

**Prevention of Reintroduction of Malaria**  
**Sri Lanka**

**Guidelines for Outbreak Management  
& Response**



**Anti Malaria Campaign**  
**Ministry of Health, Sri Lanka**



**Updated 2020**

## 1. Introduction

Scope of the guideline:

This guideline has been developed for staff of the Anti Malaria Campaign and Regional Malaria offices on investigating and managing a malaria outbreak in the POR Phase. It describes the anticipated events and the appropriate responses with the following objectives:

- To rapidly curtail and eliminate the local transmission of malaria
- To minimize morbidity and mortality related to malaria

Details of actions to be taken when an individual malaria case is notified is described in the “**Guidelines on Malaria chemotherapy and Management of Patients with Malaria**”<sup>1</sup>(Gen. circular No: 02-112/2014 dated 18.08.2014) and “**Scope of Work to be performed when a Malaria patient is reported**”<sup>2</sup> (Dated 24.03.2016) and need to be adhered to accordingly.

### ***Rapid Response Team (RRT)***

One RRT will be established in AMC HQ and one team per RMO region (26 teams in total) to ensure effective preparedness and response to malaria outbreaks.

#### • **Core RRT in the AMC HQ**

1. Responsible Officer\* - Director /Anti Malaria Campaign (D/AMC)
2. Incident Commander – Deputy Director/CCP/MO
3. Surveillance and case management officer – CCP
4. Vector Control Officer – CCP/MO
5. Parasitological surveillance - Parasitologist
6. Entomological surveillance- Entomologist
7. Risk Communication Officer – MO
8. Information Officer – HI/MO
9. Support Staff – Logistics section chief, Administration section chief, Finance section chief

#### **Core RRT in a RMO region**

1. Regional responsible officer\*- Regional Director of Health Services (RDHS)
2. Regional Team leader- Regional Malaria Officer (RMO)
3. Regional intersectoral coordinator – PHI/PHFO

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<sup>1</sup> <http://www.malariacampaign.gov.lk/index.php/en/resources/circulars>

<sup>2</sup> [http://www.malariacampaign.gov.lk/images/Publication%20Repository/SOP/SOW\\_AMC\\_Book\\_01.pdf](http://www.malariacampaign.gov.lk/images/Publication%20Repository/SOP/SOW_AMC_Book_01.pdf)

4. Regional Parasitological Laboratory Surveillance Officer – QA/QC qualified PHLT Regional Lab
5. Regional Parasitological Field Surveillance Officer – PHFO/PHI
6. Regional Entomological Surveillance Officer – HEO
7. Information management officer
8. Risk Communication Officer
9. Supportive Staff – SMO, DO, Driver, Etc...
10. Extended team members:
  - a. Consultant Physician responsible for malaria patient management
  - b. Regional CCP
  - c. Regional Epidemiologist
  - d. Respective Medical Officer of Health
  - e. Respective Range PHI

\*Responsible officer should appoint his team members in the RRT. In the preparedness period, members of the RRT should be reviewed annually or as necessary. There should be members identified as 1<sup>st</sup> line officer and a 2<sup>nd</sup> line officer in an instant when the 1<sup>st</sup> line officer become unavailable. The responsible officer may re-appoint chief members of the RRT according to the need even when the outbreak response is ongoing. Each member of the RRT should identify members for their responsible section.

Terms of Reference of each officer is attached in Annex 2.

For the districts without RMOs / fully functioning RMO office, the AMC HQ or the adjacent RMO region will be responsible for responding to outbreaks/emergencies as mentioned below.

	<b>Districts without RMO/ fully functioning RMO office</b>	<b>Responsible for covering up</b>
1.	Gampaha	AMC Head quarters
2.	Colombo	AMC Head quarters
3.	Kalutara	AMC Head quarters
4.	Galle	AMC Head quarters
5.	Matara	Hambanthota
6.	Nuwara Eliya	Kandy

- **Emergency outbreak center**

An emergency outbreak center equipped with necessary resources and space for the RRT should be identified at both the AMC HQ and the regional office. (EOCs set up in the RDHS offices by the Disaster Preparedness Response Unit can be utilized for this purpose). A dashboard with daily updated information should be displayed at each EOC for planning and communication with the RRT.

