285.
9. Kilian, Albert, et al. "Evaluation of a continuous community-based ITN distribution pilot in Lainya County, South Sudan 2012–2013." Malaria Journal 16.1 (2017): 363.
10. Koenker, Hannah and Yukich, Joshua. Effect of user preferences on ITN use: a review of literature and data. Malaria Journal 16 (2017):233.

Year Four Actuals:

11. Beyl, Celine Zegers, et al. "Impact of a 15-month multi-channel continuous distribution pilot on ITN ownership and access in Eastern Region, Ghana." Malaria Journal 17.1 (2018): 124.
12. Acosta, Angela et. al. "Design, implementation and evaluation of a school ITN distribution program in Cross River State, Nigeria." Global Health Science and Practice, 2018 Jun 27; 6(2): 272–287.
13. Koenker, Hannah. "More is More: Are We Delivering Enough LLINs?" EClinicalMedicine, 1 (2018): 5-6.

Year 5 (as of Oct 29, 2018):

14. Koenker, Hannah, et al. "Assessing whether universal coverage with insecticide-treated nets has been achieved: is the right indicator being used?" Malaria journal 17.1 (2018): 355.
15. Mboma, Zawadi M., et al. 'For the poor, sleep is leisure': understanding perceptions, barriers and motivators to mosquito net care and repair in southern Tanzania. Malaria Journal, 17.1 (2018): 375.

In draft, in press, or submitted & needs approval: CD costing meta-analysis; CD costing summary; manuscript connecting CD costs to transmission modelling; Seasonal use access paper; drivers of misuse; three Zanzibar residual transmission manuscripts

Objective 3. Promote and support country-level implementation

Indicator 3.1: Number of documents produced to improve implementation of vector management interventions

Year	Target	Actual
1	3	0
2	7	7
3	7	4
4	7	1
5	9	–
Life of project	33	–

Unit of measure: Number

Disaggregation: None

Source: Semiannual report

Definition: The number of documents produced to improve implementation of vector management interventions. Documents can include guides, toolkits, case studies, and tools such as NetCALC. Journal articles are counted elsewhere and are not included in this indicator.

Frequency of reporting: Semiannually

Reporting format: Semiannual report

Reporting units: Core

Notes:

Target based on previous experience under the NetWorks project and planned Year One core activities.

Year One: VectorWorks drafted the community distribution guide but has not yet finalized it. The project collected tools for the ANC-EPI guide and posted them online but has not yet drafted the insert with new technical content. VectorWorks hired the accountability report consultant at the end of the fiscal year.

Year Two: MIP advocacy strategy; validation report; community distribution guide; net care and repair strategy guide; durability monitoring data collection toolkit. Corrections made to this indicator in Year 3: addition of training materials on access:use indicator to MACRO and analysis plan & do-files for source of nets question.

Year Three actuals: gender training curriculum; online continuous distribution toolkit; accountability report; malaria SBCC indicator reference guide.

Year Four: Minimum data requirements for mass campaigns

In draft, or submitted and waiting approval: Urban distribution report, NetCALC lite, Misuse toolkit, ITN SBC Guide, CD Decision tree; AMP toolkit contributions; Rebranding M&E tools under SBCC WG

Year 5 (as of Oct 29, 2018): Repurposing nets

Indicator 3.2: Number of USAID country missions that contribute funds to the project

Year	Target	Actual
1	6	6
2	7	13
3	6	10
4	7	10
5	6	–
Life of project	32	–

Unit of measure: Number

Disaggregation: None

Source: Modifications to VectorWorks Cooperative Agreement

Definition: The number of USAID country missions that obligate funds to VectorWorks per year.

Frequency of reporting: Annually

Reporting format: Annual report

Reporting units: Core

Notes:

Missions can be counted multiple times in the life of project (LOP) total. If the mission made the decision to buy into the project, and the AOR provided forward-funding, then that country counts in that year.

Year One actuals: Ghana, Liberia, Mozambique, Nigeria, Tanzania, and Zimbabwe.

Year Two actuals: Angola, Ghana, Liberia, Mozambique, Nigeria, Tanzania, Zimbabwe, Senegal, DRC, Myanmar, Malawi, Kenya, and Uganda

Year Three actuals: Angola, Ghana, Liberia, Mozambique, Nigeria, Tanzania, Zimbabwe, DRC, Kenya, and Guinea.

Year Four actuals: Benin, Burma, DRC, Ghana, Guinea, Kenya, Liberia, Mozambique, Nigeria, Tanzania

GHANA PERFORMANCE MONITORING PLAN

I. PMP Purpose, Components and Critical Assumptions

A. Purpose

This Performance Monitoring Plan (PMP) provides a framework for systematically collecting and using data to monitor the activities and achievements of the VectorWorks Project in Ghana. It describes the relationship between project activities and its overall goal to "Increase country capacity to develop, monitor and implement vector management interventions". It also documents the key specific results that VectorWorks Ghana intends to achieve and the progress it makes towards its targets.

B. Components

To accomplish these functions, the PMP consists of several components. The results framework describes the pathways linking activities to the project goal. Each activity contributes to the fulfilment of project objectives, which, in turn, contribute to the overall project goal. Documenting improvements along these pathways assists in the attribution of achievements in agreement with objectives to the project's activities.

Next, the document describes VectorWorks' activities in each result area and presents a minimum number of selected key indicators most relevant to each area. These indicators were chosen based on several criteria: a) objectivity, b) ability to reflect outcomes and outputs that are central to the project's work, c) feasibility and cost of data collection, d) data availability when needed and e) usefulness for management decision-making. Indicator reference sheets provide details on their definition, frequency, level of disaggregation, and reporting unit. Lastly, a reporting flow chart illustrates the flow of data and levels of reporting, aggregation and data quality assurance.

This PMP was designed to represent key indicators specific to the VectorWorks Ghana project. In addition, it tracks two standard indicators from the global VectorWorks agreement in the Ghana work plan where those indicators are relevant.

The indicators in this PMP are not intended to provide a comprehensive understanding of how an activity resulted in a change in the agreement objectives or why an activity was not as effective as expected. Rather, indicators provide an indication that a change occurred over time, with discussions in semi-annual narrative reports providing more thorough answers on how and why VectorWorks activities achieved their results.

The project will use routine data collection forms and activity tracking spreadsheets to collect data and track activities. These include training summary forms, media monitoring reports, distribution summary forms, activity summary forms and travel and research tracking spreadsheets. Indicator tracking sheets will document how targets were selected and details on progress toward annual targets. These indicator tracking sheets and supporting documents will make it possible to document each indicator's history and for project managers to review the quality of the data being reported and make recommendations.

C. Critical Assumptions

The PMP is based on several critical assumptions. Changes to these assumptions will have major implications on the overall direction of the project and the PMP.

- Insecticide-treated net (ITN) distribution will continue to be a major focus for the Ghana National Malaria Control Program (NMCP) and the United States Agency for International Development/President's Malaria Initiative (PMI) Ghana;
- The national mechanisms for malaria policy implementation through the NMCP will remain stable and largely unchanged;

The VectorWorks Ghana Project chief of party will review this PMP and these assumptions internally and with USAID/PMI Ghana on a semi-annual basis to track trends and discuss opportunities for refining program activities and the PMP indicators.

II. Project Goal and Objectives

The VectorWorks (VW) project is a five-year (2014-2019) global malaria prevention project funded by United States Agency for International Development's President's Malaria Initiative (USAID/PMI). The global project goal is to support countries to achieve and maintain high rates of coverage and use of vector management interventions. Specifically, the project is tasked with attaining this goal through activities clustered under three main objectives:

> **Objective 1: Policy** - Develop and promote policies at both the international and national levels to encourage sustained, high levels of coverage and use of long-lasting insecticide-treated nets (ITNs) and/or alternative vector management interventions.
>
> **Objective 2: Monitoring, Evaluation & Operations Research**- Design, conduct and analyze results from monitoring, evaluation, and operational research activities in order to improve current best practices of long-lasting ITNs and/or alternative vector management interventions.
>
> **Objective 3: Implementation** - Promote and support country-level implementation of malaria prevention activities to ensure sustained high level coverage and use of long-lasting ITNs and, as needed, targeted coverage and appropriate use of alternative vector management interventions.

The project is implemented by a consortium led by the Johns Hopkins Center for Communication Programs (CCP) under Cooperative Agreement # AID-OAA-A-14-00057. Key partners in Ghana include PMI resident advisors, the Ghana Health Service (GHS), the National Malaria Control Program (NMCP), the Ghana Education Service (GES) and its School Health Education Program (SHEP).

