Republic of the Philippines
Department of Health
OFFICE OF THE SECRETARY

MAR 0 4 2021

ADMINISTRATIVE ORDER
No. 2021 - 0028

SUBJECT: Implementing Guidelines on the Use of Online Malaria Information System (OLMIS)

I. RATIONALE

Republic Act 11332 otherwise known as the "Mandatory Reporting of Notifiable Diseases and Health Events of Public Health Concern Act' stipulates that establishment of public health information and surveillance systems to facilitate timely and accurate data recording and reporting is an integral part of response to public health emergencies. This mandate is of prime importance for the National Malaria Control and Elimination Program (NMCEP) which puts surveillance as a core approach to prevent disease resurgence in malaria-free areas in order to achieve the vision of a malaria-free Philippines by 2030. Thus, one of the Philippine National Strategic Plan for Control and Elimination of Malaria (PNSPCEM) 2017-2022 strategies is the strengthening of the surveillance, reporting and recording systems for malaria.

Different Department of Health (DOH) information systems have been supporting this program's need, which includes the (i) regular Malaria Program Reporting System; the (ii) Philippine Malaria Information System (PhilMIS); the (iii) Philippine Integrated Disease Surveillance and Response (PIDSR), the (iv) Field Health Services Information System (FHSIS); and the (v) Event-based Surveillance and Response (ESR). However, based on the assessment of these systems in 2015, results have shown that the agency should have a real-time reporting system that hosts information on malaria foci investigations, foci register, case register, laboratory register, analytical tables and maps (See Annex 1, Report on the Assessment of Current Surveillance, Recording and Reporting Systems for Malaria in Philippines, p.20, sec.4.3). Thus, the Online Malaria Information System (OLMIS) was developed in 2017 with support from the World Health Organization (WHO). The OLMIS is expected to efficiently collect and report information on Malaria from all levels of the health care service delivery system.

The creation of OLMIS followed the Health Enterprise Architecture (HEA) prescribed by the DOH. As such, this is in line with the Universal Health Care (UHC) Law's directive on the maintenance of interoperable information systems. It is also in sync with the *FOUR*mula One Plus for Health (F1+) framework as it answers the need for intensified strategies for disease-free zone initiatives specifically surveillance and monitoring. Moreover, it complements the Philippine eHealth Strategic Framework & Plan 2014-2022 with the vision of Information and Communication Technology (ICT) enabled Philippine Health System towards better and equitable access to quality health care services, and easier access to secure real time and quality health data and information for evidenced-based decision making.

Accordingly, it is crucial to have guidelines in the implementation of OLMIS to support the Philippine malaria elimination goals, as well as its maintenance and monitoring across all

malaria service delivery networks nationwide; and to amend the provisions of AO No. 2014-0004 entitled as "Guidelines in the Implementation of the Modified Philippine Malaria Information System (PhilMIS) in Recording and Reporting Malaria Cases, Deaths and Vector Control Activities".

II. OBJECTIVES

To provide guidelines and direction in the adoption, implementation, maintenance and monitoring of the OLMIS.

III. SCOPE

The AO shall apply to the Department of Health (DOH) Central Office, Centers for Health Development (CHDs), Ministry of Health – Bangsamoro Autonomous Region in Muslim Mindanao (MOH-BARMM), DOH-attached agencies, DOH Retained Hospitals, Healthcare Provider Networks (HCPNs) in Local Government Units (LGUs), and other facilities providing Malaria services.

IV. DEFINITION OF TERMS

For purposes of this Order, the following terms are defined as follows:

1. **Access Level** refers to the type of access given to a user such as encoder, validator and viewer.

2. **Data Migration** refers to the process of transferring from other storage, types, and/or formats to be able to consider system implementation, upgrade or consolidation.

3. **Data Validation** refers to the process of checking the correctness, accuracy and completeness of data.

4. **External Users** refer to the agencies, offices, facilities, organizations, associations, institutions, foundations and/or individuals that also need Malaria data for whatever purpose it may serve. (e.i. research, analysis)

5. **Health Enterprise Architecture (HEA)** refers to the conceptual blueprint that defines the structure and operations of the organization.

6. **Health Care Provider Network (HCPN)** refers to a group of primary to tertiary care providers, whether public, private or mixed, offering people-centered and comprehensive care in an integrated and coordinated manner with the primary care provider acting as the navigator and coordinator of health care within the network.

7. **Implementing site/Implementer** refers to a facility or agency that implements the OLMIS at various levels of health service delivery network from CHD down to the Municipality.

8. **National Malaria Control and Elimination Program (NMCEP)** refers to the Department of Health's (DOH) arm in achieving the government's commitment towards Malaria elimination. This ensures the implementation of the following mandates: 1) development of policies and national strategic plan; 2) case surveillance 3) technical support and supervision to health agencies/units; 4) management of logistics; 5) conduct of data management; and 6) program monitoring and supervision.

9. **OLMIS Administrator** refers to CHD, DOH-BARMM, Provincial Health Office (PHO), Integrated Provincial Health Office (IPHO), and City Health Office (CHO) personnel given the access to the OLMIS administration module, which includes user account management.

10. **OLMIS Trainers** refer to a person/s specifically from CHD, DOH-BARMM, PHO, IPHO and CHO, who attended the OLMIS Training of Trainers conducted by KMITS who are expected to facilitate and conduct OLMIS roll-out trainings to their respective catchment areas.

11. **Service Request Form (SRF)** refers to a standard form accomplished by a client to request specific IT services from KMITS and this is a requirement for the issuance of OLMIS user account and for the provision of other technical assistance regarding OLMIS.

12. **System Administrator** refers DOH-Central office personnel responsible for the maintenance, configuration and operation management of a system.

V. GENERAL GUIDELINES

A. OLMIS shall be the official information system of the NMCEP to collect and consolidate all Malaria related information. It shall be the main repository of data for NMCEP.
B. The CHDs and MOH-BARRM shall develop a region-wide implementation plan for OLMIS
C. All staff involved in the Malaria Program within the region, province and city wide public, private and mixed HCPNs, and apex hospitals - which include but are not limited to the IT Officer, Malaria Coordinators, Entomologist, Medical Technologist, encoders at the level of the Region, Province and Municipality shall be trained prior to software utilization.
D. The implementation of OLMIS shall take place within one (1) month (maximum) after a facility representative/s have attended the training.
E. Monitoring/mentoring visit shall be conducted to assess compliance of the workstations and the performance of the OLMIS. The monitoring/mentoring team shall be composed of the authorized personnel from DPCB and KMITS.
F. NMCEP shall review, define and approve all external requests to access OLMIS.
G. OLMIS implementation shall promote public health action to respond effectively in disease outbreak and prevent disease resurgence in malaria-free areas, while upholding and safeguarding the data privacy rights of every individual. Thus, the processing of personal information of malaria cases shall be in accordance with RA 10173 or the "Data Privacy Act", its IRR and other relevant issuances of the National Privacy Commission (NPC).

VI. SPECIFIC GUIDELINES

A. Operational guidelines of this Order are as follows:

1. OLMIS development and future enhancement shall be done in consultation and with coordination to the NMCEP.
2. The design of OLMIS shall be made according to the HEA prescribed by KMITS. Thus, it shall be inter-operable to current DOH information systems.
3. The official source for the OLMIS data are the Malaria Laboratory Registry, Malaria Case Registry, Malaria Case Investigation Form, Malaria Foci Investigation Form, LLIN Distribution Registry and IRS Distribution Registry.
4. OLMIS implementation shall support the 1-3-5 strategy of Malaria elimination. It shall be done in a stepwise approach (See Annex 1, p.~~20~~ 19, sec. 4.2).
5. OLMIS shall link and include all components of the Malaria program including laboratory, cases, vector management, reports, and stock inventory.
6. OLMIS shall be integrated in the Integrated Clinic Information System (iClinicSys).
7. OLMIS is a DOH-developed information system, thus computers provided by DOH through KMITS shall likewise be used for OLMIS operations.
8. OLMIS is available in Android platform which supports data input in offline mode. Assigned OLMIS point person at the level of the health facility shall be responsible for the data encoding, updating and uploading of the data to the CHDs and MOH-BARMM according to the agreed schedules of submission.

B. To be able to develop a region-wide implementation plan:

1. A Consultative Meeting with CHD, MOH-BARMM, PHO, IPHO and CHO shall be conducted prior to OLMIS implementation.
2. Activities promoting sustainability of OLMIS shall be one of the major components in the plan.

C. To ensure proper system utilization, attendance to training conducted by KMITS or by authorized OLMIS trainers of at least one (1) personnel per agency/facility shall be required prior to use of OLMIS. Trained personnel who attended the training in the facility shall be in charge of the transfer of knowledge and skill in using the system.

1. With the technical support from KMITS and NMCEP Staff, the OLMIS Trainers shall conduct users' training to their respective health facilities under their catchment area.

D. To start the implementation:

1. To have an OLMIS username and password, an accomplished Service Request Form (SRF) for user account management duly signed by the head of office shall be submitted to KMITS.

a. The CHD and MOH-BARMM OLMIS Administrator shall facilitate submission of request to KMITS for its provinces. CHD and MOH-BARMM OLMIS administrator will then facilitate account creation and distribution to OLMIS administrators at the provincial and municipal levels.
b. For external users, KMITS shall process the request for system access after the approval and endorsement of NMCEP. External users which system access request has been approved shall be asked to agree to execute a Non-Disclosure Agreement (NDA).

2. Trained personnel such as doctors, medical technologist, nurses, entomologists, barangay microscopists, Rapid Diagnostic Test (RDT) point person and facility encoder/IT staff shall encode, update and submit data upon patient consultation.
3. CHDs, MOH-BARMM, PHOs, IPHOs and CHOs shall undertake validation to check the quality of data according to factors such as reliability, completeness, accuracy and timeliness being encoded at their respective units prior to the reporting of deadline of the official release of report set by NMCEP.

   a. The CHD, MOH-BARMM, PHO, IPHO and CHO shall be given access level and rights to view and validate the data of implementing sites within their catchment area. As such, the CHD, MOH-BARMM, PHO, IPHO and CHO, head of units shall assign or designate person(s) to check or verify the quality of data that have been encoded.
   b. The CHD, MOH-BARMM, PHO, IPHO and CHO shall be given five (5) working days to check and verify the data prior to the official release of NMCEP report. If problems are found, CHD, MOH-BARMM, PHO, IPHO and CHO shall immediately call the attention of the concerned unit to review and revise their reports for resubmission within five (5) working days.
   c. All issues, concerns and/or problems in the validation of data shall be properly elevated to the NMCEP which shall address these accordingly.

4. All OLMIS implementing sites shall regularly submit reports on a quarterly and annual basis and as needed by the NMCEP. This includes the Malaria Case and Death Report, Malaria Diagnostic and Quality Assurance Report, Vector Control Report and Zero Case Report. Likewise, the NMCEP shall generate the reports for data analysis and officially release the validated NMCEP reports.

   a. The NMCEP shall generate, evaluate and officially release the reports only after the CHD, MOH-BARMM, PHO, IPHO and CHO have validated the data.
   b. Quarterly Malaria report shall be released every first week of the first month of the succeeding quarter of the following quarter. Likewise, the NMCEP shall generate the Annual Malaria report every first week of the first month of the following year.

E. To facilitate effective implementation of this Order, monitoring/mentoring activities to determine the compliance of reporting health facilities and OLMIS performance shall be conducted. The NMCEP, KMITS, CHD and MOH-BARMM are hereby authorized to perform monitoring/mentoring activities which shall be done quarterly as necessary.

1. The NMCEP in coordination with KMITS shall incorporate OLMIS to their existing standard monitoring and assessment tools used during their monitoring visits.
2. The NMCEP's monitoring/mentoring approach shall include interview and cross-verification between the paper-based and electronic records; while system maintenance and performance shall be the focus of KMITS.

F. In line with the Philippine eHealth Strategic Framework & Plan 2014-2022 to harmonize health information systems, implementing sites within the HCPNs and apex hospitals may use their existing information system until all data sets were migrated to the DOH Health Enterprise Architecture.

G. Funding support for the implementation of this Order for the CHDs will be through DOH-Malaria program sub-allotment, and Pilipinas Shell Foundation Inc. (PSFI) being the lead non-government organization partner subject to the existing or applicable accounting and auditing rules and regulations.

VII. ROLES AND RESPONSIBILITIES

A. The **DPCB**, as the system owner and overall lead office in managing the implementation of the OLMIS, shall:
   1. Formulate policies, procedures and guidelines in data collection, reporting, processing, analysis and dissemination of information.
   2. Provide direction and guidance in the implementation of the OLMIS.
   3. Review, analyze, and interpret reports and provide information to stakeholders.
   4. Address program issues and concerns related to OLMIS implementation.
   5. Conduct monitoring and evaluation on OLMIS implementers (See Annex 2, OLMIS Monitoring Tool)
   6. Coordinate with KMITS the enhancement needed on OLMIS including update in program implementation.

