Malaria Surveillance in Elimination Settings
An operational manual
2018
Version 1.0

National Malaria Control Programme
Department of Public Health
Ministry of Health and Sports
The Republic of the Union of Myanmar
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Foreword

It is my special honour to provide foreword for the ‘Malaria Surveillance in Elimination Settings – An operational manual’ which has been drafted and finalized under the leadership of National Malaria Control Programme (NMCP) with the technical support and coordination by WHO. The development of this Manual is extremely timely as the country is committed towards malaria elimination by 2030. Development of such kind of Manual is crucial for the programme as well as the partners working in the country. This will help to operationalize the elimination specific activities at the ground and will alleviate confusion among the implementers.

I understand that the document has clearly described how the activities will be carried out, who will be responsible, how, when and whom to report. This document will be used as a training guide too for the implementers. I hope national malaria control programme staff and all the partners’ staff will use it to implement the elimination specific activities at the elimination targeted townships.

I would like to thank the Central VBDC staff for their hard works who were involved in drafting and finalizing the document. I would also want to provide my special thanks to WHO for their continued technical assistance and coordination efforts to produce this ‘Operational Manual’.

I hope it will be useful for the VBDC programmes, partners and stakeholders who are involved in malaria elimination in the country.

Lastly, I would like to extend my best wishes to the programme for their efforts to implement the programme activities as per the set national targets of malaria elimination by 2030.

Dr Thar Tun Kyaw
Director General
Department of Public Health
Ministry of Health and Sports
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>BHS</td>
<td>Basic Health Staff</td>
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<tr>
<td>EPI Map</td>
<td>Map used for Expanded Programme on Immunization</td>
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<tr>
<td>IP</td>
<td>Implementing Partners of NMCP</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>P.f malaria</td>
<td>Plasmodium falciparum malaria</td>
</tr>
<tr>
<td>RO</td>
<td>State/Regional Officer of VBDC Team</td>
</tr>
<tr>
<td>TL</td>
<td>Team Leader (VBDC)</td>
</tr>
<tr>
<td>TMO</td>
<td>Township Medical Officer</td>
</tr>
<tr>
<td>TPHO</td>
<td>Township Public Health Officer</td>
</tr>
<tr>
<td>VHV</td>
<td>Village Health Volunteer</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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1. Introduction

Over the recent years Myanmar has made significant progress in reducing malaria morbidity and mortality. Since 2012, malaria cases have been reduced by 72%, from approximately 480,000 to 110,146 in 2016. In that same four-year period, the number of malaria deaths fell from 403 to 21 (95% reduction). The goal of the National Strategic Plan 2010-2016 to reduce malaria morbidity and mortality by at least 60% by 2016 relative to 2007 figures has been achieved. Malaria related MDG target has been achieved by the year 2004. The achievement of the programme as well as the threat posed by the prevalence of artemisinin resistance prompted the country to develop “National Plan for Malaria Elimination in Myanmar 2016-2030”. In this National Elimination Plan, ‘surveillance’ has been identified as one of the important core interventions.

Surveillance is the continuous and systematic collection, analysis and interpretation of disease-specific data, and use of that data in the planning, implementation and evaluation of public health practices. In elimination settings, malaria surveillance is designed for the identification, investigation and elimination of continuing transmission, the prevention and cure of infections, and the final substantiation of claimed elimination1.

A malaria surveillance in elimination settings comprises of the tools, procedures, people and structures that generate information on different elimination specific interventions. The information generated is then used for planning, monitoring and evaluating malaria elimination programmes. An effective surveillance system helps programme managers to:

- Identify areas and population at risk and thereby help to mobilize required resources for delivery of necessary interventions;
- Identify the trends of indigenous malaria transmission, trends of malaria foci, effective investigation and response;
- Regularly assess the impact of intervention and decide on where adjustment or combination of interventions are required;
- Provide relevant information to support the process of certification of

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1 Malaria surveillance, monitoring and evaluation – an operational manual (draft), March 2017, World Health Organization
elimination; and monitor whether the re-establishment of transmission has occurred and if so, guide the response.

This operational manual has clearly described how the priority activities in elimination settings will be carried out, who will be responsible, how, when and whom to report. This will help to establish malaria surveillance in elimination phase and thereby will help to follow recommended practices for recording, reporting, analyzing and transforming data into information for appropriate actions at local level in an appropriate time.

Intended user of this operational manual are the Central and State/Region Staff for training and township level staff and beyond for the implementation of the surveillance activities.

2. National Strategic Plan for intensifying malaria control and accelerating progress towards malaria elimination (2016-2020)

Vision

- A Malaria Free Myanmar by 2030

Mission

The National Malaria Control Programme (NMCP) of the Ministry of Health and Sports of the government of Myanmar aims to achieve malaria elimination (‘zero indigenous transmission’ and ‘zero malaria deaths’) by ensuring equitable and universal access to effective preventive and curative services to all ‘at risk populations’ in coordination with the efforts of all communities, national and international non-governmental organizations, private sector stakeholders, United Nations agencies and financial partners. Achieving the vision of ‘A Malaria Free Myanmar’ will contribute significantly to poverty alleviation as malaria is most prevalent in the poorest segment of the population: those living or spending time in remote forested areas including mobile populations and migrants.

Goals

- This is a five-year strategy to reduce malaria morbidity and mortality by 85% and 75% respectively by 2020 relative to 2015 baseline figures. In
States/Regions where malaria transmission has been interrupted, the goal is to maintain malaria-free status and prevent reestablishment of local transmission.

- Achieving these goals will put Myanmar on the path to eliminate *Plasmodium falciparum* malaria by 2025 (in line with the urgent action required against multidrug resistance) and all malaria from Myanmar by 2030.

**Principles**

- Efforts towards elimination are accelerated through combinations of interventions adapted to Myanmar conditions and responding to local needs.
- Building country ownership and leadership, and mobilizing partnership action with the participation of communities, the Defence Services, other implementing partners, technical agencies and the private sector, are essential to accelerate progress through a multisectoral approach.
- Adequate malaria case-based surveillance and investigation is required to enable elimination.
- Improved entomological surveillance and investigation is required to support evidence based vector control operations and accelerate elimination.
- Information systems that facilitate malaria stratification (to support planning, monitor progress and evaluate anti-malaria interventions) are required to optimize implementation of malaria interventions.
- Equity in access to services irrespective of gender, reach and ethnicity is essential, especially for the most vulnerable and hard-to-reach populations.
- Innovation in tools and implementation approaches will help to maximize progress.

**Objectives**

1. To reduce reported incidence of malaria to less than 1 case per 1,000 population in all States/Regions by 2020.
2. To interrupt transmission of falciparum malaria in at least 5 States/Regions by 2020 (Target States/Regions: Bago, Magway, Yangon, Mon, Mandalay).

3. To prevent the emergence of multi-ACT resistant P. falciparum in Myanmar.

4. To prevent the re-establishment of malaria in areas where transmission has been interrupted.

**Priorities**

1. Reduce malaria burden in the most endemic areas.

2. Eliminate falciparum malaria in areas of multidrug resistance, including artemisinin resistance.

3. Strengthen the existing surveillance system and vigilance including the capacity of health care providers and programme staff at all levels for States and Regions entering the elimination and prevention of re-establishment phases.

**Key Interventions**

1. Case detection and effective management.

2. Malaria prevention.

3. Malaria case and entomological surveillance.

**Supporting Elements**

1. Expanding research for innovation and improved delivery of services
   
   - Develop novel tools and approaches to respond to existing and new challenges, such as drug resistance, insecticide resistance, outdoor biting and varying patterns of population mobility.
   
   - Conduct operational research to optimize impact and cost-effectiveness of existing and new tools, interventions and strategies.
   
   - Take action to facilitate rapid uptake of new tools, interventions and strategies.

2. Strengthening the enabling environment
• Maintain strong political commitment and ensure adequate financial support for elimination.

• Support capacity development appropriate to the implementing strategy.

• Strengthen health systems to facilitate elimination.

• Provide comprehensive services to meet the needs of all at risk populations, including mobile populations and migrants

• Foster inter-sectoral collaboration, community involvement and collective action.


The National Plan for Malaria Elimination (NPME) 2016-2030 has been developed in line with the WHO Global Technical Strategy (GTS) for Malaria 2016-2030, the Strategy for Malaria Elimination in the GMS 2015-2030 and the National Strategic Plan (NSP) for Intensifying Malaria Control and Accelerating Progress towards Malaria Elimination 2016-2020. The WHO Malaria Policy and Advisory Committee recommended that the elimination of *P. falciparum* in the GMS by 2030 is technically, operationally and financially feasible and at the 9th East Asia Summit in November 2014 all Asia Pacific leaders committed to a region free of malaria by 2030.

The ultimate goal of the NPME in Myanmar 2016-2030 is to interrupt transmission of and eliminate indigenous malaria throughout the entire country by 2030; and maintain malaria-free status in areas where malaria transmission has been interrupted and prevent re-establishment of local transmission.

4. Elimination specific Surveillance interventions

The elimination specific surveillance interventions proposed are as follows:

4.1 Day 3 *P.falciparum* positive case management

4.2 Directly Observed Treatment (DOT) for *P. falciparum* and *P. vivax* malaria cases

4.3 Case Notification, Investigation, Classification and Response
4.4 Focus Investigation, Classification and Response

4.5 Malaria Death Investigation

4.6 Malaria Post

4.7 Malaria Mobile clinics for intensified Malaria Surveillance

4.8 Selective Indoor Residual Spray

4.9 Migrant Mapping

To operationalize the activities mentioned above it is proposed to develop an operational manual for malaria surveillance in elimination settings. The contents of the manual are based on the documents mentioned in the references (foot note).

4.1 Day 3 *P. falciparum* positive case management

| **Background:** | Day 3 *P. falciparum* positive case management also called Day 3 surveillance is an elimination specific activity proposed to address and respond the Artemisinin resistance. Day 3 positivity is proxy marker to suspect artemisinin resistance and the programme can take responses early to prevent spread of resistance. |
| **Rationale:** | Day 3 surveillance is to identify areas with delayed parasite clearance time, on top of the already existing in vivo Therapeutic Efficacy Study (TES) sites, and to detect as early as possible new areas where emerging resistance to artemisinin might be occurring. This is a simpler, case based methodology for early and quick response (rather than TES) suggested to be applied in more locations to measure the proportion of patients still positive on Day 3. It will help to suspect whether a new focus of artemisinin tolerance/ resistance has arisen or not. |

If Day-3 positive *P. falciparum* and mixed cases are found, this could be suspected as artemisinin resistant malaria case. This index case might have the potential to spread artemisinin resistant *P. falciparum* to surrounding areas. It is crucial to deploy all the necessary measures to contain/eliminate the suspected resistant parasites at the source of infection.
### Objective:
To identify suspected artemisinin resistance as early as possible and to follow up in order to contain and prevent the further spread of artemisinin resistance in other areas of Myanmar.

### Where to conduct?
- In elimination (2-3 cases/week per sub-centre) and prevention of re-establishment areas where the activity is manageable.
- Villages having trained BHS or VHVs who can do Day 3 follow up.
- Existence of mechanism(s) to transport blood slides to the nearest laboratory facilities with quality assured microscopy.
- Trained human resources are in place to conduct the Day 3 case management.

### Who will conduct?
- BHS (+VHV) from sub-centres should do the follow up on day 3 collection of blood and prepare slides.
- Qualified microscopists should examine the blood smears.
- Response team should compose of BHS from RHC/Sub-centre and VBDC staff from township VBDC team.
### How to conduct?

On Day 0 and Day 3 BHS or VHV should collect blood and prepare the blood smear and fill the relevant forms (form # 1).