In Ghana, our project goal is to "**increase country capacity to develop, monitor and implement vector management interventions**" This goal incorporates three objectives, consistent with the objectives of the overall global VW cooperative agreement. These objectives are:

1. Strengthen multi-sectoral and stakeholder coordination
2. Support the NMCP to achieve and maintain high levels of ITN coverage
3. Promote the uptake and sustained use of vector management interventions

The PMP has been updated to reflect the targets for Year Four. During Year Four, VectorWorks supported supportive supervision and health facility-based continuous distribution monitoring in all 10 regions, conducted school SBCC trainings for 24,366 school head teachers and SHEP coordinators, and supported the NMCP with the national mass distribution implementation. These activities took place at the national, regional, district, health facility, and school levels.

The obligation for the 4th year of the project was $1,900,000. Key partners included the Ghana Health Service, the National Malaria Control Program and Ghana Education Service, and its School Health Education Program.

III. Results Framework

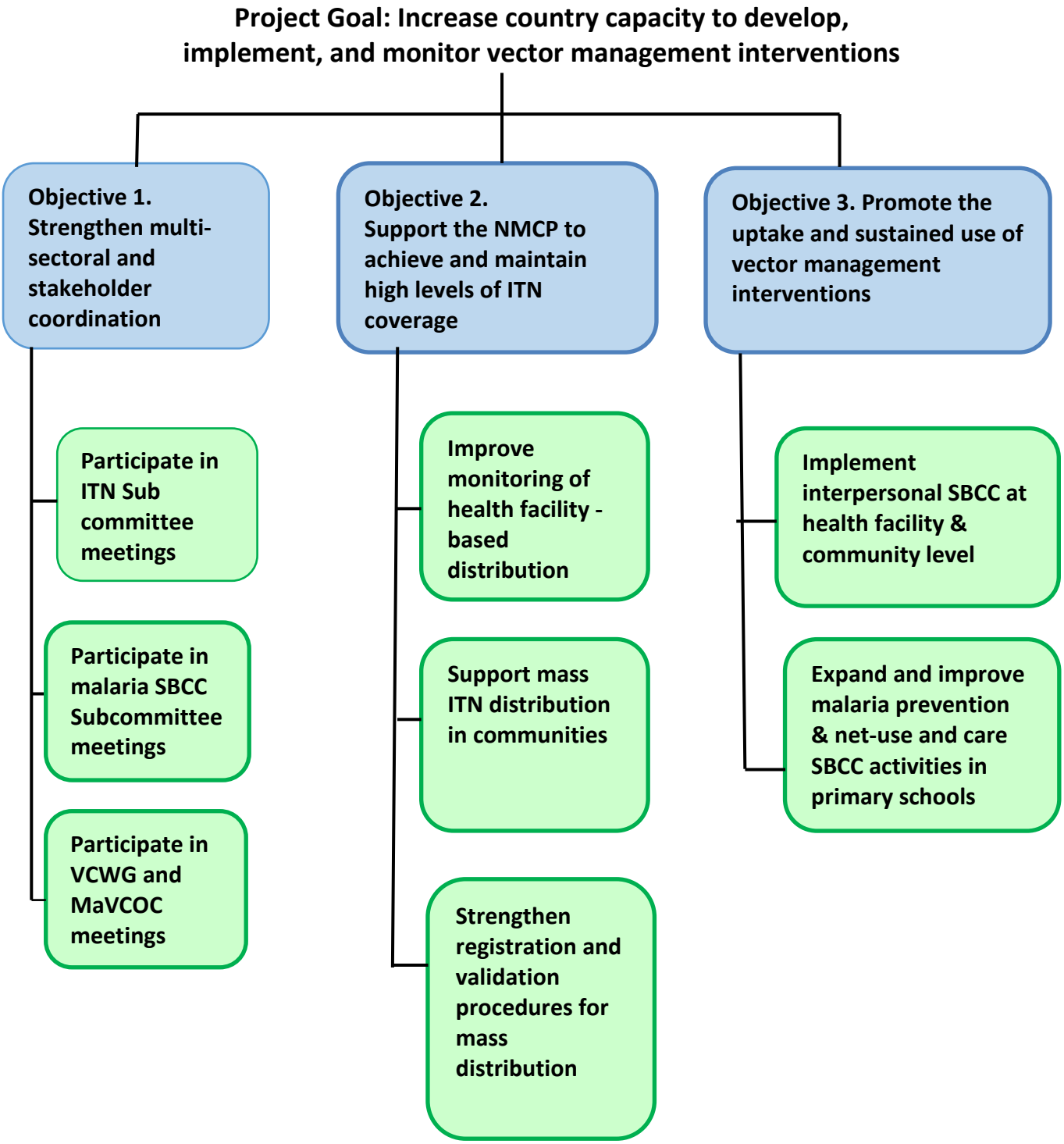
The VectorWorks Ghana results framework describes the pathways linking activities to the long-term project goal of increasing country capacity to develop, implement and monitor vector control interventions. In this framework, each activity contributes to the achievement of project objectives and in effect, the overall project goal. Documentation of improvements along these pathways helps attribute improvements to specific activities leading to the project goal and objectives.

As stated above, the VectorWorks Ghana project will contribute to the project goal through three objectives:

1. Strengthen multi-sectoral and stakeholder coordination
2. Support the NMCP to achieve and maintain high levels of ITN coverage
3. Promote the uptake and sustained use of vector management interventions

While the activities appear to occur in parallel, the three objectives function as an integrated and mutually supportive package. Under Objective 1, VectorWorks Ghana will facilitate and promote improved stakeholder communication and coordination on policy, standards and guidance in line with the National Malaria Control Strategy 2014-2020. Challenges emerging from the field experience under Objective 2 will in turn, inform policy discussions and future modifications. Objective 3 will ensure wide dissemination and adoption of the NMCP's policies and guidance.

VectorWorks Ghana Results Framework: Project Year Four



VectorWorks Ghana Indicator Table and Performance Indicator Reference Sheets (PIRS)

A. Indicator Table for VectorWorks Ghana (Life of Project)

Focus Area	*ID No*	*Indicator*	*Data Source*	*Frequency*
Objective GH.1: Strengthen multi-sectoral and stakeholder coordination				
GH.1	1	Number of Malaria Alerts distributed	Project Activity Report	Semi-Annual
	2	Number of national LLIN coordination meetings in which VectorWorks participated	Project Activity Report	Semi-Annual
Objective GH.2: Support NMCP to achieve and maintain high levels of ITN coverage and use				
GH.2.1 Monitoring Health Facility continuous distribution	1	Number of meetings of the National Monitoring Team	Project Activity Reports	Semi-Annual
	2	Number of antenatal and immunization clinics visited by a monitoring team	Project Activity Report	Semi-Annual
	3	Percent of pregnant women who receive a net during their first antenatal care visit	DHIMS	Semi-Annual
	4	Percent of children who received a net during their last measles vaccine visit	DHIMS	Semi-Annual
GH.2.2 Registration and Validating Mass Distribution data	1	Number of regional planning meetings held for mass distribution	Project Activity Reports	Semi-Annual
	2	Number of sub-districts supported to validate community population data	Project Activity Reports	Semi-Annual
	3	Percentage of communities where variances were detected	Project Activity Report	Semi-Annual
GH.2.3 Schools Distribution	1	Number of schools implementing continuous distribution	Project Activity Report	Semi-Annual
	2	Number of pupils receiving ITNs	Project Activity Report	Semi-Annual
GH.2.CC Cross-cutting	1	Number of people trained in ITN distribution	Training summary forms	Semi-Annual
	2	Number of ITNs distributed	Transport waybills	Semi-Annual

GH.3: Promote the uptake and sustained use of vector management interventions				
	1	Number of BCC activities to promote ITN use	Project Activity Reports	Semi-Annual
	2	Number of people exposed to malaria messages	Project Activity Reports	Semi-Annual

B. Performance Indicator Reference Sheets

Objective GH.1: Strengthen multi-sectoral and stakeholder coordination

Indicator GH.1.1: Number of Malaria Alerts distributed

Year	Target	Actual (Total)
1	30,000	20,000
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: None

Source: Project activity reports

Definition: The Ghana Malaria Action Alert is a two-page publication targeting leadership of the health sector at all levels, the education sector, especially the School Health Program, and national and community leaders. It will also be distributed as an email bulletin to various stakeholder institutions to increase coverage. Distribution refers to print and electronic distribution.

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks senior technical advisor

Notes: The Malaria Action Alert was discontinued after project year one.

Indicator: GH.1.2. Number of national LLIN coordination meetings in which VectorWorks participated

Year	Target	Actual
1	6	4
2	12	12
3	12	12
4	12	12
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: By committee type

Committee Type	Number of Meetings Held in Year 4
ITN Subcommittee meetings	3
MaVCOC meetings	2
Other ITN-related meetings	7
Total	*12*

Source: Project Activity Report

Definition: National LLIN coordination meetings include but are not limited to meetings with the LLIN sub-committee, the Malaria SBCC Subcommittee and the Malaria Vector Control Oversight Committee. These three committees are the main coordination mechanisms of interest to VectorWorks. Other potential coordination mechanisms include the USAID COPs meeting and the M&E/ COP (MECOP) meetings and others organized to plan and implement activities for special events such as World Malaria Day etc.