## **2. Malaria case management**

Please refer to the **Guidelines on Malaria Chemotherapy and Management of Patients with Malaria** (Gen. circular No: 02-112/2014 dated 18.08.2014) and **“Scope of Work to be performed when a Malaria patient is reported”** (Dated 24.03.2016)

## **3. Malaria outbreak response**

### **3.1 Definition of a Malaria Outbreak in the Prevention of Reintroduction Phase**

One locally acquired case of malaria (of any species) will be considered as an “outbreak”. A suspected locally acquired malaria case will be considered as a “suspected outbreak”.

### **3.2 “Suspected Locally Acquired Malaria”**

A malaria case with evidence suggestive that the infection was acquired as a result of local mosquito borne transmission is to be considered as a case of “Suspected Locally Acquired Malaria”.

A case of “Locally Acquired Malaria” should be suspected in the presence of at least one of the following:

1. If the patient has not travelled outside Sri Lanka during the preceding 12-month period  
or
2. If there is evidence of contact occurred during the previous 1-month period with a confirmed imported malaria case reported during the last 3 months<sup>3</sup> or
3. If parasitological screening of contacts is suggestive of local transmission of malaria or
4. If entomological investigations indicate the presence of vector mosquitoes infected with malaria parasites<sup>4</sup> or

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<sup>3</sup> If the patient has stayed at least one night during the previous 1 month period in a locality of an imported case reported during the previous 3 months period

<sup>4</sup> If the case based entomological surveillance findings are suggestive of vector mosquitoes infected with malaria parasites by microscopy or PCR

5. If the patient has no past medical history of malaria during the preceding 3 years or

6. If there is no evidence of induced malaria -

- No history of transfusion of blood & blood products during the preceding one year
- In the case of a newborn, no evidence of present or past malaria infection in the mother which could have been transmitted to the child.

**A rapid response should be mounted as soon as a “Locally Acquired Malaria” case is suspected.**

### **3.3 Confirmation of an “Malaria outbreak”**

A definitive diagnosis of whether a “**Suspected Locally Acquired Malaria**” case is due to local transmission or not should be made after careful analysis of evidence by the Case Review Committee within 72 hours of notification.

### **3.4 Major activities in a suspected locally acquired Malaria case”**

1. Case investigation to confirm the outbreak
2. Fever & Parasitological surveillance & response
3. Entomological surveillance & Vector Control
4. Multi-sectoral involvement & Community Mobilization
5. Monitoring, Evaluation & Documentation & Dissemination
6. Termination of the outbreak response
7. Preparation of future plans and follow-up

#### **3.4.1 Case Investigation & notification**

- ◆ **Case Investigation:** should be carried out as per the “**Scope of Work to be performed when a Malaria patient is reported**” (Link) and should be initiated within 24 hours of notification. This should be done by RMO or by the surveillance officer (supported by the district coordinators) in non-RMO districts. All patients with positive RDT or positive microscopy should be considered as a malaria case for public health purposes. A case of “Locally Acquired Malaria” should be suspected if any one of the conditions in section 3.2 is satisfied.

**Notification:** The RMO should immediately notify the following personnel by telephone if a locally acquired case is suspected.

- I. D/AMC: D/AMC should notify to DDG(PHS)1, DGHS & Chief Epidemiologist
- II. Respective RDHS
- III. Respective Regional Epidemiologist
- IV. Respective Medical Officer of Health & range PHI
- V. General Practitioners and the Health staff of hospitals in the vicinity

- **Define area/extent of outbreak**

Define and map the extent of geographical area - where surveillance and control measures should be undertaken, based on the locations of individual case/ cases, receptivity and vulnerability of the area. The area may be approximately 1 km radius or more.