- Blood slides should be transported to the nearest laboratory facility with quality assured microscopy along with the form (form # 1) and maintain one copy for reference with BHS/VHVs. Forms should be kept with them for future follow up and records.
- The copy of the result should be collected from the microscopist when the given laboratory facility is visited at a later date.
- The microscopist should register the day 3 results in existing lab register format and inform day 3 positive cases to the concerned BHS/VHV (who collected the blood) and RHC/TMO/focal person as early as possible. The register book should be kept as the separate register. NMCP should design and supply those books.
- Results of all Day 3 positive cases must be informed immediately to Regional Officer or Team Leader or responsible person of State/Regional VBDC by TMO, via telephone and/or email, for the provision of comprehensive package of containment measures in the affected area.
- A team (minimum of two/three persons; VBDC staff or BHS or VBDC + BHS depending upon the availability of human resources) should be sent to the village having day 3 positive case(s) to apply comprehensive package of containment interventions.
- Following activities should be undertaken by the team:
  
  \( a) \) *Enhanced surveillance around the Day 3 positive index case(s):*

  Forty households surrounding the Day 3 index positive case should be selected. The team should work closely with village leaders and VHVs to assist in selection of 40 households within 1 mile circle (especially where the households are discrete), and all the household members with fever or
### How to conduct?

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>history of fever in the last 1 month, repeated attacks of malaria, pregnant mothers and under 5 children should be screened and tested by RDT using the standard form (form #2). All positive cases should be treated according to national treatment guideline.</td>
<td></td>
</tr>
<tr>
<td>b) <strong>IEC/BCC interventions:</strong> Distribution of IEC/BCC materials and house-to-house interpersonal communication on malaria symptoms, diagnosis, treatment, prevention practices, and artemisinin resistance should be done. Wherever possible, the team should ensure delivery of other BCC services like health talks, video show, short plays, etc. In addition, key message on importance of drug compliance in malaria treatment and other preventive measures should be disseminated.</td>
<td></td>
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<tr>
<td>c) <strong>LLIN distribution:</strong> LLIN should be distributed to all positive cases. Previous distribution history may not be considered. If there is local transmission, and there is gap in coverage then LLINs should be distributed to fill up the gap of that affected area.</td>
<td></td>
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<tr>
<td>d) <strong>Entomological investigations:</strong> Entomological investigations around the Day 3 positive index case should be carried out (if necessary) to -</td>
<td></td>
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<tr>
<td>♦ Identify and map the presence of anopheline breeding places</td>
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<tr>
<td>♦ Apply vector control measures including LLINs, IRS, larviciding, personal protection etc (if needed).</td>
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<tr>
<td>♦ If possible, monitor indoor and outdoor resting habits of <em>Anopheles</em> mosquitoes</td>
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<tr>
<td>e) If possible, the team should take GPS coordinates of the index case and all other positive cases.</td>
<td></td>
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<tr>
<td>f) <strong>Follow-up treatment:</strong> Day 3 positive cases should be followed up by BHS/VHV until 28 days. Day 3 positivity does not necessarily mean that the drug is already failed and needs to provide additional</td>
<td></td>
</tr>
</tbody>
</table>
**How to conduct?**

Drug or to change the drug, because partner drug (e.g. Lumefantrine and Piperaquine ;) is still sensitive. For this reason, no second line treatment is given to Day-3 positive cases. But, if the patient is febrile, a blood smear should be taken to recheck for parasitaemia especially parasite density.

If microscopy result shows high parasite density and the patient presents with severe symptoms, he/she should be referred and hospitalized for management of severe/complicated malaria.

Training of the team, BHS, and VHV should be provided on day 3 surveillance and response.

**How to report?**

- Microscopists must inform the Day 3 positive case to concerned RHC/TMO/focal person as early as possible, and one copy of form 1 should be submitted to TMO. BHS should keep the copy after the Day 3 result is filled by the microscopist. Action to prevent the document loss between BHS and microscopist should be considered.

- TMO must inform to State/Regional malaria team by phone/fax/email as soon as the Day 3 positive case was verified by microscopist and reported to him/her.

- Response team should report to township and State/Region VBDC staff on day 3 surveillance and response within 1 week.

- Team leader of the response team should report the activity on monthly report using the Day-3 surveillance and response report form (form #2).

**Format to be used:**

1) Day 3 follow up and blood examination form *(Form -1)*

2) Day 3 positive cases surveillance and response form, which needs to be filled up only if there is Day 3 Positive case *(Form -2)*
### Supervision:

- Case detection and reporting for Day 3 surveillance at community level is supervised by Health Assistant of respective RHC under the guidance of TMO.
- Activity of Response Team is to be supervised by respective State/Regional VBDC Team Leader and RO.
- Supervision and monitoring teams from township and State/Regional VBDC should check the availability, completeness and correctness of the forms with the concerned persons (response team/BHS/VHV) and triangulate the Day 3 surveillance reports with carbonless patient registers which should integrate with routine QA/QC microscopy system.
- In case of deficiencies, on-site mentoring should be provided.
# Day 3 follow up and blood examination form

<table>
<thead>
<tr>
<th>Township:</th>
<th>Sub-centre:</th>
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<tbody>
<tr>
<td>State/Region:</td>
<td></td>
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<tr>
<td>RHC:</td>
<td></td>
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<tr>
<td>Name of the patient:</td>
<td></td>
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<tr>
<td>Age in years:</td>
<td></td>
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<tr>
<td>Father's name:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Contact number:</td>
<td></td>
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**Day 0**

<table>
<thead>
<tr>
<th>RDT result (species)</th>
<th>Date of Day 0 microscopy report</th>
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<tbody>
<tr>
<td>Pf</td>
<td></td>
</tr>
<tr>
<td>Mix</td>
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<table>
<thead>
<tr>
<th>Date of Day 0 blood smear taken</th>
<th>P. falciparum (Pf)</th>
<th>Other species (Pf+g)</th>
<th>Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pf</td>
<td>g</td>
<td>Mix</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 3 follow up and blood examination form</th>
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<tbody>
<tr>
<td>Date of Day 3 microscopy results:</td>
</tr>
<tr>
<td>Date of reporting:</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Pf</th>
<th>Pf+g</th>
<th>Mix</th>
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<tbody>
<tr>
<td>Mix</td>
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</table>

**Signature**

Name and contact number of microscopist: BHS/VHV:

- Signature
Instruction to fill up the form (form 1)

1. This form should be filled up by BHS or VHV.
2. Source of data for Column #1, 2, 3 will be from carbonless register/DOT form.
3. One copy of this form should be sent to microscopy centre with the blood slide.
4. One copy of this form should be retained for reference.
5. The result of the blood slide will be filled up by the microscopist.
6. The microscopist will inform the result of the blood slide to BHS/VHV and he/she will record the result in his/her own copy and inform the result to the patient.
7. BHS/VHV will collect the form when he/she visits the microscopy centre and deliver to the patient.
### Day 3 positive cases surveillance and response form

State/Region:  
RHC:  

Name of the microscopy centre/health facility:  
Name and contact number of microscopist:  
Name of the index case (from Form 1):  
Address of the index case (from Form 1):  

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Name of the head of family and contact number</th>
<th>No. of total household members</th>
<th>No. of household members tested</th>
<th>Name</th>
<th>Reason for testing (fever, history of fever, repeated malaria, pregnancy, U-5 children)</th>
<th>Age in years</th>
<th>Sex</th>
<th>RDT result (species)</th>
<th>Microscopy result (species)</th>
<th>Date of reporting</th>
<th>Treatment</th>
<th>LLIN distributed (Yes/No)</th>
<th>IRS done (Yes/No)</th>
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**Signature**  
Name and contact number of BHS/VHV:
**Instruction to fill up the form (form 2)**

1. This form should be filled up by the Response Team.
2. 40 households will be identified around the index case by the Response Team.
3. Information on Column # 1-8 will be filled by the Response Team through interviewing of the household members.
4. Reasons for testing should be documented as stated in Column #6.
5. The Response Team will perform RDT and prepare blood slides for each person tested.
6. Properly labelled blood slides will be sent to nearest microscopy centres.
7. One copy of this form should be shared with Township.
8. Township focal person will compile and send it to State/Regional VBDC.
4.2 Directly Observed Treatment (DOT) for *P. falciparum* and *P. vivax* malaria case

| **Background:** | Directly Observed Treatment (DOT) for malaria case means that treatment will be observed by VHV or BHS when the patient is under antimalarial treatment to ensure the full dose and course is taken. Usually, the responsible person has to provide 6 doses of ACT with primaquine stat single dose as gametocytocidal drug for *P. falciparum* malaria and Chloroquine total dose of 25 mg/kg spanning over for 3 days followed by radical treatment with primaquine for *P. vivax* malaria as per the national treatment guidelines. Here DOT means the observed treatment of 1\textsuperscript{st} and 6\textsuperscript{th} doses only for *P. falciparum* and 1\textsuperscript{st} day and 3\textsuperscript{rd} day dose of chloroquine for *P. vivax* malaria. Primaquine for *P. vivax* malaria will be observed weekly for 8 weeks (see note below). In the elimination phase, DOT should cover complete full courses of ACT including primaquine for *P. falciparum* and full course of chloroquine including primaquine for *P. vivax* malaria. TB DOTs Model through family members and VHV may be considered in implementing malaria DOT. |
| **Rationale:** | DOT is one of the mechanisms for compliance of Malaria Treatment. By observing treatment, full course and dose will be ascertained. It will help to cure malaria as long as the drugs are sensitive thereby reducing/interrupting malaria transmission among the population, if a full course and dose of primaquine is administered to all malaria cases (either *P. falciparum, vivax or mixed*) or a very high proportion of these patients at least. Apart from that, it can also support to cure and stop spread of potential artemisinin resistant *P. falciparum* malaria. In the elimination phase, the aim of DOT including primaquine as a gametocytocide (for *P. falciparum*) is to ensure blocking transmission and preventing onward transmission of *P. falciparum* malaria. For *P. vivax* malaria the radical treatment with primaquine will prevent the relapse. |
### Objective:

1. To improve and maximize the compliance of malaria patients in terms of correct dose and complete course of treatment.
2. To diminish/stop spread of artemisinin resistant *P. falciparum* malaria.
3. To prevent onward transmission of *P. falciparum* malaria
4. To prevent relapse of *P. vivax* cases

### Where to conduct?

DOT should be carried out in a health centre/village when malaria cases become so low at health centre/village that the respective BHS/VHV/NGO workers can be able to manage the cases for DOT.

### Who will conduct?

BHS/VHVs/NGO staff (including family members) and hospital staffs

### How to conduct?

- On Day-0 after the patient becomes positive for *P. falciparum* and mixed malaria, first supervised dose of ACT together with a single dose of PQ should be given by BHS/VHV/NGO worker at the point of diagnosis (Health facility/VHVs house etc.). Similarly first supervised dose with Chloroquine for *P. vivax* malaria should be given by BHS/VHV/NGO worker at the point of diagnosis (Health facility/VHVs house etc.)
- ACT, Chloroquine and PQ should be given according to National Malaria Treatment Guidelines
- The remaining doses of ACT should be given to patient or family members or guardian to take to their home for Day-1 & Day-2 after proper counseling.
- The last dose of ACT (6th dose) should be taken by patient supervised by the BHS/VHV/NGO worker.
- The strips of ACT should be checked by BHS/VHV/NGO worker whether the patient has taken all the doses he was supposed to take.
<table>
<thead>
<tr>
<th>How to conduct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The remaining doses of Chloroquine for <em>P. vivax</em> malaria should be given to patient or family members or guardian to take to their home for Day-1 &amp; Day-2 after proper counseling.</td>
</tr>
<tr>
<td>- Supervised treatment of Primaquine for <em>P. vivax</em> malaria will be provided by BHS (for 14 days) /VHV/NGO worker weekly for 8 weeks.</td>
</tr>
<tr>
<td>- During DOT, BHS/VHV/NGO worker should observe whether the patient has swallowed the doses and has not vomited.</td>
</tr>
<tr>
<td>- ACT and PQ doses given under DOT should be recorded and reported accordingly, using forms provided (form # 3).</td>
</tr>
<tr>
<td>- Counseling on the importance of taking full dose and full course of drug should be provided to patients and family members.</td>
</tr>
</tbody>
</table>

**Inclusion criteria for DOT:**

All *P. falciparum*, mixed and *P. vivax* malaria infections including those with *P. falciparum* gametocytes diagnosed either by RDT or microscope should fulfill the followings:

- Uncomplicated malaria which is manageable by VHV/BHS/NGO worker.  
- Visit schedule of BHS/VHV/NGO worker should be agreed and accepted by the patient or guardian.  
- Patient should be accessible by BHS/VHV/NGO worker at any time (some may need to provide DOT at night).  
- Willing and able to report incomplete doses with reasons.  
- Malaria in under-5 years old children.  
- Mobile and migrant population people passing to and from screening points.  