B. The **KMITS** shall:

   1. Provide technical support in software maintenance, implementation, deployment and operations, such as but not limited to the following software enhancement, system troubleshooting, debugging, database backup and recovery, network administration, database administration, and others.
   2. Train the trainers at the regional level on how to operate the software and be able to train the implementers.
   3. Train the System Administrators on the mechanics of technical assistance, database administration, and other relevant technical support.
   4. Monitor and evaluate the operations and performance of the OLMIS together with the DPCB.

C. The **Epidemiology Bureau** shall:

   1. Coordinate with NMCEP to facilitate case mapping from surveillance data gathered from PIDSR database quarterly, annually and as the need arises.
   2. Work with KMITS and NMCEP to develop innovative solutions to make OLMIS and PIDSR inter-operable.

D. The **CHD and MOH-BARMM** shall:

1. Advocate to the LGUs to adopt the OLMIS.
2. Provide budget for the maintenance of the functionality of OLMIS.
3. Provide assistance on the implementation of the OLMIS including account creation for the provincial and municipal system administrator users; and training personnel from public and private facilities.
4. Conduct monitoring and evaluation on OLMIS implementers.
5. Validate the NMCEP reports generated in the OLMIS.
6. Provide feedback to KMITS on the status of OLMIS implementation.
7. Provide technical assistance to OLMIS implementers.

E. The **PHO, IPHO** and **CHO of highly urbanized city** shall:

1. Adopt the Administrative Order for the effective OLMIS implementation across their province and city wide public, private and mixed HCPNs.
2. Provide administrative and operational support such as human resource, hardware and/or internet connection to their province and city wide public, private and mixed HCPNs to ensure OLMIS sustainability.
3. Advocate the use of OLMIS software to their province and city wide public, private and mixed HCPNs.
4. Identify point person for OLMIS management.
5. Allow their staff to attend in the TOT and conduct training on OLMIS software for the facilities under its HCPNs specifically the RHUs.
6. Analyze and validate report based on the encoded data of RHU and other health facilities within the HCPN.
7. Monitor and evaluate the operations and performance of the OLMIS.
8. Integrate OLMIS monitoring/mentoring in their site visits.
9. Provide feedback to CHD and MOH-BARMM on the status of OLMIS implementation.

F. The **MHOs/RHUs/CHOs, Public, Private, Mixed HPCNs** and **Apex Hospitals** shall:

1. Attend training on OLMIS software
2. Facilitate account creation for OLMIS users at the municipal level thru the municipal OLMIS administrator.
3. Use the system as the recording and reporting tool of Malaria data.
4. Encode Malaria data daily.
5. Upload the encoded data in the Android device on a regular basis.
6. Participate in the monitoring/mentoring activities conducted by NMCEP.

VIII. REPEALING CLAUSE

Any orders, including Administrative Order No. 2014-0004 entitled as "Guidelines in the Implementation of the Modified Philippine Malaria Information System (PhilMIS) in Recording and Reporting Malaria Cases, Deaths and Vector Control Activities", issuances, rules and regulations inconsistent with or contrary to this AO shall be repealed or amended accordingly.

IX. SEPARABILITY CLAUSE

If any clause, sentence, or provision of this Order shall be declared invalid or unconstitutional, the other provisions not affected thereby shall remain valid and effective.

X. EFFECTIVITY

The Administrative Order shall take effect only fifteen (15) days after its publication in the Official Gazette or in anewspaper of general circulation, and the filing of three (3) certified copies thereof with the Office of National Administration Register (ONAR) of the University of the Philippines (UP) Law Center.

FRANCISCO T. DUQUE III, MD, MSc
Secretary of Health

CERTIFIED TRUE COPY
APR 08 2021
CORAZON S. DELA CRUZ
KMITS - RECORDS SECTION
Department of Health

ANNEX 1. Report on the Assessment of Current Surveillance, Recording and Reporting Systems for Malaria in Philippines

Assessment of Current Surveillance, Recording and Reporting Systems for Malaria in Philippines

Mr Steven Mellor &Dr Robert Condon
December 2015

Acknowledgments

The contributions and technical inputs of all the individuals consulted in this assessment (listed in Annex 2) are greatly acknowledged. In addition a special thank you goes to: all the health staff in Palawan, Tarlac and Iloilo provinces who took time out of their busy schedules to meet with us and assist with the logistics of the field visits; Mr Ray Angluben of Pilipinas Shell Foundation Inc.; and MsJeunessaSto Niño of WHO for their assistance in all aspects of this assessment.

List of acronyms and abbreviations

BHS	Barangay HealthStation
DOH	Department ofHealth
DPCB	Disease Prevention and ControlBureau
EB	EpidemiologyBureau
ESR	Events-based Surveillance andResponse
EMR	Electronic MedicalRecord
FHSIS	Field Health Services InformationSystem
iClinicSys	Integrated ClinicSystem
IHR	International HealthRegulations
iHOMIS	Integrated Hospital Operations and Management InformationSystem
ITR	Individual TreatmentRecord
KMITS	Knowledge Management and Information TechnologyService
LGU	Local GovernmentUnit
MCT	Monthly ConsolidationTable
MDG	Millennium DevelopmentGoals
MOP	Malaria OperationsManual
MTRS	Malaria Text ReportingSystem
NMP	National MalariaProgram
NSPCEM	National Strategic Plan for Control and Elimination ofMalaria
PhilMIS	Philippine Malaria InformationSystem
PIDSR	Philippine Integrated Disease Surveillance andResponse
PHIE	Philippine Health InformationExchange
RHU	Rural HealthUnit
RO	RegionalOffice
TCL	Target ClientList
TPR	Test PositivityRate
TWG	Technical working Group
UP	University ofPhilippines
WAH	Wireless Access forHealth
WHO	World HealthOrganization

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Executive Summary

The Malaria Program in the Philippines is transitioning from a focus on malaria control to one of elimination, in line with the National Strategic Plan for Control and Elimination of Malaria (NSPCEM) vision of a Malaria-free Philippines by 2030. This was reaffirmed at the 10th East Asia Summit (EAS) held in Malaysia in November 2015, where the Philippines was one of 18 countries to endorse the Asia-Pacific Leaders Malaria Alliance (APLMA) Malaria Elimination Roadmap for malaria to be eliminated from the region by2030.

Overall, the Philippines continues to make steady progress towards malaria elimination. Between 2003 and 2014, there was a 90% reduction in reported malaria cases and a 94% reduction in reported malaria deaths; the country had achieved its Millennium Development Goals target for malaria by 2011. By 2014, just 47 municipalities in 13 endemic provinces remained in the malaria control phase; all other areas of the country were classified as in pre-elimination or elimination phase, or certified as malaria free and focusing on prevention of re-introduction.

One of the NSPCEM strategies is strengthening of the surveillance, reporting and recording systems for malaria. Currently, the Philippines has a number of disease surveillance systems that contain malaria related data including: the Philippine Malaria Information System (PhilMIS); the Philippine Integrated Disease Surveillance and Response (PIDSR); the Field Health Services Information System (FHSIS); the Malaria Text Reporting System (MTRS); and the Events-based Surveillance and Response (ESR). Malaria elimination (and the sub-national certification process) requires surveillance systems that are robust and comprehensive, with 100% coverage and reliable real-time recording and reporting of data. This enables national, regional, provincial and municipal malaria teams to detect and respond to malaria events, to act quickly to prevent re-introduction and to block local transmission, in order to sustain the gains achieved in reaching elimination and malaria-free status.

An assessment of the gaps between the existing surveillance landscape and the ideal system for the elimination phase is an important precursor to establishing elimination oriented systems. In this regard, the Department of Health National Malaria Program (DOH-NMP) engaged the services of the consultants to conduct this assessment, identify the gaps between the existing surveillance systems and a feasible, elimination-oriented system, and formulate recommendations and a plan of action.

The consultants were in country for 4 weeks during November / December 2015. They consulted with a wide range of Government health officials from within and outside the Malaria Program at all levels from national to barangay as well as non-Government partners, the WHO and donors. A series of field visits were undertaken to provinces representing the range of stages from control (Palawan), elimination (Tarlac) to prevention of reintroduction (Iloilo). During these visits the consultants visited Regional Health Offices, Provincial Health Offices, hospitals, Rural Health Units (RHU) and Barangay Health Stations (BHS). At the end of the consultancy, meetings were held with the Technical Working Group (TWG) to present the findings of the assessment and to agree on a plan ofaction.

In the places visited it was found that staff at all levels reacted promptly and appropriately to cases and outbreaks with prompt alerts (often 24 hours or less) by whatever means (radio, phone, text, etc.) from midwives to RHUs, RHUs to PHO, PHO to Region; responses (often at RHU level) are often already appropriate to 'elimination mode', and include case investigation and classification, investigation of potential transmission foci, and response. Staff at all levels were, for the most part, diligent in completing their malaria reporting requirements. A typical RHU has to use a number of different forms to capture and report a malaria case through FHSIS, PhilMIS and PIDSR; the different forms often gather duplicate data. FHSIS and PIDSR potentially have a national reach, whereas PhilMIS has been implemented in 37 malaria endemic provinces only (and supported in 13). Clearly there is an opportunity to make the reporting system more efficient by reducing the malaria reporting burden on RHU healthstaff.

At the same time, many hospital and rural health services are introducing electronic medical record (EMR) systems. The available EMR packages are, in many aspects, consistent with the Philippine Health Information Exchange (PHIE) architecture, may be able to export activity level data to FHSIS, but generally do not have full functionality in linking to acute reporting systems (e.g. PIDSR, ESR) orPhilMIS.

The current reporting systems, particularly PIDSR and PhilMIS, were originally designed for malaria control and have served the Program well in helping to greatly reduce the malaria burden in the last decade; however, they do not currently serve the data needs of an elimination program. The Malaria Program is already undertaking actions

to reorient the program from control to elimination and has articulated a vision for a '1-3-5' system – similar to the Chinese '1-3-7' system. The '1-3-5' system aims for case notification within 1 day, case investigation & classification within 3 days and focus investigation & action within 5 days. Specifically, the Program has plans to:

- Upgrade malaria from a PIDSR category 2 disease to category 1, which will mandate all malaria cases to be reportedfromall facilities(includingprivatefacilities)within 24hours,bylaw(i.e.the'1'ofa'1-3-5'system).
- Implement a new malaria case reporting and investigation form for PISDR (i.e. covering '1-3') with detailed travel history and classification of cases as either local orimported.
- Introduce an online version of PIDSR (although it is not clear if this is currently planned to launch for all diseases simultaneously or to be implemented disease bydisease).
- Finalize and refine the Malaria Operations Manual (MOP) to include forms and protocols for elimination phase activities like foci investigation, management and response (i.e.'5').

These activities are a good start but more work needs to be done to streamline and modernize the recording and reporting systems for malaria to support '1', '3' and (eventually) '5'.

This report identifies 5 key areas that need to be addressed to move the Philippines to a malaria recording and reporting system that will support elimination; this will enable the reporting system to catch up to the actual situation in the majority of provinces, where the Program is already effectively operating in elimination mode and EMRs are starting to be introduced. These key areas are:

1. **Develop a single national online case registry of all malaria cases, including travel history andclassification**
2. **Fully implement the 1-3-5 model, including creation of a fociregistry**
3. **Improve malaria case recording in EMR systems**
4. **Upgrade program managementreporting**
5. **Implement data quality control at alllevels**

For each of these areas, this report identifies a number of specific recommendations that should be implemented but the main activities can be summarised as follows:

- Adopt the new PIDSR malaria form as the sole reporting mechanism for malaria cases (i.e. the '1' and the '3' in the 1-3-5system).
- Upgrade the PIDSR to an online system for all 33 notifiable diseases at the same time rather than disease by disease.
- Remove case reporting from the PhilMIS system as the new PIDSR case report and investigation form will make it redundant; this will reduce a level of duplication in malaria casereporting.
- Upgrade PhilMIS (minus the case reporting) to an online system so it can be linked to the online PIDSR malaria case reporting and allow the programmatic aspects of PhilMIS to become available to all provinces not presently covered by PhilMIS.
- Expand PhilMIS to cover the response part of the 1-3-5 system (the '5') by including a foci investigation and management protocol and form as the basis for a national registry of active and potentialfoci.
- Incorporate the PISDR malaria report into the EMR systems currently being used in the control areas to ease the reporting burden on RHUstaff.
- Relax the 1-3-5 reporting timeframe for areas still in control and use the existing PhilMIS staff to encode the case data into PIDSR in theseareas.

The report also sets out a suggested timeline for completing these activities by the end of 2016 and highlights specific activities that may need external technical assistance and funding or management support.

Refinement of MOP protocols for management of cases and foci according to standard WHO guidance for elimination phase surveillance and response would take place concurrently (subject to acceptance of the recommended plan of action).

1 Background

The Malaria Program in the Philippines is transitioning from a focus on malaria control to one of elimination.