Frequency of reporting: Semi-Annually

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks chief of party

Objective GH.2: Support NMCP to achieve and maintain high levels of ITN coverage and use

Indicator: GH.2.1.1 Number of meetings of the National Monitoring Team

Year	Target	Actual
1	3	3
2	4	4
3	4	4
4	4	4
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: None

Source: Project activity reports

Definition: This indicator tracks the number of times the national monitoring team meets to plan and undertake training of regional teams and to monitor continuous distribution activities. The national monitoring team's main role is to reorient the district-level monitoring teams and to provide supervision and support for health facility monitoring. These activities are tracked by other indicators.

Frequency of reporting: Semi-Annually

Reporting format: Semi-Annual and Annual Reports

Reporting units: VectorWorks chief of party

Indicator GH.2.1.2 Number of antenatal and immunization clinics visited by a monitoring team

Year	Target	Actual
1	800	1,428
2	3,217	3245
3	3300	4,093
4	3300	3,980
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: Regions and districts

Region	Number of health facilities visited in Year 4
Ashanti	558
Brong Ahafo	539
Central	480
Eastern	665
Northern	480
Upper East	344
Upper West	322
Volta	592
Total	3,980

Source: Monitoring forms

Definition: The number of antenatal care (ANC) and EPI (expanded programme on immunization) clinics visited by monitoring/supervision teams.

Frequency of reporting: Semi-Annually

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Notes: The large number of districts (216) in the country made it not feasible to disaggregate data by district level. We therefore limited disaggregation of data to the regional level.

Indicator GH.2.1.3: Percent of pregnant women who receive a net during their first ANC visit

Year	Target	Actual
1	60	50.65
2	80	58.37
3	80	69.90
4	80	88.60
5	TBD	
Life of Project	TBD	

Unit of Measure: Percentage

Disaggregation: Regions, districts, and facility type (hospitals, health centres, CHPs)

Region	Coverage in Year 4

Ashanti	89.52
Brong Ahafo	99.58
Central	81.84
Eastern	98.45
Greater Accra	73.97
Northern	71.33
Upper East	91.41
Upper West	84.11
Volta	98.56
Western	97.26

Source: DHIMS

Definition:

- Numerator: Number of pregnant women who received a net during their first ANC visit
- Denominator: Number of pregnant women who had a 1st ANC visit for the current pregnancy in the reporting period

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks senior technical advisor

Notes: The large number of districts (216) and health facilities in the country made it not feasible to disaggregate data by district level or facility type. We therefore limited disaggregation of data to the regional level.

Indicator GH.2.1.4: Percent of children who received a net during their last measles vaccination visit

Year	Target	Actual
1	70	73.05
2	80	71.44
3	80	76.17
4	80	87.35
5	TBD	
Life of Project	TBD	

Unit of Measure: Percentage

Disaggregation: Regions, districts, and facility type (hospitals, health centres, CHPs)

Region	Coverage in Year 4
Ashanti	91.57
Brong Ahafo	96.84
Central	79.01
Eastern	97.29
Greater Accra	72.16
Northern	72.78
Upper East	88.95
Upper West	84.04
Volta	97.72
Western	93.12

Source: DHIMS

Definition:

- Numerator: Number of children who received a net during their 18-month measles vaccine visit
- Denominator: Number of children who received their 18-month measles vaccine visit

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks senior technical adviser

Notes: The large number of districts (216) and health facilities in the country made it not feasible to disaggregate data by district level or facility type. We therefore limited disaggregation of data to the regional level.

Indicator GH.2.2.1: Number of regional planning meetings held for mass distribution

Year	Target	Actual
1	12	12
2	12	14
3	N/A	N/A
4	10	10
5	N/A	
Life of Project	34	

Unit of Measure: Number

Disaggregation: None

Definition: Number of regional planning meetings held for mass distribution.

Source: Activity reports

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Indicator GH.2.2.2: Number of sub-districts supported to validate community population data

Year	Target	Actual
1	262	230
2	293	531
3	N/A	N/A
4	N/A	N/A
5	N/A	N/A
Life of Project	555	761

Unit of Measure: Number

Disaggregation: Regions/districts

Definition: Number of sub-districts supported to validate community population data. Support is defined as technical or financial input from VectorWorks.

Source: Project activity reports

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Notes: Current process involves electronic validation and does not require training of sub-district officers for data validation.

Indicator GH2.2.3: Percentage of communities where variances were detected

Year	Target	Actual
1	25%	30%
2	20%	23.6%
3	N/A	N/A
4	20%	N/A
5	N/A	

Life of Project	20%	

Unit of Measure: Percentage

Disaggregation: Regions/districts; Rural / urban

Definition:

Numerator: Number of rural/urban communities where variances were detected between number of nets allocated from census data and number of nets allocated from registration coupons.

Denominator: Total number of rural/urban communities checked for variance.

Source: Project activity reports

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Disaggregated Results: N/A

Notes: Current process involves electronic registration, validation and quantification of ITNs using the NetApp and does not require validating projected population data.

Indicator GH.2.3.1: Number of schools implementing continuous distribution

Year	Target	Actual
1	-	-
2	14,000	16,026
3	19,288	23,526
4	N/A	N/A
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: Regions/districts; level (such as Lower Primary, Upper Primary).

Source: Training forms

Definition: The number of primary schools in which nets were distributed.

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Notes: Continuous distribution in schools was not carried out in Year 4.

Indicator GH.2.3.2: Number of pupils receiving ITNs

Year	Target	Actual
1	--	3,200
2	910,000	936357
3	1,148,610	1,369,206
4	N/A	N/A
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: Regions/districts, gender

Source: Training forms

Definition: The number of students receiving (a) an ITN from a school distribution program.

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Notes: Continuous distribution in schools was not carried out in Year 4.

Indicator GH.2.CC.1 Number of people trained in ITN distribution

Year	Health-Facility-Based Distribution		School-Based Distribution		Mass Distribution		Total	
	Target	*Actual*	*Target*	*Actual*	*Target*	*Actual*	*Target*	*Actual*
1	3,200	6,904	n/a	n/a	230	281	3,420	7,185
2	9,984	9,882	1,761	1,939	478	814	12,223	12,635
3	1,500	13,410	9,747	22,649	N/A	N/A	11,246	36,059
4	10,000	10,991	N/A	N/A	4,703	*4,213	14,703	15,204
5	TBD		TBD		TBD		TBD	
Life of project	TBD		TBD		TBD		TBD	

*Activity in progress—to be updated in Year 5 semi-annual report.

Unit of Measure: Number

Disaggregation: Regions/districts; type of personnel, channel and gender.

Region	Mass ITN dist. staff trained in Year 4		Health facility-level staff trained in Year 4		Total
	Male	**Female**	**Male**	**Female**	
Ashanti	N/A	N/A	354	1,745	2,099
Brong Ahafo	N/A	N/A	439	1,256	1,695
Central	208	626	286	1,179	2,299
Eastern	240	738	290	1,307	2,575
Greater Accra	N/A	N/A	N/A	N/A	N/A
Northern	158	486	463	545	1652
Upper East	N/A	N/A	308	548	856
Upper West	N/A	N/A	338	473	811
Volta	198	490	320	1140	2,148
Western	*263*	*806*	N/A	N/A	1,069
Total	***1,067***	***3,146***	***2,798***	***8,193***	***15,204***

Source: Training forms

Definition: The number of people trained with VectorWorks funds in ITN distribution.

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Disaggregation: By region for mass campaign

Notes: CC stands for cross-cutting indicators.

This is a global PMI and VectorWorks indicator. Support for ITN distribution, including trainings, is dependent on many institutions and factors beyond the project such as Global Fund for AIDS, Tuberculosis and Malaria (GFATM) and UK Department for International Development (DFID)

Indicator GH.2.CC.2: Number of ITNs distributed

Year	Health-Facility-Based Distribution		School-Based Distribution		Mass Distribution		Total	
	Target	*Actual*	*Target*	*Actual*	*Target*	*Actual*	*Target*	*Actual*
1	557,500	557,500	N/A	N/A	642,500	2,818,842	1.2 million	3,376,342
2	700,700	874,905	910,000	936,357	7,189,300	8,641,087	8.8 million	10,452,349
3	1,527,427	1,312,113	1,148,610	1,369,206	N/A	N/A	2,676,037	2,536,957
4	1,200,000	1,657,515	N/A	N/A	14,299,688	*9,534,983	15,499,688	11,192,498
5	TBD		TBD		TBD		TBD	
Life of project	TBD		TBD		TBD		TBD	

*Numbers for Brong Ahafo, Central, Eastern, Northern, Western, Volta regions

Unit of measure: Number

Disaggregation: By region, district, and channel (e.g., ANC or EPI, point mass distribution, school distribution)

Year 4 Disaggregation by Region and Channel

Region	Health-Facility-Based Distribution	School-Based Distribution	Mass Distribution	Total
Ashanti	305,089	N/A	N/A	305,089
Brong Ahafo	191,066	N/A	1,628,041	1,819,107
Central	133,210	N/A	1,508,974	1,642,184
Eastern	181,440	N/A	1,553,781	1,735,221
Greater Accra	233,010	N/A	N/A	233,010
Northern	181,913	N/A	1,448,240	1,630,153
Upper East	61,058	N/A	N/A	61,058
Upper West	43,107	N/A	N/A	43,107
Volta	145,665	N/A	1,431,959	1,577,624
Western	181,957	N/A	1,963,988	2,145,945

Source: Waybills, distribution reports, program officer reports

Definition: The number of ITNs distributed through mass, continuous, or routine distribution channels for which VectorWorks provided facilitation services.