**Exclusion criteria for DOT**

- Malaria with pregnancy.  
- Severe malaria.  
- Patient who live in village which is not accessible.  

*All excluded cases should be treated in accordance with routine practice.*
Pre-referral treatment should be given to severe patients before referral, and there is a need to follow guideline on management of malaria for special groups. Malaria in pregnancy is important so they should also be referred.

**How to report?**

Monthly reporting to respective Township Public Health Department.

**Forms to be used:**

- Record Form for Directly Observed Treatment for Pf, mixed and Pv malaria cases (*Form # 3*).
- Monthly summary report Form for Directly Observed Treatment for Malaria (*Form # 4*).

**Note:**

_In a matter of fact, DOT should be carried out for all doses of ACT but it is not feasible for the health staff to do so. Even the volunteer may not have time to go and observe each and every dose at patient’s home for 3 days. So NMCP decided to observe the first and the last doses of ACT. At the first dose, drug provider must be sure that the patient has taken Primaquine with ACT and during observing the last dose, he/she can also check the ACT strip to make sure all the doses have been taken by the patient. For P. vivax malaria, first dose of chloroquine will be observed and then the doses of primaquine weekly for 8 weeks will be observed. During observing of the first dose of primaquine he/she can also check and make sure that all the doses of chloroquine have been taken by the patient._
Flow chart for Directly Observed Treatment (DOT) Activity for ACT

**Pf/Pv/Mix Patient**

Choose appropriate ACT strip (for *Pf*) or number of chloroquine tablets (for *Pv*) and number of Primaquine to be given for *pf* according to National Treatment Guideline

Provide 1st dose of ACT together with Primaquine (for *Pf*) or first dose of chloroquine (for *Pv*) by observing the patient completely swallowed the drugs

Check whether the patient can be included for DOT activity according to inclusion criteria

**YES**

- Provide remaining doses of ACT or Chloroquine for *Pv* and Mixed infection to the patient/care giver
- Inform the patient that the last dose of ACT (for *Pf*)/doses of PQ (for *Pv*) will be observed
- Explain how to take the drugs (as per the national treatment guidelines)
- Appoint the time and place to observe the last dose of ACT/doses of PQ (for *Pv*)

Fill the DOT record form for reporting purpose

On Day2, observe the last dose of ACT (for *Pf*) as appointed and check whether in-between doses are taken correctly or not. On Day3 (for *Pv*) observe the first dose of primaquine and check whether in-between doses of CQ are taken correctly or not. Then observe the remaining doses of PQ (Daily for 14 days for BHS and weekly for 8 weeks for ViHVs)

**NO**

- Provide remaining doses of ACT or chloroquine with Primaquine for *Pv* and mixed infection to the patient/care giver
- Explain how to take the drugs (ACT, CQ, and PQ)
- Educate the importance of drug compliance to get complete cure and to prevent drug resistance

Record these patients and also the reason for not including in DOT activity for reporting purpose
# Record Form for Directly Observed Treatment (DOT) for Malaria cases

<table>
<thead>
<tr>
<th>Date of DOT</th>
<th>Day 0 RDT result (species)</th>
<th>Day 0 microscopy result (species)</th>
<th>Date of DOT</th>
<th>Remaining 4 doses (2nd-5th) of ACT for Pf (or) Remaining 2 doses of CQ for Pv taken completely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pf</td>
<td>Mix</td>
<td>Pf</td>
<td>Pf+g</td>
</tr>
<tr>
<td>2</td>
<td>ACT 1st dose and PQ stat dose</td>
<td>ACT last dose</td>
<td>CQ 1st dose</td>
<td>PQ 1st to last dose</td>
</tr>
<tr>
<td>3</td>
<td>1st wk-2nd wk-3rd wk-4th wk-5th wk-6th wk-7th wk-8th wk-</td>
<td></td>
<td></td>
<td>1st to 14th dose</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Instruction to fill up the form**

1. This form should be filled up by BHS or VHV or NGO worker.
2. To fill date in column 1 and 4
3. To fill (✓) in column 2, 3 and 5

**Signature:**

**Date:**

**Name and contact number of BHS/VHV/NGO worker:**
### Monthly summary report for Directly Observed Treatment for Malaria

State/Region: 
RHC: 
Name of the microscopy centre/health facility: 
Name and contact number of microscopist: 
Total no. of people tested for malaria: 
Total no. of people positive for malaria (Pf and mixed): 
Total no. of Pf and mixed cases treated under DOT: 
Total no. of Pf and mixed cases completed treatment under DOT: 

<table>
<thead>
<tr>
<th>Sr</th>
<th>Name of patient</th>
<th>Father’s name</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Address</th>
<th>Date (D 0)</th>
<th>D 0 RDT result (Pf/ mix/ Pv)</th>
<th>Day 0 microscopy result (species) (Pf/ Pf+ g/g/mix/ Pv)</th>
<th>Status of DOT (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Instruction to fill up the form**

1. Information on Column #2 – 10 will be taken from form #3
2. Reasons for not completing DOT should be mentioned under column 10

Remaining 4 doses (2nd-5th) taken completely
Remaining 2 doses of CQ taken completely

**Signature:**

Name and contact number of BHS/VHV/NGO worker:
### 4.3 Case Notification, Investigation, Classification and Response

#### Background:
- Malaria surveillance in the elimination phase is aimed at (1) immediate detection of and mandatory notification of all malaria infections, whether symptomatic or not within 24 hours, and ensure that they are early and properly treated in order to prevent generating secondary cases; and (2) investigation of each malaria case to determine whether it was locally acquired or imported.
- Malaria must be a notifiable disease for all providers at public, private and community-based health sectors in elimination.
- All confirmed cases must be epidemiologically investigated to determine whether it was locally acquired or imported, and a standard case investigation record form has to be completed. It should be done by using of a standardized questionnaire in relation to a person in whom a malaria infection is diagnosed.
- All confirmed cases have to be classified into locally acquired (introduced, indigenous, relapsing), imported due to mosquito-borne transmission, or induced not due to mosquito-borne transmission.

#### Rationale:
Case investigation and classification is an essential component of surveillance in the elimination phase.

#### Objective:
To investigate and classify each malaria case and to take proper response measures to cease transmission of local malaria within the affected area, where the case(s) is/are reported.

#### Where and when to conduct?
- Case investigation and response of all malaria cases should be done in areas eligible for elimination when the number of cases becomes manageable (2-3 cases per week in a sub-centre area) but this depends on the local situation.
- Case investigation and response can be initiated as a piloting activity in areas that are about to move into elimination.
- If area is still in the transmission-reduction phase, there is no need to do case investigation.
### Where and when to conduct?
- Notification of each malaria case to determine whether it is locally acquired or imported, should be done ideally within 24 hours.

### How to notify?
- After diagnosis as a positive malaria case by BHS, they should notify to the RHC within 24 hours.
- If the case is diagnosed by the VHVs, they should notify the case to the BHS in the sub-centre within 24 hours and sub-center should notify the RHC.
- RHC staff in turns informs township malaria focal person so that necessary support for case investigation, classification and response and foci investigation-classification and response can be done.

### Who will conduct?
- The investigation should be done by BHS (PHS II- Sub-centre) and VHV (NMCP+NGO) with the support of BHS (HA/PHS II RHC) and Township VBDC staff MA/MI/MS + Entomologist + lab. Technician.
- Capacity of the above team should be built so this is operationally feasible, conducted within three days and they do not have to rely on the township/State/region teams for case investigation, classification and response.
- Entomologist has to be part of the investigation team to advise on entomological situation and vector control measures to be applied within a given focus.

### How to conduct?
- After receiving the notification of the cases from the BHS or the VHV, the team will prepare the necessary logistics (case investigation form -5, RDTs, ACTs, CQ, PQ, LLIN, IRS, travel arrangements etc.).
- The team will visit the patient and investigate using the form 5.
- A copy of form 5 will be submitted to the focus investigation team and one copy to be maintained at the Sub-centre.
Case Classification:

- Case Investigation, classification and response:
  - The case investigation needs to be conducted based on the form 5. Rigorous training should be provided to the case investigation team on this activity and how to fill the form.
  - Figure 1 below provides an overview of the classification of malaria cases by origin of infection.
  - After a malaria case has been investigated, it should be classified into one of the following categories:
    - Locally acquired cases: A locally acquired case is one that is due to mosquito-borne transmission and acquired within the area of investigation. Such cases also known as “autochthonous” cases. There are three types of locally acquired cases:
      - Indigenous – any case contracted locally, without strong evidence of a direct link to an imported case; and
      - Introduced – any case contracted locally, with strong epidemiological evidence linking it directly to a known imported case (first generation from an imported case; i.e. the mosquito was infected by a patient classified as an imported case).
      - Relapsing cases: Relapsing cases are used to describe true relapses from *P. vivax* or *P. ovale* hypnozoites that are contracted locally some time ago.
    - Imported cases: An imported case is one that is due to mosquito-borne transmission and is acquired outside the area where it is diagnosed. The origin of imported cases can be traced to a known malarious area outside the elimination area to which the case has travelled (within 3 months).
### Case Classification:

- **Induced cases**: An induced case is one that is not due to mosquito-borne transmission; it is a case whose origin can be traced to a blood transfusion or other form of parenteral inoculation of the parasite. Such cases are easy to classify if the person lives and works in an area with no known transmission for many years and has a history of blood transfusion or other exposure from blood that could have transmitted malaria. The incubation period after contamination with infected blood ranges from 4 to 17 days, with a median of 12 days. Induced cases never give rise to clinical relapses, because there is no liver-stage parasite.

- **All confirmed cases** have to be classified into locally acquired (introduced, indigenous, relapsing), imported due to mosquito-borne transmission, or induced not due to mosquito-borne transmission:
  - It is highly advisable to classify introduced and indigenous cases by place of infection. Cases classified as "introduced" require that the index case and all other infections found during the field investigation of the index case can be linked to a single imported case. During the case and field investigation, investigators should estimate the possible transmission pathways and incubation period between all confirmed cases. If in doubt, cases should be classified as "indigenous" (at least second generation).

### Format to be used:

1. Malaria Case Investigation, classification and response Form (Form # 5).
2. Monthly summary report of case investigation, classification and response (Form # 6).

### Supervision:

Supervision and monitoring of case investigation should be done by both TMO and by State/Regional VBDC. The township level malaria focal point is responsible for ensuring that all confirmed cases are investigated and that reports for all cases are available and kept up to date.
Operational aspects of classification of cases:
Correct epidemiological classification of malaria cases is crucial in malaria elimination, because it is the basis for classifying foci and for selecting surveillance response and other control measures.