To accelerate the transition from control to elimination, the Department of Health National Malaria Program (DOH-NMP) has developed the Philippine National Strategic Plan for Control and Elimination of Malaria (NSPCEM; the Strategic Plan), containing the strategies and interventions to be implemented in 2014-2020. The vision of the NSPCEM is a Malaria-free Philippines by 2030 – reaffirmed at the 10th East Asia Summit (EAS) held in Malaysia in November 2015, where the Philippines was one of 18 countries to endorse the Asia-Pacific Leaders Malaria Alliance (APLMA) Malaria Elimination Roadmap for malaria to be eliminated from the Asia-Pacific region by2030.

Currently, out of the 81 provinces, the majority are already in the pre-elimination, elimination and prevention of reintroduction stages with over 70% of cases reported in 2014 from just one province, Palawan[1].

One of the strategies of the NSPCEM is the strengthening of the surveillance, reporting and recording systems for malaria. Currently the Philippines have a number of disease surveillance systems that contain malaria related data including: the Philippine Malaria Information System (PhilMIS); the Philippine Integrated Disease Surveillance and Response (PIDSR); the Field Health Services Information System (FHSIS); the Malaria Text Reporting System (MTRS) and Events-based Surveillance and Response (ESR). The elimination mode (and the subsequent sub-national elimination certification process; Section 2.2) requires surveillance systems that are robust and comprehensive, with 100% coverage and reliable real-time recording and reporting of data. This enables national, regional, provincial and municipality malaria teams to detect and response to malaria events, to prevent re-introduction and block local transmission, in order to sustain the gains in achieved in reaching elimination and malaria-free status.

An assessment of the gaps between the existing surveillance landscape and the ideal system for the elimination phase is an important precursor to establishing elimination oriented systems. In this regard, the DOH-NMP engaged the services of consultants to conduct this assessment, identify the gaps between the existing surveillance systems and a feasible, elimination-oriented system, and formulate recommendations and a plan of action to bridge thegaps.

The full TOR is included in Annex 1 of this report. The main purposes of the consultancy are:

1) To assess the current capacity of the existing surveillance, reporting and recording systems against the needs of elimination;
2) To recommend strategies and interventions to take to meet the needs ofelimination;
3) To develop a plan of action to implement the said recommendations, with activities, cost and timeline;and
4) To inform the Technical Working Group (TWG) of the assessment findings, recommendations and plan of action in preparation for actual implementation.

Methodology

The consultants were in country for 4 weeks during November / December 2015 and, during that time, consulted with a wide range of Government health officials from within and outside of the Malaria Program at all levels from national to barangay, as well as non-Government organization (NGO) partners, the World Health Organization (WHO) and donors. A full list of persons consulted is included in Annex 2.

A two-day workshop was held at the beginning of the consultancy (see Annex 3) for the consultants to gain an understanding of current systems of disease reporting in Philippines and for participants at all levels to consider their reporting requirements and to learn from the experiences of the NMPs in China, Malaysia and Thailand in reorienting their malaria surveillance systems to elimination mode. A series of field visits were then undertaken to provinces representing the range of stages from control (Palawan), elimination (Tarlac) to prevention of reintroduction (Iloilo). During these visits the consultants visited provincial health offices, hospitals, rural health units (RHU) and barangay health stations (BHS). At the end of the consultancy meetings were held with the TWG to present the findings of the assessment and to agree on a plan of action going forward.

[1] World Malaria Report 2015, Philippines sub nationaldata

2 The Malaria Program in thePhilippines

2.1 Health system context

The progressive elimination of malaria as a public health problem in the Philippines is important to the national health and development agenda. Under the country's devolved health system, responsibility for the delivery of malaria services is shared between the national and local levels of Government.

At the national level, the Malaria Program is part of the Infectious Diseases Office (IDO) under the overall authority of the DOH Disease Prevention and Control Bureau (DPCB). The IDO is responsible for: setting the Malaria Program's policies, standards and guidelines; providing technical training; augmenting logistics and anti-malaria commodities; managing quality assurance (QA) schemes for diagnostic and vector control measures; designing health promotion materials; and Program monitoring and evaluation (M&E) and reporting.

At the regional level, the DOH Regional Office (RO) provides technical and some commodities procurement supporttoprovincesthroughaRegionalMalariaCoordinator(RMC)andprovincially-basedDOHExtensionOffices.

At the city, provincial, municipal and community (barangay) levels, the Malaria Program is fully integrated with primary and secondary diagnostic and treatment services. Local government units (LGU) in malaria endemic areas – i.e. those in the control or pre-elimination phase – generally have designated malaria technical staff to support primary health care staff in the implementation of malaria prevention and control activities.

Local level interventions are determined by annual micro-stratification of transmission risk, based on the pattern of malaria transmission and receptivity at the barangay level over the preceding threeyears.

LGU health facilities submit data for disease surveillance (through PhilMIS, PIDSR, FHSIS and occasionally ESR) and monitoring of Program performance (through PhilMIS only); these data are consolidated at the provincial and RO level prior to onward transmission to the national Epidemiology Bureau (EB) and the Malaria Program.

Since 2003, the Global Fund has provided the majority of financial resources for the Malaria Program – most recently through the Pilipinas Shell Foundation Inc. (PSFI) as the sole principal recipient. The Government-funded portion of the total malaria budget has increased in recent years, from just over one-quarter in 2011 to just over half in 2015.

The current Global Fund grant, worth USD 15.7 million over three years (2015-2017), provides commodities and operational support in 13 high-priority control and pre-elimination provinces. Savings on the procurement of long lasting insecticidal bed nets (LLIN) will allow some flexibility to support elimination and health system priorities.

2.2 The National Malaria StrategicPlan

A detailed, independent review of the Malaria Program was undertaken in 2013, in preparation for development of the NSPCEM2014–2020.

The review validated the technical approaches of the national Program, but also noted the fragmentation of data inherent in the multiple surveillance systems and numerous challenges in program monitoring.

The Strategic Plan adopts a health systems approach to maintaining universal access to quality malaria services, strengthening governance and human resources, maintaining malaria financing, and ensuring timely and accurate information management. Progress is measured by a continued reduction in malaria cases and deaths overall, and a strategy of progressive elimination of malaria at the sub-national level.[2] Its targets include an annual malaria incidence rate below 1.6 cases per 100,000 nationally by 2020, while maintaining close to zero deaths from malaria; the number of provinces declared malaria-free will have increased from 27 to 50, and another 21 provinces will have zero (or almost zero) local malariatransmission.

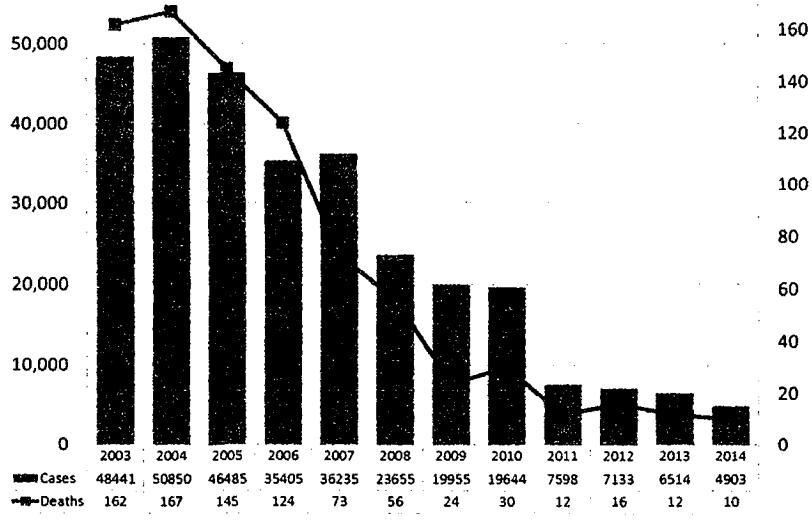
[2] DOH Administrative Order 2011-0019: Guidelines in Evaluation of Low-Endemic Provinces for Declaration as Malaria Free

Technical policies and procedures for enhanced malaria control are articulated in a detailed Manual of Operations (MOP), and are overseen by the TWG (which includes representation from the Program, PSFI, EB, WHO, and academic and research partners).

2.3 Overview of current malariasituation

Overall, the country continues to make steady progress towards malaria elimination. Between 2003 and 2014, there was a 90% reduction in reported malaria cases and a 94% reduction in reported malaria deaths (Figure 1); the country achieved its Millennium Development Goals (MDG) target for malaria in2011.

Figure 1: Reported malaria cases and deaths, by year, Philippines, 2003-2014



Source: World Malaria Report 2015

Figure 2 (page 9) summarizes the reduction in the number of provinces reporting malaria cases between 2003 and 2013.

Most years, Palawan has contributed around 50% of cases; the outer Sulu Archipelago (Sulu and Tawi-Tawi), the Zamboanga Peninsula and parts of Mindanao and northern Luzon contributed most of the remainder. All of these areas have seen significant reductions in malaria transmission, with the number of reported malaria cases in Palawan falling from 16,897 in 2003 to 4,662 in 2013, and in Tawi-Tawi from 4,492 in 2003 to 1,968 in 2013.

Results of the stratification exercise in 2013 revealed that just 47 municipalities in 13 endemic provinces remained in the malaria control phase; all other areas of the country were in pre-elimination or elimination phase, or certified as malaria free and focusing on prevention of re-introduction.

Figure 3 (page 9) shows the geographic distribution of the currently endemic municipalities.

Figure 2: Distribution of reported malaria cases by province and municipality, Philippines, 2003 and 2013

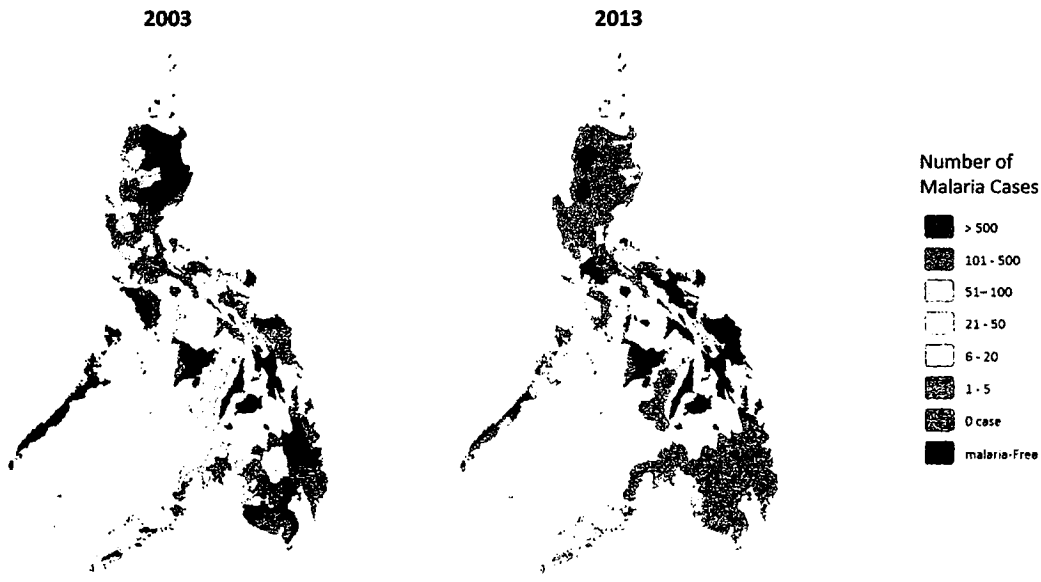


Figure 3: Distribution of malaria-endemic municipalities (in red), Philippines, 2014

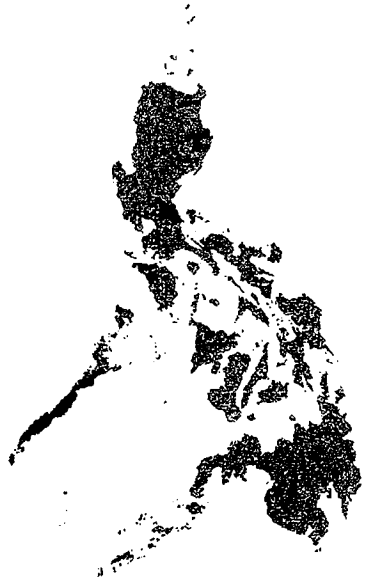
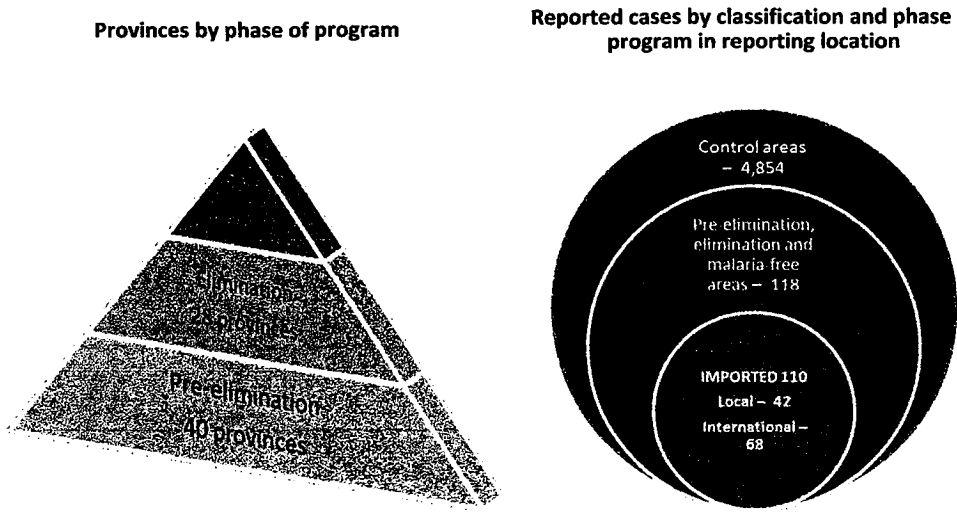


Figure4showstheproportion ofprovincesandreportedcasesineachphase.

