SELF-AUDIT OF THE NATIONAL MALARIA PROGRAM USING THE MALARIA ELIMINATION AUDIT TOOL

2021

Government of Nepal
Department of Health Services
Ministry of Health and Population
Epidemiology and Disease Control Division
July 2021

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Date: 26 July, 2021

Acknowledgement

Malaria continues to be a global health problem with high level of disease and death. However, it is preventable and curable. The global health priority is to reduce the burden of malaria with long term vision of malaria eradication.

Nepal has made tremendous progress in the fight against malaria. Country has dramatically reduced the total number of malaria cases and deaths over the last decade. Mostly due to strengthened malaria surveillance and response, improved access to testing and treatment at health facility and availability of quality assured diagnostics, treatment and vector control products. Nepal is listed as one of the countries with capacity to eliminate Malaria by 2025 which is in-line with the Nepal Malaria Strategic Plan 2014-2025 to achieve zero indigenous case of malaria.

The National Malaria Program Self Audit is one of the key activities to be conducted yearly by the EDCD to track progress towards malaria elimination. The audit has highlighted the key intervention areas where more progress needs to be undertaken urgently.

The EDCD is grateful to the core task group for their support and valuable contribution to the self-audit. I would also like to congratulate the NTD/VBD section for successfully completing the malaria audit. The EDCD would like to thank the Communicable Disease Unit, WHO Country office for providing technical support for this Malaria Program Self Audit.

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ACRONYMS

ACT	Artemether Combination Therapy
BCC	Behavioral Change Communication
CIF	Case Investigation Form
DHIS	District Health Information System
DoHS	Department of Health Service
DQA	Data Quality Audit
ECCAM	External Competence Assessment of Malaria Microscopist
EDCD	Epidemiology and Disease Control Division
EWARS	Early warning and Reporting System
FWD	Family welfare Division
HFs	Health facilities
HMIS	Health Management Information System
HP	Health Post
IEC	Information, Education and communication
IRS	Indoor Residual Spray
IVM	Integrated Vector Management
LLIN	Long –lasting Insecticide-treated Nets
LMIS	Logistic Management Information System
MEAT	Malaria Elimination Audit Tool
M&E	Monitoring and Evaluation
MDIS	Malaria Disease Information System
MoHP	Ministry of Health and Population
NMLP	Nepal Malarial Laboratory Plan
NMSP	Nepal Malaria Strategic Plan
NMESC	National Malaria Elimination Steering Committee
NMSG	National Malaria Surveillance Guideline
NMTP	Nepal Malaria Treatment Protocol
NTWC	National Technical Working Committee
NHTC	National Health Training Center
NPHL	National Public Health laboratory
NPC	National Planning Commission
PHC	Primary Health Centre
PHD	Provincial Health Directorate
PPHL	Provincial Public Health Laboratory
QA	Quality Assurance
RDT	Rapid Diagnostic Test
SCI	Save the Children International
SOP	Standard Operating Procedure
TWG	Technical Working Group
USAID	US Agency for International Development
VBDRTC	Vector borne Disease Research Training Center
WHO	World Health Organization

1. INTRODUCTION

1.1 HISTORY OF MALARIA IN NEPAL

Malaria was a major public health problem causing significant morbidity and mortality in Nepal throughout much of the 20th century. Nepal's malaria control program was first launched in 1950 as an operational field research unit affiliated with the hydropower project. In 1954, with support from the US government, the Insect-borne Disease Control unit was formed with the goal of controlling malaria in the Terai.

In 1958, Nepal launched the Malaria Eradication Program, the country's first national public health program, in cooperation with WHO and the US Agency for International Development (USAID). Over the next several years, the vertically-run program made great progress in reducing the national malaria burden, achieving an annual parasite incidence (API) of 0.4 per 1,000 population by the late 1960s, which in turn contributed to the country's agricultural and socioeconomic development.[1] However, these achievements could not be sustained due to several technical, logistical, and financial problems, and malaria cases began to rise again in the 1970s; The program was then reoriented towards malaria control in 1978. [1,2]

In 1994, National Plan of Operation for Malaria Control was developed by the National Malaria Control Program (NMCP), a key component of which was the stratification of the malaria endemic area for the first time. The program was further strengthened with the onset of the Roll Back Malaria initiative in 1998, focusing control efforts in the forested areas of the Terai where over 70 percent of the country's annual cases occurred. [2,3]

The Global Fund to Fight AIDS, Tuberculosis and Malaria was launched in 2004 with the first round of funding aimed at improving malaria control efforts through the strengthening of the primary health care system in the 13 highly endemic districts.[5] Since then, successive rounds of funding have focused on scaling-up coverage and quality of interventions in these districts and expanding coverage to high-risk areas for malaria.

The ongoing financial, technical, and programmatic support from WHO and the Global Fund, in combination with continued commitment from the Government of Nepal and the NMCP, has made a tremendous impact on the malaria situation in Nepal.

1.2 CURRENT MALARIA SITUATION OF NEPAL

Overall malaria trend in Nepal for the last 10 years indicates a decline in malaria case burden (Table 1). According to malaria risk microstratification 2020, only 153 wards in 16 districts, approximately 3.16% of total population, are living in malaria endemic (high & moderate risk) areas.

With the significant reduction in malaria burden, the Nepal malaria program has set up the vision of a malaria-free Nepal by 2025. [10] The Government has recently updated the Nepal malaria strategic plan (NMSP) 2014–2025 with a goal to eliminate the disease by 2025. The focus of the strategy is to strengthen the surveillance, improve quality and access to early diagnosis and effective treatment of malaria and strengthening programmatic, technical and managerial capacities towards malaria elimination.

TABLE-1 NUMBER OF INDIGENOUS MALARIA CASES IN NEPAL, 2010–2020

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
3 894	3 414	3 230	1 974	832	591	507	623	619	127	73

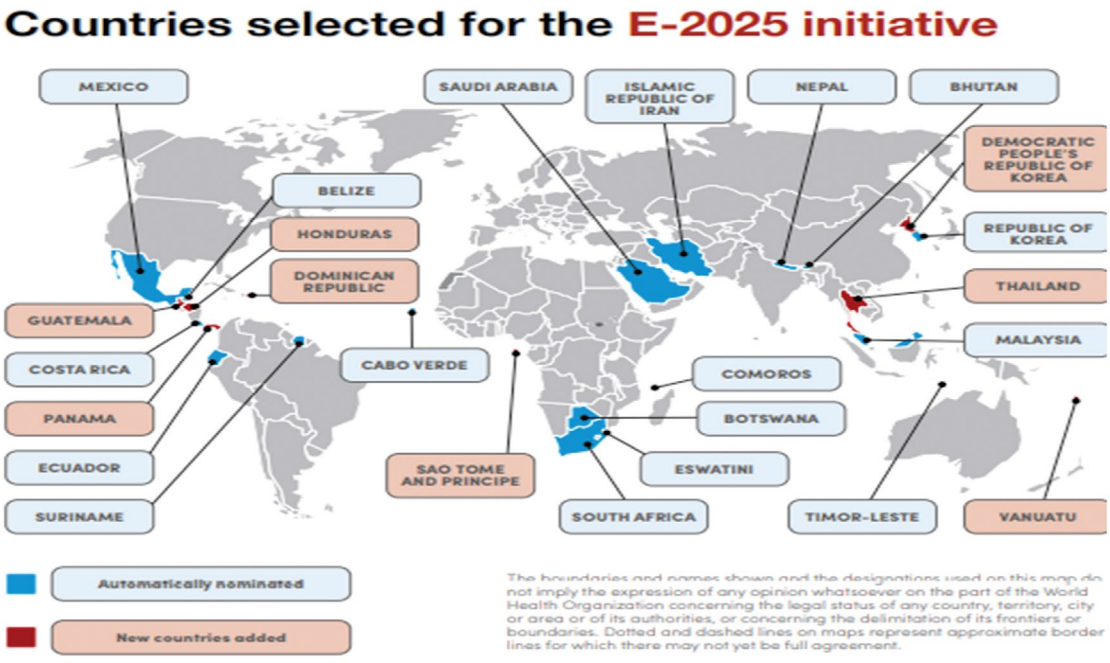
(Source: NMP reports)

1.3 E-2025 INITIATIVE

The WHO Global technical strategy for malaria 2016–2030, endorsed by the World Health Assembly in May 2015, is designed to guide and support all malaria-affected countries as they work towards malaria control and elimination. Since 2017, WHO has supported a group of 21 malaria-eliminating countries through a special initiative called the "E-2020". In the period 2010–2019, total malaria cases in the 21 E-2020 countries reduced by 79%. Eight E-2020 member countries reported zero indigenous cases of malaria in 2020, a remarkable achievement in view of the ongoing global COVID-19 pandemic.

WHO has identified a new cohort of 25 countries (Fig 1) that could eliminate malaria within the next five years. The E-2025 countries have provided commitment for malaria elimination by 2025. Nepal is performing the baseline review of the Malaria Elimination Program using Malaria Elimination Audit Tool (MEAT) to establish the capacity of the elimination program at the start of E-2025 initiative.

FIG 1: COUNTRIES SELECTED FOR THE E-2025 INITIATIVE



1.4 OBJECTIVES

The objectives of the malaria self-audit are as follow:

- To review progress towards achieving the goal and objectives of the current national malaria strategic plan and overall program coverage and outcomes using WHO Malaria Elimination Audit Tool (MEAT).
- To make recommendations for strengthening implementation of the program.
- To make recommendations to accelerate the malaria elimination.

1.5 METHODOLOGY

The EDCD as focal point of the MoHP for Malaria is committed to undertake self-assessment of the malaria elimination program. WHO has provided key technical support in conducting the assessment using the WHO Malaria Elimination Audit Tool (MEAT).