1 Malaria surveillance, monitoring and evaluation – an operational manual, March 2017, WHO
Distinguishing between “imported” and other local or autochthonous cases:

- The timing of travel to and from endemic areas
  
  o The usual delay between an infective bite and a primary attack is 7-30 days. The minimum incubation period of malaria in human is about 7 days for *P. falciparum* infections and 10 days for *P. vivax* infection. Thus detection of malaria within 0-5 days initiating travel would indicate that the person was infected before travelling.
  
  o People who have lived in malaria free areas for 2 years or more years and have low immunity to malaria are highly likely to have clinical symptoms shortly after the usual incubation period.

- The parasite species
  
  o *P. falciparum* infection can last for 18-24 months, but several febrile episodes would be expected during that period, because parasite density increases intermittently to cause fever or symptomatic illnesses.
  
  o *P. vivax* infections due to activation of hypnozoites can cause infection up to 5 years after the previous infection or clinical episodes but are most likely within 3 years.

- The probability of local transmission in the area of residence and work of patient:
  
  o If a person lives and works in a place in which there has been no local transmission for many years, with adequate surveillance, and the person travelled to an area of known transmission, classification of the cases is as “imported” is straightforward.
  
  o If the area has had no malaria for more than 10 years and has reasonable surveillance, or has no known appropriate vectors, local transmission is unlikely.
  
  o If the malaria patient lived in a focus with recent local transmission (classified as residual non active focus), there is lower probability that the case is “imported”.
  
  o Cases in areas with local transmission should rarely be classified as “imported”.
# Case Investigation Form (form 5)

## Section (A) 1. (Patient’s general information)

<table>
<thead>
<tr>
<th>Patient’s name</th>
<th>Positive case ID no.</th>
<th>(Sr no. &amp; Year)</th>
<th>Carbonless Reg(Sr no/mth/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Male/Female</td>
<td>Occupation</td>
<td>Father’s name</td>
</tr>
<tr>
<td>Work place (within last 30 days)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the workplace is forested area or "chaung phyar", please describe together with nearest village name. E.g Chaung Phyay (Ban Khar village)
If the workplace has name, please describe together with type of workplace and nearest village name. E.g Thilin Tun (Rubber plantation, Katalu village)

### Permanent address

<table>
<thead>
<tr>
<th>No.</th>
<th>Street</th>
<th>Village/Ward</th>
<th>SHU/RHC</th>
<th>SRHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>State/Region</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact phone number</th>
<th>(PCD)</th>
</tr>
</thead>
</table>

GPS Location (Decimal Degree) | Latitude | Longitude | (E.g. ###.####)

To be filled by Team leader of case investigation regarding current Malaria situation of respective village

Any Malaria transmission within your resident ward/village this year | Yes | No | Not sure
If "No", how many years | (To check/verify the carbonless register and positivity rate of previous years)

### Place of blood testing (ward/village and Township)

<table>
<thead>
<tr>
<th>SRHC</th>
<th>SHU/RHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township</td>
<td>State/Region</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P.code</th>
<th>GPS Location (Decimal Degree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude</td>
<td>Longitude</td>
</tr>
</tbody>
</table>

Date of onset of fever

Date of blood testing | Positive specle

Date of Notification | Date of Case Investigation

Place where case investigation was done (ward/village and Township)

## Section (B) 2. to 5. (Positive case classification)

2.1 Any blood transfusion within last 3 months | Yes | No | Date of blood transfusion

2.2 Any past malaria history within the last three years | (Not including previous 30 days. For this, separately interview in no.4)

Before this current malaria attack, was there any previous malaria attack within the last three years?

<table>
<thead>
<tr>
<th>No</th>
<th>If &quot;No&quot;, skip 2.2 and continue to 3.</th>
<th>Year</th>
<th>when</th>
<th>(Month/Year)</th>
</tr>
</thead>
</table>

Malaria was contracted from where (ward/village, Township and State/Region)

<table>
<thead>
<tr>
<th>Any blood test</th>
<th>Yes</th>
<th>No</th>
<th>Not remember</th>
</tr>
</thead>
<tbody>
<tr>
<td>If &quot;Yes&quot;......</td>
<td>Test done by</td>
<td>RDT</td>
<td>Microscopy</td>
</tr>
<tr>
<td>Test result</td>
<td>Pf</td>
<td>Pv</td>
<td>Mixed</td>
</tr>
</tbody>
</table>

(If test result was Pm/Po, please tick in "Others" box)

Continue below questions (If Investigator knows below information, please fill by himself/herself)

Treated by whom | Name | Post title | (MW/VHV, etc)

Name of Drug taken

Color/Taste of Drug taken | (Yellow/White/Orange/Brown) | (Bitter or not)

No of days of Drug taken | No of doses of Drug taken

Completely taken full course according to NTG | Did not take full course

To be ticked only in where the result is.
3.1 **Detail Travelling History** – overnight stay by patient during the previous 30 days

- No
- Yes (If "No", skip 3 and continue to interview 4) ...... This case may be **Locally Contracted Malaria case**.

  If "Yes", please fill the following table. (To be filled in all places where the patient stayed overnight)

<table>
<thead>
<tr>
<th>No.</th>
<th>Place</th>
<th>Township</th>
<th>State/Region</th>
<th>Period of visit (Day/Month/Year)</th>
<th>Any night stay during this trip (Yes/No)</th>
<th>Malaria transmission Yes/No/Not known</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
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<tr>
<td>4</td>
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<td></td>
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<tr>
<td>5</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2 **Any additional visit to other places during this stay for any reasons**

If "Yes", please fill the following table.

<table>
<thead>
<tr>
<th>Date of additional Travel</th>
<th>Where (please describe detail information)</th>
<th>Period of this visit (Day/Month/Year)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. **Detail fever history related to recent existing fever**

How many attacks of fever during this illness? _______ times

- For current attack
  - To be filled by investigator if he/she provided the treatment

- Current attack
  - To be filled for every positive case

To those who had travelling history during last 30 days.

<table>
<thead>
<tr>
<th>During travelling</th>
<th>After return back (Date of arrival <strong><strong>/</strong></strong>/____)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First attack</td>
<td>First attack</td>
</tr>
</tbody>
</table>

5.1 **Differentiation of Imported case and Locally Contracted Malaria case**

<table>
<thead>
<tr>
<th>Day</th>
<th>Date of onset of fever Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Day 8</th>
<th>To fill the date backward starting from &quot;Date of onset of fever&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date</td>
<td>Day 9 (PF)</td>
<td>Day 10 (PF)</td>
<td>Day 11 (PF)</td>
<td>Day 12 ( PF/Pv)</td>
<td>Day 13 ( PF/Pv)</td>
<td>Day 14 ( PF/Pv)</td>
<td>Day 15 (Pv)</td>
<td>Day 16 (Pv)</td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td>Day 9 (PF)</td>
<td>Day 10 (PF)</td>
<td>Day 11 (PF)</td>
<td>Day 12 ( PF/Pv)</td>
<td>Day 13 ( PF/Pv)</td>
<td>Day 14 ( PF/Pv)</td>
<td>Day 15 (Pv)</td>
<td>Day 16 (Pv)</td>
</tr>
</tbody>
</table>

- **PF** - To review the place where patient was during the period between 9th and 14th day.
- **Pv** - To review the place where patient was during the period between 12th and 17th day.

During reviewed period according to species, 1. If the patient was in travelling places, it is **Imported case**, 2. If he/she was not in travelling places, it is **Locally Contracted case**. If he/she was in both travelling place and own resident, it will be assumed as **Locally Contracted case**.

(To be reviewed by Township supervisor if the result is 3)

To be ticked only in [ ] where the result is.
If the case was **Imported case** according to 5.1, skip 5.2 and continue to section (C).

If the patient was **Locally Contracted Malaria case** according to 5.1, please continue 5.2.

### 5.2 Differentiation of **Introduced case** and **Indigenous case**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Around the last 30 days before First attack of current patient, there was positive case/cases in this area. <em>(To review the positive case register of Township)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Among these positive cases, there was Imported case according to case investigation. <em>(To review the done Case Investigation from Township)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) Specie of <strong>Imported case</strong> is same with the specie of current patient. <em>(To review the Positive case register and Case Investigation from Township)</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If all are "Yes", it is **Introduced case**.
If at least one result was "No", it is **Indigenous case**.

- Introduced case
- Indigenous case

To be reviewed above information by Township Supervisor.

### Section (C) 6. to 8. (Review the onward transmission)

#### 6. During this current attack (before completion of Rx), Any places where patient stay overnight. (Please fill the travelling period according to arrangement in table)

<table>
<thead>
<tr>
<th>Place (worksite/village, Township and State/Region)</th>
<th>Start date of travelling</th>
<th>End date of travelling</th>
<th>Slept under bed net during travelling Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### 7. Bed net utilization status of patient

Total number of household member- (..................)

<table>
<thead>
<tr>
<th>Patient to be asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>What type of bed nets?</td>
</tr>
<tr>
<td>Sleep under bed net during onset of fever and blood testing date. (Yes/No)</td>
</tr>
<tr>
<td>Sleep under bed net during blood testing date and current time. (Yes/No)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household member to be asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household member who slept under the bed net (Always)</td>
</tr>
<tr>
<td>Number of HH members sleep under bed nets (during the period of patient staying and treating)</td>
</tr>
<tr>
<td>Number of HH members do not sleep under bed nets (during the period of patient staying and treating)</td>
</tr>
</tbody>
</table>

#### 8. Any Breeding Place in his/her resident village? (by interviewer)

<table>
<thead>
<tr>
<th>No</th>
<th>Type of breeding place</th>
<th>Number</th>
<th>It is near/surrounding of patient’s house or not. Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1-Slow running stream</td>
<td>1-Few</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>2-Marsh water</td>
<td>2-Moderate 3-Abundant</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>3-Wheel track</td>
<td>4-Others(specify)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section (D) 9. Reactive case detection around the house of index case

9. Reactive case detection around the house of index case

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Father's name</th>
<th>Species</th>
<th>Current fever</th>
<th>Co-worker of current positive case</th>
<th>Forest related work</th>
<th>Neighbor of current positive case</th>
<th>Family member of current positive case</th>
<th>Positive case ID</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
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</tbody>
</table>

**Remark**: If any malaria case(s) was found during the time of doing case investigation, please do case investigation for all that cases using CI form.

Section (E) 10. Case Classification (Summary)

10. Patient’s name/age________________________, ______year
   Ward/Village/Cluster______________________________
   Date of onset of fever_________________________; Specie__________________________
   Any travelling history during 30 days before this current attack.  
   Yes ☐  No ☐

Case Classification (Please choose the below) if it is imported case, please choose a,b,c.

10.1 Indigenous
10.2 Introduced
10.3 Imported
   (a) Outside the village but within the township
   Name of contracted village: ____________________________
   (b) Outside the township but within State/Region
   Name of contracted Township: ____________________________
   (c) Outside the State/Region but within the Country
   Name of contracted Township: ____________________________

10.4 Relapse/ Recrudescence
10.5 Induced
10.6 Cryptic

Initial investigator: ____________________________  Supervisor: ____________________________
Name: ____________________________  Name: ____________________________
Designation: ____________________________  Designation: ____________________________
Duty Station: ____________________________  Duty Station: ____________________________
Date of investigation: ____________________________  Date of supervision: ____________________________
## Monthly summary report for Case Investigation, Classification and Response Form (form 6)

### State/Region:

**Township:**

**RHC:**

**Sub-Centre:**

**Total no. of malaria cases investigated and responded:**

**Name and contact number of person filling the form:**

**Name of the village (in case VHV is filling the form):**

### Instruction to fill up the form

1. This form should be filled up by TMO/BHS /case investigation team
2. Information on Column # 2-9 will be taken from form # 5
3. One copy of this form should be shared with Township.
4. Township focal person will compile and send it to State/Regional/District VBDC.