Figure4:Distributionofprovincesbyphaseofcontrolorelimination(left)andofcasesbyclassificationandphaseof reporting location (right), Philippines,2014



2.4 Emerging priorities and challenges for the MalariaProgram

2.4.1. Higher transmission areas and vulnerablegroups

Malaria incidence and progress towards control and elimination remain fragile in some parts of the country. In particular, there has been a resurgence of malaria in southern Palawan during 2015 with the number of reported cases increasing to 6,075 in the first 9 months of the year; further investigation of risk groups and the quality of Malaria Program interventions is planned for early 2016. Elsewhere, outbreaks have been reported from Davao del Norte, Maguindanao and Sultan Kudarat in western Mindanao – these are thought to be due to a combination of cross-border population movement and delayed detection, reporting andresponse.

Mobile groups in remote forested areas – whose mobility is related to cultural, occupational and socio-economic factors – continue to experience a greater risk of malaria, and represent one of the biggest challenges for the Program. In 2015, 42% of reported cases have been in indigenous minorities.

Nation-wide, more than half of all malaria cases are reported in children (25% in children less than 5 years of age and 33% in school-aged children). In the presence of high reported bed net utilisation, this probably reflects a combination of human and vector behaviour (e.g. outdoor activities before bed-time in the presence of at least some outdoor biting by mosquitoes).

A reduction in the proportion of cases due to *P. falciparum* is an indication of the effectiveness of control measures. The Philippines is the only country in the Asian region that still reports more than 50% of cases as due to*P. falciparum* (75.8% of microscopy- or RDT-positive cases in 2014, rising to 83% of cases so far in2015).

Progress has been maintained in Tawi-Tawi and Sulu, where only 116 and 10 locally-transmitted cases of malaria, respectively, have been reported in 2015. Just 18 sporadic cases have been reported from other areas of the country, where elimination is probably just a matter of time but the Program still needs effective re-orientation towards elimination phase surveillance systems and activities.

2.4.2. Accelerating progress in pre-elimination and eliminationareas

To achieve malaria elimination, each case must be detected, treated, reported and investigated promptly, and the potential for any further local transmission eliminated. This requires a very strong epidemiological surveillance and response capability; it includes the assessment and management of known and potential foci of transmission to identify all people carrying malaria parasites (including asymptomatic individuals and those with gametocytes) and ensure that they become non-infectious as soon aspossible.

The new MOP provides additional guidance on Program transmission towards elimination-oriented surveillance, response to individual cases and outbreaks, and management of known or suspected foci of residual transmission in elimination areas. It is currently being revised following peer review by Regional Malaria Coordinators.

A new case investigation form has been developed for use in conjunction with PIDSR reporting, but a focal investigation and management protocol, form and registry remain urgent needs for the Program.

Provinces of the Philippines with long-standing sub-national certification as malaria free rarely report cases of malaria (despite significant population movement both nationally and internationally for occupational reasons, including to areas with active malaria transmission). Parts of these provinces remain receptive to malaria, and it is a priority to strengthen surveillance, reporting and response capability in these areas to bolster the prevention of re-introduction.

Elsewhere in the region, China, Korea and Malaysia are at the stage where they report on, investigate and classify every case and focus of transmission. In China, case-based surveillance and response are managed according to a '1-3-7' protocol where cases are reported within 24 hours, are confirmed and investigated within 3 days, and the necessary public health response to prevent further transmission is completed within 7 days.[3]

Based on China's experience, the Philippines Malaria Program has set itself the vision of introducing a '1-3-5' surveillance and response protocol nation-wide to accelerate progress towards elimination.

2.4.3. Program management andfinancing

The new MOP is due to be rolled out in early 2016. Ready access to this technical guidance will be essential, especially for areas implementing enhanced case-finding activities against a background of low reporting rates (see also Section 4.4).

In preparation for the eventual withdrawal of donor support for the Malaria Program, further studies on the financing requirements for elimination and financial sustainability of the Program are needed.

While malaria is a notifiable disease in the Philippines (and about to become subject to 24-hour notification; see Section 3.2), engagement of the Malaria Program with the private sector varies greatly between provinces. Provincial and Municipal health services will need to develop close cooperation with private practitioners and facilities to ensure maximum case ascertainment, reporting and investigation.

3 Disease reporting systems inPhilippines

There are many disease reporting systems in the Philippines but, for the purposes of this report, only systems that have (or potentially have) relevance to malaria are discussed below.

3.1 Field Health Services Information System(FHSIS)

The Field Health Services Information System has been implemented nationwide since 1990 and provides the DOH with management information on the different public health programs implemented by all Government health

[3] Cao J, Sturrock HJW, Cotter C, et al. Communicating and Monitoring Surveillance and Response Activities for Malaria Elimination: China's "1-3-7" Strategy. *PLOS Med* 2014; Volume 11 (5); e1001642,

facilities other than hospitals. It is the official system of the DOH and designated national health statistics as per Executive Order No. 352.

The stated objectives of the FHSIS[4] are:

- To provide summary data on health service delivery and selected program accomplishment indicators at the barangay, municipality/city, and district, provincial, regional and nationallevels.
- To provide data which when combined with data from other sources, can be used for program monitoring and evaluationpurposes.
- To provide a standardized, facility level data base that can be accessed for more in depthstudies.
- To minimize the recording and reporting burden at the service delivery level in order to allow more time for patient care and promoteactivities.

The FHSIS consists of a number of recording tools to assist the health staff (primarily midwives and nurses) with day to day management of their activities and a number of reporting tools for summary reporting to provincial, regional and nationallevels.

The recording tools within the FHSIS are:

- **Individual Treatment Record (ITR)** - This form records the date, name, address of patient, presenting symptoms or complaint of the patient on consultation and the diagnosis, treatment and date of treatment. This record is maintained as part of the system of records at each health facility on all patientsseen.
- **Target Client List (TCL)** – Target Client Lists help to plan and carry out patient care and service delivery by enabling midwives/nurses to monitor service delivery to clients in general and in particular to groups of patients identified as "targets" or "eligibles" for programs of the DOH. The primary advantage of maintaining the TCLs is that the midwife/nurse does not have to go back to individual patient/family records as frequently in order to monitor patient treatment or services to beneficiaries and to complete the FHSISReporting
- **Summary Table** - The Summary Table is a form with 12 month columns retained at the facility (BHS) where the midwife records monthly data relating to health program accomplishments and morbidity trends within the healthfacility.
- **Monthly Consolidation Table (MCT)** - The Consolidation Table is located at the RHU and records the reported data per indicator by each BHS ormidwife.

The reporting tools within the FHSIS are:

- **The Monthly Reports (M1 & M2)** - M1 contains selected indicators relating to maternal care, child care, family planning and disease control and are copied from the TCL and Summary Table. M2 contains a list of diseases by age and sex. Monthly reports are submitted to the provincial level for consolidation into the quarterly reports.
- **The Quarterly Reports (Q1 & Q2)** – These reports are quarterly consolidations of the monthlyreports.
- **The Annual Forms (A-BHS, A1, A2 and A3)** - The Annual Forms consists of data and indicators needed only on a yearly basis. A-BHS is a midwife's report containing on demographic, environmental and natality data. Nurses at the RHU/MHC use the A1 to report on vital statistics such as demographic, environmental, natality and mortality. A2 lists all diseases and their occurrence in the municipality/city broken down by age and sex and A3 lists all deaths occurred in the municipality/city broken down by age andsex.

Malaria data within the FHSIS

The monthly / quarterly FHSIS forms include the following, limited summary malaria data:

- Malaria case among less than 5 years of age and above 5 years ofage

[4] Electronic Field Health Service Information System Manual ofOperations

- Confirmed malaria cases by species: *P. falciparum*, *P. vivax*, *P. malariae*and *P. ovale*
- Confirmed malaria cases by method: Slide and Rapid Diagnostic Test(RDT)
- Number of malariadeaths
- Population at risk (noting that the definition of the population at risk of malaria may vary as the country progresses towardselimination)
- Households given Insecticide Treated Nets(ITN)

The malaria data within the FHSIS is of limited use to a malaria program in the elimination stage apart from providing the opportunity to cross check number of cases reported through PIDSR and PhilMIS from government health facilities (excluding hospitals). This would be a very useful exercise at all levels to ensure all cases are being reported but apart from some individual health facilities that indicated that they regularly cross checked cases reported via FHSIS with other systems this was not done at any of the provincial offices visited or at national level.

There are a number of obvious gaps in the FHSIS malaria data which could be addressed during the next form revision, specifically:

- Expand the species list to include mixed infections and *P.knowlesi*
- Include the total number of tests (slide and RDT) as well as the number of positives, as this will enable calculation of test positivity rate (TPR) and annual blood examination rate (ABER) – both important indicators of Program performance for the eliminationphase
- The age breakdown <5yrs, >5yrs is not really relevant to the current epidemiological situation (see Section 2.4.1); if there is to be an age breakdown, it should follow the WHO guidelines (although, given that PIDSR and PhilMIS are case based systems, there is a case to be made to drop the agebreakdown).

The FHSIS is online and accessible for RHU's to upload their data at http://uhmis2.doh.gov.ph/efhsis/login.phpbut, in the provinces visited, it appeared that the process was largely manual up to provincial level.

3.2 Philippine Integrated Disease Surveillance and Response(PIDSR)

The Philippine Integrated Disease Surveillance and Response System was established in 2008 to improve the current disease surveillance systems in the Philippines and to comply with the International Health Regulations (IHR), adopted by the World Health Assembly in 2005, which highlighted the urgent need to adopt an integrated approach for strengthening the epidemiologic surveillance and response system of each WHO member nation.

PIDSR encompasses all diseases and syndromes covered by the Republic Act 3573[5] which requires all individuals and health facilities to report notifiable diseases to local and national health authorities.

Notifiable diseases are selected because they are epidemic prone disease, are targeted for eradication or elimination, and subject to international health regulation. At present there are 33 notifiable diseases (see Figure 5) which are split into category 1 (report within 24hrs) and category 2 (reportweekly).

Currently, there are plans in 2016 to include chikungunya as a notifiable disease and to reclassify malaria from category 2 to category 1.

[5]http://www.chd11.doh.gov.ph/webfiles/pdf/resu/ao2008-0009.pdf

Figure 5: Notifiable diseases reported through PIDSR

Category 1 (Should be reported within 24 hours)	Category 2 (Should be reported weekly)
1. Acute Flaccid Paralysis	1. Acute Bloody Diarrhea
2. Adverse Event Following Immunization (AEFI)	2. Acute Encephalitis Syndrome
3. Anthrax	3. Acute Hemorrhagic Fever Syndrome
4. Human Avian Influenza	4. Acute Viral Hepatitis
5. Measles	5. Bacterial Meningitis
6. Meningococcal Disease	6. Cholera
7. Neonatal Tetanus	7. Dengue
8. Paralytic Shellfish Poisoning	8. Diphtheria
9. Rabies	9. Hand, Foot and Mouth Disease (HFMD)
10. Severe Acute Respiratory Syndrome (SARS)	10. Influenza-like Illness
11. Outbreaks	11. Leptospirosis
□ Clusters of diseases	12. Non-neonatal Tetanus
□ Unusual diseases or threats	13. Pertussis
14. MersCov	14. Typhoid and Paratyphoid Fever
15. Ebola	15. Acute Meningitis Encephalitis Syndrome
16. SARI	16. Chikungunya
	17. Malaria

For each disease, there are guidelines on case definition, laboratory confirmation, case detection and reporting, and outbreak investigation and control and there are forms for each disease with different levels of complexity from simple line listings to detailed individual case data and lab results.

The reporting of PIDSR diseases at the lower levels is largely manual using whatever means available (radio, phone, text, email, etc.) but, at higher levels such as hospitals and PHO and above, the system uses a series of Access databases which are eventually merged into regional and finally national databases.