RRT should be mobilized immediately.

Conduct a briefing meeting to decide on the objectives and action plan to respond to the outbreak. A briefing meeting on the expected daily tasks at the beginning of a day and a debriefing meeting at the end of the day summarizing activities should be conducted **daily** at both the regional EOC and AMC HQ EOC.

### 3.4.2 Fever & Parasitological surveillance & Management

1. This should be initiated within 24 hrs of notification and conducted as per **Scope of Work to be performed when a Malaria patient is reported"**

*In addition to the above,*

- Identify an existing health care institution in the locality or establish a temporary health post to facilitate active case finding.
- Initiate active case finding at health care institutions and via house to house fever surveys starting with high risk areas (i.e. areas closest to known cases, areas where the standard of housing is poor affording low levels of protection from mosquito bites at night, etc). (Refer Figure 1)
- **All fever cases and /or all susceptible persons should be suspected and tested for malaria by microscopy and /or RDT.**
- If microscopy and RDT are negative and the patient continues to be febrile, repeat the tests **daily for at least three days.**
- All patients from the risk area attending other regular clinics should routinely be asked whether they have had a fever in the last 72 hours.
- Enhanced surveillance should be implemented in all households in the risk area on a regular basis (1-2 weekly) until it is decided that it is no longer necessary.
- All patients with positive RDT or positive microscopy should be considered as malaria cases. For initiation of anti malaria treatment, the diagnosis should be confirmed by microscopy.

2. **Genotyping /Sequencing-** Blood should be collected on Whatman cards from every individual with a confirmed diagnosis of malaria prior to the onset of treatment. The filter paper should be labeled with the appropriate sample identification number and each card should have only the blood of one patient. The samples should be allowed to dry for one hour at room temperature. Place the cards in a multi barrier pouch along with desiccant and seal.

### 3.4.3 Entomological surveillance & vector Control

- I. Entomological surveillance should be initiated within 48 hrs and conducted as per the **“Scope of Work to be performed when a Malaria patient is reported”** (Dated 24.03.2016)
- II. *Attention should be focused on the following.*
  - Entomological surveillance and vector control activities should be carried out as a combined activity by the RRT to facilitate speedy decisions and actions.
  - Appropriate vector management also should be carried out based on entomological surveillance findings and in consultation with AMC RRT (as per **“Scope of Work to be performed when a Malaria patient is reported”** (Dated 24.03.2016))

### 3.4.4 Multisectoral involvement & community mobilization

- Possible outbreak conditions should be communicated to the Divisional Secretariat, *Grama Niladharis*, Hospitals in the vicinity, Police & the Tri-forces (SOS) and other governmental and non-governmental organizations.
- If assistance is required from non-health sectors, then it should be clearly communicated by the RMO with the approval of RDHS. Their help should be sought in the following instances:
  - If human resources are inadequate to initiate an effective outbreak response
  - For mobilizing resources
  - For community mobilization for fever screening
  - For conducting community awareness programmes on fever screening and malaria prevention
  - For integrated vector management interventions
- Community awareness campaign should be designed and implemented as early as possible. It is recommended to keep sufficient amount of relevant IEC materials to be used in a possible outbreak situation. Repeated communication cycles need to be

implemented to reiterate the messages and to sustain health promotive behaviors in the community.

#### **3.4.5 Monitoring, Evaluation, Documentation & Dissemination**

Monitoring, evaluation and documentation should be done by the relevant RRT members. Information officer of the RRTs should be responsible in compiling this data.

Dissemination of information to the relevant authorities using proper channels of communications should be done by the Responsible Officers of regional and AMC HQ teams.

The following activities should be conducted and documented regularly and accurately.

- I. Daily review of cases and vector breeding sites.
- II. Daily review of progress of outbreak control measures & M&E of interventions during the outbreak.
- III. All information should be shared with RMO / Outbreak Coordinator in the AMC HQ on a daily basis in designed formats.
- IV. Maintain communication with the relevant authorities.
- V. Prepare reports for distribution.
- VI. Communicate with the media and the community as appropriate.