### Table

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Patient Serial No</th>
<th>Name of patient</th>
<th>Age (yrs)</th>
<th>Sex</th>
<th>Address</th>
<th>Date of case detected</th>
<th>Date of case investigation done</th>
<th>No. of cases classified as</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>Relapse</td>
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</tbody>
</table>

**Signature:**

**Date:**

**Name and contact number of TMO/BHS:**
4.4 Focus Investigation, classification and response

<table>
<thead>
<tr>
<th>Background:</th>
</tr>
</thead>
</table>
| - Interventions during elimination phase are based on the concept of a malaria focus, assuming that transmission is focalized and no longer homogeneous across the country.  
- A focus is defined as “a defined and circumscribed area situated in a currently or formerly malarious area that contains the epidemiological and ecological factors necessary for malaria transmission. Foci can be classified as active, residual non-active, or cleared”.  
- The focus as a minimum entity is the object of action, and this concept is crucial for malaria elimination programme that aims at interruption of transmission, and the functional status of malaria foci is a cornerstone for measuring the progress towards reaching set targets and stated goals.  
- Examples are a house or a cluster of houses or a village or a town or other defined geographical area in which there are Anopheles breeding sites, feeding and resting places, and people exposed to biting by the vectors.  
- In elimination settings, once a case of locally acquired malaria has been detected, a focus investigation is carried out to describe the areas where malaria occurred until recently and to delineate the population at risk.  
- The focus investigation identifies the main features of the location, including the population at the greatest risk, the vectors responsible for transmission, where the vectors are located and when transmission occurs.  
- An investigation of foci is likely to involve assessing potential Anopheles breeding sites, collecting adult mosquitoes to identify the species responsible for transmission and assessing the vectors’ susceptibility to insecticides. Therefore, an entomologist or equivalent should participate in the focus investigation to delineate areas of receptivity. |
### Rationale:

- In elimination phase, malaria transmissions are limited to a focus and hence focus identification, investigation, classification and response is necessary for providing appropriate interventions.
- Once a local case of malaria has been detected and notified, a focus investigation should be carried out by malaria staff within 72 hours (3 days) to describe the locality where malaria occurred for determining the underlying causes of ongoing transmission.
- Focus investigation includes clinical and epidemiological diagnosis of the reported case, description of the locality in relation to receptivity and vulnerability and anti-malarial measures carried out, and as a result, the focus is classified.

### Objective:
To investigate and classify each focus, in order to apply proper measures with aim to interrupt transmission in a given focus as early as possible and prevent its further spread.

### Where and when to conduct?
- Foci investigation should be done based on the results of case investigation and classification within 72 hours (3 days).
- Application of proper response measures should be done as soon as possible and not later than 7 days from case notification.

### Who will conduct?
The foci investigation and response team consists of the township/district/SR level malaria focal persons (malaria inspector, laboratory technician, entomological staff, local basic health staff (BHS) and respective VHVs.)
How to conduct?
- Figure 2 below shows a schematic of ACD system following 1-3-7 strategy
- Foci investigation should be conducted within 72 hours (3 days).
- A focus investigation form (form # 7) should be completed for each focus with confirmed malaria case(s).
- Response depends on the result of foci classification.
- A classification will be drawn in a map, with standard, recognized keys, to show:
  - Geographical features relevant for malaria transmission (e.g. rivers, rice fields, dams, ponds, forests, roads and altitude);
  - The location of the households, highlighting those in which cases have been detected in the past three years (indicating the parasite species for each case);
  - Vector breeding places and possible sites of transmission;
  - Malaria control interventions, and location of test and treatment sites, including areas and households where ACD has been conducted
  - Vector control interventions

<table>
<thead>
<tr>
<th>Classification of foci with operational criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 3 below shows the classification of foci. Malaria foci can be classified into one of three types (based on evidence of transmission and presence of cases)</td>
</tr>
<tr>
<td>1. <strong>Active foci</strong>: Focus with ongoing transmission where locally acquired cases have been detected within the current calendar year;</td>
</tr>
<tr>
<td>2. <strong>Residual non-active foci</strong>: Transmission interrupted recently (1-3 years). The last locally acquired case(s) was detected in the previous calendar year or up to 3 years earlier;</td>
</tr>
<tr>
<td>3. <strong>Cleared foci</strong>: A focus with no local transmission for more than 3 years and which is no longer considered as residual non-active foci. A focus with absence of locally acquired cases(s) for more than 3 years, where only imported or/and relapse/recrudescent cases or/and induced cases may occur in the current calendar year.</td>
</tr>
</tbody>
</table>
### Response measures:

1. Figure 4 below highlighted procedure for foci response following case and foci investigation process.

2. Vector control measures are assessed for their appropriateness, coverage and use and increased according to the characteristics of malaria in the area, with particular attention to its receptivity.

3. PCD services are accessible to all members of the population throughout the year, with supervision at defined intervals.

4. For active foci: High coverage of appropriate vector control (LLINs, IRS) should be maintained. ACD (with screening and testing or with testing alone) can be considered at appropriate intervals, especially just before or during the transmission season. If testing is chosen and no cases have been found after several rounds of ACD, the frequency of ACD may be reduced or strategy may be changed to active surveillance for suspected clinical cases that can be tested and managed as necessary. In some circumstances mass drug administration may be appropriate.

5. For residual non-active foci: ACD may be considered at key times (e.g. the mid and late transmission season) and people most likely to have malaria (e.g. those with fever, migrant labourers, those not using prevention) are screened to identify local cases, indicative of ongoing transmission. If several rounds of ACD reveal no cases, the frequency may be reduced. If new introduced or indigenous cases are identified, further evaluation is required to determine whether local transmission has resumed.

6. For cleared foci, the programme should rely on the surveillance system to rapidly identify any cases of suspected malaria and determine whether local transmission has resumed.

7. The foci register should be maintained and the change of the foci type should be updated on a yearly basis. This is crucial for certifying elimination - also explained below.
### How to report?

1. The investigation team should report to State/Region malaria focal person on results of the foci investigation (Form # 7).
2. The TMO/township malaria focal person should consolidate the report and send it to State/Region on monthly basis.
3. The focus classification should be updated periodically. The status of the focus should be reviewed as new cases appear and field investigations are undertaken. The focus results are maintained at regional/state and national level (comprising a focus register), and a summary of the status of the foci is updated at least annually.

### Format to be used:

1. Foci investigation and response form (*Form # 7*).
2. Monthly summary report of foci investigation and response form (*Form # 8*).

### Supervision

Supervision of foci investigation (along with case investigation) and response should be done by both TMO/township malaria focal person and by State/Regional/district VBDC once in a quarter. The township level malaria focal point is responsible for ensuring that all foci are investigated and that reports for all foci are available and kept up to date.
**Figure 2: A schematic of the ACD system following 1-3-7 days approach**

- **Within 1 Day; At Local Health Facility**
  - All suspected malaria cases
  - Diagnosis with Microscopy or RDT
  - Case notification - Health worker reports Case to field team with One day

- **Within 3 Day; Case Investigation**
  - Case classification
  - Imported → Local

- **Within 7; Focus Investigation team**
  - Focus investigation
  - Active focus
  - Residual Non active
  - Cleared up
  - Response

RDT, rapid diagnostic test

**Figure 3: Classification of malaria foci**

- **RECEPTIVE AREA**
  - Locally acquired
  - Locally acquired

- **Active focus**
  - Residual non-active focus
  - Cleared focus

Ongoing Transmission
Figure 4: Foci response following case and foci investigation process

- Active foci
  - LLINs
  - IRS
  - Larviciding
  - Treatment
  - Case-base treatment
  - Mass drug administration (MDA)

- Residual non-active
  - Regular ACD in particular risk group and areas with *P. vivax* or *P. ovale*
  - Risk assessment
  - Immediate treatment of imported cases

- Cleared-up
  - Vigilance and rapid surveillance
  - Immediate treatment of imported cases
FORM – EPIDEMIOLOGICAL INVESTIGATION OF FOCUS (FORM – 7)

Township: ……………………. Malaria focus file no. …………………
Township code no. ……………………. ……………………. ……………………. …………………
Village …………………………………… Sub-center ………………………………. …………………
RHC …………………………………………. ……………………. ……………………. …………………
GPS Location (Latitude ………………. Longitude……………. ) Village code no. …………………

INFORMATION FROM PRIMARY CASE INVESTIGATIONS

Name of malaria case who gave rise to investigation of focus (“leading case”)
………………………………………………………………………………………………………………
Malaria case file number (Case investigation file number)
………………………………………………………………………………………………………………
Tentative classification of malaria case as to origin of infection:
………………………………………………………………………………………………………………
Other malaria cases detected simultaneously with leading case (malaria case file number)
………………………………………………………………………………………………………………
GENERAL INFORMATION OF LOCALITY

Epidemiological relationship of locality to leading case: (e.g. Place of residence/of work, etc)
………………………………………………………………………………………………………………
Description of locality (including principal/secondary malaria vectors and their characteristics as result of entomological surveillance/monitoring/investigations etc.)
………………………………………………………………………………………………………………
LLIN DISTRIBUTION HISTORY (during last 3 years) – YES /NO …………………… (? Coverage % …………)
If YES, any suspected reasons why insecticide may not have been effective (frequent washing, dust/smoke deposit, using other purpose, sleeping habits of inhabitants, outdoor human behavior/work, etc.)
………………………………………………………………………………………………………………
OTHER VECTOR CONTROL MEASURES APPLIED (larval source reduction, environmental management etc.) during last 3 years………………………………………………………………………………………………………………
Spraying History (during last 3 years) YES/NO …………………
(i) …………………………………………………………………………………………………………………
### Malaria Surveillance in Elimination Settings: An operational manual

**Date of spraying** | **Insecticide and dosage used** | **No. of houses sprayed** | **No. of houses not sprayed** | **Remarks**
---|---|---|---|---

Any suspected reasons why insecticide in the locality may not have been effective during last 3 years (re-construction of house, papering, smoke deposit, re-painting, sleeping habits of inhabitants, outdoor human behavior/work, etc.)

………………………………………………………………………………………………………………………………………………

**Breeding Places**

i. Any possible mosquito breeding places surrounding the “household of leading case” (only for Anopheles); YES / NO; If “YES”, type of breeding places

………………………………………………………………………………………………………………………………………………

ii. Any possible mosquito breeding places within and surrounding the village (only for Anopheles) – YES / NO; If “YES”, type of breeding places

………………………………………………………………………………………………………………………………………………

**CASE DETECTION ACTIVITIES (Based on previous reports and records)**

- Is there any malaria volunteer post or RHC/Sub-center at the village – YES / NO ……….