The regions and provinces implement the reporting system in slightly different ways. For instance, in Tarlac, data is entered into the PIDSR database at province level to avoid duplication if cases are referred to other health facilities; in Iloilo, data is entered at facility level and validated at provincial level to remove any duplicates. Both these approaches seem to work well as the emphasis in both provinces is to ensure that the correct people are notified within the required reporting timeframe and the appropriate response isinitiated.

In Palawan, which has a high burden of malaria, it was noted that in some areas the PIDSR reports were not always completed as they did not see the need to report malaria cases using PIDSR when the cases are already reported through PhilMIS – even though the aims of the two systems are different. This causes issues at national level when trying to reconcile cases from both systems to come up with a definitive number of malaria cases in the country.

There are plans to upgrade the PIDSR to an online system and, in the case of severe acute respiratory infection (SARI; Figure 5, Category 1 column), there is already an online system for this disease. The Knowledge Management and Information Technology Service of the DOH (KMITS), which is primarily responsible for most of the DOH software development, is working with the Epidemiology Bureau on the planned upgrade of the PIDSR reporting to an online system and they are looking to engage two programmers to work on this in early2016.

As part of their mandate to harmonize disease reporting as far as possible, KMITS understands that the best course of action is to upgrade the PIDSR for all diseases rather than by one disease at a time but the current plans for moving the PIDSR to an online system appear to be based around a disease by disease approach and this appears to be driven largely by financial considerations as certain donor-supported projects provide funding for certain diseases. There may have to be some thought as to how to harness these funds effectively to upgrade all PIDSR diseases to online reporting at the same time.

One of the strengths of the PIDSR system is the fact that it is a 'one stop shop' for all notifiable diseases with one reporting form, harmonized software and integrated human resources for reporting and response at LGU level. Whilst the advantages of moving to an online system are many, if this is done on a disease by disease basis it runs the risk of increasing the workload of the users of the system if they need to log in to different systems for each disease. Whilst it is strongly recommended to move the PIDSR online, it is also recommended to do this for all notifiable diseases at the same time.

Malaria data within the PIDSR

As a category 2 disease (weekly reporting), the reporting requirements for malaria are a basic line listing with species, recent travel (yes/no), blood transfusion (yes/no), classification and outcome – less than the data required for PhilMIS. As part of the reclassification to a category 1 disease (24hrs), the reporting requirements will be increased to cover all the data currently collected by PhilMIS plus additional sections for clinical data and detailed case investigation, including detailed travel history and activities after onset of symptoms to identify possible onward transmission. This new form will constitute the '1-3' section of the proposed '1-3-5' system.

The new malaria form seems to be comprehensive and has already gone through some acceptance testing. One possible area for improvement would be 'source of identification' which at present is surveillance / outbreak and it is recommended that this be changed to 'Passive surveillance' / 'Active Case Detection (ACD) – Case follow up' / 'ACD – other' so it will be possible to also identify cases that are detected during follow up of an index case or during routine follow-up management of a potential focus of transmission (i.e. in the absence of a new index case).

3.3 Event-based Surveillance & Response System (ESR)

The Event-based Surveillance & Response System was introduced in 2004 to complement PIDSR, which was the existing surveillance system within the DOH to report notifiable diseases, clusters of diseases and unusual diseases or threats. ESR was designed to complement the PIDSR in terms of its ability to easily pick-up information on health events that may pose a risk in the communities and provide an appropriate response to those places where PIDSR was not yet fully functional or established and to cater for those diseases and other health events (e.g. chemical spills, food poisoning, etc.) that are not covered by thePIDSR.

There are two types of data capture into ESR:

- **Active** - daily gathering of health events by the ESR staff through surfing the internet and other media sources such as television, radio andprint.
- **Passive** - capture of health events reported by the media people, health facilities such as DOH and other attached agencies, partner agencies and local Government Units through email, fax, phone calls or text messages to the ESRstaff.

After data about a health event is captured by the system there is a process of filtering, verification, assessment and response.

- **Filtering** is the process of reviewing which reported events should be discarded or investigatedfurther.
- **Verification** is the process of substantiating the details of the event within 24hrs usually by confirming the details with health staff that have knowledge of theevent.
- **Assessment** is the analysis of the event and classifying the event into one of a number of classifications which then determines the appropriateresponse.
- **Response** can involve local, provincial, regional or national staff depending on the assessment of both the event and the capacity of staff at various levels torespond.

Details of each event are captured on a verification form which is entered into an online system which is can be viewed by registered users.

Malaria data within the ESR

Of the 2000+ health events in the online ESR for 2015 (as of December 2015), there were 37 malaria events. As the ESR is designed to only capture rare events, it is to be expected that only cases of malaria that occur in provinces in elimination phase (i.e. very rare cases) would be reported to the ESR and this is in fact the case. Tarlac (with only one reported imported case in 2014) reported a case to the ESR in June 2015 which, after an investigation, was classified as a health event of local concern (the case was imported); no outside assistance was deemed necessary. In the Tarlac case the provincial staff viewed the ESR as the most responsive system as they aim to respond within 1-3 days whereas the PISDR system is slower as malaria is a category 2 disease (reporting weekly).

As malaria becomes a rare event (with a reduction of cases), it is to be expected that the ESR will pick up more of these cases but, as malaria is reclassified as a category 1 disease (24hrs) in PIDSR, it would make sense to link the PISDR system with the ESR – if a case is identified through PIDSR (with the more in depth reporting required by it being re-listed to Category 1), it will automatically trigger an event in ESR. This would obviously be very easy if the PISDR system was also online.

3.4 Philippine Malaria Information System(PhilMIS)

The Philippine Malaria Information System was developed in 2005 by the then National Epidemiology Center of the DOH in collaboration with the NMP, by modifying and improving on a previous system that had been developed and piloted in the province of Agusan del Sur: the Rural Health Unit-Malaria Information System (RHU-MIS). The development was made possible through the technical and financial support of the WHO-AusAID Roll Back Malaria Project and the Global Fund malaria grant.

The Philippine Malaria Information System aims to:

- To provide information in a computerized form needed for planning, implementation, monitoring and evaluation of malaria control program.
- To standardize the collection of malaria data using the same reporting and recording forms in malaria endemic provinces.
- To achieve quality malariadata.
- To easily retrieve malaria indicators required for programme management and those needed by funding agencies and otherstakeholders.
- To avoid the delay in generating the required information through prompt reportingsystem.

The PhilMIS system captures individual malaria cases, deaths, vector control and other programmatic data and was designed to be used in malaria endemic provinces. The original rationale, still valid today, was that neither the PIDSR nor the FHSIS generated enough data to support a more detailed analysis of program implementation or disease transmission dynamics. By 2009, PhilMIS had expanded to 37 of the 40 provinces supported through the Global Fund grant but since then, due to the country's success in reducing the malaria burden, the number of provinces actively using PhilMIS has declined to the 13 provinces with the highest burden (those supported by the current Global Fund Malaria project; Section 2.1). The data collection cycle is monthly from both government and some private faculties and the data is entered into access databases that are merged at provincial, regional and national levels.

PhilMIS was designed for controlling malaria and there is now a recognition that, as the program moves to elimination mode and malaria becomes a category 1 notifiable disease, PhilMIS needs to undergo a further transformation to meet the evolving needs of the malaria elimination program. The original rationale to collect individual malaria case data is no longer valid as the new PIDSR form will provide all the case data required for the "1-3-5" system which PhilMIS cannot provide (such as the detailed travel history) and will provide this data for the whole country which PhilMIS cannot. However, in the elimination stage there is also an increasing emphasis on the response side, case and foci investigation become key activities, the "3-5" of the "1-3-5" system and there is an ongoing need for programmatic data which cannot be met by the PIDSR system. There will be a need for a foci registry containing the data in the 'yet to be developed' foci investigation form and it is recommended that PhilMIS should be expanded to include this data and, in effect, guide and monitor the "5" of the "1-3-5" system. Such a system would need to be available nationwide – not just in the Global Fund supported provinces – and the best

way to achieve this would be to put the PhilMIS online where it could also be linked to the malaria cases in the planned online PIDSR.

3.5 Malaria Text Reporting System (MTRS)

The Malaria Text Reporting System is an SMS based alert / reporting tool designed to facilitate:

- **Early Warning of Disease Occurrence** – early warning system to be aware of the occurrence of cases and monitor trends and disease emergencies(outbreaks).
- **Logistic Management** – to ensure that there is no stock out of anti-Malaria drugs in thefacilities.

Health workers first have to register on the system which can be done by sending and SMS in a prescribed format to a number supplied by one of the three participating telecom companies. After registration the health worker can used prescribed SMS templates to report thefollowing:

- **Malaria Report** – individual case report sent immediately after a malaria case isdiagnosed.
- **Death Report** - RHUs and hospitals can report malariadeaths
- **Stock Status Report** – users can report stockinventory
- **Stock Out Report** – users can report stockouts

Data sent though the system is then available to be viewed on a website.

None of these reports are meant as a replacement for existing systems such as PhilMIS, but are designed to be used as an alert mechanism with the intention of initiating a prompt response. It was noted during the field visits that the community based health workers often used SMS (i.e. free-text, without the MTRS template) to alert RHU staff about new cases. This tool could therefore be very useful as long as the SMS template is not too complicated, and would be even more appealing if it could be made free to theuser.

The present system tries to fit a lot of data into the message, and this could result in error messages if the message is not in the correct format. It is recommended to try to reduce the amount of data included in the SMS as much as possible. Similarly for the stock control aspects, this could be a useful tool for monitoring stock levels at remote facilities and alerting managers to stock outs.

3.6 Remote MicroscopyDiagnostics

The University of Philippines (UP) is developing a system to use mobile phones to transmit images of slides (malaria and others) via an mHealth app to be read remotely and linked to a website where results and be viewed and mapped using Google maps. The system consists of a device to attach any mobile phone to the microscope and an Android application that allows the user to verify the image and send (with a text message) the image via MMS to a central server where the images can be viewed and verifiedonline.

The system is still in the development and testing stage but could form a useful tool for: refresher training for medical technologists in elimination settings that do not see many positive slides; performing QA of malaria slides (verification of positives and a percentage of negatives) without the need to physically transport the slides; and for prompt remote verification of slide in cases where the medical technologist may need a second opinion.

3.7 Electronic Medical Records(EMR)

The Philippines has a well established National eHealth Program which was established by the Department of Health in collaboration with the Department of Science and Technology, Philippine Health Insurance Corporation, University of the Philippines – Manila, and Commission on Higher Education.

This program has a roadmap[6] towards a vision that by 2020 *"eHealth will enable widespread access to health care services, health information, and securely share and exchange patients' information in support to a safer, quality health care, more equitable and responsive health system for all the Filipino people by transforming the way information is used to plan, manage, deliver and monitor health services."* One of the critical steps in this roadmap is that all health facilities have certified electronic medical records systems that are able to exchange data through the Philippine Health Information Exchange (PHIE) to ensure to harmonized data sharing and avoid repetitive processes, double counting and redundant data collection by providing a single unified view of the patient's data or record across and between various health facilities. For instance if all health facilities were to have EMRs, and assuming those EMRs captured all the data required by the different disease programs there would be no need for disease specific vertical programs. The country has not yet achieved this milestone but they are well on the way with most hospitals and a sizable minority of rural health facilities with functioningEMRs.

The Government, through the Knowledge Management and Information Technology Service (KMITS) of the DOH, has developed EMRs for hospitals (iHomis) and for RHUs (iClinicSys) and these are complemented by a number of privately developed systems for hospitals and RHUs (Shine, CHITS, WAH, etc). In Tarlac, all RHUs use the WAH system and, in Palawan, some of the health facilities visited were also using WAH; in Iloilo, one of the facilities was using CHITS.

All privately developed EMRs should include the minimum datasets prescribed by KMITS for the PHIE to enable reporting for FHSIS, PIDSR etc but in practice this was not observed to be the case. Of the EMRs in use in the facilities visited for this assessment, they were able to produce reports in the format for FHSIS but not yet for PIDSR. Particularly in Palawan and its high malaria burden, where a facility will see many malaria cases, if the EMR (in the facilities visited this was WAH) was able to capture, at the point of consultation, and report all the relevant data from malaria patient to satisfy the new PIDSR form then the reporting burden on the facility staff will be very much reduced. It is therefore recommended that the EMRs in use in high burden facilities in Palawan be supported to accelerate the introduction of the PIDSR malaria reporting form into their software. For facilities without EMRs, it should be noted that having an EMR with PIDSR reporting capacity will greatly improve their capacity to report malaria cases in a timely manner but this should not be the main reason for introducing the EMR into a facility as moving from a paper based system to and EMR requires many changes to all aspects of the facility's work flow and as such should be carefully planned.