#### **3.4.6 Termination of outbreak response**

- I. When no new malaria cases are reported for a period of 3 consecutive months, the RRTs of the regional and AMC HQ, together with the case review committee, should analyze the evidence and decide whether to terminate the particular outbreak response.
- II. The termination of outbreak response should be declared by the DGHS or DDG/PHS I based on the recommendations of the AMC & CRC.

#### **3.4.7 Future monitoring**

With the declaration of the termination of the outbreak response, the area will be considered as an “**active focus of Malaria**” and the following activities have to be conducted.

- I. Enhanced parasitological surveillance activities should continue for a minimum of 3 years, or as decided by the RRT and CRC, depending on the species of the parasite, vector bionomics, feasibility and cost effectiveness.



- II. Enhanced entomological surveillance of the focus should continue for at least 1 year or as decided by the RRT and CRC, depending on the species of the parasite, vector bionomics, feasibility and cost effectiveness.
- III. Outbreak management & response guide should be updated and upgraded based on the recommendations made.

### **Routine prevention activities that would support risk reduction in a malaria outbreak:**

- Routine surveillance activities: Parasitological, entomological and case surveillance should happen on a regular basis.
- Risk mapping of highly vulnerable and highly receptive areas should happen based on the surveillance activities.
- Vector control measures should be done accordingly.
- Early diagnosis of cases and prompt management
- Therapeutic efficacy monitoring of anti-malaria treatment.
- Chemoprophylaxis for travelers to endemic countries.
- Advocacy to get financial, political commitment from leadership for malaria prevention activities.
- Developing inter-sectoral partnerships for malaria prevention activities.
- Preparation of IEC materials.
- Behavioral communication for community mobilization.

## **4. Terms of reference for the RRT in Malaria outbreak management & Response**

1. Prepare for response to outbreaks/suspected outbreaks.
2. Review the evidence and confirm the malaria outbreak in consultation with the CRC.
3. Allocate responsibilities to investigate and control the outbreak and to eliminate local transmission.
4. Manage malaria cases, active screening of contacts for malaria parasites
5. Parasitological and entomological investigations & necessary actions to prevent further transmission.
6. Provide accurate and responsible information for professionals, the media and the public.
7. Document the investigation and control measures taken.
8. Provide recommendations for follow-up actions and future actions.

9. Develop systems and procedures to prevent future malaria outbreaks.

Specific team members and their TORs are annexed

## 5. Planning and preparing for a “Malaria Outbreak Management & Response”

Step	Component	Individual or group responsible
Preparation	<ul style="list-style-type: none"> <li>• Development of Outbreak response protocols/ guidelines.</li> <li>• Identification of outbreak management team.               <ul style="list-style-type: none"> <li>- Identify and communicate in advance of any members needed from other districts or RDHS office.</li> </ul> </li> <li>• Identify an Emergency Operation Centre with the necessary logistics.</li> <li>• Assembling materials necessary for outbreak investigation and response.</li> <li>• Vector control items and equipment including second line insecticides (maintain a buffer stock)</li> <li>• Regularly review routine surveillance activities to monitor vulnerability and receptivity:               <ul style="list-style-type: none"> <li>- Parasitological surveillance activities</li> <li>- Entomological surveillance activities</li> <li>- Susceptibility monitoring</li> <li>- Prepare risk maps with the surveillance data</li> </ul> </li> <li>• Ensure comprehensive case surveillance at regional and central level.</li> <li>• Establish good communication pathways with the government hospital/ infectious control units and the private sector healthcare providers and laboratories.</li> <li>• Training activities:               <ul style="list-style-type: none"> <li>- Vector control training.</li> <li>- Mock drills for outbreak response – desk top drills and simulation drills.</li> </ul> </li> </ul>	<p>Expert group D/ Anti Malaria Campaign</p> <p>AMC HQ and regional RRT</p> <p>RRT - Vector control officer</p> <p>RMO and D/AMC</p> <p>Case surveillance officer</p> <p>RMO</p> <p>Vector control officer AMC HQ and RMO</p>
Advocacy and communication	<ul style="list-style-type: none"> <li>• Develop a communication plan for:               <ul style="list-style-type: none"> <li>- To inform gov and private health sector on the required response.</li> <li>- To mobilize the community for surveillance activities</li> <li>- To communicate with the media</li> </ul> </li> <li>• Preparation of key messages &amp; IEC materials.</li> <li>• Keep a minimum stock of IEC materials in</li> </ul>	<p>RMO Surveillance officer -AMC</p>