Frequency of reporting: Semi-Annually

Reporting format: Semi-Annual and Annual reports

Reporting units: VectorWorks program officers

Notes: The large number of districts (216) and health facilities in the country made it not feasible to disaggregate data to the district level. We therefore limited disaggregation of data to the regional level

CC stands for cross-cutting indicators.

This is a global PMI and VectorWorks indicator. Numbers of nets beyond Year Four will depend on donor and Government of Ghana (GoG) orders, so cannot be estimated at this point.

Objective GH.3: Promote the uptake and sustained use of vector management interventions

Indicator GH.3.1 Number of behavior change communication activities to promote ITN use

Year	Target	Actual
1	735	3,912
2	1785	1895
3	2800	7,567
4	3200	9,083
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: Regions/District; Rural/urban; Channel (community mobilization, radio, etc.)

Region	Number of School BCC Activities in Year 4
Ashanti	I,822
Brong Ahafo	1,420
Central	1,226
Eastern	1,891
Western	1,406
Volta	1,318
Total	9,083

Source: Project activity reports

Definition: The number of community mobilization activities and mass media airings or postings funded by VectorWorks. Community mobilization activities include community meetings, home visits, etc.

Frequency of reporting: Semi-Annual

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Notes: Number of SBCC activities is a global PMI and VectorWorks indicator. In Year Four, SBCC activities were focused on interpersonal communications at schools and health facilities as VectorWorks did not lead radio or community mobilization activities.

Indicator GH.3.2 Number of people exposed to malaria messages

Year	Target	Actual
1	2,040,564	3,014,800
2	2,247,69	3104580
3	3,321,504	3,557,874
4	3,557,874	11,192,498
5	TBD	
Life of Project	TBD	

Unit of Measure: Number

Disaggregation: Region/district, channel

Region	Number of People Exposed to Malaria Messages (Health facility/PMD) in Year 4
Ashanti	305,089
Brong Ahafo	1,819,107
Central	1,642,184
Eastern	1,735,221
Greater Accra	233,010
Northern	1,630,153
Upper East	61,058
Upper West	43,107
Volta	1,577,624
Western	2,145,945
Total	*11,192,498*

Source: SBCC activity reports

Definition: The number of people who were exposed to messages on ITN use through mass media or community mobilization activities. This indicator does not capture the numbers of patients and caregivers who received interpersonal counseling at health facilities. Community mobilization activities include community meetings, home visits, and so on.

Frequency of reporting: Semi-Annually

Reporting format: Semi-Annual & Annual Reports

Reporting units: VectorWorks program officers

Notes: The large number of districts (216) in the country made it not feasible to disaggregate data to the district level. We therefore limited disaggregation of data to the regional level.

IV. Reporting and Data Use

To implement the VectorWorks Ghana project, five program officers (PO) will be responsible for working closely with the Ghana Health Service (National Malaria Control Program-NMCP) and Ministry of Education counterparts at regional, district and sub-district levels. The program officers submit monthly reports to the senior technical advisor, who, in consultation with the monitoring and evaluation manager checks the reports for completeness and accuracy, discuss, and provide feedback to the program officers. These reports are then be forwarded with indicator tally sheets to the chief of party for final review and submission to VectorWorks headquarters.

VectorWorks leadership periodically reviews progress against targets to advise program officers, the monitoring and evaluation manager, the senior technical advisor, and the chief of party. VectorWorks submits PMP reports to PMI along with semi-annual and annual project reports.

Data will be presented using the types of disaggregation outlined above to allow for comparisons over time, between regions, districts, and facility types and sex. This analysis will be part of the semi-annual reporting process. A presentation/team review of the analysis will also be part of the annual work plan process. During annual work planning meetings, VectorWorks will review progress against targets and reflect on challenges faced, lessons learned and recommendations. This combination of quantitative and qualitative reflections will be used to shape future years' activities and targets.

TANZANIA PERFORMANCE MONITORING PLAN

PMP Purpose, Components and Critical Assumptions

Purpose

This Performance Monitoring Plan (PMP) provides a framework for systematically collecting and using data to monitor the activities and achievements of the VectorWorks Project in Tanzania. It describes the relationship between project activities and its overall goal to "support NMCP to achieve and maintain high levels of coverage and use of long-lasting ITNs". It also documents the key specific results that VectorWorks Tanzania intends to achieve and the progress it makes towards its targets.

Components

To accomplish these functions, the PMP consists of several components. The results framework describes the pathways linking activities to the project goal. Each activity contributes to the fulfilment of project objectives, which, in turn, contribute to the overall project goal. Documenting improvements along these pathways assists in the attribution of achievements in agreement with objectives to the project's activities.

Next, the document describes VectorWorks' activities in each result area and presents a minimum number of selected key indicators most relevant to each area. These indicators were chosen based on several criteria: a) objectivity, b) ability to reflect outcomes and outputs that are central to the project's work, c) feasibility and cost of data collection, d) data availability when needed and e) usefulness for management decision-making. Indicator reference sheets provide details on their definition, frequency, level of disaggregation, and reporting unit. Lastly, a reporting flow chart illustrates the flow of data and levels of reporting, aggregation and data quality assurance.

This PMP was designed to represent key indicators specific to the VectorWorks Tanzania project. In addition, it tracks two standard indicators from the global VectorWorks agreement in the Tanzania work plan where those indicators are relevant.

The indicators in this PMP are not intended to provide a comprehensive understanding of how an activity resulted in a change in the agreement objectives or why an activity was not as effective as expected. Rather, indicators provide an indication that a change occurred over time, with discussions in semi-annual narrative reports providing more thorough answers on how and why VectorWorks activities achieved their results.

The project will use routine data collection forms and activity tracking spreadsheets to collect data and track activities. These include training summary forms, media monitoring reports, distribution summary forms, activity summary forms and travel and research tracking spreadsheets. Indicator reference sheets will document how targets were selected and details on progress toward annual targets. These indicator reference sheets and supporting documents will make it possible to document each indicator's history and for project managers to review the quality of the data being reported and make recommendations.

Critical Assumptions

The PMP is based on several critical assumptions. Changes to these assumptions will have major implications on the overall direction of the project and the PMP.

- Insecticide-treated net (ITN) distribution will continue to be a major focus for the Tanzania National Malaria Control Program (NMCP) and the United States Agency for International Development/President's Malaria Initiative (PMI) Tanzania;

- The national mechanisms for malaria policy implementation through the NMCP will remain stable and largely unchanged;

VectorWorks will review this PMP and these assumptions internally and with USAID/PMI Tanzania on an annual basis to track trends and discuss opportunities for refining program activities and the PMP indicators.

Project Goal and Objectives

The VectorWorks (VW) Project is a five-year (2014-2019) global project funded by United States Agency for International Development's President's Malaria Initiative (USAID/PMI). The global project goal is to support countries to achieve and maintain high rates of coverage and use of vector management interventions. Specifically, the project is tasked with attaining this goal through activities clustered under three main objectives:

> **Objective 1: Policy** - Develop and promote policies at both the international and national levels to encourage sustained, high levels of coverage and use of insecticide treated nets (ITNs) and/or alternative vector management interventions.
>
> **Objective 2: Monitoring, Evaluation & Operations Research**- Design, conduct and analyse results from monitoring, evaluation, and operational research activities in order to improve current best practices of long-lasting ITNs and/or alternative vector management interventions.
>
> **Objective 3: Implementation** - Promote and support country-level implementation of malaria prevention activities to ensure sustained high level coverage and use of long-lasting ITNs and, as needed, targeted coverage and appropriate use of alternative vector management interventions.

The project is implemented by a consortium led by the Johns Hopkins Center for Communication Programs (CCP) under Cooperative Agreement # AID-OAA-A-14-00057. Other partners include Tropical Health LLP, Swiss Tropical and Public Health Institute, Population Services International (PSI), Mennonite Economic Development Associates and the Tulane University Center for Applied Malaria Research and Evaluation (CAMRE). The project will be conducted in partnership with NMCPs as well as PMI Resident Advisors and other malaria partners in each country.