4 Assessment of malaria reporting in thePhilippines

4.1 Currentsituation

The places visited during this assessment were chosen to represent areas in pre-elimination, elimination and prevention of reintroduction modes. In these places it was found that staff at all levels reacted promptly and appropriately to deal with cases and outbreaks with prompt alerts (often within 24 hours or less) by whatever available means (radio, phone, text, etc) from midwives to RHUs, RHUs to PHO, PHO to region. Appropriate responses were generally undertaken (often at RHU level, which are often already in 'elimination mode'), including case investigation and classification, foci investigation, and response (ACD, spraying, LLIN distribution, etc).

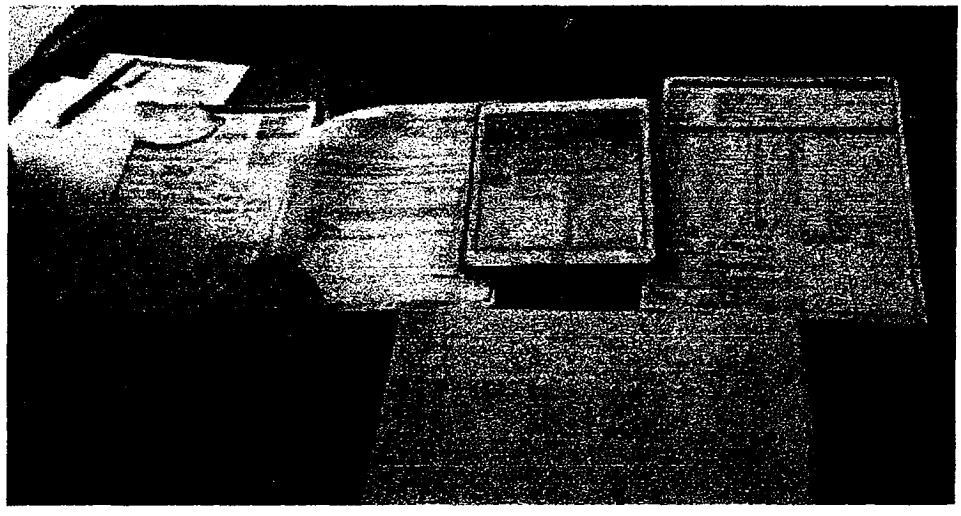
Staff at all levels were, for the most part, also diligent in completing their malaria reporting requirements, which were found to consist of numerous forms – some of which contained duplicate data. Figure 5 shows a sample of forms used at Narra RHU in Palawan to capture and report malaria case including the WAH electronic medical records system, FHSIS, PhilMIS and PIDSR. Clearly the malaria reporting burden on the RHU health staff needs to bereduced.

These reporting systems, particularly PIDSR and PhilMIS, were originally designed for malaria control which have served the program well in helping to greatly reduce the malaria burden in the last decade but do not currently serve the data needs of an elimination program and specifically the recording and reporting requirements of the proposed 1-3-5 system which requires detailed case and foci investigation '3-5' in addition to the existing data that

[6] http://uhmis.doh.gov.ph/images/pdf/Philippines_eHealthStrategicFrameworkPlan_April152014_Release03_OK.pdf

is captured about case diagnosis and treatment '1'. This data also needs to be captured much faster than the current weekly reporting cycle (PIDSR) and monthly cycle (PhilMIS).

Figure 5: Recording and reporting forms for malaria at Narra RHU in Palawan



4.2 The wayforward

Eliminating malaria requires a robust surveillance system to rapidly capture, classify and respond to all cases; identify and map foci; and also to satisfy the vigorous requirements for DOH (sub-national) and WHO (national level) certification. Essential elements of such a system are:

- Policy - mandatory (by law) reporting from public and private facilities in a specific timeframe (usually 24-48 hours)
- 100% coveragenationwide
- National CaseRegistry
- Detailed case investigation with travel history – classification of local / importedcases
- Prompt response to eachcase
- Foci investigation, classification and continuingmanagement
- Mapping of cases andfoci

The 1-3-5 system

The Malaria Program is already undertaking actions to reorient the program from control to elimination and has articulated a vision for a 1-3-5 system similar to the Chinese 1-3-7 system. The '1-3-5' system aims for case notification within 1 day, case investigation & classification within 3 days and focus investigation & action within 5 days. Specifically the program has plans to:

- Upgrade malaria from a category 2 disease in PIDSR to category 1 that will mandate that all malaria cases be reported from all facilities (including private facilities) within 24 hours bylaw.
- Implement a new malaria case reporting and investigation form for PISDR ('1-3') with detailed travel history and classification into local / imported cases.
- Introduce an online version of PIDSR (although it is not clear if this is to be planned for all diseases at the same time or to be implemented disease by disease; as of December 2015, two programmers are being recruited to work with KMITS and Epidemiology Bureau on the new malaria onlineform).

- Finalize and refine the malaria Manual of Operations to include forms and processes for foci investigation and response('5').

These activities are a good start but more work needs to be done to streamline and modernize the recording and reporting systems for malaria to support 1, 3 and (eventually) 5.

4.3 Recommendations to improve recording and reporting systems for malaria inPhilippines

There are 5 keys areas that need to be addressed to move the Philippines from a recording and reporting system for malaria control to one of elimination and enable the reporting system to catch up to the actual situation in the majority of provinces where the program is already effectively operating in elimination mode. These key areas are:

1. **Develop a single national online case registry of all malaria cases, including travel history andclassification**
2. **Fully implement the 1-3-5 model, including creation of a fociregistry**
3. **Improve malaria case recording in EMR systems**
4. **Upgrade program managementreporting**
5. **Implement data quality control at alllevels**

For each of these areas, there are a number of specific recommendations that should be implemented.

Develop a single national online case registry of all malaria cases, including travel history

The current system of reporting captures basic diagnosis and treatment data for each case ('1') but not case investigation data ('3'). To refocus the reporting system to efficiently capture 100% of all case and case investigation data in a timely fashion (1 day for case reporting, 3 days for case investigation) and to reduce duplicate reporting in control areas, the following are recommended:

1. The proposed new PIDSR malaria case investigation form with travel history (for malaria as a category 1 notifiable disease) should be adopted with a suggested modification to 'source of identification' which at present is surveillance / outbreak and it is recommended that this be changed to Passive surveillance / ACD – Case follow up / ACD – other, so it is possible to identify which cases are identified during follow up of an index case or routine ongoing management of a potential focus oftransmission.
2. Upgrade the PIDSR to an online system **for all 33 notifiable diseases – i.e. simultaneously.** This is already planned with KMITS and the Epidemiology Bureau identifying funds to recruit two programmers to develop the online malaria PIDSR reporting system. It is also understood that there are plans and funds to move other PISDR diseases to an online system similar to what has already been done with the SARI system. The strong recommendation is to find a way to use available resources to do a 'one off' development of an online system for all PIDSR notifiable diseases at the same time. This approach will be in line with the eHealth strategy to harmonize disease reporting as much as possible and will make the adoption of the new online system easier for the LGUs who see the PIDSR reporting system as a single integrated system and not 33 separate disease reportingsystems.
3. Form an **implementation task force** to guide the PIDSR developers. This project will involve many different partners covering all of the notifiable diseases and users of the system from national level to the LGUs and it is important that the requirements of all the programs and users be taken into consideration by the programmers when designing and testing the newsystem.
4. The new system should be flexible enough to allow regions and LGU partners to determine the level at which data are entered online to fit within existing PISDR reporting processes in their province. The regions and provinces implement the current PISDR reporting system in slightly different ways (as discussed in relation to TarlacandIloilo;seeSection3.2).Boththeseapproachesseemtoworkwellastheemphasisinbothcasesis

to ensure that the correct people are notified within the required reporting timeframe and the appropriate response is initiated. This flexibility should be maintained in the new online system.

5. The new PIDSR online system should have analysis, mapping and alert capabilities so that users at all levels can see summary data on cases for the whole country and detailed case data for their particular area of responsibility.There shouldalsobelinkstotheonlineESRforcasesthatsatisfythecriteriaforan ESRreport.
6. Remove the case malaria case reporting module from PhilMIS to eliminate duplicate case reporting. The introduction of the new PIDSR case reporting and investigation form extends reporting to the national level and makes the existing case data collection inPhilMIS redundant; this should therefore beremoved.

Fully implement 1-3-5 including creation of foci registry

In order to fully implement the 1-3-5, consideration needs to be given to the '5', response, for pre elimination and elimination areas but also the effect of implementing 1-3-5 on areas that are still in control mode and still have a high burden of malaria. To fully implement the 1-3-5 and to manage the change in control areas the following is recommended:

7. Cases to be reported within 24 hours to PISDR in pre-elimination and elimination settings (i.e."1").
8. Case investigation, including the relevant section of the form, to be completed in 3 days (i.e. "1-3") in pre-elimination and elimination settings. For inpatients, both are likely to be completed in one day as part of initial consultation (i.e. "1-1").
9. Relax the reporting timeframe, and possibly the requirement to complete the case investigation section of the form, for control areas with significant burden of disease (and reporting) and use existing PhilMIS staff and infrastructure to encode the cases into PIDSR as soon as possible. As the PhilMIS staff will no longer have to enter the case data into PhilMIS, these same staff could be used to enter the new malaria forms intoPISDR.
10. A foci investigation form and registry is needed for non-control areas. This form is mentioned in the MOP but still needs to bedeveloped.

Improve malaria case recording in EMR systems

As part of the national eHeath strategy, RHUs are increasingly adopting electronic medical records systems; notably, this includes a number of RHUs in Palawan. This gives us an opportunity to improve the reporting of malaria cases in the new PIDSR format whilst reducing the reporting burden on health facility staff by adopting the following recommendations:

11. Require all EMRs, especially those used in RHUs, to capture all data required for PIDSR diseases and produce reports in PISDR format
12. Automate SMS alerts for notifiable diseases (i.e.'3-5')
13. Consider accelerated support (funding) to implement PIDSR reporting for malaria in EMR systems in use in malaria control areas to reduce reporting burden and assist in the transition to case based ('1-3')reporting

Upgrade program management reporting

The original rationale to collect individual malaria case data within the PhilMIS is no longer valid as the new PIDSR form will provide all the case data required for the "1-3-5" system; however, in the elimination stage there is also an increasing emphasis on the response side, case and foci investigation become key activities (the "3-5" of the "1-3-5" system) and there is an ongoing need for programmatic data which cannot be met by the PIDSR system. It is recommended to upgrade the PhilMIS as follows:

14. Upgrade the program management part of PhilMIS to an online system to enable links with PIDSR malaria case registry, and to make it available to allprovinces.
15. Incorporate a foci reporting and management tool into the online PhilMIS (fociregistry).
16. Include links to an online version of theMOP.
17. Expand PhilMIS analysis and mapping capabilities to map cases andfoci.

18. Use the online PhilMIS to capture 'missing' data such as number of slides / RTDs examined (a longer term alternative is to include this in FHSIS; see Section3.1).

Implement data quality control at all levels

There appears to be very little cross checking of data from the various systems to ensure that cases do not go unreported and this could be improved with some very simple data quality control such as:

19. Cross check PIDSR cases with iHOMIS in hospitals. The reporting of notifiable diseases in hospitals is usually the job of specific nursing staff responsible for surveillance and is done as part of the daily bed census. Final diagnosis data is usually entered into the hospitals EMR system at a later date and there are usually no checks to ensure that the data reported to through the EMR matches that reported throughPIDSR.
20. Cross check PIDSR cases with FHSIS reported cases in RHUs, provinces and regions. The malaria data within the FHSIS is of limited use to a malaria program in the elimination stage apart from providing the opportunity to cross check number of cases reported through PIDSR from RHUs. This would be a very useful exercise at all levels to ensure all cases are being reported but, apart from some individual health facilities that indicated that they regularly cross checked cases reported via FHSIS with other systems, this was not done at any of the provincial offices visited or at nationallevel.

4.4 Consistency with national Strategic Plan priorities for surveillance andresponse

The recommended approach addresses a number of priorities (gaps and challenges) identified in the NSPCEM 2014-2020.

First, we have confirmed that systems for malaria data management and collation remain fragmented and that there are system inefficiencies related to multiple surveillance systems and reporting formats and duplicate data entry at the RHU level; these different reporting streams are, in turn, managed by different individuals at the PHO. Our proposed approach starts to reduce this duplication through convergence of the case management data entry in PhilMIS and PIDSR under a single, new electronic platform for PIDSR – to eventually also be linked to EMRs.

Second, we propose extending the reach of case-based malaria surveillance to the national level through the single PIDSR platform. Provinces outside the core group of 13 control phase provinces (or the 27 other provinces previously supported by the Global Fund grant) potentially also gain access to the national elimination surveillance database through the registry of transmission foci; on-line links to the MOP will support improved program quality. This will also help to address the uncertainties around zero reporting from provinces with long-standing status as having interrupted local transmission, and will strengthen the functionality of the Elimination Hubs.[7]

Third, the new PIDSR case investigation form contains all necessary fields to guide case investigation, follow-up and case classification; i.e. it is functional as both an administrative and an epidemiological tool (with some minor modifications; see Recommendation 1), allowing convergence of PhilMIS case reporting underPIDSR.