A core team was identified at the EDCD to support the consultant with task of conducting the review. The team carried out desk-based reviews, interviewed key stakeholders, reviewed the documentation of MoHP, DoHS, EDCD, and relevant publications regarding malaria and guided by the MEAT.

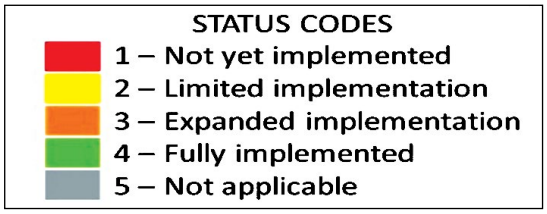
In discussion and consultation with the key program staff within EDCD, SCI, WHO, health workers working at the local level, the review identified the current situation, challenges, issues, and developed recommendations to guide the malaria program for elimination. The final document is prepared by giving score of each element using the Malaria Elimination Audit Tool (MEAT) after the extensive review of preliminary findings with the MoHP and partners.

2. MALARIA ELIMINATION PROGRAM AUDIT

The MEAT implementing scoring recommends evaluation of the malaria program using the ten domains. Within each domain are critical elements drawn from the *Framework for malaria elimination*. For each element, there are one or more milestones that indicate progress towards full implementation of that element.

The implementation status of each element is indicated by a score, which reflects the country's level of advancement, its capacity to institutionalize technical strategies and to ensure that they are sustainable. Scoring is applicable to most elements; those elements that do not lend themselves to a score are indicated by a N/A and are grayed out.

The following scheme is used with color coding:



1. **Not yet implemented**. None of the milestones of the element have been reached.
2. **Limited implementation.** Implementation has started with some milestones achieved and others begun.
3. **Expanded implementation.** Most but not all of the milestones have been reached, or there remain significant gaps in the implementation of several milestones, or there are significant concerns about the sustainability of activities.
4. **Fully implemented.** All milestones have been reached and activities are sustainable.

Based on the current situation of the National Malaria program and in consultation with the EDCD, the following eight domains were only used in the assessment.

1. National strategy, coordination, policies and advocacy
2. Stratification
3. Diagnosis
4. Case management
5. Surveillance
6. Focus investigations, micro-plans and epidemic response
7. Vector control and entomological surveillance
8. Documents and records for certification of elimination

The review did not include the domains : Accelerating strategies and prevention of re-establishment in the assessment.

2.1 NATIONAL STRATEGY, COORDINATION, POLICIES AND ADVOCACY

Targets: Countries have a clear strategy for malaria elimination, supported by an effective national programme and an independent elimination advisory committee, with advocacy for appropriate resourcing and a community actively engaged in local elimination activities.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
1.1 National strategic elimination plan Elimination plans define the key results to be achieved and the outputs and activities that will contribute to the final goal; plans are costed to inform and facilitate resource mobilization.	1.1.1 National strategic elimination plan is available, aligned with WHO guidance, up to date, costed and implemented.	The Malaria Program in Nepal has been identified by the government as a priority with a target of a malaria-free Nepal by 2025. Based on the malaria program review conducted in 2017, the Nepal Malaria Strategic plan 2014-2025 (NMSP) is updated in 2021. This document provides the key strategic direction based on WHO guidance that will reorient the program to gear up for elimination, in the view of ongoing country administrative restructuring towards federalism. The main focus of current malaria program are- elimination of transmission foci by strengthening health system to early detect, eliminate the foci; confirm all suspected malaria cases and appropriately treat all confirmed malaria cases and significantly reduce human-mosquito contact. **(Refer file 1.1;1.1.1)**	3	1. Development of the implementation/operational plan for malaria elimination at provincial and local level. 2. Wider dissemination of the NMSP at the provincial and local level.
	1.1.2 Operational or implementation plans aligned with the national strategic plan are available and implemented at subnational levels.	The province and local levels are implementing the malaria interventions as guided by the NMSP and other national guidelines on testing, treatment, surveillance and IVM. However, a separate implementation/ operation plans not developed at the province /local level.		
1.2 Committee formation An independent national malaria elimination advisory is recommended to provide an independent view of progress and gaps and can be used during the certification process.	1.2.1 Independent national elimination advisory committee has been established and terms of reference are available.	Nepal National Malaria Elimination Steering Committee (NMESC) has been constituted under the chairmanship of Minister of Health. The terms of reference (ToR) of the committee and membership is available. **(Refer 1.2.1)**	3	1. A similar steering committee at the Provincial level needs to be formed and provide guidance and monitoring malaria elimination activities and work in coordination with the Nepal National Malaria Elimination Steering Committee (NMESC). 2. The NMESC meet to discuss any issues that require significant policy changes.
	1.2.2 The independent national committee is meeting at least annually.[1]	The committee is expected to meet twice a year. However, the meeting of the National Elimination Advisory Committee is yet to be held.		

[1] To be verified through review of reports of the meeting.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
1.3 Communications and advocacy There is a general awareness of the existence and goals of the elimination program, and advocacy for resources	1.3.1 Communications and advocacy plan is available and implemented.	There is no specific document for communication and advocacy plan developed so far. The strategic objective 4 in the NMSP has emphasized to develop comprehensive strategy document and materials for advocacy, social mobilization and behavior change communication (BCC). The preparation of BCC advocacy plan is under process. The products related to BCC has been developed and used in malaria elimination activities. **(Refer file 1.1;1.1.1)**	2	1. Develop communication and advocacy plan to streamline for the malaria program.
1.4 National programme structure All programmes require a central structure to oversee the implementation of national strategies, provide technical leadership, set policies and guidelines, coordinate national training, communicate with donors and evaluate overall progress.	1.4.1 The national malaria programme has a clear structure with roles and responsibilities of units/ departments/sectors clearly defined.	Under the Ministry of Health and population (MoHP), Department of Health Services (DoHS), Epidemiology and Diseases Control Division (EDCD) is divided into NTD and Vector borne Disease Control Section, Zoonotic and other communicable disease control section, epidemiology and outbreak management Section, NCD and mental Health Section, Leprosy Control and disability management section, Disease Surveillance and Research Section . NTD and Vector-borne Disease Control Section is responsible for malaria and other vector borne diseases control. The section is supported by the senior public health officer as section chief, public health officer and a vector control inspector. EDCD works in collaboration with Vector Borne Diseases Training and Research Centre (VBDTRC) for training and research activities related to malaria. Likewise, at the provincial level, Medical Services and Disease Control Department is in charge of all the NTD/VBD including malaria. At the local level, all the health services are coordinated by a health unit.	2	1. Need to strengthen the NTD/ VBDs unit at EDCD with additional technical human resources with designated unit for malaria elimination with clear roles and responsibilities. 2. Develop strong coordination, collaborative mechanisms and regular meetings between the federal, provincial and local level for malaria elimination. 3. Need to assign the dedicated focal person at the province and local level for malaria elimination
	1.4.2 The national programme is effective in implementing elimination strategies, coordinating national training, supervising, monitoring and evaluating progress.	Currently Nepal has headed into elimination in 2025 with activities rolled out across all the 77 districts of the country including the high, moderate, low and no risk districts. With support from the Global Fund, a program management unit has been established at the EDCD to support the malaria program. Additionally, surveillance, entomology officer supports the program at the center/EDCD and the field level. EDCD works in coordination with other relevant divisions at the DoHS, at the provincial and the local level to implement the malaria program activities.		

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
	1.4.3 The malaria programme has clear focal points at subnational levels that are sufficient to implement elimination strategies, conduct training, supervise, monitor and evaluate.	Provincial health directorate consists of nine Sections and a Provincial Reference Laboratory. The nine sections include: 1. Policy, planning and programme coordination section 2. Medical service and disease control section 3. Procurement and supply management section 4. Administration section, 5. Monitoring, evaluation and regulation section 6. Health information and population management section 7. Ayurved and alternative medicine section 8. Health promotion and training section and 9. Nursing service management section. Medical service and disease control division looks after malaria and other VBD/NTDs program. There are designated focal points at the provincial and local level for the malaria and VBD/NTDs program. The health coordinator and sub-coordinators are responsible for all health related activites includingVBD/NTDs/Malaria.. At the province and local level, the current focal persons are assigned multiple responsibilities so they couldn't provide adequate focus on malaria program. **(Refer file 1.4.1)**		
1.5 Community engagement Directly engaging communities in co-planning, co-implementing and co-evaluating malaria elimination programmes will improve the coverage and effectiveness of elimination strategies.	1.5.1 A community engagement plan or framework is available and implemented.	Traditionally, community engagement in malaria program has been slow compared to HIV or TB responses. Community engagement plan has not been developed. Community Based Testing and treatment plan guideline has been developed in 2021. The selection of LLIN is based on the community survey conducted. the insecticide is also selected as per the National TWG recommendation and rotation of insecticides. **(Refer file 1.5)**	1	1. Need to strengthen the community engagement in malaria program especially when the country has elimination at sight. Community engagement plan should be developed with active participation of disease vulnerable populations, key stakeholders, and civil society.

2.2 STRATIFICATION

Targets: Stratification identifies subnational areas (smallest administrative unit possible) by their level of malaria transmission, receptivity, risk of importation of malaria cases and seasonality to permit better targeting of malaria interventions.