In Tanzania, VectorWorks advances the three project objectives through several activities. VectorWorks supports the government in the implementation of the school-based ITN distribution pilot, locally referred to as the School Net Program (SNP). In the first year of the project, SNP operated in the three Southern regions (Lindi, Mtwara and Ruvuma) and in the second year the project expanded to the four Lake Zone regions (Geita, Kagera, Mara, and Mwanza); and in year three and four VectorWorks expanded further to cover 14 regions in total: Lindi, Mtwara, Ruvuma, Mwanza, Geita, Kagera, Mara, Sinyanga, Kigoma, Tabora, Katavi, Simiyu, Pwani and Morogoro. Additionally, in Year 2 VectorWorks developed a strategy and for routine distribution of ITNs through antenatal clinics (ANC) and expanded programs for immunization (EPI) services, and began phased-in implementation starting in the regions of Mtwara and Mwanza.

In year four 2017/2018, VectorWorks completed the fifth round of the School Net Program (SNP5), distributing 2,094,470 ITNs through primary schools; and supported implementation of the sixth round distributing 1,372,616 ITNs in 8 regions of mainland Tanzania with collaborative efforts from central level ministries especially Presidents Office, Regional Administration and Local Governments (PO-RALG) and MoHCDGEC through the National Malaria Control Program (NMCP) and local regional/district council officials. The vision of this fifth and six rounds of school-based ITN distribution were to implement a much lean and cost effective SNP in order to ensure a sustainable model for future application is demonstrated.

VectorWorks expanded distributing ITNs to pregnant women attending antenatal care (ANC) services and infants attending Expanded Program on Immunization (EPI) services from initial two pilot regions (Mtwara and Mwanza) to more seven regions (Ruvuma, Simiyu, Mara, Kigoma, Geita, Kagera and Lindi) in year three and five more regions (Morogoro, Pwani, Katavi, Tabora and Shinyanga previously, under Global Funds). From October 2017 to September 2018, VectorWorks distributed a total of 1,629,028 ITNs as resupplies to public health facilities in 14 regions of Mwanza, Mara, Kagera, Kigoma, Simiyu, Geita, Ruvuma, Lindi, Mtwara, Shinyanga, Katavi, Tabora, Morogoro and Pwani regions. In addition, VectorWorks supported the initial smart push distribution of 1,098,080 ITNs to 17 regions (5 PMI regions and 12 Global Fund regions). The 17 regions were Arusha, Dar es Salaam, Dodoma, Iringa, Katavi, Kilimanjaro, Manyara, Mbeya, Morogoro, Njombe, Pwani, Rukwa, Shinyanga, Singida, Songwe, Tabora, and Tanga. To date all 26 regions are issuing ITNs at the health facilities to the targeted population.

In order to ensure RCH based ITNs distribution is sustained without stock out, VectorWorks has worked to build the capacity of the Central Medical Stores Department (MSD). While the process of building MSD capacity and transitioning LLINs storage and distribution to MSD has been slow, in year 3 VectorWorks has managed to transition 2 districts (Nyamagana and Sengerema) in Mwanza region to allow MSD get the needed experience in LLINs distribution. MSD has also picked up storage of LLINs for Tabora and Kigoma region. VectorWorks will use lessons from Mwanza LLINs distribution and Tabora LLINs storage to further build MSD capacity and transition more regions.

In year 3, VectorWorks designed and implemented activities that use existing local and central government systems and staff. VectorWorks also worked with government of Tanzania counterparts design both SNP and RCH distribution models that seek to develop a less costly, more replicable, and more sustainable model for ITN distribution through schools and clinics for future scale-up. For example, in year 3 VectorWorks revised SNP distribution model where using the centralized PO-RALG Basic Education Management information System (BEMIS) system is doing no further student registration. VectorWorks and PORALG integrated supervision for LLINs distribution in the existing PORALG data team at the regional and district level. The central government has also integrated ITN distribution in the BEMIS system; this means there is no training of more than 1,500 ward level education coordinators in the 14 regions. These changes have made SNP integrated in the PORALG system and increased implementation efficiency and significantly cut down costs.

Other activities for VectorWorks in Year 3 included support to the NMCP in finishing a comprehensive ITN distribution strategy, coordination with stakeholders in ITN policy, and technical assistance for continuous distribution strategies in Zanzibar.

In Year Four, VectorWorks Tanzania continued to support the Government of Tanzania's (GoT) shift from mass campaigns of ITNs to continuous distribution. At the start of Year Four, VectorWorks Tanzania completed SNP5 and implement first phase of SNP6, distributing 3,467,086 ITNs through primary schools. In addition to SNP, VectorWorks Tanzania supported distribution of ITNs through health facilities in mainland Tanzania and Zanzibar. VectorWorks Tanzania supported the initial smart push of 1,098,080 ITNs to seventeen regions receiving support from PMI and Global Fund. VectorWorks has supported distribution of ITNs to all 26 regions, and supported the government of Zanzibar to launch community and health facility-based distribution in quarter three of Year Four.

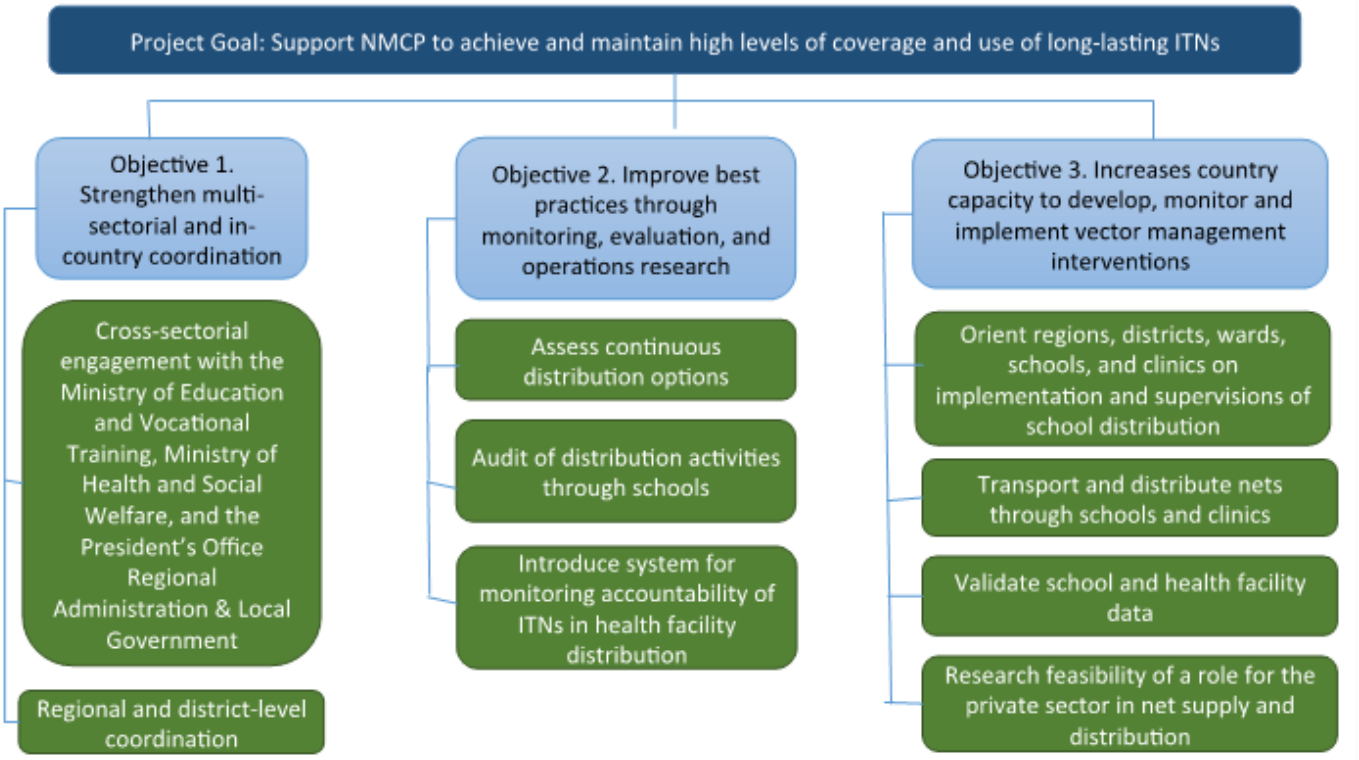
Results Framework

The VectorWorks Tanzania results framework describes the pathways that link specific project activities to the long-term goals described by the project objectives above. In this framework, each activity contributes to the fulfilment of project objectives, in turn, contributing to the overall project goal. Documenting improvements along these pathways assists in the attribution of activities toward reaching the project goal and objectives.

While the activities appear to occur in parallel, the three VectorWorks objectives function as an integrated and mutually supportive package. Under Objective 1, VectorWorks Tanzania will facilitate and promote improved

multi-sectoral and stakeholder communication and coordination on policy, standards, and guidance in line with the National Malaria Strategic Plan 2014-2020. Field experience under Objective 3 will increase country capacity to develop, implement and monitor programs and the challenges and lessons learned through this will in turn, inform the policy discussions and future modifications to implementation. Research conducted under Objective 2 will inform Objectives 1 and 3 as it sheds insight on potential scale up, identifies best practices, and points towards modifications in program design for future years.