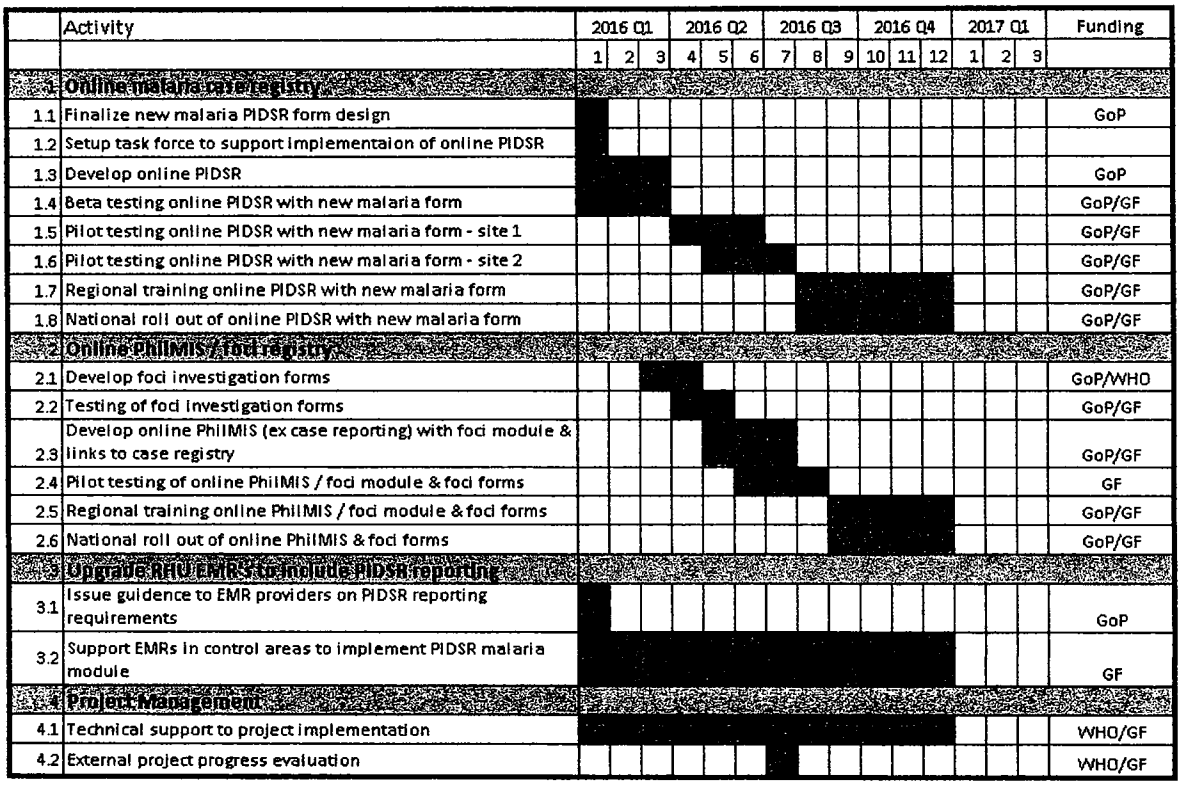
Finally, the close links between the Malaria Program and the Epidemiology Bureau proposed under this plan will introduce the Program to an important role in surveillance and more nuanced analysis of the data than is currently undertaken in routine EB reporting. Where unusual events (outbreaks, cases in malaria-free areas) are managed through ESR, close links with the Program will strengthen the quality of the technical response.

4.5 Implementationplan

A list of key activities and a suggested timeframe for implementation (taking into consideration the current DOH plans for developing the online PISDR) are show in Figure 6.

[7] DOH Administrative Order 2013-0007: Guidelines on the Establishment of Malaria EliminationHubs

Figure 6: Key activities and timeline for implementing the recommendations of this assessment



	Activity	2016 Q1			2016 Q2			2016 Q3			2016 Q4			2017 Q1			Funding
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
1	**Online malaria case registry**																
1.1	Finalize new malaria PIDSR form design																GoP
1.2	Setup task force to support implementaion of online PIDSR																
1.3	Develop online PIDSR																GoP
1.4	Beta testing online PIDSR with new malaria form																GoP/GF
1.5	Pilot testing online PIDSR with new malaria form - site 1																GoP/GF
1.6	Pilot testing online PIDSR with new malaria form - site 2																GoP/GF
1.7	Regional training online PIDSR with new malaria form																GoP/GF
1.8	National roll out of online PIDSR with new malaria form																GoP/GF
2	**Online PhilMIS / foci registry**																
2.1	Develop foci investigation forms																GoP/WHO
2.2	Testing of foci investigation forms																GoP/GF
2.3	Develop online PhilMIS (ex case reporting) with foci module & links to case registry																GoP/GF
2.4	Pilot testing of online PhilMIS / foci module & foci forms																GF
2.5	Regional training online PhilMIS / foci module & foci forms																GoP/GF
2.6	National roll out of online PhilMIS & foci forms																GoP/GF
3	**Upgrade RHU EMRS to include PIDSR reporting**																
3.1	Issue guidence to EMR providers on PIDSR reporting requirements																GoP
3.2	Support EMRs in control areas to implement PIDSR malaria module																GF
4	**Project Management**																
4.1	Technical support to project implementation																WHO/GF
4.2	External project progress evaluation																WHO/GF

A more detailed plan with indicative funding requirements will also be produced separately and will form the basis of a 'living' plan and budget that can be adjusted as the project proceeds.

4.6 Risks and potentiallimitations

Like any project the successful process of reorienting the recording and reporting of malaria in the Philippines from control to elimination mode will be subject to many risks and limitations, the more serious of which are:

- Lack offunding
- Delays due to political issues in an electionyear
- Poor management and oversight of projectimplementation
- Online PIDSR implemented disease by disease instead of as a harmonized system covering alldiseases.
- Lapses in PhilMIS reporting before PIDSR-based system fullyfunctional
- Need alternative strategy for monitoring TPR and ABER in RHUs either through FHSIS, by retaining the relevant fields for total tests conducted in PhilMIS, or through an annual survey. In hospitals the TPR is available in the Hospital Statistical Report which is being submitted by all hospitals to DOH's Hospital Operation and ManagementServices.
- Commercial EMRs do not update their systems to reflect the PIDSR reportingrequirements
- Inadequate internet connection and computer systems (laptops, iPads, etc.) for sites piloting electronic data entry
- Detailed elimination strategies and foci management not fully worked out in new MOP (i.e. also need to be piloted)

- Lack of engagement with the private sector to report all malaria cases (which require local partnerships and solutions to support compliance with mandated 24 hour reporting ofmalaria)

We acknowledge that drawing all malaria case reporting and investigation into the PIDSR platform may increase the reporting and compliance burden on provinces that currently have a relatively high incidence of malaria and have not yet transitioned into the pre-elimination phase (in particular, Palawan and Maguindanao). This risk may be mitigated by implementing provisional, "relaxed" malaria reporting rules in those provinces with a high case load as per recommendation no. 9. This would be assessed during the proposed progress evaluation in the second half of 2016 (Figure 6, activity4.2).

The implementation time line (Figure 6) is relatively tight and work needs to commence as soon as possible. Risks associated with slow progress or poor implementation of the project will be the responsibility of the implementation task force, which should be established as soon as possible. This task force would include representation from EB, KMITS, BDCP and the Malaria Program, and selected development partners (e.g. PSFI on behalf of the Global Fund, WHO).

The task force would oversee the progress evaluation, which would be funded as a separate activity.

Annex 1:

Terms of Reference

Consultant – Assessment of Current Surveillance, Reporting and Recording Systems for Malaria

Background

Malaria cases and deaths have continuously and significantly decreased, enabling the transition of the country from malaria control to elimination. Currently, out of the 80 provinces, 17 remain in control phase, 14 in the pre-elimination phase, 23 in the elimination phase, while 27 are officially declared malaria-free (includes Metro Manila). To accelerate the transition from control to elimination, the DOH-National Malaria Program (DOH-NMP) has developed the Philippine National Strategic Plan for Control and Elimination of Malaria, containing the strategies and interventions to be implemented in 2014-2020. One of the strategies is the strengthening of the surveillance, reporting and recording systems for malaria. Current systems running include the Philippine Malaria Information System (PhilMIS), the Philippine Integrated Disease Surveillance and Response (PIDSR), the Field Health Services Information System (FHSIS), the Malaria Text Response System (MTRS) and the Events-based Surveillance and Response (ESR). The elimination mode requires the surveillance systems to be robust and comprehensive, with reliable real-time recording and reporting of data, for This enables national, regional, provincial and municipality malaria teams to detect and response to malaria events, to prevent re-introduction and block local transmission, in order to sustain the gain in achieved elimination and malaria-free status. An assessment of the gaps between the existing surveillance and the ideal system in elimination phase is an important precursor to establish elimination-oriented systems. In this regard, the DOH-NMP wishes to engage the services of a consultant to conduct this assessment, identifying the gaps between existing and ideal elimination-oriented surveillance systems, and formulate recommendations and a plan of action to bridge in thesegaps.

Purpose

The purposes of the consultancy are:

1) To assess the current capacity of the existing surveillance, reporting and recording systems against the needs ofelimination;
2) To recommend strategies and interventions to take to meet the needs ofelimination;
3) To develop a plan of action to implement the said recommendations, with activities, cost andtimeline;
4) To inform the Technical Working Group of the assessment findings, recommendations and plan of action in preparation for actual implementation;

Eligibility

1) Vast knowledge, skills and experience in design, implementation and upgrading modern surveillance/information systems especially for diseases forelimination;
2) Experience worked within a national malaria program or national health information system isadvantage;
3) Experience with in Asia culture is anadvantage;
4) Able to facilitate discussions, workshops and planningsessions;
5) Fluent in oral and writtenEnglish;

Responsibilities/Deliverables

a. Describe the characteristics of each of the surveillance, reporting and recording systems currently used formalaria;

b. Make a comparison of the characteristics of these different systems to identify points where they complement and points where theycontrast;
c. Determine the effect of these complementary and contrasting characteristics to the quantity and quality of data produced at the nationallevel;
d. Define how the current data being produced, in its current state, affect what kind of decisions are made at the municipal, provincial, regional and national level, in terms of routine program implementation and non-routine responsiveactions;
e. With the complementary and contrasting points as bases for actions, formulate a set of recommendations on how to strengthen, streamline and integrate the existing systems with the element of real-time surveillance andreporting;
f. Visualize and demonstrate how these recommendations can improve the quantity and quality of data produced especially for decision-makingpurposes;
g. With close consultation with the Malaria Technical Working Group, develop this set of recommendations into a plan of action that would specify what activities should be done, including the estimated cost and thetimeline;
h. Disseminate the plan to all the members of the technical working group, including all partners and stakeholders for eventualimplementation.

Tasks:

1) The consultant shall hold a consultative meeting and planning workshop to discuss with the technical working group the mechanics of the assessment, including the methods for datacollection;
2) The consultant shall work in close collaboration with the National Malaria Program Coordinator and members of the technical working group, in all stages of carrying out theassessment;
3) The consultant shall present the results of the assessment to the Technical Working Group, including the recommendations;
4) The consultant shall work with the TWG to translate the recommendations into a final plan ofaction;
5) The consultant shall hold a meeting with the TWG, program implementers, partners and stakeholders to disseminate the finding of the assessment, the recommendations and plan of action for eventual implementation;
6) The consultant shall provide the DOH-NMP with print and electronic copies of the final assessment document, which includes the recommendations and plan of action, along with pertinent annexes and references;

Duration of Assignment:

November - December 2015 (one month in-country)