RATIONALE	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
2.1 National stratification maps Accurate stratification of malaria transmission is essential for effective targeting of interventions.	2.1.1 An updated map (for the most recent calendar year) of the country stratified by the appropriate measure of transmission is available.[2]	There is yearly update of malaria risk microstratification till the ward level based on disease burden, disease receptivity and vulnerability. The 2020 microstratification is available. **(Refer file 2.1)**	**4**	1. It is recommended that microstratification to be updated every year. Similarly, as the country moves towards the elimination this exercise should be carried out at the Provincial level along with active participation of the local level.
	2.1.2 An updated stratification map considers receptivity and risk of importation.	The scoring of the risk has been carried out and classified as no risk, low risk, moderate risk and high risk. Stratification map considers disease burden of the last 3 years receptivity and risk of importation **(Refer file 2.1)**		
2.2 Intervention targeting Interventions are targeted according to the level of transmission, degree of receptivity and risk of importation	2.2.1 Vector control interventions are targeted to areas based on an updated stratification map.	This national guideline on Integrated vector management (IVM) provides a toolbox of vector control methods and emphasizes on evidence based recommendation. Vector control interventions are targeted to areas based on an updated stratification map. High and Moderate risk areas are covered by LLIN distribution every 3 years. And there is continuous distribution of the LLINs to the pregnant mother during the ANC visits. **(Refer file 2.2.1**	**3**	1. The M and E of the vector control activities should be strengthened. 2. Capacity development of the local level staff in vector control activities (LLIN distribution planning and implementation, IRS planning and implementation). 3. Engaging communities in vector control activities as per the community engagement plan should beundertaken. _____ 1. To stress in the timely implementation of the 1-3-7 strategy. 2. Technical capacity development on malaria surveillance at the provincial and local level. 3. Ensure logistics supplies essential to malaria surveillance are available at the local level. 4. Ensure monitoring mechanism to oversight the effective implementation at the local level. 5. Chemoprevention strategy is not required for the country.
	2.2.2 Surveillance strategies are targeted to areas based on an updated stratification map	The national malaria surveillance is implemented as per the National Guidelines on Malaria Surveillance 20219 which follows the 1-3-7 strategy for malaria elimination. The objective of a malaria surveillance system in the elimination phase is to detect all malaria Infections and radically cured so that they do not generate secondary cases. Once the malaria cases are diagnosed at the local level, they are reported through the MDIS system. This is followed by series of events and coordination between the central, provincial and local level and - the 1-3-7 strategy is implemented. The Malaria program also monitors the active foci/residual non active foci according to the National Surveillance Guidelines. However, there are issues related to effective implementation of the PACD activities in those areas. It is also envisioned that the malaria parasitological testing services are available at the local level at all 77 districts regardless of the risk stratification. However, stock out situation of the RDTs and issues in logistics management are the threat and challenges in ensuring quality diagnostic at all levels. **(Refer to file-5.1.1)**		
	2.2.3 Chemoprevention strategies are targeted to areas based on an updated stratification map.	There are no chemoprevention strategies targeted towards the malaria high risk populations		

2. The unit of stratification will depend on the country, but the goal is for countries to stratify by locality. The measure used for stratification will depend on the level of transmission in the country as well as the objective of stratification. At high levels of transmission, incidence rates or parasite prevalence may be used. When countries are close to elimination, stratification may be based on case counts. Near and after elimination, stratification is based on receptivity and risk of importation, i.e. the malariogenic potential.

2.3 DIAGNOSIS

Targets: Timely and accurate laboratory confirmation of malaria parasitemia among persons seeking care for illness or participants in active surveillance.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
3.1 Diagnostic network The laboratory or testing center network is functional and provides prompt and quality-assured parasitological diagnosis to the entire population	3.1.1 Laboratories or diagnostic testing centres are appropriately staffed with adequate diagnostic capacity.	National malaria program recommends diagnosis by either quality assured RDT or microscopy. The laboratory staffs working at the health facility oversee all laboratory diagnosis and sometimes, their absence in the HF compromises in malaria diagnostic activities. Trained microscopists are available up to PHC levels. Basic and refresher training and competencies are performed routinely. However, due to frequent transition of staff, re-locations and re-adjustments, the functionality of all microscopic centers is an issue. RDT are available at all health facilities; and health staff are trained in testing with updated SOPs. **(Refer to file-3.1.1)**	**3**	1. Ensure the lab staff in the health facility are assigned based on patient burden. 2. Ensure the designated microscopic centers have the basicrequirements to provide quality malaria diagnosis. Ensure timely re-supply/stocking of the SoPs and Bench Aides at the health facility. 3. Continue with regular basic and refresher training course on malaria microscopy. Ensure procurement and supply of quality assured malaria diagnostics for microscopy. 4. Ensure that the malaria diagnostics SoPs are followed at the laboratories. 5. There has been challenges in regular supply of commodities during COVID-19 so the PSM system needs to be strengthened.
	3.1.2 Written standard operating procedures and bench aids are available in all laboratories or diagnostic testing centres.[3]	SOPs detailing the activities performed in laboratories providing malaria microscopy services, RDTs, RDT tutorial guide and bench aides are available at health facilities. Revised lab manuals, Lab plans and Cross-checking guidelines are in the printing stage and will be distributed.		
	3.1.3 Microscopists and lab technicians and staff trained to do microscopy follow standard operating procedures, as evidenced by good quality stained blood slides and accurate readings.	Regular basic and refresher training on microscopy is conducted to enhance the skills of microscopy slide preparation and examination; modules, and lab manuals are attached. Revised Lab manuals are in the printing stage. Positive slides are cross-checked at the district or microscopic centers and even at EDCD. It often noticed that the quality of the microscopy slides is an issue. **(Refer to file 3.2.5) a, b, c, d, e, f, g, h, i, j,**		

3. Standard operating procedures for rapid diagnostic tests must be in alignment with manufacturer's guidance.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
	3.1.4 Laboratory and diagnostic consumables and reagents are supplied continuously with no stock outs.	All the logistics and lab commodities are ensured with no stock outs by regular supervision and monitoring. The stock updates are collected on monthly basis. However, the supply channel has been affected due to current COVID 19 pandemic. The logistics supply system is managed in the eLMIS system. Complete and timely data entry in the eLMIS system can provide real time malaria stock data at the local level.		
	3.1.5 Testing centers that use only rapid diagnostic tests have identified a laboratory where microscopy can be conducted to permit follow-up of the patient.	The health facility which only offers RDT service will verify the result with the nearby microscopy center. The National Lab Plan recommends that HFs not having microscopy facilities, microscopic slides will be sent to the designated microscopic centers for examination and cross-checking. Currently, it is not operating effectively in all the centers.		
3.2 Microscopy quality assurance system A clear structure for a quality assurance system is in place with defined roles and responsibilities.	3.2.1 A national focal point or coordinator is appointed to oversee the QA programme.	National Malaria lab Plan has identified a malaria QA focal person or coordinator. The NPHL is the chair of the national lab steering committee to oversight the overall QA/QC program and has appointed a focal person at NPHL for QA/QC in line with the National lab plan. **(Refer to file-3.2.1)**	**3**	1. There is need to conduct the regular meeting of the national lab steering committee to oversight the overall QA/QC program. 2. National Lab plan 2020-2025 is endorsed by TWG, however, adequate funding needs to be provided for operational support. 3. Similar quality assurance system needs to be developed at the provincial level (provincial malaria QA committee and assign a provincial malaria QA focal person). 4. The NRL should keep the list of L1, L2 level microscopists to fairly assign at the NRL and the provincial level PHL. 5. The NRL should initiate a standard NCAMM and continue to participate in the ECAMM. 6. Supervision and monitoring from PPHL, District need to be more systematic according to the national SoPs. 7. Need to develop a comprehensive operational plan for cross-checking of malaria slides. 8. Standard protocol of QA/QC for malaria should be implemented.
	3.2.2 National reference laboratory is designated officially[4]	There is the clear structure of the national malaria microscopy network consisting of three levels – national reference laboratory (NRL), provincial reference laboratories and peripheral malaria microscopy centers (public and private health facilities). National Public Health Laboratory (NPHL) will serve as the national reference laboratory. The NRL will be capacitated with adequate human resources, including certified (WHO accreditation level 1) malaria microscopists for carrying out QA/QC activities. **(Refer to file-3.2.1)**		
	3.2.3 Roles and responsibilities of quality assurance structure in national and subnational level is well-defined	Roles and responsibilities of all the components of QA/QC structures are illustrated in Lab plan, Cross-checking guidelines. **(Refer to file-3.2.3)**		
	3.2.4 A national core group of highly competent microscopists is established and certified by an external competency assessment[5]	National Malaria program has identified competent microscopists team through internal and external competency assessments Competent microcopists have been involved in lab manual preparation, lab plan development, SOPs, trainings, QA/QC and supervision and monitoring ECAMM are being held regularly with support from WHO. Currently there are 8 L-1 and 15 L2 level microscopists in Nepal. **(Refer to file-3.2.4) a, b**		

4. A copy of the document authorizing the national reference laboratory to oversee quality assurance in the country should be available.
5. The roster of microscopists that make up the core group should be available, along with certificates identifying microscopists with Level I/A or II/B as determined through an external quality assurance scheme.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
	3.2.5 All microscopists receive regular training and routine competency assessments. [6]	VBDRTC, Karnali PPHL, Sudurpaschim PPHL currently possess basic equipment and set up for microscopy training. They regularly conduct basic and refresher training and competency assessment. Other PPHLs also coordinate with these institutions to conduct microscopy trainings. Participants are selected based on their previous training attendance timeline since the last training and recommendations from PPHL-Districts and HFs. WHO regularly supports to conduct the ECAMM and refresher training as needed. **(Refer to file 3.2.5) a, b, c, d, e, f, g, h, i, j,**		
	3.2.6 At least one of following approaches is used for external quality assessment: regular on-site supportive supervision, proficiency testing (or direct evaluation); or blinded cross-checking slides by laboratories at different level[7]	Supervision and monitoring from Central level is frequently performed at the health facility level. Onsite proficiency testing, slide collection for cross-checking are done during supervision and monitoring, but not adequately and uniformly performed. Blind cross-checking of slides is included in the cross-checking guidelines and is in progress for implementation. **(Refer to file-3.2.6) a, b**		
	3.2.7 All positive slides and 10% of negative slides, selected at random, are sent to the national reference laboratory for review[8]	According to our lab plan, all positives and 5% slides will move to the PPHL and NPHL for cross-checking. However, the implementation has not been satisfactory. Currently, only positive slides are cross-checked during case-based investigations and ACDs. At some places, in the initiation of Provinces (SP, Karnali), cross-checking is also performed in the Karnali and Sudur Paschim Province. **(Refer to file-3.2.1)**		
3.3 Microscopy quality control Both internal quality control and external quality assurance systems are in place to ensure that all tests are performed accurately and precisely.	3.3.1 Laboratory registers are up to date and accurate and record minimal essential data on patients and testing results.	A standard recording and reporting forms are used for laboratory data and are entered in HMIS system and available online. **(Refer to file-3.3, a, b, c, d, e, f)**	3	1. Timely entry of the malaria lab data. 2. Prior to distribution, the reagents and other logistics should be quality insured. 3. The maintenance of the laboratory equipment needs to be continued as per plan.
	3.3.2 Internal quality control system, particularly for Giemsa staining and cross checking of blood slides, is in place.	The guidelines and description are given in Lab manuals and lab plan. The activities are currently in progress, as this is related to the full functioning of PPHL and NPHL which are currently overwhelmed by COVID-19 pandemics for last 1 and half year		
	3.3.3 Reagents and equipment are quality assured; equipment is maintained regularly.	The malaria microscopy reagents are procured as per standard GF and national procurement policies which are quality assured. **(Refer to file-3.3.3 a, b, c, d, e, f)**		