Figure: VectorWorks Tanzania Results Framework



VectorWorks Tanzania Indicator Table and Performance Indicator Reference Sheets

A. Indicator Table for VectorWorks Tanzania

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
1. Number of SNP coordination, review and/or planning meetings held by VectorWorks with Ministry of Health and Social Welfare (MoHSW), Ministry of Education and Vocational Training (MoEVT), and/or the President's Office Regional Administration & Local Government (PO-RALG) - administrative, education and health arms.	This indicator intends to measure the level of government personnel involvement in planning and reviewing SNP. Levels are national, regional, district and ward. The specific arm represented by the PO-RALG attendees (administrative, education or health) will be noted.	Meeting reports	Semi-annually	25 (National 3 Regional 3 District 19)	55 (National 1 Regional 7 District 47)	80 (National 4 Regional 9 District 67)	129 (National 10 Regional 14 District: 105)	N/A

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
2. Percent of schools flagged for validation that received a validation visit for SNP	**Numerator:** The number of schools visited by validation teams. The validation teams will verify student quantifications against actual class lists in the schools. **Denominator:** The total number of schools that will distribute nets in the current SNP round with variances in student quantification beyond the predefined validation cut-off.	Validation report	Semi-annually	95%	50% *See reference sheet for explanation of change in target	0	0	0
3. Number of districts with a complete micro-plan for ITN distribution through SNP	A complete micro-plan will be defined in the standard operating procedures/implementation guidelines.	Micro-plan meeting reports and actual micro-plans	Semi-annually	19	50	105	105	0
4. Number of districts with a complete micro-plans for ITN distribution through health facilities	A complete micro-plan will be defined in the standard operating procedures/implementation guidelines.	Micro-plan meeting reports and actual micro-plans	Semi-annually	N/A	16	50	105	105

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
5. Percent of SNP distribution points (schools participating in SNP) that received the correct number of nets during the reporting period	**Numerator:** Number of SNP distribution points (schools participating in SNP) that received the correct number of nets as defined in the micro-plans. **Denominator:** The total number of SNP distribution points (schools participating in SNP). For Tanzania SNP, this is the number of schools that will distribute ITNs in the current round under VectorWorks.	Truck drop-off data and transportation reports	Annually	100%	90%	90%	90%	0

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
6. Number of people trained in ITN distribution by VectorWorks by sex, ITN distribution channel, and location	This is a global VectorWorks and PMI indicator. This is defined as the number of people trained with VectorWorks funds in ITN distribution. For VectorWorks Tanzania, the ITN distribution channels are schools and health facilities. Locations include national, regional, district, ward and facility. Training will be defined in the implementation guidelines or standard operating procedure for each channel.	Training reports	Quarterly and semi-annual	School: 528	**Health Facility:** National: 5 Regional: 14 District: 84 Facility: 936 Total: 1,039 **School:** National: 14 Regional: 28 District: 192 Ward: 1,069 Total: 1,303 **Grand Total: 2,342**	**Health Facility:** National: 0 Regional: 50 District: 200 Facility: 1,400 Total: 1,650 **School:** National: 18 Regional: 36 District: 268 Ward: 1,400 Total: 1,722 **Grand Total: 3,372**	**Health Facility:** 0 **School:** 0	**Health Facility:** 0 **School:** 0

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
7. Number of insecticide treated nets (ITNs) purchased with USG funds that were distributed by VectorWorks, by channel	This is a global VectorWorks and PMI indicator defined as the number of ITNs distributed through mass, continuous or routine distribution channels. VectorWorks must have funded the transport of nets to storage sites or distribution points. For the Tanzania School Net Program, the channel is schools. For the Tanzania health facility distribution, the channel is health facilities that provide ANC and/or IVD services.	Distribution reports	Quarterly and semi-annually	Schools: 500,000	**Health facilities**: 320,000 **Schools**: 1,310,000 **Total**: 1,630,000	**Health facilities**: 1,330,709 **Schools**: 966,812 **Total**: 2,297,521	**Health facilities**: 956,701 **Schools:** 2,770,086 Total: 3,726,787	**Health facilities**: 558,080

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
8. Number of insecticide treated nets (ITNs) purchased by other partners that were distributed with USG funds	This is a PMI indicator defined as the number of ITNs purchased by other partners that were by distributed with USG funds through mass, continuous or routine distribution channels. VectorWorks must have funded the transport of nets to storage sites or distribution points. For the Tanzania School Net Program, the channel is schools. For the Tanzania health facility distribution, the channel is health facilities that provide ANC and/or IVD services.	Distribution reports	Quarterly and semi-annually	N/A	N/A	**N/A**	**Health facilities**: 1,240,182 **Schools:** 0 Total: 1,240,182	**Health facilities**: 4,306,230 **Schools:** 0 Total: 4,306,230
9. Percent of schools visited by a supervision team during ITN issuing	**Numerator:** The number of schools participating in SNP visited by a designated SNP supervision team during the issuing period. **Denominator:** The total number of schools participating in SNP. For Tanzania SNP, this is the number of schools that will distribute ITNs in the current round under VectorWorks.	Supervision report	Annually	90%	25% *See reference sheet for explanation of change in target	25%	25%	0

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
10. Percent of health facilities with flagged variances visited by supervision teams	**Numerator:** The number of health facilities with flagged variances that were visited by designated supervision teams during the reporting period. **Denominator:** The total number of health facilities with flagged variances during the reporting period. A flagged variance will be defined in the implementation guideline.	Validation report	Quarterly	N/A	95%	95%	95%	95%
11. Proportion of targeted beneficiaries who received an ITN, by channel, location and sex	**Numerator:** The number of targeted beneficiaries who received an ITN. **Denominator:** The number of targeted beneficiaries registered for each channel. Channels are schools and health facilities. For school-based distribution the targeted beneficiaries are defined in the standard operating procedure. For health facility based distribution the targeted beneficiaries are pregnant women who attended the health facility for their first ANC visit and children who attended the health facility for the measles vaccine.	**Schools**: Distribution reports **Health facilities**: Accountability report	**Schools**: Annually **Health facilities**: Quarterly	Schools: 100%	**Schools**: 99% **Health facilities**: ANC: 80% IVD: 80%	**Schools**: 99% **Health facilities**: ANC: 80% IVD: 80%	**Schools**: 99% **Health facilities**: ANC: 80% IVD: 80%	**Schools**: 0 **Health facilities**: ANC: 80% IVD: 80%

INDICATOR	*DEFINITION*	*SOURCE*	*FREQUENCY OF REPORTING*	*TARGETS YR 1*	*TARGETS YR 2*	*TARGETS YR 3*	*TARGET YR4*	*TARGET YR5*
12. Percent of health facilities that did not experience a stock-out of ITNs, by region, during the reporting period	**Numerator**: Number of health facilities that did not experience a stock-out of ITNs during the reporting period. A stock-out will be defined in the implementation guideline. **Denominator**: Total number of health facilities participating in the health facility ITN distribution during the reporting period.	eLMIS and Accountability report, or ILS Gateway	Quarterly	N/A	100%	100%	100%	100%

B. Performance Indicator Reference Sheets

Indicator #1: Number of SNP coordination, review and/or planning meetings held by VectorWorks with Ministry of Health and Social Welfare (MoHSW), Ministry of Education and Vocational Training (MoEVT), and/or the President's Office Regional Administration & Local Government (PO-RALG) - administrative, education and health arms.

Year	Targets & Actuals			
	Total	National	Regional	District
1	Target: 25 Actual: 25	Target: 3 Actual: 3	Target: 3 Actual: 3	Target: 19 Actual: 19
2	Target: 58 Actual: 63	Target: 1 Actual: 2	Target: 7 Actual: 7	Target: 50 Actual: 54
3	Target 82 Actual: 79	Target: 4 Actual: 2	Target: 9 Actual: 9	Target: 67 Actual: 67
4	Target: 129 Actual: 119	Target: 10 Actual: 0	Target: 14 Actual: 14	Target: 105 Actual: 105
5	N/A	N/A	N/A	N/A
Life of Project				

Unit of Measure: Number

Disaggregation: Level of government (national, regional and district)

Source: Meeting reports

Definition: This indicator intends to measure the degree of cross-ministerial involvement in reviewing and planning the performance of SNP at all levels of government. Levels are national, regional, district and ward.

Frequency of reporting: Semi-annually

Reporting format: Semi-annual report

Reporting personnel: Malaria Advisor

Notes: School Net Program (SNP) has evolved over time since its inception in 2013. In year four, VectorWorks engaged in dialogue with PO-RALG, MoHCDGEC/NMCP and identify one region to implement a "Self-Managed" SNP, VectorWorks envisions the region to take care of the entire distribution costs including but not limited to ITNs transportation costs to schools, supervision, printing of issuing booklets, reporting and documentation. Unfortunately the plan did not work since ITNs procurement is planned for so far in advance. In year 4 SNP conducted regional and district level feedback/review and planning meetings in quarters 3 and 4.

