

Fever Sentinel surveillance network

SUBPROJECT 1

Key leader: Laurence RANDRIANASOLO

Direct supervisor: Patrice PIOLA

A. Goals, Objectives and Technical Approach

Elimination of malaria in Madagascar requires effective epidemiological surveillance systems. Reported numbers of malaria cases and deaths are used as core indicators to track malaria progress, its impact and to detect the emerging epidemics.

The current fever sentinel network in Madagascar is a passive syndromic surveillance system. This system is complementary to the routine epidemiological surveillance operated by the Ministry of Health (MoH). It is an integrated surveillance system focused on fever syndromes which also provides differential diagnosis of malaria. The febrile diseases under surveillance are: malaria, influenza like illness (ILI), dengue like syndrome (DLS) and diarrhea.

Currently, fever sentinel sites network involve 54 out patients department (OPD), 18 Hospitals (CH) and 73 Community Health Volunteers (CHV). The selection of the sentinel centers was carried out to give geographical representativeness. The fever sentinel network provides a good quality of data (timeliness and completeness) and has been of great help for health authorities to monitor trends in malaria and detect outbreaks in the entire country.

B. Proposed activities for the duration of the program with explanation on how they will be implemented

- *Fever Sentinel sites composed by 54 OPD*

Fever sentinel system was set up to have an Early Warning System (EWS) detecting main causes of fever syndromes. This proposal aims to maintain and improve the quality of this sentinel network. We enhance efforts to ensure adequate and traceable application of case definitions. This is an ongoing activity.

- Sentinel network coordinator (1 Full-time 100%): She is a public health specialist in charge of the fever sentinel sites network coordination. She will collaborate with RBM partners. These activities will include all those to improve malaria and fever surveillance. She will ensure the consistency of data collection and reporting (period 10/01/2015 to 09/30/2016).
- Project manager (1 Full-time 100%): He is an advisor of administrative and financial report in accordance of this application (period 10/01/2015 to 09/30/2016).

- Data programmer (1 Full-Time): Based in IPM Epidemiology unit with the main responsibility to develop M-Health and E-Health, to ensure the smooth management of database system and the accuracy of entered data. He will develop a new technical approach for data collection (period 10/01/2015 to 09/30/2016)
- Public health Officer (4 Full-Time): based at the Epidemiology unit and ensure the accuracy of entered data, to classify the study form. (Period: 10/01/2015 to 09/30/2016).
- Purchase of equipment: medical and office supplies for IPM Epidemiology Unit, sentinel sites network for their activities.
- Purchase of supplies: include consumables and reagents that will be used during outbreak investigation and consumables during field investigation (for diagnostic and treatment).
- Others : expenses for maintenance of different equipment useful for surveillance activities (printers and data scan software), for expedition of surveillance form or other tools from IPM to sentinel centers or from sentinel centers to IPM (Express Courier), for transferring of data surveillance by SMS (credit card, telephone subscription, ...)

- *Early Warning System in rural isolated areas*

In 2013, a pilot project was initiated and implemented a network of Community Health Volunteer (CHV) with the objective to get a clearer picture of the malaria prevalence and mortality in isolated areas. Currently, we collaborate with 73 CHVs located in 3 health districts: Farafangana, Moramanga and Ankazobe. This is an ongoing activity.

From December 2014 to January 2015, there was a malaria outbreak in South Ambalavato in the Farafangana district. Among causes were the lack of malaria management and stock outs of RDT and ACT. Circulation of Salmonella was also detected during this investigation. We will setup an early warning with a 40 CHV network in this locality to follow-up the malaria incidence and to compare the epidemiological situation.

- CHV coordinator (1 Full-Time): based in the epidemiology unit of the IPM and responsible of constantly communicating with the CHWs involved in the evaluation of malaria morbidity and mortality in the selected isolated region. The holder of this position will constantly assess CHVs needs (period 10/01/2015 to 09/30/2016).
- Community Health Volunteers incentive (113 part-Time): 113 CHVs in highly remote areas will receive an incentive for the extra work resulting from the routine use and documentation of RDTs in febrile patients. They will also record and communicate malaria suspected deaths to the IPM by SMS (period 10/01/2015 to 09/30/2016).
- Public health Officer (1 Full-Time): based at the Epidemiology unit and ensure the accuracy of entered data, to classify the study form. (Period: 10/01/2015 to 09/30/2016).
- Training and courses: to use the M-Health new approach and statistics for the Community Health Volunteer coordinator and Data programmer.

- *Hospital Sentinel network composed by 18 Hospitals (CH)*

Since September 2015, we use e-health to collect data from hospital sentinel. We identified that the data quality (timeliness and completeness) is poor and will need to be strengthened. As a result, for the upcoming year, we will setup a financial incentive for each data entry. The web-based surveillance feedbacks will be available to sentinel centers. It is an ongoing activity.