6. All records of the external competency assessments of malaria microscopy, training curriculum and material should be available and reviewed.
7. Records of supervision visits should be available in laboratories at all levels. Microscopists should receive reports of feedback from proficiency panels. Reports of slide cross-checking should be available in laboratories at all levels.
8. The records should allow verification that all positive slides and a random sample of negative slides from peripheral laboratories have been reviewed by the national reference laboratory, and that results were reported back to the peripheral laboratory.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
3.4 Rapid diagnostic tests Rapid diagnostic tests are recommended for malaria diagnosis at all health facilities.	3.4.1 Rapid diagnostic tests used by the country are WHO-prequalified or meet procurement standards, and appropriately target the most common malaria species in the country.	All malaria RDTs (P*f*, P*v*) procured at the central level (EDCD) are WHO PQ as mandated by the National Testing and Treatment guidelines. However, due to multi-time procurement, different brands of WHO-PQ RDTs are available at the same time in the country, creating confusion to the health workers. The procurement made at the provinces, local level and private health sectors are often non-WHO PQ RDTs. Mostly due to lack of knowledge, availability and financial reasons.	**3**	1. Ensure the availability of the RDTs at the HFs at all the levels and round the year. 2. Recommend procurement of a standard single brand of WHO PQ RDT to be used in all public facility in the country. This will improve the quality assurance of the RDT diagnosis and reduce confusion among health workers. 3. onsite supervision at health facility should cover the demonstration of RDT testing to ensure accurate knowledge of procedures and interpretation.
	3.4.2 Rapid diagnostic tests are available at all levels of health facilities.[9]	National malaria program ensures that all the health facilities have WHO-PQ RDT supplies throughout the year.		
	3.4.3 Health facility staffs are trained and proficient in performing and interpreting rapid diagnostic tests.[10]	RDT testing is guided through Information for use document incorporated in the RDT kit. During supervision and monitoring, case investigations, ACDs, compliance with RDT SOPs and performances are usually evaluated. Training is given during health facilities orientation, CME, review meetings. Demonstration of RDT testing and interpretation of the results is always included during training sessions. All the health facilities are provided with RDT SOPs stickers in Nepali (procedures and interpretation with images). A tutorial video has been developed and ready for circulation. **(Refer to file-3.4.3)**		
	3.4.4 Outreach training and supportive supervision is undertaken to support rapid diagnostic test implementation in peripheral health facilities.	Trainings are provided routinely during malaria orientation programs, during supervision and monitoring and other program related activities. Hands-on training is given to enhance the skills and performance. Training are also conducted in private sectors to improve quality diagnosis and increase the testing, recording and reporting. Supervision and monitoring, the integral part of the malaria program, is ongoing process. As the QA/QC part is now handed over to NPHL, PPHL and districts, outreach supervision and monitoring is required to be more systematic and organized and need to be conducted from these levels to closely observe diagnostic services in peripheral health facilities. It is in progress and expected to run full fledge as situation of COVID-19 gets little better.		

9. The appropriate use of rapid diagnostic tests should be described in the national strategic plan, and the availability of rapid diagnostic tests at different levels of the health system should follow the national strategic plan.
10. Health facility staff should be observed while performing rapid diagnostic tests to ensure accurate knowledge of procedures and interpretation.

2.4 CASE MANAGEMENT

Targets: All laboratory-confirmed cases of malaria receive appropriate and effective treatment, including radical cure for *P. vivax* and *P. ovale* infections, and low-dose primaquine for *P. falciparum* infections

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
4.1 Guidelines Malaria case management, consisting of early diagnosis and prompt, effective treatment, remains a vital component of malaria control and elimination strategies	4.1.1 Written national treatment guidelines are available, in alignment with WHO guidance, including for severe malaria, and implemented.	The National Malaria Treatment Protocol 2019 is based on WHO recommendations to provide guidance to health workers to ensure that optimal care is provided for malaria patients and contribute to achieving the goal of malaria elimination in Nepal by 2025. **(Refer to file-4.1; 4.1.1)**	4	1. The malaria services should be linked to the national health insurance program to include support for inpatient admission. 2. Include social support to the malaria patients to avoid any hardship or improve adherence to the radical cure.
	4.1.2 Malaria testing and treatment are available without financial hardship to all populations at risk, including non-citizens	Malaria testing and treatment services are given free of cost at HP, PHCs, hospitals where services are available. **(Refer to file-1.1.1)**		
4.2 Training Health care providers are skilled at identifying suspected patients, diagnosis, treatment using the correct treatment regimens and the referral system for severe cases.	4.2.1 Training on identifying suspected malaria cases, conducting malaria diagnosis and case management is provided to relevant health providers routinely.[11]	NMSP 2014-2025 in objective 5 has emphasized to develop and strengthen effective health workers at the center, provincial and local level. Training/Refresher trainings have been developed for health workers at all levels on guidelines, protocols and SOPs related to malaria case management Health workers have been frequently trained in diagnosis and case management of malaria, prevention and vector control including IRS and distribution of LLINS. **(Refer to file-1.1.1)**	**3**	1. Continue the Training/ Refresher trainings regularly for health workers at all levels on guidelines, protocols and SOPs. 2. Develop online module of training on National Malaria Treatment Protocol to increase accessibility.
4.3 Referral system A system is in place to refer severe patients to hospitals.	4.3.1 A referral system for patients with severe malaria is described in the national strategic plan and implemented.	Referral system is illustrated in National Malaria treatment protocol as follow: Pre-referral treatment should be provided for suspected severe malaria before transfer to a higher-level facility. In health facility where complete treatment of severe malaria is not possible, but if the artesunate injections are available, give adults and children a single intramuscular dose of artesunate, then refer to an appropriate facility for further care. **(Refer to file-4.1)**	**2**	1. Ensure that there is access to Inj. Artesunate at PHC level.

11. Review training reports and training curriculum.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
4.4 Treatment for uncomplicated malaria infections Treatment maximizes the likelihood of rapid clinical and parasitological cure and minimizes onward transmission from the treated infection.	4.4.1 Recommended drugs in the national case management guidelines i.e. NMTP 2019 for all *Plasmodium* species are appropriate.	The anti-malarial drugs used are in line with WHO recommendation. First line treatment The first line treatment for *P. vivax*, P.*ovale*, P.*malariae* or P.*knowlesi* is chloroquine (CQ) for 3 days. Day 1: chloroquine is given at dose of 10 mg base/ kg body weight. Day 2: 10 mg/kg body weight. Day 3: 5 mg/kg body weight. For P. *vivax* and *ovale*, radical cure is required. Second line treatment: The recommended 2nd line antimalarial in Nepal is dihydroartemisinin + piperaquine (DHA/PPQ). Treatment of P. falciparum malaria Artemether combination therapy (ACT) is used for First line treatment Artemether + lumefantrine (AL) given over three days and a single dose primaquine. To reduce transmission. (*Malaria Treatment Guideline-2019)* **(Refer to file-4.1)**	4	1. Continue to ensure undisrupted supply of quality drugs for malaria at all levels of health facility. 2. Training should include when to use the 2nd line drugs and ensure its availability at the district levels and its use should be based on evaluation as per NMTP 2019. 3. Robust planning of logistics supply for antimalarial drug to avoid stock out in risk areas as well as to avoid bulk expiry. 4. Develop mechanism to monitor adherence to the radical cure for P*v* infection. 5. Ensure that the patients are prescribed anti-malarial as per the body weight and as recommended in the WHO/National Treatment guidelines.
	4.4.2 A single, low dose of primaquine is used to reduce transmission for *P. falciparum*	Primaquine single dose of 0.25 mg/kg bw is given. (except in pregnant women, infants aged < 6 months and women breastfeeding infants aged < 6 months). Testing for glucose-6- phosphate dehydrogenase (G6PD) is not required. (National Malaria Treatment Protocol 2019) **(Refer to file-4.1)**		
	4.4.3 For *P. vivax* and *P. ovale,* primaquine is prescribed according to WHO guidelines to prevent relapses.	To achieve the goal of malaria elimination and in the light of the public health benefit and significance of achieving radical cure, it is recommended to use the 14 days regimen of primaquine in all cases. G6PD testing is not required. However, all patient receiving primaquine are properly counselled and closely supervised for detection and management of primaquine-induced hemolysis. The patients follow up will be done on Day 3, 7 and 14, both to monitor for adverse effect and to encourage adherence to the 14 days treatment schedule. **(Refer to file-4.1)**		
	4.4.4 The G6PD status of patients is used to guide administration of primaquine according to WHO guidance.	G6PD testing is not required prior to providing radical cure. However, all patient receiving primaquine are properly counselled and closely supervised for detection and management of primaquine-induced hemolysis. The patient follow up will be undertaken on Day 3, 7 and 14, both to monitor for adverse effect and to encourage adherence to the 14 days treatment schedule. Screening for G6PD deficiency is not widely available outside major hospitals. The G6PD RDTs are not widely available apart from the high- risk areas of the G6PD deficiency. In Nepal, there has been no documentation of severe adverse reaction despite the long-time use and experience with primaquine.		