Indicator #2: Percent of schools flagged for validation that received a validation visit for SNP

Year	Target	Actual
1	95%	94.6% Lindi: 93% Ruvuma: 95% Mtwara: 98%
2	50%	Southern regions 0% Lake zone 95%
3	50%	0%
4	0%	0%
5	N/A	N/A
Life of Project		

Unit of Measure: Percent

Disaggregation: Location (region, district)

Source: Validation reports

Definition:

> **Numerator:** The number of schools visited by validation teams. The validation teams will verify student quantifications against actual class lists in the schools.
>
> **Denominator:** The total number of schools that will distribute nets in the current SNP round with variances in student quantification beyond the predefined validation cut-off.

Frequency of reporting: Semi-annually

Reporting format: Semi-annual report

Reporting personnel: SNP Officer

Notes: During SNP3, which was still a pilot distribution, VectorWorks identified 335 (17%) schools that needed validation visit; and conducted validation to 315 schools (94.6%). In the second year of the project (SNP4), VectorWorks conducted validation visit to 342 schools (99.7% of 343 target schools). In Years Three and Four, the project did not conduct council and school level data validation activity, due to the Tanzanian government's request to VectorWorks to rely on data government provides.

Indicator #3: Number of districts with a complete micro-plan for ITN distribution through SNP

Year	Target	Actual
1	19	19
2	50	54
3	105	105
4	105	105
5	N/A	N/A
Life of Project		

Unit of Measure: Number

Disaggregation: District

Source: Micro-plan meeting reports and actual micro-plans

Definition: A complete micro-plan will be defined in the standard operating procedures/implementation guidelines.

Frequency of reporting: Semi-annually

Reporting format: Semi-annual report

Reporting personnel: SNP Officer and PSI

Notes: 1 new district was added to Mtwara after year 1 of the project; therefore, SNP4 had 20 micro-plans from the Southern regions and 30 micro-plans from the Lake regions.

During SNP3 planning, the total number of districts in the 7 regions was 50 but during implementation phase 4 new districts were established (2 in Mtwara and 2 in Ruvuma) making it 54 districts in total.

For years 3 and 4, there were 14 regions with a total of 105 districts.

Indicator #4: Number of districts with complete micro-plans for ITN distribution through health facilities

Year	Target	Actual
1	N/A	N/A
2	16	16
3	105	105
4	105	105
5	105	TBD
Life of Project		

Unit of Measure: Number

Disaggregation: District

Source: Micro-plan meeting reports and actual micro-plans

Definition: A complete micro-plan will be defined in the standard operating procedures/implementation guidelines.

Frequency of reporting: Semi-annually

Reporting format: Semi-annual report

Reporting personnel: Logistics Manager and PSI

Notes: In year 3 VectorWorks expects to expand its operations to reach out to 9 regions with a total of 67 districts. In year 4 and 5 the project in collaboration with NMCP distributed ITNs in 105 districts from 14 regions.

Indicator #5: Percent of SNP distribution points (schools participating in SNP) that received the correct number of nets during the reporting period

Year	Target	Actual
1	100%	73% (see note)
2	90%	100%
3	90%	100%
4	90%	100%
5	N/A	N/A
Life of Project		

Unit of Measure: Percent

Disaggregation: Location (zone, region, district)

Source: Truck drop-off data and transportation reports

Definition:

> **Numerator:** Number of SNP distribution points (schools participating in SNP) that received the correct number of nets as defined in the micro-plans.
>
> **Denominator:** The total number of SNP distribution points (schools participating in SNP). For Tanzania SNP, this is the number of schools that will distribute ITNs in the current round under VectorWorks.

Frequency of reporting: Annually

Reporting format: Annual report

Reporting personnel: PSI

Notes: According to PSI data report on SNP3 transportation, 1,401 of 1,919 schools (73%) received the exact correct number of ITNs as compared against the pupil registration data. This data is still under review and the percentage accomplishment may change. In the quarter 1 of year 4 SNP distributed SNP 5 ITNs procured by Global Funds for 10 regions. All schools received correct quantities whereas; in the last quarter, VectorWorks distributed SNP6 ITNs to 8 regions and schools received correct quantities as well.

Indicator #6: Number of people trained in ITN distribution by VectorWorks by sex, ITN distribution channel, and location

Year	Target	Actual
1	School: Total: 528 Regional: 10 District: 122 WEC: 396	School: Total: 552 Regional: 12 (66% male; 33% female) District: 68 (46% male; 54% female) WEC: 472 (85% male; 15% female)
2	Health Facility: National: 5 Regional: 14 District: 84 Facility: 936 Total: 1,039 School: National: 14 Regional: 28 District: 192 Ward: 1,069 Total: 1,303 Grand Total 2,342	Health Facility: National: 6 Regional: 22 District: 136 Facility: 1,247 Total: 1,411 School: National: 14 Regional: 28 District: 213 Ward: 1,182 Total: 1,437 Grand Total 2,848
3	Health Facility: National: 0 Regional: 50 District: 200 Facility: 1,400 Total: 1,650 School: National: 18 Regional: 36 District: 268 Ward: 1,400 Total: 1,722 Grand Total: 3,372	Health Facility: National: 0 Regional: 56 District: 396 Facility: 7,051 Total: 7,503 School: National: 0 Regional: 42 District: 418 Ward: 0 Total: 460 Grand Total: 7,963
4	0	Health Facility: Regional and district level: 826 Facility: 0 Total: 826
5	N/A	N/A
Life of Project		

Unit of Measure: Number

Disaggregation: Sex, ITN distribution channel, and location

Source: Training reports

Definition: This is a global VectorWorks and PMI indicator. This is defined as the number of people trained with VectorWorks funds in ITN distribution. For VectorWorks Tanzania, the ITN distribution channels are schools and health facilities. Locations include national, regional, district, ward and facility. Training will be defined in the implementation guidelines or standard operating procedure for each channel.

Frequency of reporting: Quarterly and semi-annual

Reporting format: TMEMS database (quarterly) and semi-annual report

Reporting personnel: M&E Manager and PSI

Notes: In Years 4 and 5 VectorWorks does not have plans to train any group of implementers on ITN distribution since there will be no new regions of operation and the protocol is the same. However, in the second quarter of year four, NMCP requested the project to support trainings in 12 Global Funds regions and conduct refresher trainings in 5 regions previously under Global Funds (Morogoro, Pwani, Shinyanga, Katavi and Tabora).

Indicator #7: Number of insecticide treated nets (ITNs) purchased with USG funds that were distributed by VectorWorks, by channel

Year	Target	Actual
1	**Schools**: 500,000	**Schools**: Total: 494,407 Lindi: 135,820 Ruvuma: 169,849 Mtwara: 188,738
2	**Health facilities:** 320,000 **Schools:** 1,310,000 **Total: 1,630,000**	**Health facilities**: 237,760 **Schools**: 1,152,715 **Total: 1,390,472**
3	**Health facilities:** 1,330,709 **Schools:** 966,812	**Health facilities:** 1,249,120 **Schools:** 921,607 **Total: 2,170,727**
4	**Health facilities**: 956,701 Schools: 2,770,086	**Health facilities:** 1,498,718 **Schools:** 1,372,616 **Total: 2,871,334**
5	Health facilities: 558,080 Schools: N/A	**Health facilities:** **Schools:** N/A
Life of Project		

Unit of Measure: Number

Disaggregation: ITN distribution channel and region

Source: Distribution reports

Definition: This is a global VectorWorks and PMI indicator defined as the number of ITNs distributed through mass, continuous or routine distribution channels. VectorWorks must have funded the transport of nets to storage sites or distribution points. For the Tanzania School Net Program, the channel is schools. For the Tanzania health facility distribution, the channel is health facilities that provide ANC and/or IVD services.

Frequency of reporting: Quarterly and semi-annually

Indicator #8: Number of insecticide treated nets (ITNs) purchased by other partners that were distributed by VectorWorks, by channel

Year	Target	Actual
1	0	0
2	0	0
3	0	0
4	**Health facilities**: 1,240,182 Schools 0	**Health facilities:** 1,364,080 **Schools:** 2,094,470 **Total: 3,458,550**
5	Health facilities: 558,080 Schools: N/A	**Health facilities:** **Schools:** N/A
Life of Project		

Unit of Measure: Number

Disaggregation: ITN distribution channel and region

Source: Distribution reports

Definition: This is a global VectorWorks and PMI indicator defined as the number of ITNs distributed through mass, continuous or routine distribution channels. VectorWorks must have funded the transport of nets to storage sites or distribution points. For the Tanzania School Net Program, the channel is schools. For the Tanzania health facility distribution, the channel is health facilities that provide ANC and/or IVD services. PMI introduced this indicator in quarter 4 of year 3 to accommodate Global Funds ITNs that VectorWorks project distributes using USG funds. In year 4 PMI procures ITNs for all 14 SNP regions; however, there were still Global Funds ITNs for round 5 of SNP, which VectorWorks distributed in the first quarter of year four.