  If YES, for how long have been existed (How many years?)------------ Functioning or not---------

  If not, how long does it take to go to the nearest malaria treatment post -------------------------

- Type of case detection most recently used: ACD ☐  PCD ☐  Combined ☐

- Were malaria blood testing regularly? – YES / NO ……………

- Were malaria blood testing in adequate number or not? - Adequate/ Not adequate

- Number of malaria cases detected in the locality during the last three years:
<table>
<thead>
<tr>
<th>Year</th>
<th>Species</th>
<th>Number of malaria cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indigenous</td>
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</tbody>
</table>

Remarks: ……………………………………………….
### EPIDEMIOLOGICAL SURVEY ** (Summary)

<table>
<thead>
<tr>
<th>In the household of leading case:</th>
<th>No. of inhabitants</th>
<th>Total blood tested</th>
<th>No. positive</th>
<th>Remarks (Malaria case file number, etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>With fever or recent fever history</td>
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<tr>
<td>Without fever</td>
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<tr>
<td>Total</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>In other household of localities:</th>
<th>No. of inhabitants</th>
<th>Total blood tested</th>
<th>No. positive</th>
<th>Remarks (Malaria case file number, etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>With fever or recent fever history</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without fever</td>
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<tr>
<td>Total</td>
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</tbody>
</table>

Persons at case’s place of work

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<thead>
<tr>
<th>Category</th>
<th>Spe- ies</th>
<th>No. of employees</th>
<th>Total blood tested</th>
<th>Total number positive</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>A</td>
</tr>
</tbody>
</table>

| With fever or recent fever history | A | B | C | A | B | C | A | B | C |         |
| Without fever                       | A | B | C | A | B | C | A | B | C |         |
| Total                                | A | B | C | A | B | C | A | B | C |         |

A = From locality under investigation  
B = From other localities  
C = Total

### Number of malaria cases

<table>
<thead>
<tr>
<th>Category</th>
<th>Spe- ies</th>
<th>No. of malaria cases</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Indige- nous</td>
<td>Relaps- ing</td>
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<tr>
<td>In the household of leading case:</td>
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<td>Pf</td>
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<tr>
<td>Pv</td>
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<tr>
<td>Mixed</td>
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<tr>
<td>Others</td>
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<td>Total</td>
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</table>
### In other household of localities:

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<th>Pf</th>
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</table>

### Persons at case’s place of work:

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<th>Pf</th>
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<td>Pf</td>
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### Total

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</thead>
</table>

### CONCLUSION

**Status of focus:**

(i) Is the locality investigated a malaria focus?  YES / NO ………………

(ii) If YES, class of focus

<table>
<thead>
<tr>
<th>Class</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td></td>
</tr>
<tr>
<td>Residual non-active</td>
<td></td>
</tr>
<tr>
<td>Cleared</td>
<td></td>
</tr>
</tbody>
</table>

### Recommendations as to action to be taken in the focus:

<table>
<thead>
<tr>
<th>Actions</th>
<th>YES</th>
<th>NO</th>
<th>Specifications (Scheme, periodicity, duration etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCD</td>
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<tr>
<td>ACD</td>
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<tr>
<td>Mass Blood survey</td>
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<tr>
<td>LLIN distribution</td>
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<tr>
<td>Actions</td>
<td>YES</td>
<td>NO</td>
<td>Specifications (Scheme, periodicity, duration etc)</td>
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<tr>
<td>--------------</td>
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<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Indoor Residual spray</td>
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<tr>
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<tr>
<td>Others</td>
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<td></td>
</tr>
</tbody>
</table>

Date: ………../………./…………..

(1) Signature of principal investigator: ……………………………………………

  Name & post title ………………………………………………………………………

(2) Signature of State/Region Epidemiologist ………………………………….

  Name & Post title……………………………………………………………………….

*a = other village, same township; b = other village, outside the township; c = other State/Region; d = from abroad

** Detailed lists of all persons examined should be attached. The list should have columns for name, age, sex, address of the person, pregnant or not, temporary resident of the locality, h/o fever, blood tested and results (if microscopy – species, density, stages in Pf), and column of result.
### Monthly summary report for Foci Investigation and Response (form 8)

State/Region: ___________________________  Township: ___________________________

RHC: _______________________  Sub-centre: ___________________________

Total no. of malaria foci investigated and responded: ___________________________

Name and contact number of person filling the form: ___________________________

Name of the village (in case VHV is filling the form): ___________________________

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Name of foci (locality/village)</th>
<th>Address GPS location &amp; Place code</th>
<th>Date of foci detected (through case investigation)</th>
<th>Date of foci investigation done</th>
<th>Date of response done</th>
<th>Type of foci</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Active foci</td>
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<tr>
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<td></td>
<td>Residual non-active</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Cleared foci</td>
</tr>
</tbody>
</table>

**Instruction to fill up the form**

1. This form should be filled up by TMO/BHS/foci investigation team.
2. Information on Column # 2-7 will be taken from form # 7.
3. One copy of this form should be shared with Township.
4. Township focal person will compile and send it to State/Regional VBDC.

**Signature:**

**Date:**

**Name and contact number of TMO/BHS:**
### 4.5 Malaria Death Investigation

| **Introduction:** | Effective malaria controls depend on early diagnosis and treatment and the objectives of a treatment are to ensure rapid cure, reduce morbidity and prevent mortality through preventing the progression of uncomplicated malaria into severe, potentially fatal disease. High- and moderate-transmission settings are generally characterized by high parasitaemia and a relatively high number of malaria cases and deaths among the high risk group (non-immune mobile and migrants population and pregnant and under 5) but as we approach elimination even in low parasitaemia in this non-immune patient may result in progression to severe malaria—which is associated with a high case fatality rate. Inadequate detection and poor quality assurance of malaria microscopy and delay in treatment may lead to death. Now, malaria is no more a public health problem in some areas so there is less awareness from public and private health care providers. The inpatients deaths in the health facility should be routinely reported to the HMIS and NMCP using standard inpatient death investigation form. There might also be death in the private sectors and community which needs to be investigated and reported.  

* **Malaria death means a person who dies due to malaria (confirmed malaria parasite positive with RDT or microscopy) admitted at hospital or at community level.** |
| **Rationale:** | Information on deaths due to malaria is critical for the design and implementation of malaria control/elimination programmes. It is also necessary to investigate each death to determine the factors related to the event. The investigation will provide insights into the caveats on the programme and patient contributing to such lethal outcome, particularly delay in recognition of the danger symptoms and signs of severe malaria by the patient, late treatment seeking behavior of the patient, access to the services, time of diagnosis, antimalarial treatment provided to the patients, adherence to the antimalarial treatment, any adverse events during the treatment etc. |
### Objective:
- To determine the factors contributing to the death of a malaria patient.
- To document the unreported malaria deaths in health facilities and at community level.
- To compile, analyze and utilize these data for corrective action.

### How to conduct?
- All health facilities (public, private and Defense medical services) and VHV and BHS should report deaths due to malaria (only confirmed cases should be included) to the Township Medical Officer either through mobile SMS or through standard forms.
- The Death Investigator (DI) should visit the hospital within 2 days and should fill up the relevant section of the Death Investigation Form (form 9) by interviewing the relevant health staff and using the patients’ record form from the reported health facility.
- The DI should then visit the house of the deceased after a week and collects the relevant information mentioned in the form. If VHV is present in the village, he/she will help the investigation.
- The copy of the form should be submitted to the State/Region at the end of the month and a copy will be kept at the township for future reference.

### Who will conduct?
DI: Township Focal person of malaria/HA from respective RHC confirmed by S&R RO/TL.

### How to report?
- At community level, VHV or BHS who get the information of malaria death has to inform TMO for investigation.
- At hospital level, a person in – charge of the ward has to inform TMO/ Medical Superintendent at large hospitals.
- (Need to get prior higher level coordination with Department of Medical Service and Defense Services for Large Hospital, Private and Defense Services)
- DI should submit the copy of the form to the State/Region VBDC and maintain a copy at township level.
- After analysis, these data should be included in monthly and Annual Report

### Format to be used:
Malaria Death Investigation form *(Form 9).*
<table>
<thead>
<tr>
<th>Supervision</th>
<th>TMO is the responsible person for supervision of malaria death investigation. The VHV, BHS and township malaria focal person are responsible for conducting the malaria death investigation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The TMO should also participate in malaria death investigations, if available and provide on-site supportive supervision.</td>
</tr>
<tr>
<td></td>
<td>TMO should check the malaria death investigation forms filled by the focal points for any missing data and to improve the quality.</td>
</tr>
<tr>
<td></td>
<td>TMO/Focal person/VBDC staffs should analyze the determinants of deaths from the malaria death investigation form and do corrective action and should share to the State/Region VBDC team.</td>
</tr>
</tbody>
</table>
Malaria Death Investigation form (Form 9)

State/ Region …………………………… Township ……………………………

Station Hospital/RHC …………… Subcentre ……… Village ……………………

Basic Information

Name of the deceased ________________Age (in years)_________________Sex _______

In adult female, indicate status of pregnancy and its complications, if any:________________

Date of Death _________________________

Place of death——- ☐ Hospital ☐ Home ☐ Work ☐ Other…………………………

Occupation of the deceased:________________________________________________

Complete address of residence-________________________________________________

Any history of travel before 1- 2 weeks of the onset of symptoms.. Yes/No. If yes where?…………………

Symptoms and signs

Can’t sit/stand/walk without assistant
Severe vomiting (can’t take orally any things food/water/drugs)
High fever
Severe anaemia/pallor
Yellow colour eye/skin
Changed of sensorium
Not interesting to environment
Inability to concentrate
Aggressive
Drowsy
Delirium
Fits / loss of consciousness/coma
Difficult breathing/ tightness of chest , restless
Cool and clammy extremities/ signs of shock
Low urine output (<200cc/day), anuria
Black color urine, black tarry stool
Ecchymosis, bleeding
Others if any…………………………

Similar symptoms in the family and neighbor if any…………………………..
**Diagnosis and treatment**

Date of the first symptoms noticed…………………………

Date of first contact with health care provider (VHV/BHS/Township hospital/district hospital/private clinics/self-medication/others-specify)_____________________________

Malaria test - Yes/No If no, why …………………………………………..

**Parasitological investigation**

Tests Date of test place of test result (pf/pv/mixed/neg) date of the result

RDT

Microscopy Species, parasite density, parasite staging

**Treatment history before hospitalization**

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Place</th>
<th>Date From</th>
<th>Date To</th>
<th>Name of the drug</th>
<th>Dose</th>
<th>Route</th>
<th>Complete Y/N</th>
<th>Remaining drugs Y/N</th>
<th>Malaria testing Result</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

**Treatment history during hospitalization**

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Place</th>
<th>Date From</th>
<th>Date To</th>
<th>Name of the drug</th>
<th>Dose</th>
<th>Route</th>
<th>Complete Y/N</th>
<th>Remaining drugs Y/N</th>
<th>Malaria testing Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

**Type of discharge and date**

Date

1 Discharge (if improved)

2 Sign and left

3 Discharge on request
Cause of death
Confirmed malaria (Pf/Pv/Mixed/Others)
Others (specify)

Malaria Interventions taken in the area of the residence of the deceased
LLIN distributed (Yes/No),
If yes when? ........
IRS done (Yes/No)……..
If yes When? ......
VHV present……
Duration to reach the nearest health facility/ VHV from residence of deceased
................................
Remarks from the investigator ...........................................
.................................................................
.................................................................
Suggestion ..........................................................
.................................................................
.................................................................

Final verbal autopsy diagnosis
Death due to Malaria □ Yes □ No
1. Confirmed malaria death Yes/No
2.Death probably due to malaria Yes/No
3.Death due to other causes ..........................................................
4.Other contributing factors ..........................................................