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
4.5 Treatment for severe malaria Treatment for severe malaria includes intravenous or intramuscular artesunate for at least 24 h and until the patient can tolerate oral medication, followed by complete treatment with 3 days of artemisinin-based combination therapy.	4.5.1 Treatment for severe malaria is specific and dosage is weight-based.	The antimalarial medicine recommended for the treatment of severe malaria is an initial treatment with injectable (IV/IM) artesunate followed by a full course of AL as soon as the patient is stable enough and able to tolerate oral medication. **Inj. Artesunate**: Recommended Dosage for injectable artesunate: – Children less than 20 kg: artesunate 3.0 mg/kg bw – Older children and adults: artesunate 2.4mg/kg bw Dosage regimen - Give 3 parenteral doses of injection artesunate in the first 24 hours ■ first dose on admission (time zero), ■ second dose 8 hours after the first dose and ■ third dose at 24 hours after the first dose. Thereafter every 24 hours until patient is able to tolerate oral medication. The parenteral antimalarial drugs should be given for a minimum of 24 h once started (irrespective of the patient's ability to tolerate oral medication earlier) or until the patient can tolerate oral medication, before giving the oral follow-up treatment (3 days) with single dose of primaquine (PQ) **Management of specific complications:** Severe malaria is associated with a variety of manifestations and complications, which must be recognized promptly and treated. **(Refer to file-4.1)** (Malaria Treatment Guideline-2019 – table 3.5, page 22)	**4**	1. The guideline for the treatment for severe malaria and need to ensure the availability of the essential malaria drugs & commodities in all health care facilities
4.6 Patient follow-up All malaria patients have their treatment supervised to ensure adherence, and blood slides taken (at a minimum) at day 28 (or 42, depending on drug regimen) to ensure parasite clearance.	4.6.1 Treatment is directly supervised for all cases to ensure adherence.[12] 4.6.2 All cases, including imported cases, have a day 28 (or day 42, depending on drug regimen) blood slide taken to monitor patient cured.[13]	The NMTP recommends follow up of patients at interval of 3, 7 and 14 days. Patient case investigation form (CIF) has the checklist with the follow up dates. Follow up can be patient visit or telephonic conversation on the adherence to treatment and adverse effect of antimalarial used. Not done. Unless the patient returns to the health facility with the persistent illness.	**2**	1. As we approach the elimination with decreasing number of cases, all cases should be followed up at 28 days to see clinical or parasitological improvements.

12. Case follow-up forms should include documentation that treatment adherence was monitored (supervised treatment).
13. Case follow-up forms should include documentation that the patient had blood slides taken at least on day 28 (or day 42) to ensure complete cure. P. vivax and P. ovale cases should additionally have a blood slide taken at 3 months.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
4.7 Monitoring drug efficacy As countries progress to very low numbers of indigenous malaria cases, monitoring of drug efficacy is integrated into national malaria case-based surveillance, replacing regular studies of therapeutic efficacy.	4.7.1 Drug efficacy monitoring is integrated into case surveillance, with parasitologic testing (at a minimum) on day 3 and 28 (or 42, depending on the type of artemisinin-based combination therapy).	Not done yet.	**1**	1. As we approach the elimination with decreasing number of cases, traditional TES study may not be feasible. So, the program should initiate case-based TES as recommended by WHO.
	4.7.2 Filter paper blood samples or rapid diagnostic test cassettes are collected to monitor molecular markers of drug resistance, where applicable.	Not done yet		
4.8 Drug supply Systems are needed to ensure that sufficient treatment courses are available when and where needed.	4.8.1 A system and methodology to ensure health facilities have sufficient stock of diagnostic and treatment supplies is in place.	The diagnostic and the treatment supplies are sent to Provincial Level from the Central level and then to the to the health facilities via district health offices The Logistic Management system is operating which can track the stock of the diagnostic and treatment supplies up to the health office level at the district. However, the LMIS system at the facility level need to be strengthened to track the real time data on the diagnostic and treatment supplies.	**2**	1. The LMIS system at the facility level need to be strengthened to track the real time data on the diagnostic and treatment supplies. 2. Provide capacity building exercise for logistics management of the anti-malaria drugs and diagnostic.
	4.8.2 Stock-outs of antimalarial drugs are monitored.[14]	eLMIS is already rolled out throughout the country. All the provinces, districts and local levels already started using it for their stock recording and reporting. Its expansion up to HF level is going on. There is still big issue of timely and complete data entry into system. The LMIS system (Complete and Timely Reporting) at the facility level need to be strengthened to track the real time data on the stock-out of the malarial drugs to ensure the timely supply.		
4.9 Private sector In many countries, the private sector treats a large proportion of malaria cases and needs to be trained in and follow the national treatment and surveillance guidelines.	4.9.1 The private sector follows national treatment guidelines.	All confirmed malaria cases must be treated promptly with anti-malarial drugs and tracked as per NMTP. The Private Sector Engagement Guideline has strongly recommended that private sectors need to follow the national treatment guidelines. The anti-malarialdrugs in several combinations are openly available in market. The private sector treatment also involves use of Inj. Artesunate even for non-severe cases. **(Refer to file-4.9.1)**	**3**	1. Orientation of the private sector on NMTP and surveillance. 2. Encourage the private sector to use quality assured diagnostics and treatment for malaria. 3. Engage with the private sector in improving malaria case surveillance and treatment guidelines.

14. There should be monthly reports documenting stockouts.

2.5 SURVEILLANCE

Targets: Surveillance systems identify the areas and population groups most affected by malaria, assess the impact of interventions and progress towards elimination, actively identify and treat cases to prevent onward transmission and monitor the malaria-free status of areas that have eliminated transmission.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
5.1 Guidelines and standard operating procedures Surveillance is a key intervention in elimination settings and operating procedures need to be described and aligned with WHO guidance.	5.1.1 Written surveillance guidelines for passive, proactive and reactive surveillance, case and focus investigations are available, aligned with WHO recommendations and implemented.	National Malaria Surveillance Guidelines 2019 aligned with WHO recommendations. Included recommendation for all malaria related surveillance activities. **(Refer to file-5.1)**	**3**	1. Ensure implementation of the guidelines at all levels.
5.2 Training Surveillance as an intervention requires a different skill set than routine surveillance and all personnel involved in case or focus investigations need special training on protocols and procedures.	5.2.1 Task-based training on surveillance is provided to district or health facility staff responsible for case notification, investigation and classification and is conducted routinely.	Task-based training on surveillance is provided to district or health facility staff responsible for case notification, investigation and classification and is conducted routinely **(Refer to file-5.2.1); a**	**3**	1. Selected private health facility to be included regularly in all malaria training activities including treatment, surveillance. 2. training programs for the health care providers at the private clinics have been initiated but needs to be expanded.
	5.2.2 Private clinics and providers that treat patients with fever are trained in appropriate surveillance procedures.	Private sectors are often not included in the training and capacity building programmes conducted by the MoHP. A limited training are provided to selected private health facility on recording and reporting. Orientation on malaria elimination, surveillance, NMTP, case notification, recording and reporting is planned to be conducted at the local body, private health facility facilitated by province, district, and local body in close collaboration and co-ordination with APHIN and NCDA. Participants are staffs of private clinics, drug retailers, pharmacists. *(Private Sector Engagement Guidelines in Malaria)* **(Refer to file-5.2.1, 5.2.2) 5.2.3**		

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
5.3 Passive case detection Suspected malaria cases are identified by health workers or by community health workers through passive case detection. If the population has good access to health care, passive case detection can result in early identification and treatment of cases reducing the risk for ongoing transmission.	5.3.1 By law, malaria is a notifiable disease and a case notification protocol exists and is implemented, including for the private sector.	There has been ongoing discussion to mandate malaria as notifiable disease by law and is on process. Currently any malaria cases can be reported for notification by the MDIS and also thru Early Warning and Reporting System (EWARS)	3	1. High level advocacy to mandate malaria as notifiable disease. 2. Ensure all the suspected cases are tested for malaria. 3. Train to develop and rationalize other cases of fever in case the malaria test is negative. 4. MDIS data recording is not compatible with DHIS-2 and does not include all the components of malaria program. There is need to build Malaria Module in DHIS -2 so we can enter real time data. DHIS data system needs to be strengthened.
	5.3.2 Suspected case definition is clearly defined in guidelines and standard operating procedures.[15]	A suspected malaria case is an individual with an illness suspected by a health worker to be due to malaria, generally based on the presence of fever with or without other symptoms. This suspicion triggers the process of parasitological confirmation by microscopy or RDT and the subsequent decision on whether to treat the individual for malaria. *(National Malaria Surveillance Guidelines 2019)* **(Refer to file-5.1.1)**		
	5.3.3 All suspected cases are reported and tested for malaria using microscopy or rapid diagnostic tests.[16]	National Malaria Treatment Protocol (NMTP) 2019 recommends all suspected malaria cases should have a parasitological test either by quality assured microscopy or RDT to confirm the diagnosis. Quality assured microscopy should be used where available. In some specific situations (e.g. monitoring treatment failure or to determine parasite density) microscopy is preferred to RDT **(Refer to file-5.3.3)**		
	5.3.4 The minimum data set is electronically recorded for each case.[17]	Line Lists of all Confirmed Malaria Cases format constitute the minimum data set which are electronically recorded. **(Refer to file-5.3.4)**		
	5.3.5 Case-based data are reported to district and national levels according to guidelines.	Case based data is reported to district and national level via malaria CRF. At present, malaria cases are reported using the Malaria Disease Information System (MDIS) (case notification within 24 hours of case detection).		
5.4 Private clinics A strategy for ensuring that private clinics are reporting data to the ministry of health exists.	5.4.1Private, military, police, faith-based and non-governmental organization clinics are reporting case-based data to the ministry of health.	All positive cases can be notified immediately to the malaria program by sending SMS via MDIS. (National Malaria Surveillance Guidelines 2019). However, knowledge on need to report malaria case in private sector is limited. *(Private Sector Engagement Guidelines in Malaria-2019)* **(Refer to file-5.2.2)**	**2**	1. Provide orientation to the private sectors on malaria case surveillance and reporting.