Frequency of reporting: Quarterly and semi-annually

Reporting format: TMEMS database (quarterly) and semi-annual report

Reporting units: M&E Manager

Indicator #9: Percent of schools visited by a supervision team during ITN issuing

Year	Target	Actual
1	90%	21% (see note)
2	25%	9.48%
3	25%	25%
4	25%	47%
5	N/A	N/A
Life of Project		

Unit of Measure: Percent

Disaggregation: Region and district

Source: Supervision report

Definition:

> **Numerator:** The number of schools participating in SNP visited by a designated SNP supervision team during the issuing period.
>
> **Denominator:** The total number of schools participating in SNP. For Tanzania SNP, this is the number of schools that will distribute ITNs in the current round under VectorWorks.

Frequency of reporting: Annually

Reporting format: Annual report

Reporting personnel: SNP Officer

Notes: During the SNP3 planning phase, VectorWorks expected WECs to conduct supervision during issuing. While they did informally collect data from schools during the issuing period using the issuing data collection tools designed for SNP3, they did not actually conduct what formal supervision for school distribution during ITN issuing. Therefore, only the supervision visits to schools that the national supervision teams conducted counted against this indicator. VectorWorks adjusted the target for SNP4 in Year Two to reflect coverage of supervision visits by national supervision teams for SNP4. The project implemented SNP5 in 14 regions in Years 3 and 4. Year four, therefore, implemented second phase of SNP5 and first phase of SNP6. During ITN issuing in the first 8 regions of SNP6, regional and district coordination teams visited a total of 2,540 schools out of 5,407 (47%) which is 22% above annual target without additional costs. The higher coverage is due to direction by the government, who took on an increasing amount of ownership.

Indicator #10: Percent of health facilities with flagged variances visited by supervision teams

Year	Target	Actual
1	N/A	N/A
2	95%	0%
3	95%	0%
4	95%	46%
5	95%	TBD
Life of Project		

Unit of Measure: Percent

Disaggregation: Region and district

Source: Validation reports

Definition:

> **Numerator:** The number of health facilities with flagged variances that were visited by designated supervision teams during the reporting period.
>
> **Denominator:** The total number of health facilities with flagged variances during the reporting period. A flagged variance will be defined in the implementation guideline.

Frequency of reporting: Quarterly

Reporting format: Semi-annual report

Reporting personnel: M&E Manager

Notes: Supervision visits intend to identify causes of the discrepancy and provide technical assistance to health facilities' personnel. Since *Chandarua Kliniki* dashboard came to operation in year 4, in year 2 and 3 VectorWorks visited health facilities, randomly, for monitoring and supervision purpose. Starting quarter 1 of year 4 the project conducts supervisions at health facilities with more focus on red flag facilities based on *Chandarua Kliniki* report.

Orientation on the use of accountability information system (*Chandarua Kliniki* dashboard) happened in September 2017. Regional Managers started to apply the tool on supervision in October 2017. Thus, in the first six month of FY2018 the project, through Regional Managers visited a total of 702 health facilities with red flag, which is 53% of 1325 total health facilities with red flag. During the third and four quarter of Year four Regional Managers visited a total of 395 flagged health facilities, which is 38% of 1,045 target health facilities. Annually, the project visited a total of 1,097 health facilities, which is 46% of total number of 2,370 red flag health facilities. The project could not reach the target of 95% due to two main reasons: a higher number than expected of flagged facilities as a result of delayed distribution and issuing of ITNs in the five regions previously under Global Funds (Morogoro, Pwani, Shinyanga, Katavi and Tabora), and overlap between SNP6 and health facility-based distribution activities forcing Regional Managers to focus on SNP6.

Indicator #11: Proportion of targeted beneficiaries who received an ITN, by channel, location and sex

Year	Target	Actual
1	**Schools:** 100%	**Schools:** Total: 99.25% (49% male, 51% female) Lindi: 97.5%; Ruvuma: 99.9%; Mtwara: 99.9%
2	**Schools:** 99% **Health facilities:** ANC: 80%; IVD: 80%	**Schools:** 98% **Health facilities:** ANC: Not determined IVD: Not determined
3	**Schools:** 99% **Health facilities:** ANC: 80%; IVD: 80%	**Schools: 98%** **Health facilities:** ANC: 56% IVD: 44%
4	**Schools:** 99% **Health facilities:** ANC: 80%; IVD: 80%	**Schools:** Not determined yet (pending cleaning of issuing data) **Health facilities:** ANC: 65% IVD: 54%
5	**Schools:** N/A **Health facilities:** ANC: 80%; VD: 80%	**Schools:** N/A **Health facilities:** ANC: IVD:
Life of Project		

Unit of Measure: Percent

Disaggregation: Channel, location and sex

Source:

Schools: Distribution reports

Health facilities: Accountability report

Definition:

Numerator: The number of targeted beneficiaries who received an ITN.

Denominator: The number of targeted beneficiaries registered for each channel.

Channels are schools and health facilities. For school-based distribution the targeted beneficiaries are defined in the standard operating procedure. For health facility based distribution the targeted beneficiaries are pregnant women who attended the health facility for their first ANC visit and children who attended the health facility to receive the first measles vaccine.

Frequency of reporting:

Schools: Annually

Health facilities: Quarterly

Reporting format: Semi-annual report

Reporting personnel: M&E Manager, Logistics Manager, and SNP Officer

Notes: For schools 98% were reached in previous rounds so we believe this is a reasonable target.

Indicator #12: Percent of health facilities that did not experience a stock-out of ITNs, by region, during the reporting period

Year	Target	Actual
1	N/A	N/A
2	80%	100%
3	80%	88.2%
4	80%	61.1%
5	80%	TBD
Life of Project		

Unit of Measure: Percent

Disaggregation: Region and district

Source: eLMIS and accountability report or ILS Gateway

Definition:

> **Numerator**: Number of health facilities that did not experience a stock-out of ITNs during the reporting period. A stock-out will be defined in the implementation guideline.
>
> **Denominator**: Total number of health facilities participating in the health facility ITN distribution during the reporting period.

Frequency of reporting: Quarterly

Reporting format: Semi-annual report

Reporting personnel: M&E Manager, Logistics Manager, and PSI

Notes: Health facilities are required to maintain a stock of ITNs that can last for a minimum of three moths and maximum of six months. At smart push the project distributes six month quantities and resupplies depend on consumption level and submission of requests from the health facilities. Year Four experienced health facilities with stockouts due challenges with MSD delays in processing orders from health facilities (such as in MSD Tabora zone), and taking over the five regions previously administered by the Global Fund.

Reporting, Data Management and Use

VectorWorks Tanzania has several programmatic reporting requirements:

- Report on those indicators that are also global VectorWorks and PMI indicators to the TMEMS database quarterly.
- Submit semi-annual and annual reports to PMI within 45 days after the reporting period has ended.
- Submit deliverables as stated in annual work plans, which report on activities conducted, including quarterly accountability reports for health facility distribution and the procedural audit for school distribution (see below).

Per guidance of the GoT, VectorWorks will use the BEMIS to determine data related to SNP. VectorWorks will use the *Chandarua Kliniki* dashboard for monitoring related to health facility distribution.

VectorWorks will periodically review progress against targets to advise current implementation and annual work plans. Data will be presented using the types of disaggregation mentioned above to allow for comparisons over time, between regions, districts, facility types and sex. This analysis will be part of the semi-annual reporting process. A team review of the analysis will also be part of the annual work plan process. During annual work planning meetings, VectorWorks will review progress against targets and reflect on challenges faced, lessons learned and recommendations.

Evaluation Plan

VectorWorks conducted process evaluations, mostly recently during SNP4. Additionally, VectorWorks conducted a Commodity Management Audit for SNP4.

VectorWorks will also conduct a financial evaluation of the school net distribution program. This activity is funded under PMI-Washington with Core funds and led by VectorWorks partner, Tulane University. Tulane has set up cost tracking systems and collected cost data for SNP3. These analyses will provide critical information on the costs of different types of continuous distribution channels, to be used by the NMCP and for PMI. The economic analysis provides a more complete picture of the costs including volunteered or non-project time that will inform a comparative analysis that includes person-years-of-protection for different types of channels, and will help to establish the case for or against a transition from mass campaigns to continuous distribution. Currently, VectorWorks is conducting a cost effective evaluation of SNP5, which will provide valuable information when compared to SNP3 about cost effectiveness during pilots and at scale.

The results of the VectorWorks Tanzania project monitoring and evaluation data will inform future program design, National ITN strategies, Malaria Operational Plans, and Global Fund concept notes.