Name of Investigator ........................................ Name of Supervisor
Designation ..................................................... Designation .....................................................
Address: ..................................................... Duty Station .....................................................
Date of Investigation................................. Date ....................................................
### 4.6 Malaria Post

<table>
<thead>
<tr>
<th><strong>Introduction:</strong></th>
<th>Malaria posts are the “Points of entry or exit” where most of the mobile and migrant populations usually pass-by or cross during their way.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale:</strong></td>
<td>Malaria tests are to be done especially for the mobile and migrant populations including uniform service staff to get early diagnosis and treatment of both symptomatic and asymptomatic parasitaemia of any species of malaria. It is one of the special activities to contain drug resistant <em>P. falciparum</em> malaria among mobile and migrant population⁶.</td>
</tr>
</tbody>
</table>
| **Objective:**    | • To detect malaria cases early and treat them promptly, adequately and radically.  
• To provide special diagnostic and treatment services to mobile and migrant population in remote areas and at selected border crossing points (as well as to prevent the emergence of multi-ACT resistant *P. falciparum* in Myanmar). |
| **How to conduct?** | **Selection Criteria of Malaria Post**  
1. Hard to reach areas where routine health services are inaccessible.  
2. Border crossing points.  
3. The junctions where mobile and migrant people used to stop/cross such as bus stations/ railway stations/boat posts/ personnel of Uniform Services returning from frontier service in endemic regions/a specified area (a local monastery, public place, border markets, check points, meeting points of migrant workers, forest trails etc.).  
**Advertisement**  
• Sign board or poster must be hanged to be noticed by the pass-by people for checking of blood test  
• Pamphlet/posters to raise awareness on the benefit of early diagnosis and treatment of malaria |
### How to conduct?  
**Whom to be tested?**
- Persons with or without fever crossing the malaria post  
- Returnees FROM neighboring countries  
- Migrants and mobile population  
- Uniform services persons returning from frontier sites  
- Pregnant women  
- Under five year children  

**What to do at the malaria post (Task)?**
- Blood test with RDT and give treatment to the people with positive cases according to the national treatment guideline.  
- If severe malaria is found, refer the patient to the hospital.  
- Health education to all and counseling to the patients for adherence of complete drug regimen.

### Who will conduct?  
- BHS.  
- VBDC staff.  
- VHV in some areas where BHS/VBDC staff is not feasible to assign.

### How to report?  
- Registration of the people tested in Carbonless register.  
- To note the address (where to go) of the malaria positive cases.  
- To inform the respective township where the patient will go/work.  
- Routine monthly reporting has to be sent to Township Public Health Department.

### Format to be used:  
Malaria case register and send Carbonless paper routinely.

### Supervision:  
Malaria Field Project Coordinator, Team Leader and State/Regional VBDC officers are responsible for supervision. Routine monitoring of data must be done by Township Focal Person.
### 4.7 Malaria mobile clinics for intensified malaria surveillance

<table>
<thead>
<tr>
<th><strong>Introduction:</strong></th>
<th>Malaria mobile clinics are the clinics organized by a team that usually cover the inaccessible areas/hard-to-reach areas (villages or worksites or both) by VBDC Staffs/BHS/ other staff of I/NGO.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale:</strong></td>
<td>Malaria outreach services through mobile services and clinics, especially during peak transmission period and epidemics, in inaccessible areas/hard-to-reach areas have shown to be one of the most cost-effective intensified case detection methods for malaria control/transmission assessment as a supplement to Passive Case Detection through health facilities. The periodic or fixed-schedule malaria mobile clinic can be run by a microscopist/ trained VBDC Staffs/ BHS and an assistant with portable equipment (microscope or RDT etc), to a specified area (a local temple, public place, border markets, check points, meeting points of migrant workers, forest trails etc) on a fixed monthly schedule.</td>
</tr>
</tbody>
</table>
| **Objective:**    | • To provide early diagnosis and prompt, effective and quality treatment to the population living in inaccessible areas like, MMPs, worksites, NGCA, etc.  
• To prevent onwards transmission of malaria among populations of inaccessible area including mobile and migrant groups |
How to conduct?

Standard Operating Procedure on Mobile clinic

1. The mobile team in consultation with the authority/focal person of the area (e.g. village head, leader, VBDC Staffs and/or BHS/local people) should prepare the line list of the places and prepare the schedule for organizing the mobile clinics for intensified case detection. If the team wants to conduct this activity in the hard to reach areas, they must prepare the detailed schedule and required budget to be included in the Quarterly Work Plan.

2. The sites for intensified case detection should be hard to reach areas, ≥2 km. from the nearest health facilities, areas prone to outbreaks, new settlements, worksites (gold mines/gem mines/palm oil plantation/big rubber plantation sites/construction etc.), and areas with high number of MMPs etc. Villages with high malaria burden where PCD post is not yet established.

3. The team must coordinate well in advance and inform the authority/focal person of the area (e.g. village head, leader, etc) (by phone/by mail/by messenger) concerned in advance so as to catch up the target population.

4. The team should be led by medical doctor(s) or Health Assistant(s) or malaria assistant(s) depending upon the size of the population. Medical doctor will be needed for other diseases too. The resources for other diseases should be supplied for integrated mobile clinic service delivery.
### How to conduct?

5. The team should include 4-5 persons who are trained for Early Diagnosis and Appropriate Treatment of malaria (diagnosis by RDT/Microscopy and treatment according to species and NMTG - National Malaria Treatment Guideline) and giving health education, with complete set of prevention and treatment facilities for minor ailments and specially for malaria. The carbonless register must be used for recording and reporting.

6. If possible, mobile team should visit each household to raise awareness through interpersonal communication using IEC/BCC materials and screening for fever to ensure all are covered during the activity.

7. Mobile clinics should not turn up without consultation with beneficiaries – visits should be scheduled in coordination with people who live there.

8. Conduct health education sessions/video shows on malaria etc.

### Who will conduct?

The activity should be conducted by the mobile team. The mobile team should be led by VBDC (Malaria Assistants, Malaria Inspector or Malaria supervisors) and will be composed of BHS (Health assistant, LHV, PHS 2, midwives), VHVs, representatives from NGOs working on malaria, medical doctor(s)/nurses (where possible).

### How to report?

The mobile team should submit the carbonless register to the nearby health facility (sub-center/RHC) and a copy to the TMO and TMO will submit the report to the State/Region level. In areas eligible for elimination, the case investigation and foci investigation and response should follow.
### Format to be used:

- The form (form #10) will be used to report the activity.
- For fever cases who are tested and treated, carbonless paper should be used in each site.
- Data analysis, interpretation and feedback and advice on future implementation should be done by respective TMO.

### Supervision and monitoring:

TMO should supervise the activity. State/Regional VBDC Team Leaders, Regional Officer and Project Manager/Assistant Project Manager of respective organization should also participate in the activity whenever possible.
### Report on Malaria Mobile Clinics for Intensified Cases Surveillance (Form 10)

**Microscope or Combo RDT (To be used separately)**

<table>
<thead>
<tr>
<th>Sr</th>
<th>Township</th>
<th>Village</th>
<th>Date</th>
<th>(0-1)</th>
<th>(1-4)</th>
<th>(5-9)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Ex</td>
<td>Pos</td>
<td>Pf</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sr</th>
<th>Township</th>
<th>Village</th>
<th>Date</th>
<th>(10-14)</th>
<th>(15 &amp; above)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>Ex</td>
<td>Pos</td>
<td>Mix</td>
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<td>M</td>
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<td>M</td>
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</tbody>
</table>
### 4.8 Selective Indoor Residual Spray

| Introduction: | Indoor Residual Spraying (IRS) is the application of residual insecticide to potential malaria vector resting surfaces such as internal walls, eaves, and ceilings of all houses or structures (including domestic animal shelters) where such malaria vectors might come into contact with the insecticide\(^9\). IRS will reduce and ultimately interrupt malaria transmission by reducing vector survivorship, density and human-vector contact, in a manner that is safe for human health and not harmful to the environment. The national policy on IRS in Myanmar is to conduct IRS in malaria epidemics and epidemic prone situations such as development projects and new settlements. To be effective, IRS requires careful planning, well-organized operations with skilled technical staff, very strong supervision and community mobilization to achieve the high level of IRS coverage (more than 80%) to maximize impact of this operation. |

| **Rationale:** | In the epidemic situation and epidemic prone areas such as development projects, new settlements and areas of high antimalarial resistance, IRS will reduce the transmission and contribute to interrupt malaria transmission by reducing the vector’s life span to less than the time it takes for the malaria sporozoites to develop, reducing vector density by immediate killing and reducing human-vector contact through repellent effect, thereby preventing the number of mosquitoes to enter into the sprayed rooms. In the elimination phase, focal IRS should be considered (if feasible) along with other preventive measures (LLINs and other insecticide-treated materials etc.), with a view to interrupting transmission as soon as possible in all active foci over the target area. In addition to IRS and other measures, mass drug administration (MDA), which implies the distribution of an antimalarial drug to every individual in a given population may be considered, particularly in situations when (1) persistent active foci of malaria continue to exist in areas where its transmission has been interrupted elsewhere, or (2) a small-scale outbreak is reported in a malaria-free area or (3) IRS and/or other vector control measures have reduced substantially intensity of transmission but cannot fully interrupt it. |
| **Objective:** | To reduce, and ultimately interrupt, malaria transmission by reducing the vector’s life span, vector density and human-vector contact, in a manner that is safe for human health and not harmful to the environment. |
| How to conduct? | The procedures for spraying will be followed as per “WHO operational manual on IRS, 2015”.  
**Notes:**  
The effectiveness of IRS depends on adherence to the specified criteria of the insecticide and application procedure, public acceptance of spraying, the use of well-maintained equipment, adequately trained personnel, good coverage and effective supervision. Timing of IRS is essential and must be based on epidemiological and transmission dynamics data. The timing of IRS applications, or “rounds”, is a critical factor for a successful programme. Best practice is to schedule the completion of spray application to coincide with the build-up of vector populations just before the onset of the peak transmission season. This ensures fresh deposits of insecticides during periods of peak mosquito density. In general, spray operations should take place approximately one month before the start of the potential seasonal increase in incidence\(^\text{10}\). However, the routine IRS is not practised in Myanmar. |
| When to conduct? | • If there are no LLIN distributed in past three years.  
• IRS should be considered for insecticide resistance management.  
• IRS will be conducted in the areas around the day three positive surveillance cases.  
• IRS will be conducted in the epidemic prone areas-project development sites, new settlements in malaria endemic areas  
• IRS will be conducted in areas with evidence of epidemic and persistence of local transmission.  
• IRS will be conducted in villages with an evidence of malaria positive in under one year. |
<table>
<thead>
<tr>
<th>Where to spray?</th>
<th>Generally, all the interior walls and ceilings are sprayed as per the standard procedure. In addition to permanent human dwellings, huts where people sleep during the plantation or harvesting season should be sprayed. The underside of furniture, back of the doors, outside eaves and out houses structure also need to be sprayed e.g. cow shed, latrine etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who will conduct?</td>
<td>Spray squad from the Central or State/Regional VBDC should conduct the IRS in coordination with the township VBDC staff and VHV. The technique for preparation of insecticide, checking Hudson X-pert spray can and other associated equipment for spray, supervision of spray squad should follow the “WHO operational manual on IRS, 2015”</td>
</tr>
<tr>
<td>How to report?</td>
<td>Immediate reporting to respective VBDC team after spraying using the IRS activity report form.</td>
</tr>
<tr>
<td>Format to be used:</td>
<td>IRS Activity Report format (Form 11)</td>
</tr>
<tr>
<td>Supervision</td>
<td>Spraying is carried out by Permanent Spray man and spray squad is usually led by Malaria Supervisors. Spray teams are supervised by Malaria Assistants of State/Regional VBDC and Field Officer of central VBDC.</td>
</tr>
</tbody>
</table>
### Focal IRS form (Form 11)

<table>
<thead>
<tr>
<th>Sr</th>
<th>Town-ship</th>
<th>Name of Ward/villages/camps conducted</th>
<th>Sprayed Coverage</th>
<th>Unsprayed Coverage</th>
<th>Insecticide used</th>
<th>Reasons for spray</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of Houses</td>
<td>No. of Out Houses</td>
<td>Total Houses</td>
<td>No. of structure in camps</td>
<td>Pop</td>
</tr>
<tr>
<td>1</td>
<td></td>
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</tbody>
</table>

| Total |               |                  |              |                    |     |        |         |                        |                 |                        |               |

Name with designation:

Date:
### 4.9 Migrant Mapping

<table>
<thead>
<tr>
<th><strong>Introduction Definition:</strong></th>
<th>Mapping of Mobile and Migrant population is a new activity conducting in malarious areas especially in artemisinin resistance containment States/Regions in Myanmar.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale:</strong></td>
<td>The newly developed National Malaria Strategic Plan 2016-2020 defines MMP as one of its targeted populations. The strategy also specifies mapping of MMP population for developing township plans for targeting MMP which is one of its strategic approaches to combat malaria, including the drug-resistant one (NSP 2016-2020)(^\text{11}).</td>
</tr>
</tbody>
</table>
| **Objective:**             | - To give effective preventive, control and containment measures among migrant population  
- To allocate optimum utilization of resources |
| **How to conduct?**        | **Source of information regarding migrants**  
1. Administrative body & Departments at different levels  
2. Companies/ Employers  
3. BHS and malaria focal persons  
4. Volunteers  
5. Villagers  

**Collecting information for migrant mapping**  
- State/Regional/Township level workshop on Migrant Mapping must be conducted by inviting different departments related to malaria (eg; Agriculture, forestry, construction, mining, energy etc.) and companies working on different projects at different areas.  
- Draft mapping of location of migrants at different levels and plan for data collection (where/ which village to go and to collect detailed information) during State/Regional workshop |
### How to conduct?