15. The suspected case definition in the surveillance guidelines should include, at a minimum, the essential clinical features that clinicians use to identify suspected malaria patients, such as fever. Countries are encouraged to include potential risk factors, such as travel to a malaria-endemic area in the previous month or occupations at higher risk, such as forest workers. The understanding of the suspected case definition by those responsible for determining who is tested should be verified.

16. At a minimum, countries should report the number of suspected cases tested for malaria, the number testing positive and the number testing negative. A country with expanded implementation will also report minimal demographic and risk factor data for all cases suspected of malaria (e.g., age, sex, clinical features, travel history, occupation) to permit analysis of risk factors for malaria and better define populations at risk. A country with full implementation will report clinical features and risk factors for all patients with fever or anemia to permit analysis of the proportion of patients meeting the suspected case definition that were identified and tested.

17. Refer to the Framework for malaria elimination for more information on the minimal essential data for each case.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
5.5 Proactive case detection Proactive case detection can play an important role by targeting high risk populations who may not receive a timely diagnosis of malaria through passive case detection.	5.5.1 The strategy and guidelines for proactive case detection strategy (objectives, high-risk population, geographic unit, timing) are available, appropriate and implemented.	The strategy and guidelines for proactive case detection strategy (objectives, high-risk population, geographic unit, timing) are available. However, complete implementation is a challenge. **(Refer to file-5.1.1)**	**3**	1. Even prior to COVID, the PACD could not be completed to cover all the risk areas. Currently due to COVID 19 pandemic, the proactive case detection and the reporting of has been compromised which needs to be accelerated. 2. The EDCD needs to make annual PACD plan and budget accordingly for implementation along with the local level. 3. The program needs to published the reports by reviewing the data from proactive cases periodically and provide timely/regular feedback to the HFs.
	5.5.2 Data from proactive case detection are identified separately in the surveillance database.	Data from proactive case detection are identified separately in the surveillance database. **(Refer to file-5.3.3)**		
	5.5.3 Programmes are routinely reviewing data from proactive case detection to determine whether the approach is efficient and useful.	Programme review data from proactive case detection once there are higher number of cases reported.		
5.6 Reactive case detection Reactive case detection may be used to identify co-travellers or other community members exposed to the same risk factors as the index case. Reactive case detection may be used to help support classification of cases as imported or introduced, may be considered the first step in focus investigations and may help in increasing the sensitivity of the surveillance system.	5.6.1 The strategy and guidelines for reactive case detection strategy (objectives, screening method, diagnostic test, radius for testing, frequency of rounds) are available, appropriate and implemented.	The strategy and guidelines for reactive case detection strategy (objectives, screening method, diagnostic test, radius for testing, frequency of rounds) are available, appropriate and implemented. However, due to geographic reasons, prompt mobility is an issue. **(Refer to file-5.1.1, 5.8.1)**	**3**	1. The EDCD needs to allocate budget for the RACD. 2. Effective monitoring and supervision should be provided to see the quality of the RACD. 3. The program should keep data on RACD and PACD for better program analysis.
	5.6.2 Cases identified during reactive case detection are tagged in the surveillance database.	Cases identified during reactive case detection are tagged in the surveillance database. **(Refer to file-5.3.3)**		
	5.6.3 Programmes are routinely reviewing data from reactive case detection to determine whether the approach is efficient and useful.	Programme review data from reactive case detection to determine whether the approach is efficient and useful.		

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
5.7 Surveillance coverage In elimination settings, all cases must be identified by the surveillance system	5.7.1 All at-risk populations are covered by passive or proactive surveillance for malaria.	All at-risk populations are covered by passive or proactive surveillance for malaria. Malaria testing is available at all the health facility. **(Refer to file-5.3.3)**	**3**	1. The EDCD needs to keep a disaggregated data on all the testing conducted. 2. Operational research to map risk behavior, movement of the high risk group for malaria.
	5.7.2 The programme routinely evaluates the country's high-risk populations to ensure they are adequately covered by surveillance.	The programme has identified high risk groups especially the migrants, forest workers, brick factory workers. And regularly conduct PACD in those population/areas. **(Refer to file-5.7.2)**		
5.8 Case investigations Case investigations determine the likely locations of infections to determine the locations requiring response.	5.8.1 Case investigations are undertaken to determine the likely place of infection.[18]	The case investigations are conducted as per the National Guidelines. However, foci responses are sometime delayed to geographic remoteness. **(Refer to file-5.1.1, 5.8.1)**	**3**	1. Monitor and evaluate malaria case investigation and foci response regularly. 2. Need to strengthen the foci and case investigation activities for timely response and enhance operation support for field workers
	5.8.2 If the case was acquired locally, the likely location of infection (household or place of work) is geolocated.[19]	If the case is acquired locally, taking the patients house as the center, people residing within 2 km are examined, fever is checked and the blood samples are tested. *(National Malaria Surveillance Guidelines 2019)* **(Refer to file-5.1.1, 5.8.1)**		
	5.8.3 Case investigation forms include minimal essential data (patient demographics, illness history, diagnostic test results, treatment, travel history) for case classification and are completed fully for each case.	Case investigation form (CIF)includes patient demographics, illness history, diagnostic test results, treatment, travel history. (National Malaria Surveillance Guidelines 2019) **(Refer to file-5.1.1, 5.8.1)**		
	5.8.4 All cases are classified correctly according to WHO guidelines.[20]	The cases are classified as per WHO protocol as imported and indigenous to guide in malaria response.		
	5.8.5 Additional investigations are conducted to support the classification of introduced cases when no imported case can be linked directly to the introduced case.[21]	Yes, when investigation shows that the cases were developed due to delay in response. The investigation would support the classification of introduced cases when no imported case is linked directly to the introduced case. However, it would be noted as indigenous case and responded accordingly.		

18. Depending on the number of cases in an area, the information gathered during a case investigation may be used simply to differentiate between locally-acquired and imported cases based on the case's location during the likely period of infection. Simply differentiating between locally-acquired and imported cases could be done by a healthcare worker at a health facility. However, when the number of cases becomes very few, the importance of identifying the exact location of infection becomes critical to be able to conduct the appropriate investigations to develop a specific response plan. In this instance, conducting investigations at the household level becomes essential.

19. Geolocation can include simply identifying the household on a sketch map or use of latitude and longitude as determined using a global positioning system (GPS).

20. Several countries have found the independent national elimination advisory committees to be helpful in reviewing case classifications to provide an objective and unbiased view of the data supporting classification, particularly when the country begins distinguishing introduced from indigenous cases, and when the country is working to prevent re-establishment.

21. In countries with very few cases (e.g., less than 20), it may prove challenging to identify the imported cases that led to an introduced case. To support the classification of cases as introduced, the country can conduct additional investigations (entomological and epidemiological) to rule out indigenous transmission, thereby strengthening the evidence that the case was not indigenous.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
5.9 Data analyses Decisions on programme policies, strategies, approaches and priorities are based on the best available evidence to ensure maximum impact with the available resources, improve the results that programmes can achieve, and enhance accountability. Leaders at all levels of the malaria programme are empowered to collect and analyze data regularly.	5.9.1 Health facility, district and national staff are examining or analyzing surveillance data for action, planning or monitoring	Health facility and district staffs are encouraged to examine or analyze surveillance data for action, planning or monitoring. However, it does not fall under priority due to lack of HR and inadequate technical skills.	**3**	1. Health facility and district staffs have been overburdened with multiple task which has compromised their performance. They need to be encouraged to examining or analyzing surveillance data for action, planning or monitoring. 2. Regular feedback (formal) should be provided to each district for malaria related data. 3. The M& E indicators should be reviewed and discuss regularly at the central level.
	5.9.2 Individual health facilities are receiving feedback on their reports	The HF do not receive formal feedback from the center. **(Refer to file-5.9.2)**		
	5.9.3 The programme is monitoring and evaluating indicators of surveillance system performance.[22]	The monitoring and evaluation of the program indicators is ongoing.		
5.10 Bulletins Publication of regular bulletins provides a transparent and timely manner to disseminate information on malaria cases to the public and neighboring health areas or countries. Annual malaria surveillance reports provide official data on the number of malaria cases reported in the country.	5.10.1 Malaria case information is publicly available, at least monthly, with data reported at least to the district level	Malaria case information bulletin is publicly available. However, the bulletins are not published monthly. **(Refer to file-5.10)**	2	1. Dashboard of malaria data for public viewing should be developed to improve the transparency of malaria program and to increase people's interest in malaria 2. Annual malaria report needs to be published annually.
	5.10.2 Annual malaria surveillance reports are produced.	Annual malaria surveillance reports are produced but not done annually and are limited in information. **(Refer to file-5.8.1)**		

22. For example, programmes should routinely analyze the time from symptom onset to diagnosis and to treatment for all malaria cases; the proportion of suspected malaria cases that receive a parasitologic test; the time from diagnosis of a positive case to notification to the appropriate authorities; the proportion of confirmed cases that complete their treatment; the proportion of confirmed cases with day 28 (or day 42) blood slides taken, etc.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
5.11 Monitoring and evaluation Monitoring and evaluation are essential for measuring how well an elimination programme is operating over time and whether it is achieving its milestones and goals.	5.11.1 Monitoring and evaluation plan is available, the indicators are aligned with WHO guidance and the plan is implemented.	M and E plan (2021) is available, the indicators are aligned with WHO guidance and the plan is in process of implementation. **(Refer to file-5.11.1)**	**3**	1. The M and E plan needs to be costed for effective implementation. 2. Regular audit of program data should be conducted as per the M and E plan guidelines. 3. An integrated malaria module should be introduced to the DHIS/ HMIS system, so that a complete malaria data set can be reported at the health facility.
	5.11.2 Audits of data quality for monitoring and evaluation are performed, reports are available, and feedback is provided to facilities and staff that collected the data.	The HMIS data is regularly downloaded and provide feedback to the field staffs. In addition, during the supporting visit the data recording and reporting system is reviewed and necessary feedback is provided. **(Refer to file-5.11.1)**		
	5.11.3 A high-quality data management system for entering, analyzing and reporting on monitoring and evaluation data is used.	Currently multiple sources are used for malaria data. Case based data is obtained from the MDIS online portal, diagnostics, ACD/PCD data are from the HMIS system which often causes delay in real time analysis of data.		