	<p>required languages.</p> <ul style="list-style-type: none"> <li>Keeping the capacities updated of communication officers.</li> </ul>	
Identification of an outbreak	<ul style="list-style-type: none"> <li>On suspicion of an outbreak (criteria given in section...) activate RRT.</li> <li>Immediate reporting of malaria outbreak to the relevant authorities including DGHS &amp; DDG/PHS I</li> </ul>	D/AMC
Outbreak response	<ul style="list-style-type: none"> <li>Activate outbreak response as given in Section...</li> </ul>	
Documentation and reporting	<ul style="list-style-type: none"> <li>Documentation of the outbreak.</li> <li>Timely and accurate reporting of all outbreaks via outbreak surveillance system. Initial reports within two weeks of recognition, updated weekly, final record within one week of ending of outbreak</li> </ul>	D/AMC AMC team RMO PHI

### 5.1 Assembling materials required for an investigation

Preparation should cover a single outbreak involving a population of 500. However, depending on the population density, vulnerability and receptivity of the area, the expected size of the population to be covered would differ.

A list of items & materials that may be required at short notice to respond to a malaria outbreak should be **identified** and organized beforehand. These items should be **replenished with new stocks whenever required**. Materials may include:

	<i>Item</i>	<i>Amount per "Malaria Outbreak"</i>
1.	Case investigation forms	500
2.	Hand-held GPS	2
3.	List of telephone numbers of potentially useful agencies and individuals	
4.	Guidelines and Scope of work	50
5.	Information, Education & Communication Materials – posters & leaflets	500
6.	Equipment, lab items (slides & reagents)	500
7.	RDT kits	500
8.	Forms for parasite screening	500
9.	Field equipment for entomological surveillance	
10.	Insecticides	To cover 100-150 houses /1km radius houses
11.	LLIN	500
12.	Fish supply	
13.	Anti-malarial drugs 1 <sup>st</sup> line – Chloroquine - Oral ACT - IV Artemisinin	