- Once data collected by BHS, Township level workshop should be conducted for detailed mapping at village/community level including filling up of each project site and compiled at sub centre level so that each Midwife/ PHSII can know the area and the communication channel of contact person.
- Output from State/ Regional and Township level Workshop must be used for the planning of preventive and control measures for migrants to be carried out at respective township.

### Who will conduct?

Under the guidance of State/Regional VBDC Team Leader and Regional Officer (Malaria), BHS staff/ IPs can conduct a workshop for migrant mapping. If possible volunteers of strategic areas should be invited to get more discussion and information.

### How to report?

Quarterly Report (after Migrant Mapping workshop and data collection)

### Format to be used:

- Migrant Mapping Tool (1)
- Migrant Mapping Tool (2)
- Township-wise Compilation format for allocation of resources for migrants

### Supervision and Monitoring:

State/Regional workshop will be led by State/Regional officer of VBDC. Township level workshop should be led by TMO assisted by respective State/Regional VBDC TL/RO. Regular supervision should be done by TMO, FPC, TL & RO (VBDC), State/Regional Health Director and by Programme manager of NMCP.
Migrant Mapping Tool (1)

Mapping Format to be used in State/ Regional/Township level workshop

State/ Region ------------------    Township -----------------   Date conducted ----------------------

State/Regional/ Township Profile

1. No. Townships (For S/R) –
2. No. of wards -
3. No. Village tracts/ villages –
4. Total population of (State/ Region/Township) –
5. Total No. of male pop: –
6. Total No. of female pop: –

Migrants’ Location and Information

<table>
<thead>
<tr>
<th>S/N</th>
<th>SHU/ RHC</th>
<th>Sub-centre</th>
<th>Place Name (Nearest village/ landmark)</th>
<th>Name of the Migrants’ Place (if any)</th>
<th>Category of Migrant (1, 2 or 3)</th>
<th>Estimated Pop:</th>
<th>Occupation of majority of the migrants</th>
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</thead>
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</tbody>
</table>

State and Regional Level Migrants’ Location and Information

<table>
<thead>
<tr>
<th>S/N</th>
<th>Township</th>
<th>Type of Economic Activity</th>
<th>Nearest Landmark/ Village</th>
<th>Category of Migrant (1, 2 or 3)</th>
<th>Estimated Pop:</th>
<th>Contact Person/ Address/ Ph. No.</th>
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</thead>
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</tbody>
</table>
### Attendant sheet for target beneficiaries

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name</th>
<th>Title/Designation</th>
<th>Company/Worksite</th>
<th>Contact Address &amp; Ph. No.</th>
<th>Duration of work in that particular Area</th>
</tr>
</thead>
<tbody>
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</table>
Migrant Mapping Tool-2

Migrant Group Profile questionnaire (Proposed) to be finalized by DMR

(To be used in the field)

State/Region ---------------------  Township -----------------------  SHU/RHC -----------------------

Subcentre ------------------------  Village Tract ------------------  Village -----------------------

Place of Migrant Group  ------------------------  Name of Migrant place -----------------------

MOHS:  [ ]  Ethnic group Health Organization:  [ ]

1. Category of migrant group

<table>
<thead>
<tr>
<th>Category 1: Well-organized work settings with high social capital and resource availability</th>
<th>Category 2: Permanent work sites with moderate social capital and limited resources</th>
<th>Category 3: Small, often temporary work sites, with low social capital and resource availability</th>
</tr>
</thead>
</table>
| - Large rubber, palm oil, and sugar cane plantations  
- Large fruit orchards  
- Large mines (gems, precious metals)  
- Road, rail, dam construction  
- Commercial logging camps  
- Civil service (e.g. forestry)  
- Armed forces | - Medium-sized rubber, palm oil, and sugar cane plantations  
- Large orchards  
- Smaller, privately owned mines (usually gold) | - Small orchards, sugar cane, and rubber plantations  
- Small gold mines  
- Forest extraction (wood and bamboo cutting)  
- Charcoal making sites  
- Remote fishing camps (often on islands)  
- Brick-making factories  
- Taung-Yar (small farms on hill) |

Category -1 = Big companies/ Dept:project/ Joint Project zone
Category -2 = Small and median sized companies, contact person and managers (+)
Category-3 = smaller groups, no definite site, mobile, hard to contact

(For this group, if they can contact easily and easy to reach, ask the questions and noted in the forms, record in the township register of migrants to give suitable services.

NO NEED TO DO GPS CODING)
2. **GPS coding (Fixed places of migrants only)**

<table>
<thead>
<tr>
<th>Place Name</th>
<th>GPS Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcentre</td>
<td>Place</td>
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<td>__________________</td>
<td>------------</td>
</tr>
<tr>
<td>EO –</td>
<td>N-</td>
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<tr>
<td>Migrant grp:</td>
<td>Place</td>
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<tr>
<td>__________________</td>
<td>------------</td>
</tr>
<tr>
<td>EO –</td>
<td>N-</td>
</tr>
</tbody>
</table>

3. **Migration in details (in relation to malaria endemicity)**

### 3.1. Pattern of Migration

(a) **Source** (Departure) the place from where most of the people of this group start to move

State/Region ----------- Township ----------- Village-----------

State/Region ----------- Township ----------- Village-----------

(b) **Transit** (before arrival to this area)

State/Region ----------- Township -----------

State/Region ----------- Township -----------

State/Region ----------- Township -----------

(c) **Arrival to this area**

State/Region ----------- Township ----------- Duration-----------

State/Region ----------- Township ----------- Duration-----------

State/Region ----------- Township ----------- Duration-----------

How long will this group be here (Duration, to know seasonality) -----------

(d) **Next move**

Where does this group intend to move from here?

State/Region ----------- Township -----------

State/Region ----------- Township ----------- (OR)

Do not know – □
4. Occupation in details (in relation to malaria risk) (one group may have different categories of job)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Working hours</th>
<th>Working place in relation to get malaria risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
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</tbody>
</table>

5. Any language barrier between migrant group and local people – (+/-)

6. Demographic pattern

Total population -

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>&lt;5 yr</td>
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<td>5-15 yr</td>
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<tr>
<td>&gt;15 yr</td>
<td></td>
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<tr>
<td>Total</td>
<td></td>
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</tbody>
</table>

Pregnant women (+/-) - If (+) – Number -

7. Living structures in details

No. of (human) living structures –

No. of (human) nonliving structures (e.g; stores, huts for cattles) –

Walls (made up of) – Sprayable – (+/-)

Roof (made up of) – Sprayable – (+/-)
8. Accessibility and availability of health facility and services close to the location

8.1. Which is the nearest public health facility (Tick only one)

- RHC
- Subcentre
- Station hospital
- Township hospital

8.2. Category of malaria service provider for this location, Tick the most appropriate one.

- AMW/CHW
- TTBA
- BHS
- Volunteer
- Drug shop
- Village Practitioner
- GP Doctor
- NNGO/INGO Clinic
- Other

Name of Surveyor

Designation

Date

Signature

Name of Supervisor

Designation

Date

Signature
### Table: Malaria Inpatient Only

<p>| Sr. No. | Registration No. | Name of Patient | Age | Malaria Case ID | Address | Date of Onset of Fever | Admitted/Admitted Date | MP tested Date | Microscope / RDT | Lab Result | Parasite density | UCM or SCM | Treatment given (Drug Name, Dose, Course) | If SCM, main symptoms | D/C date for IP | Patient Status on D/C | D/C status of Patient | Notification Date |
|---------|------------------|-----------------|-----|-----------------|---------|------------------------|------------------------|---------------------|-----------------|--------------|-------------|------------|----------|--------------------------------|---------------------|---------------|------------------|---------------------|------------------|
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
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|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |
|         |                  |                 |     |                 |         |                        |                        |                     |                 |             |            |           |                                    |                     |               |                  |                     |                  |</p>
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>OPD Registration No.</th>
<th>Name of Patient</th>
<th>Age</th>
<th>Malaria Case ID</th>
<th>Address</th>
<th>Onset of fever Date</th>
<th>Attended Date</th>
<th>Result of RDT</th>
<th>Lab Method</th>
<th>Microscopy Result</th>
<th>MP tested</th>
<th>MP tested Date</th>
<th>Malaria Parasite density</th>
<th>Treatment or given</th>
<th>UCM or SCM</th>
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**Line list for Malaria Positive Cases from Hospital**

**State/Region**

**Name of Hospital**

**Name of Township -**

**Malaria Surveillance in Elimination Settings An operational manual**

<table>
<thead>
<tr>
<th>Name of Hospital</th>
<th>Notification Date</th>
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<tbody>
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<th>UCM or SCM</th>
<th>Treatment given</th>
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<thead>
<tr>
<th>Date of Admitted/ Discharge</th>
<th>Date of RDT</th>
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<tr>
<th>Date of Onset of fever</th>
<th>Malaria Parasite density</th>
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- 77 -
## TOWNSHIP LEVEL MALARIA CASE REGISTER (Malaria Elimination Activity)

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Malaria Case ID</th>
<th>Name of patient</th>
<th>Age</th>
<th>Gender</th>
<th>Father Name</th>
<th>Address/ Village or Worksite</th>
<th>Date of onset of symptoms</th>
<th>Date of blood test</th>
<th>Result</th>
<th>Date of notification</th>
<th>Case Investigation (Yes/No/Specify if No)</th>
<th>Treatment NTG</th>
<th>Treatment completed</th>
<th>Previous H/O malaria</th>
<th>Case Investigation Date</th>
<th>Case Classification</th>
<th>Total tested during case investigation</th>
<th>Malaria Case ID No. of all cases linked epidemiologically to index case</th>
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**English Version**
(Footnotes)

1. Day 3 Protocol (Draft) 2012 by Charles Dellacollete
2. According to the Department of Medical Research – DMR, Day 28 positive cases among the D3 positive cases is zero.
5. A framework for malaria elimination, WHO, 2017
6. SEARO-Regional Artemisinin Initiative, 2014
7. Approaches for mobile and migrant populations in the context of malaria multi-drug resistance and malaria elimination in the Greater Mekong Subregion
10. Malaria Operational Manual, 2009, India
11. National Strategic Plan for Intensifying Malaria Control and Accelerating Progress towards Malaria Elimination 2016-2020