2.6 FOCUS INVESTIGATIONS, MICROPLANS AND EPIDEMIC RESPONSE

Targets: Focus investigations occur when the number of malaria cases is fewer than 3-4 per week per focus investigation team. Focus investigations are conducted to identify the determinants of malaria transmission to develop a response microplan. Focus investigations may be broadened into outbreak investigations when the number of cases in the area exceeds normal thresholds.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
6.1 Definition The programme has set the definition and size of their foci based on WHO guidance and availability of human and logistical resources.	6.1.1 A malaria focus is defined in the surveillance guidelines.[23]	A 'focus' is considered to be a defined, circumscribed area situated in a currently or formerly malarious area containing the continuous or intermittent epidemiological factors necessary for malaria transmission *(National Surveillance Guidelines 2019)* **(Refer to file-5.1.1)**	**4**	1. The information on foci and risk area should be easily accessible and available at all levels.
6.2 Classification Foci are classified and monitored to target malaria interventions and determine response elements.	6.2.1 Criteria for focus classification are included in the surveillance guidelines and harmonized with WHO guidance.	The criteria of focus classification is well stated in National Surveillance Guidelines 2019 and manual for foci investigation. **(Refer to file-5.1.1; 6.3.1)**	**3**	1. The foci should be annually reviewed and planned accordingly.
6.3 Focus investigations Focus investigations are conducted to delimit and characterize the area and population at risk, and to understand the determinants of transmission in the area.	6.3.1 Standard operating procedures for focus investigations, including objectives, procedures, triggers, timing, reporting and response elements, are available, appropriate and implemented.[24]	Standard operating procedures for focus investigations, including objectives, procedures, triggers, timing, reporting and response elements, are available. However, due to lack of adequate funding, technical capacity, it is most often delayed and needs to be supported by the central level. **(Refer to file-6.3.1)**	**3**	1. The focus investigation needs to be carried out strictly following the SOPs and the manual for foci investigation. 2. Technical capacity development on different aspects of foci investigation should be conducted at the local level. 3. Adequate budget should be allocated at local level.
	6.3.2 A focus database is available and up to date and includes the minimum information needed to understand what activities were conducted to eliminate transmission.	A focus database is available and up to date. The maps have been prepared as per the foci distribution. The foci register constitutes the minimum information needed to understand what activities were conducted to eliminate transmission **(Refer to file-6.3.2a, b, c, d, e)**		1. The foci data base should be converted to electronic version with GIS information. 2. The foci information and data base should be easily available and accessible at all levels.

23. The delineation of transmission areas into foci is only of practical value if this will result in few foci so that their investigation is operationally feasible. For practical purposes, the typical size of a focus is the same as a small village where households are separated by small distances.

24. The elements of the focus investigation should be clear in the standard operating procedures, including when and why different elements might or might not be included. For example, entomologic investigation may not be needed if the epidemiologic data clearly demonstrate local transmission and data are not needed to make decisions around what type of vector control to implement.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
6.4 Foci response plans A plan is developed to respond to the findings of the focus investigation and to communicate to health staff, community leaders, and other relevant local actors what steps need to be taken when and by whom to eliminate transmission, and to monitor progress.	6.4.1 Written microplans for activities in each focus are prepared, with information on timing, responsible parties, supplies needed, etc.	The responses for the foci are conducted in general guidelines of the foci response. However, micro-planning is not conducted. **(Refer to file-6.4.1)**	**2**	1. The micro-plan needs to be developed for yearly foci response at local/district/ provincial level with bottom-up planning.
	6.4.2 Micro-plans are implemented and activities are documented	Micro-plans are not yet implemented. Top down planning is being done.		
6.5 Epidemics and outbreaks As the prevalence of malaria decreases, transmission becomes unstable, and countries are at increasing risk for epidemics.	6.5.1 Written epidemic or outbreak preparedness plan, that includes a plan to mobilize needed resources, is available and appropriate.	Written epidemic preparedness plan including the epidemic preparedness, epidemic verification, epidemic responses and post epidemic assessment is illustrated in National Malaria Surveillance Guidelines 2019. **(Refer to file-5.1, 6.5.1)**	**4**	1. The epidemic plan is available and funded as per the guidelines.

2.7 VECTOR CONTROL AND ENTOMOLOGICAL SURVEILLANCE

Targets: Vector control is implemented effectively to reduce malaria and prevent re-establishment of transmission. Entomological surveillance is able to characterize receptivity to guide stratification and selection of interventions, determine the seasonality of transmission for optimal timing of interventions, and monitor the susceptibility of vectors to insecticides used in vector control.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
7.1 Entomological surveillance Entomological data are collected to determine where and when vector control is needed and which insecticide must be used.	7.1.1 Written entomologic surveillance guidelines and standard operating procedures are available, aligned with WHO guidance and implemented.	Guidelines for Entomological Surveillance of Malaria Vectors in Nepal 2017 as per WHO guidelines. **(Refer to file-7.1.1)**	**3**	1. Regular Training on entomology guidelines at the local level. 2. Allocate funding to initiate operational sentinel surveillance for entomology.
	7.1.2 Sentinel sites for entomological surveillance are established as per the guidelines.	Sentinel sites for entomological surveillance is recommended in the guidelines, but has not been implemented yet. **(Refer to file-7.1.1)**		
	7.1.3 Entomologists conducting surveillance receive training routinely.	The Basic Medical Entomology Training manual is available. The trainings are conducted, however it needs to undertake regularly **(Refer to file-7.1.3) a, b, c, d, e, f)**		
7.2 Vector species and behavior An understanding of local vector biology (species diversity and seasonal density fluctuations), their behaviour and ecology (preferred oviposition site, host choice and resting location) is important to inform decisions on the deployment of cost effective vector control interventions	7.2.1 Entomologic intelligence, including primary and secondary vectors, is available for all foci within the last 3 years.[25]	The data on the primary and secondary vectors, is available for all foci. **(Refer to file-7.2.1)**	**2**	1. The data on the Entomologic characteristics of the primary and secondary vectors needs to be periodically updated.
	7.2.2 Basic behavioral characteristics (indoor vs. outdoor biting preferences, indoor vs. outdoor resting preferences, blood meal preferences) are known for primary and secondary vectors.[26]	Basic behavioral characteristics (indoor vs. outdoor biting preferences, indoor vs. outdoor resting preferences, blood meal preferences) are known for primary and secondary vectors **(Refer to file-7.2.2)**		

25. Entomological surveillance data for foci may be extrapolated from sentinel sites rather than collected directly during a focus investigation. Critical data include abundance of different vector species, seasonal changes in abundance and susceptibility to insecticides.
26. Behavioral data for vectors can be obtained from research activities and published articles.

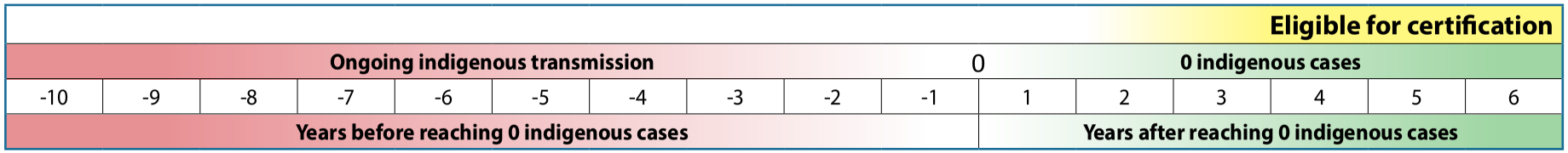
CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
7.3 Insecticide susceptibility Monitoring insecticide susceptibility is useful to predict vulnerability of vectors to insecticide-based interventions and essential to inform choice of alternative insecticides	7.3.1 An insecticide resistance monitoring plan is available, appropriate and implemented.	IRM is available as part of National IVM document, but not operational. However, taking policy decisions relating to change of insecticides is difficult due to higher cost of the new insecticides. Protocols for Monitoring Vector Susceptibility to Insecticides and Bioassay test on IRS and LLIN are available. **(Refer to file-7.3.1)**	**3**	1. A comprehensive operational IRM plan should be developed and implemented as a critical part of Malaria Program.
	7.3.2 Data on vector susceptibility to insecticides is available for all foci.[27]	Regular IR studies conducted provides data on vector susceptibility to insecticides is available for some foci. **(Refer to file-7.3.2) a**		
7.4 Vector control Vector control, together with case management, is the most effective method for malaria control and elimination	7.4.1 Written vector control guidelines and standard operating procedures are available, aligned with WHO recommendations and implemented.	National guidelines on Integrated Vector Management (IVM) guides the selection and use of vector control intervention. **(Refer to file-7.4.1)**	**3**	1. Develop training module on IVM. 2. Implement IVM thru the highest coordinating mechanism. 3. Conduct regular trainings for vector control staff on IRS. 4. Ensure IRS operations are well planned, supervised and monitored for insecticide efficacy. 5. Ensure LLIN distribution are well planned and operated to reach the disease vulnerable populations and pregnant women.
	7.4.2 Vector control staff conducting indoor residual spraying or larval source management receive regular training.	Vector control staff conducting indoor residual spraying or larval source management receive training. The trainings are conducted in ad hoc manners by different provinces. Trainings need to be conducted regularly. ToT were planned to conduct for vector control staffs but couldn't happen due to COVID-19. **(Refer to file-7.4.2)**		
	7.4.3 The vector control strategy for outbreaks and emergencies is available as part of the epidemic preparedness plan.	The vector control strategy for outbreaks and emergencies is available as part of the epidemic preparedness plan and is included in the National Malaria Surveillance and IVM guidelines. **(Refer to file-7.4.1, 5.1.1)**		
	7.4.4 A primary vector control method is implemented at full coverage in areas with active transmission and those with significant malariogenic potential.	The vector control interventions currently implemented in Malaria are: Long-lasting insecticide-treated nets (LLINs): Mass distribution of LLINs is undertaken in high and moderate risk areas and people living in active foci in regular intervals to ensure universal coverage. Continuous distribution of LLINs to pregnant women living in high and moderate risk areas through ANC and mobile and migrant populations. Indoor residual spraying (IRS): Currently the IRS spray is conducted twice a year in selected districts to control Kala-azar and Malaria as there is significant overlap between endemic malaria and kala-azar districts. The program also implements twice a year focal spraying to eliminate high risk foci (wards). Larval source management (LSM): The LSM by environmental manipulation and management is commonly practiced, although the National Guidelines allow use of larvicides for larval control. **(Refer to file-(1.1), 1.1.1**		