Annex 2: Persons consulted

DrMarioBaquilod	-	Director, Disease Control and PreventionBureau
DrVitoRoque	-	Director, Epidemiology Bureau
MrHerdieHizon	-	Epidemiology Bureau
MrAllanIgnacio	-	Programmer, Epidemiology Bureau
Ms JuneCantataCorpuz	-	PIDSR Program Manager, Epidemiology Bureau
MsReginePedron	-	PIDSR Malaria Point Person, EpidemiologyBureau
MrRhandyTolentino	-	FHSIS Coordinator, EpidemiologyBureau
MsMarissaOrtega	-	FHSIS Coordinator, EpidemiologyBureau
MsCherrieEsteban	-	KMITS
DrJessieFantone	-	Regional Epidemiology Surveillance Unit Head, CentralLuzon
MsGeldaCabaGui	-	Nurse, Tarlac ProvincialHospital
MsJoaneFeTaluyo	-	Nurse, Tarlac ProvincialHospital
MsCecille Lopez–Zuazula	-	Nurse, PESU, Tarlac Provincial HealthOffice
Ms MaTeresitaLacdac	-	FHSIS Coordinator, Tarlac Provincial HealthOffice
MsMarilynPunsalan	-	Nurse, RHU I Bamban, Tarlac
MsFaustaDatugan	-	Midwife, RHU II Bamban,Tarlac
DrReaganPatriarca	-	Development Mngt Officer IV, Tarlac DOH PHTLOffice
MrNoelOrosco	-	Regional Epidemiology Surveillance Unit Head,MIMAROPA
Dr MaryAnnNavarro	-	Provincial Health Officer,Palawan
MsLornaLoor	-	PIDSR Coordinator, Palawan Provincial HealthOffice
MrBennyOsorio	-	FHSIS Coordinator, Palawan Provincial HealthOffice
MsAileenBalderian	-	~~Director~~Program Manager, KilusanLigtas Malaria, Palawan Provincial HealthOffice
MrAllan Gonzales	-	PhilMIS Encoder, KilusanLigtas Malaria, Palawan Provincial HealthOffice
MsSusanEspina	-	PhilMIS Encoder, KilusanLigtas Malaria, Palawan Provincial HealthOffice
MsGeraldineErro	-	Records Clerk, MMG Cooperative Hospital,Palawan
Ms JollyAnn Mansera	-	Records Clerk, MMG Cooperative Hospital, Palawan
MsLovelyRodriguez	-	MMG Cooperative Hospital,Palawan
MsLesandraDiploma	-	Nurse II, Ospital ngPalawan
MsEliseaTuling	-	Disease Surveillance Point Person, Ospital ngPalawan
MrJeniferAlcorano	-	Disease Surveillance Nurse II, Ospital ngPalawan
Ms AnnaMay Gerner	-	Supervising Nurse, Ospital ng Palawan
MsVilma Godoy	-	Southern Palawan Provincial Hospital
MsAdelaPalanca	-	Baptist Hospital, Roxas,Palawan
Ms AndreaLynTangug	-	Malaria Point Person, RHU Narra,Palawan
MsEdithLongno	-	FHSIS Coordinator, Nurse IV, RHU Narra, Palawan
MsCamilleArroyo	-	Encoder, RHU Narra,Palawan
MsFlorindaRuiz	-	Barangay Microscopist, BrgyUrduja, Narra,Palawan
DrBonifacioEstarmino	-	Municipal Health Officer, San VicentePalawan
MsDollySantos	-	Medtech/Disease Surveillance Point Person, RHU San Vicente,Palawan
Ms AgnesGrace Sabuya	-	FHSIS Coordinator, RHU San Vicente,Palawan
MsJulietPenon	-	PhilMIS Point Person, RHU San Vicente,Palawan
DrJosievelineDamalerio	-	Municipal Health Officer, Quezon,Palawan
MsShielaToren	-	Municipal Malaria Point Person, Quezon,Palawan
MsZiforahLevaneighSotomil-		PIDSR – PESU Coordinator, Iloilo Provincial Health Office
MrHubertDesquitado	-	Disease Surveillance Officer, Iloilo Provincial Health Office
MrChristopherLee	-	Disease Surveillance Encoder, Iloilo Provincial HealthOffice
Dr PatriciaGraceTrabado	-	Provincial Health Officer II, IloiloProvince
Ms MaElenaMediodia	-	Surveillance Officer, Ramon Tabiana Memorial District Hospital, Cabatuan,Iloilo
MsErlisaEmboltorio	-	Encoder, Ramon Tabiana Memorial District Hospital, Cabatuan,Iloilo
MsMarisylIMoleta	-	Surveillance Officer, RHU San Joaquin,Iloilo
MsVictoriaVillaflor	-	Sanitary Inspector, RHU San Joaquin,Iloilo
DrAbrahamElgario	-	Municipal Health Officer, RHU San Joaquin,Iloilo
MsRosario Palmos	-	PIDSR/Surveillance Coordinator, Rep. Pedro Trono MemorialHospital
MsKateGellangala	-	Encoder, Rep. Pedro TronoMemorialHospital
EngrAntoniettaEbol	-	Regional Malaria Coordinator – DavaoRegion

MsJosephineVillafuerte	-	City Health Officer, DavaoCity
MsFarahClamon	-	City Epidemiology Surveillance Unit Officer, Davao City
DrNeilErasmo	-	Regional Malaria Coordinator – Central VisayanRegion
MrDanSabug	-	Provincial Epidemiology Surveillance Unit Officer,Antique
DrRicNaciongayo	-	Provincial Health Officer,Antique
MsRashelGozar	-	Barangay Microscopist, Semirara Island,Antique
DrAnnabelleRebollido	-	Medical Doctor, Semirara Mining Power Corp Hospital
Ms MariaAngelicaSabile	-	Medical Doctor, Bicol MedicalCenter

DrRabiAbeyasinghe	-	WHO – WPRO
DrZaixingZhang	-	Medical Officer – WHO Philippine CountryOffice
Ms Maria JeunessaStoNino	-	Surveillance, Monitoring and Evaluation Officer, WHO Philippine CountryOffice
MsHoneylinTodavia	-	Surveillance, Monitoring and Evaluation Officer, WHO Philippine CountryOffice
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Foundation,IncMrRayAngluben	-	Deputy Program Manager, Pilipinas Shell
Foundation,IncMsYnnaDoblado	-	M&E Officer, Pilipinas Shell Foundation,Inc
MrIkeMontederamos	-	Programmer for PhilMIS, Pilipinas Shell
Foundation,IncMrFelipeCanlas	-	Wireless Access forHealth
MacquelSerrano	-	Supervising Partner for Platform Innovation, Wireless Access forHealth

Annex 2: CONSULTATIVE MEETING ON THE ENHANCEMENT OF MALARIA CASE REPORTING, INVESTIGATION AND RESPONSE IN THE PHILIPPINES

Objectives:

At the end of the workshop, the participants are expected to have:

1. gained an understanding of the malaria surveillance and reporting systems being implemented in thecountry;
2. developedanawarenessofthereal-timereportingsystemsusedformalariasurveillancebeingimplementedinother countries;
3. reached an initial analysis of the strengths and weaknesses, together with the factors contributing to such, of the current country surveillance and reporting systems formalaria;
4. identifiedanddiscussedstrategiesandormodificationsnecessarytoimprovethecurrentmalariasurveillanceand reporting system in thecountry.

Program Flow:

Day 1 – Nov 24		
8:00-8:30	Registration	
8:30-9:00	Welcome ,Opening Ceremonies, and Introduction	
9:00-9:30	National Malaria Program status with emphasis on surveillance and reporting	Dr Mario Baquilod
9:30-10:00	Overview of PIDSR and FHSIS	Dr Vito Roque Jr / Ms Marissa Ortega and Ms June Corpuz
10:00 – 10:30	Overview of ESR	Mr. HerdieHizon
10:30-11:00	Overview of KMITS	Ms Cherie Esteban
11:00-11:30	Overview of PhilMIS and MTRS	Mr Ray Angluben
12:00 – 1:00	LUNCH	
1:00 – 2:00	Break-out session 1 – WHICH SURVEILLANCE SYSTEMS OPERATE IN YOUR LOCALITY OR FACILITY Local level status of implementation of reporting and surveillance systems	
2:00 – 2:30	Plenary	
 2:30 – 3:00 3:00 – 3:30 3:30 – 4:00	Country Presentations withQ&A Malaysia Thailand China	
4:00 – 4:20	Global Trends: Information/Disease Surveillance Systems	Mr Steve Mellor
4:20 - 4:40	1-3-5 reporting system for malaria – a vision	Dr Mario Baquilod
4:40 - 6:00	Break-out Session 2 - DELAYS, BARRIERS AND GAPS IN MALARIA SURVEILLANCE AT DIFFERENT LEVELS OF FACILITY What information is needed? By whom? How soon? Why? How well do these present systems meet the needs and the gaps?	
Day 2 – Nov 25		
8:30 - 9:30	Plenary of Session 2	
9:30 – 11:00	Break-Out Session 3 – ADDRESSING THE DELAYS, BARRIERS	

	AND GAPS YOU HAVE JUST IDENTIFIED How to get there? What is needed to achieve timely reporting, case investigation and response? Do we need to change what we do and how we do it? How? Think in terms of: • Policy (national andlocal), • Logistics andcommunications, • Manpower, • Access to guidelines and expertadvice, • Others	
11:00 -12:00	Plenary of Session 3	
12:00 - 1:00	Lunch Break	
1:00 - 2:30	Continuation of Plenary Session 3	
2:30 – 3:00	Summing up: Review and re-affirming of expectations	
3:00 – 4:00	What next: Planning and Guidance for the Field Work, follow-up discussions with TWG and development of a plan	

Annex 2. OLMIS Monitoring Tool

SYSTEM MONITORING TOOL

Ref No: SMT-IMS-2020-	**System**: Online Malaria Information System (OLMIS)
Name of Facility:	**Date:**
Address:	**Time:**
Contact Number:	
Name of Personnel:	
Name of Head of Health Facility:	

A. HARDWARE/SOFTWARE

1. Number of Functional Computer Unit/s in the Facility: ☐ None ☐ 1 unit ☐ 2 units ☐ 3 units ☐ 4 units ☐ 5 or more units
2. Other Devices in the Facility (ex. Tablet, Android Device) ☐Yes☐No
   2.1 If YES, indicate: _____
3. Computer Source
   ☐ LGU ☐ PSFI☐DOH – FHSIS ☐Other Donors: _____
4. Number of functional printer/s: ☐ None ☐ 1 unit ☐ 2 units ☐ 3 units ☐ 4 units ☐ 5 or more units

   4.2 *Printer type:* ☐ Dot Matrix ☐ Laser ☐ Ink Jet☐ Others, please specify: _____

B. INTERNET CONNECTION

1. *With Internet connection in facility*	☐Yes ☐No *(If the answer is **YES,complete items 2 to 8**)*	
2. *Name of Internet Service Provider*	_____	
3. *Type of ISP Account*	☐ Modem – Dial-up☐ Digital Subscriber Line☐ Cable ☐ Wireless Fidelity (i.e. Smartbro)☐ Satellite ☐ Leased Line ☐ T1☐ Others, please specify:_____	
4. *Bandwidth/ Speed/ CIR*	☐ below 128 kbps☐ 128 kbps ☐ higher than 128 kbps	4.1 *Actual Bandwidth/ Speed/ CIR:*_____
5. *ISP Connection Sharing*	☐ Yes ☐ No	
6. *Firewall*	☐ Yes ☐ No	
7. *Local Area Network*	☐ Yes ☐ No	7.1 *Number of computers connected:*_____
8. *Funding Source*	☐ LGU ☐PSFI☐DOH – FHSIS ☐Other Donors :_____	

C. SYSTEM PERFORMANCE (OLMIS)

Type of Problem/s	Problem Description	
	OLMIS Android App	*OLMIS Web*
Login		
Server Connection		
ISP Connection		
Errors/Bugs		

D. UTILIZATION OF FORMS

(Indicate concerns/problems encountered in the use of the registries and forms)

Standard Procedures (System Navigation: Encoding, Data Submission etc)			
System Hang			
Others			

Personnel/s and Facility Accomplishing this Form

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

OLMIS DATA REVIEW FORM

Region: _____ Province/ HUC: _____ Municipality/ City: _____
Name of Facility: _____
Checked by: _____ Date: _____

Instruction: Choose data from the previous quarter. Fill-out each table with the correct numbers/percentages according to the data aspect being assessed. Put N/A as needed.

Quarter:_____

Form A: Assessing Data Completeness

A1. Completeness of Paper-Records (NMCEP Registries and Forms)

Recording Form	Records with Complete Data		Records with Incomplete Data		Total Records	Remarks (provide details on missing data)
	No.	%	No.	%		
Malaria Laboratory Registry						
Malaria Patient Registry						
LLIN Registry						
IRS Registry						
Malaria Investigation Form						
Foci Investigation Form						

A2. Completeness of OLMIS - eRecords

Recording Form	Records with Complete Data		Records with Incomplete Data		Total Records	Remarks (provide details on missing data)
	No.	%	No.	%		
Malaria Laboratory Registry						
Malaria Patient Registry						
LLIN Registry						
IRS Registry						
Malaria Investigation Form						
Foci Investigation Form						

Form B: Assessing Data Consistency

B1. Consistency of Records between Paper Based and OLMIS eRecords (Accuracy)

Recording Form	Records with Consistent Data		Records with Inconsistent Data		Total Records	Remarks (provide details on common mistakes noted)
	No.	%	No.	%		
Malaria Laboratory Registry						
Malaria Patient Registry						
LLIN Registry						
IRS Registry						
Malaria Investigation Form						
Foci Investigation Form						

B.1 Consistency between Paper based and OLMIS e-Records

Recording Form	Month	Number of Data in Paper Base (NMCEP Registries and Forms)		Number of Data in OLMIS		Remarks (provide details on the variances assessed)
All Screened Patients		*RDT:*	*Slides:*	*RDT:*	*Slides:*	
		RDT:	*Slides:*	*RDT:*	*Slides:*	
		RDT:	*Slides:*	*RDT:*	*Slides:*	
All Confirmed Patients (Jan – Sep 2019)						
Households Received LLIN						
Households Sprayed IRS						