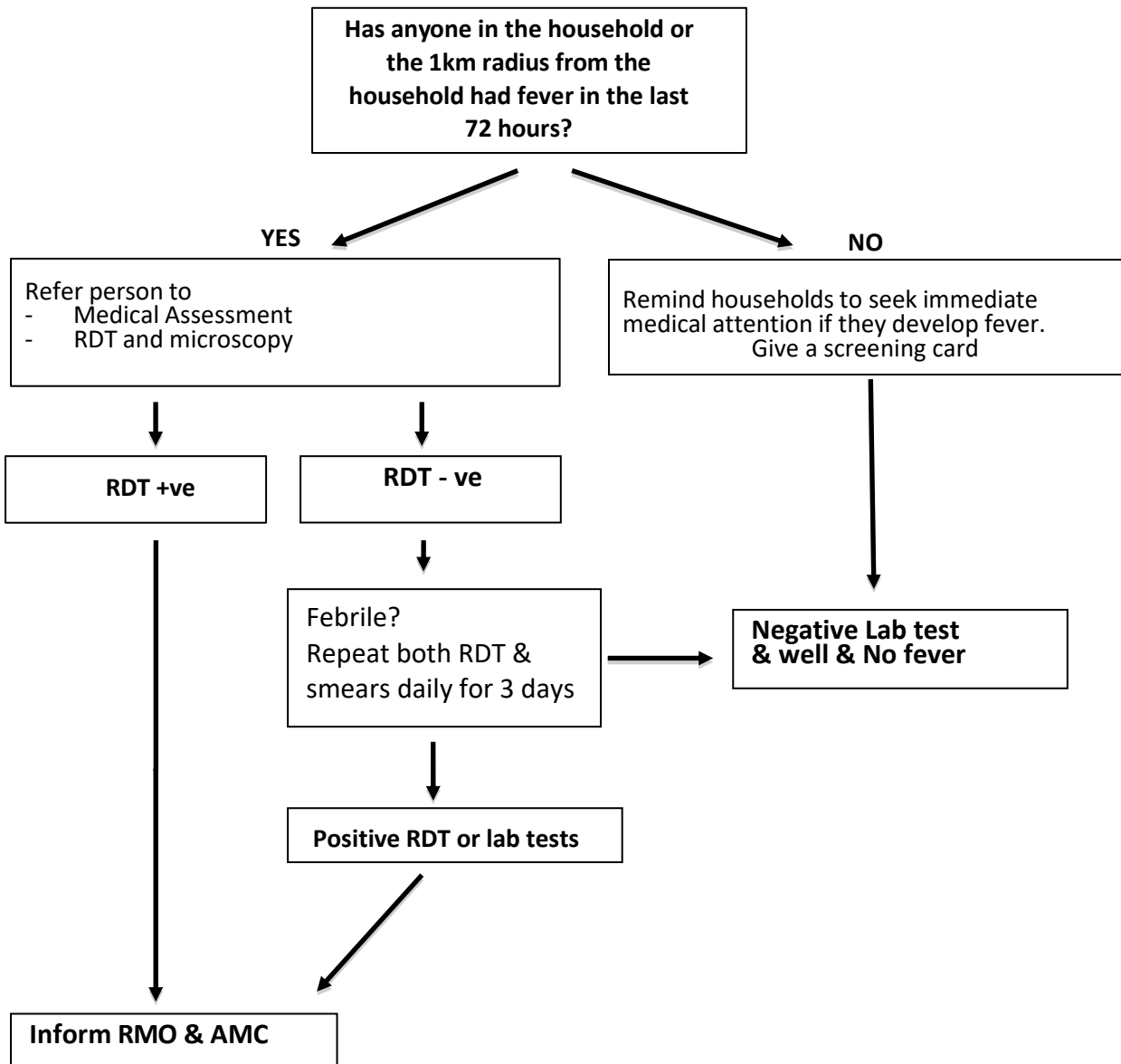
	- Primaquine 2 <sup>nd</sup> line – DHA PPQ	At least one dose for the province
14.	EOC – Laptops - Dashboard - Video conferencing facility	Minimum 2 1 1