- Public health specialist from the MoH (50% time): All hospital sentinels is a public health center and we will need to collaborate with a public health specialist from the MoH to coordinate the hospital sentinel activities.
- Data entry incentive (18 CH, 10%Time): They will be 18 agents from CH sentinels. They will also record and communicate malaria suspected deaths to the IPM by web (period 10/01/2015 to 09/30/2016).
- Purchase of equipment: furniture for hospital reporting and health items for hospital wards and malaria mortality reporting.

- *Biological Monitoring*

The fever sentinel sites in Madagascar are a syndromic surveillance system coupled with biological surveillance. If there is a febrile syndrome outbreak, biological analyses will be performed during investigation to identify causal agents. Four sentinel primary health centers located in coastal cities of public health interest were also implemented with weekly arbovirus surveillance. Nine sentinel primary health centers are focused on weekly influenza surveillance. This is an ongoing activity.

- Purchase of supplies : fees for biological analysis (at IPM and abroad)
- Others : we will expense for transport of specimen

- *Quality assurance of data collection*

- Annual meeting for all sentinel sites staff, IPM team, staff of MoH (central, regional, at district and center levels) and private partners for capacity building
- Training workshop in Antananarivo dedicated to fever sentinel site responsible (54 OPD) to initiate epidemiology surveillance and outbreak investigation.
- Update of the supervision manual

- Training of the district team to use the new supervision manual
- Biannual supervision to maintain good quality of data collection: firstly by Health District Officer (HDO) and secondly by IPM team. After supervision, the functionality of the sentinel sites will be ranked in "excellent", "satisfactory", "improved" or "not functional." This classification will be obtained by evaluating human and material resources, compliance of procedures, reliability of data, data mining and RDTs assessing.
- Expenses for travels: will compensate participants* for transportation by road or by plane and the vehicle rental fees and/or vehicle petrol (*all sentinel sites responsible). It will include per-diems and part of logistical expenses inside Madagascar, per-diem covering lodging, meals and any other incidental expenses

- *Publication and communication*

In order to improve the effectiveness of the surveillance system and to identify the trends of malaria, a continuous analysis of data collected by fever sentinel sites is necessary.

- Expenses for travels: this budget line will cover travel expenses related to national and international conferences or congress. It will include airfare tickets and ground transportation as well as per-diem and lodging inside and outside Madagascar.
- Others : publication fees

C. Corresponding time frame for implementation of activities

Activity	Date completed	Responsible	Performance indicators
Fever Sentinel sites composed by 54 OPD and 113 CHV	ongoing activity	IPM – RBM partner	-Completeness of data SMS collection -Timeliness of data SMS collection -Percent of abnormal situation or alert controlled in district level -Number of artemisin-based combination therapy (ACT) treatment purchased with USG funds -Number of ACT treatments purchased in any fiscal year with USG

			funds that were distributed in this reported fiscal year -Number of malaria rapid diagnostic tests (RDTs) purchased with USG funds -Sentinel Site Indicators – Outpatients : Number of outpatients, Number of clinical outpatient cases of malaria, Number of RDTs examined for malaria from outpatients, Number of RDT-confirmed outpatient cases of malaria, Number of antimalarial treatments, Number of days out of stock in the last month for each antimalarial -Number of RDTs purchased
Early Warning System in rural isolated areas	ongoing activity	IPM– RBM partner	-Completeness of data SMS collection -Timeliness of data SMS collection -Percent of abnormal situation controlled in district level -Number of children under five receiving ACTs -Number of person aged >5 receiving ACTs
Hospital Sentinel network composed by 18 CH	ongoing activity	IPM– RBM partner	-Completeness of data SMS collection -Timeliness of data SMS collection -Sentinel Site Indicators – Inpatients : Number of inpatients, Number of

			clinical inpatient cases of malaria, Number of inpatient deaths, Number of children <5 receiving a blood transfusion
Biological Monitoring	ongoing activity	IPM	-Percent of specimen analyzed by specimen received
Quality assurance of data collection	ongoing activity	IPM	-Percent of “functional” OPD sentinel -Percent of “functional” CHV - Percent of “functional” hospital sentinel -Number of Health Volunteers trained in case management with artemisinin- based combination therapy (ACT) with USG funds -Number of Health Volunteers trained in malaria laboratory diagnostics (RDTs) or microscopy with USG funds - Number of sentinel sites responsible trained in epidemiology surveillance and outbreak investigation
Publication and communication	ongoing activity	IPM	-Number of weekly report -Number of monthly report EPIVEILLE -Number of quarterly report -submitted paper
Recruiting human	Before	IPM	signed contract

resources	10/31/2015		
Carrying outbreak investigation	All year	IPM	Outbreak investigation performed
Attending international conferences or congress	All year	IPM	Booking to a congress
Purchasing of equipment	All year	IPM	Availability of surveillance tools, office equipment, ...
Purchasing of supplies	All year	IPM	Availability of field supplies, consumable office material, reagent in laboratory, ...