**Health Education -Key messages:**

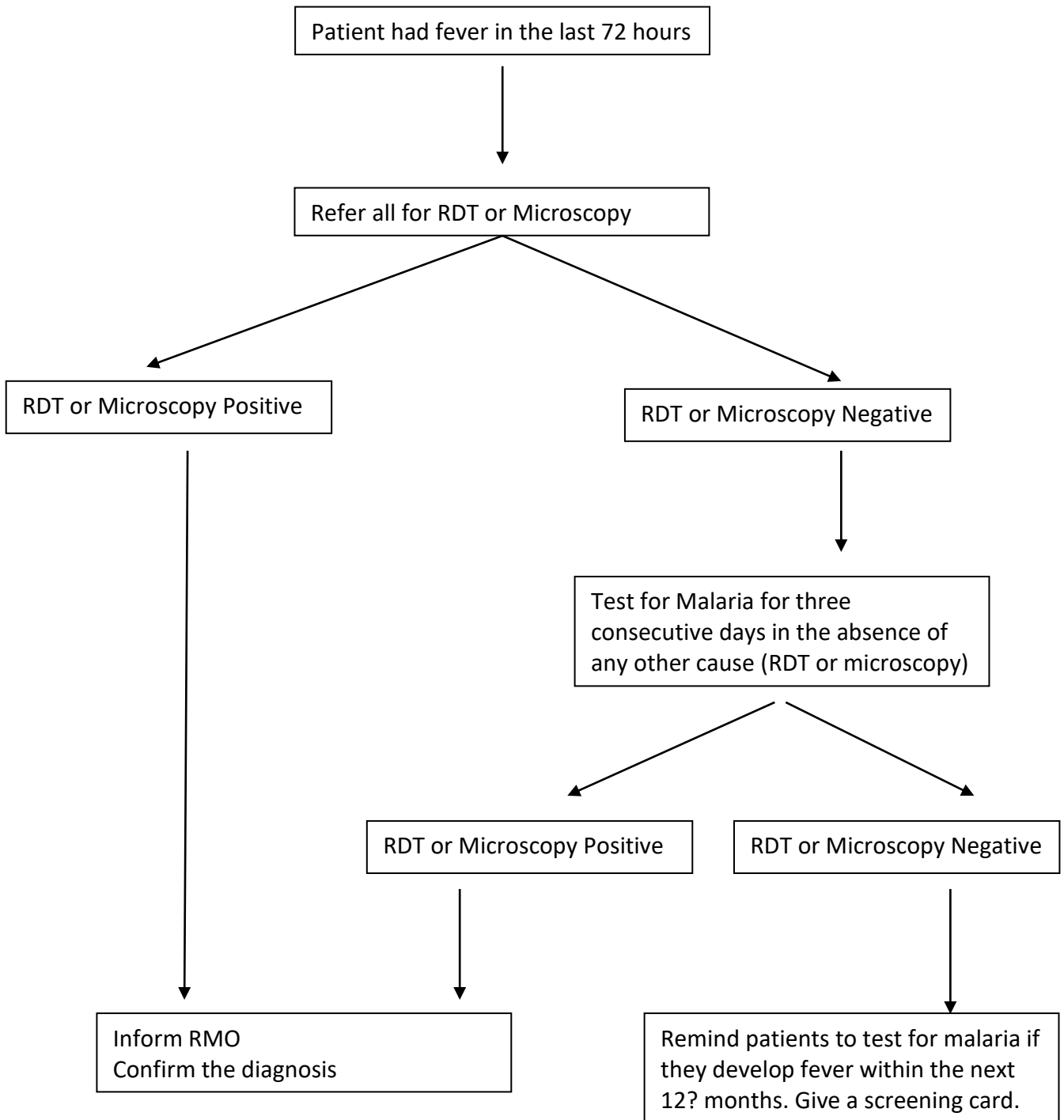
1. Prepared with necessary IEC materials in local languages.
2. On case surveillance for Health staff
  - a. **Malaria outbreak !!!; Check all fevers for malaria**
  - b. **Blood for MP and RDT for Malaria is available in ..... (your hospital)**
  - c. **Any fever or ill health? Check for Malaria!**
3. On case surveillance for General Public:
  - a. Importance of people presenting to a health clinic if experiencing symptoms such as fever, headache.  
**“If you have fever or malaise.....check for Malaria”**  
**“Even if the test is negative, repeat the test for 3 consecutive days to rule out malaria”**
4. Prevent people from getting bitten by mosquitoes through adopting protective measures. These include:
  - a. **Avoid mosquito bites**
    - Use mosquito repellent particularly between dusk and dawn
    - Sleep under LLIN or bed net
    - Wear long sleeved shirts and pants
    - Avoid being outdoors between dusk and dawn
    - Use repellent devices
5. Larval source reduction:
  - Fish introduction

**Figure 1: Flow chart of Active Case Detection**

**(House to house fever survey within 1km radius from the index case house)**



**Figure 2: Flow chart for Passive Case Detection (Fever Surveillance in the government and private sector institutions)**



**Notes:**