27. Data on vector susceptibility may be extrapolated from sentinel sites rather than collected during a focus investigation.

CRITICAL ELEMENTS	MILESTONES	DESCRIPTION OF CURRENT STATUS OF MILESTONE	STATUS CODE	RECOMMENDATIONS
7.5 Monitoring Malaria vector control programmes need to monitor vector control interventions to quickly detect and respond to changes	7.5.1 Vector control coverage and quality is routinely monitored, including at the focus level.	Although, vector control interventions are conducted, no high priority is given on monitoring, supervision and post evaluation.	**3**	1. Ensure that the IRS operations are well planned, supervised and monitored for insecticide efficacy. 2. Ensure LLIN distribution are well planned and operated.

2.8 DOCUMENTS AND RECORDS FOR CERTIFICATION OF ELIMINATION

Targets: The country has assembled the documents and records that are required to prove, beyond a reasonable doubt, that the country has had zero indigenous cases over the past three consecutive years (36 months) and has a robust surveillance system and response system in place that can prevent onward transmission from imported cases and respond promptly to outbreaks to prevent re-establishment.



REQUIRED DOCUMENTS AND RATIONALE	REFERENCE PERIOD[28]	WHERE SHOULD DOCUMENTS/RECORDS BE AVAILABLE?	AVAILABLE (YES/NO)	RECOMMENDATIONS
Plans, reports and legislation				
8.1 National malaria elimination strategic plan and operational or implementation plans To understand how the country arrived at 0 indigenous cases and provide an overview of elimination strategy.	All plans that cover the period -5 years to 0	Copies are available at national and intermediate levels	Yes	1. Ensure that the malaria records are available and safe.
8.2 Plan of action for prevention of reestablishment of malaria To help assess the likelihood that malaria-free status can be maintained in the country.	Current plan	National and intermediate levels	No	1. Plan of action for prevention of reestablishment of malaria need to be developed.
8.3 Annual malaria programme reports[29] To provide an overview of malaria activities undertaken and evidence that an annual review system is in place to monitor programme progress and optimize response.	-5 years to present	National level	No	1. Annual malaria programme reports need to be developed.
8.4 Recent published and unpublished reports of studies on malaria epidemiology and malaria vectors[30] To substantiate current strategies to prevent re-establishment.	Any reports published from -10 years to present	National level	Yes	1. Regular report needs to be published on malaria epidemiology and malaria vectors.
8.5 Legislation or regulations related to malaria and vector control To demonstrate that malaria is a mandatory notifiable disease.	All current legislation	National level	No	1. Malaria to be made a notifiable disease.

28. For the reference period for documents, please refer to timeline above that indicates the date of the last indigenous case as time "0".
29. The annual programme report can be combined with the annual surveillance report. Trainings may be included in the annual programme report or presented as a separate report.
30. Results on operational research should be included.

REQUIRED DOCUMENTS AND RATIONALE	REFERENCE PERIOD[28]	WHERE SHOULD DOCUMENTS/RECORDS BE AVAILABLE?	AVAILABLE (YES/NO)	RECOMMENDATIONS
Surveillance				
8.6 Guidelines and SOPs for malaria surveillance To assess whether the surveillance system is operating appropriately for an elimination setting.	Current guidelines (previous guidelines can be included if available)	National and intermediate levels	Yes	1. Guidelines and SOPs for malaria surveillance should be revised as needed.
8.7 Annual malaria surveillance reports[31] To describe changes in malaria transmission over time.	-5 years to present	National level	No	1. Malaria surveillance reports need to be published.
8.8 Malaria case database To provide minimal essential data on cases to validate case classification[32].	-10 years to present	National, intermediate (provincial or district) and health facility level	Yes	1. Database should be developed and save securely.
8.9 Malaria case investigation forms The original case investigation forms must be provided to permit evaluation of the completeness of data collection and correctness of case classification.	-5 years to present[33]	National, intermediate (provincial or district) and health facility level	Yes	1. Included in the database and save securely.
8.10 Focus register, focus investigation forms and maps These include reports on focus management and response to demonstrate effective activities to interrupt transmission in the last foci.	-5 years to 0	National, intermediate (provincial or district) and health facility level	Yes	1. Included in the database and save securely.
Diagnosis				
8.11 SOPs and bench aids for malaria diagnostics To demonstrate that laboratories have correct guidance, aligned with that of WHO.	Current document	All laboratories that participate in malaria diagnosis network	Yes	1. SOPs and bench aids for malaria diagnostics need to be available at the HFs.
8.13 Reports (or records) of quality control and assurance activities for diagnosis To demonstrate that malaria diagnosis is quality-assured in the country and the capacity is likely to be sustained.	0 to present	At any facility conducting microscopic diagnosis for malaria or quality control of such activities	Yes	1. Reports (or records) of quality control and assurance activities for diagnosis need to be maintained and timely reported.
8.14 Laboratory sample register To validate case notifications against the primary source material.	-5 years to present	Health facility or laboratory level	Yes	1. Lab registers needs to be systematically filed and stored.

31. This may be combined with the annual malaria programme report. Records of surveillance assessment results should be included, if available.
32. The malaria case database should be electronic. Access to this database should be provided to WHO precertification missions and to the independent evaluation mission team. Subnational authorities should have copies of the database that include the cases that were diagnosed or infected within their jurisdiction.
33. The investigation forms for at least all the cases identified during the three years (36 months) of zero indigenous cases be made available.

REQUIRED DOCUMENTS AND RATIONALE	REFERENCE PERIOD[28]	WHERE SHOULD DOCUMENTS/RECORDS BE AVAILABLE?	AVAILABLE (YES/NO)	RECOMMENDATIONS
Case management				
8.15 National malaria treatment guidelines[34] To determine whether guidelines are aligned with WHO recommendations.	Current guidelines (past guidelines can be included if available)	At every facility treating cases of malaria	Yes	1. National malaria treatment guidelines need to be revised as needed.
8.16 Patient log or register To determine whether cases have been provided appropriate antimalarials.	-5 years to present	At every facility treating cases of malaria	Yes	1. Patient log or register should be implemented and reporting need to be done from the private sectors too.
Vector control				
8.17 Guidelines or SOPs for entomological surveillance and vector control To determine whether guidelines match WHO recommendations or appropriate.	Current guidelines (past guidelines can be included if available)	National and intermediate levels	Yes	1. Guidelines or SOPs for entomological surveillance and vector control need to be followed.
8.18 Annual reports of entomological and vector control activities To understand how the country arrived at 0 indigenous cases and whether re-establishment can be prevented.	-5 years to present	National and intermediate (provincial or district) level	No	1. Annual reports of entomological and vector control activities need to be documented.
Prevention of re-establishment				
8.19 Reports of multisectoral collaboration To demonstrate that multisectoral collaboration is in place and will support the country's plan to prevent re-establishment.	0 to present[35]	At least at national level	No	1. Multi-sectoral collaboration needs to strengthened to prevent reestablishment and report need to be published.
8.20 Reports of border cross-coordination activities[36] To demonstrate that cross-border coordination is functional and will support the country's plan to prevent re-establishment.	0 to present	National level and at appropriate intermediate (provincial and district) level	No	1. Cross-border coordination activities need to be expanded and report needs to be published.
8.21 Documentation of health education and community awareness-raising[37] To demonstrate that health education and community engagement were used to achieve elimination and will support the country's plan to prevent re-establishment.	0 to present	At least at national level	No	1. Health education and community awareness-raising activities need to be initiated to prevent reestablishment.

34. If the national treatment guidelines do not completely align with WHO recommendations, countries should provide justification for the differences.

35. Reports on multisectoral collaboration before reaching zero indigenous cases should be included to demonstrate the established collaboration mechanism, if available. Meeting reports, agreements such as memoranda of understanding, action plans and implementation reports should be included if available.

36. Includes meeting reports, signed agreements, action plans and implementation reports. Reports on cross-border collaboration before reaching zero indigenous cases should be included, if available.

37. Reports on relevant health education programmes or other relevant activities.

3. CONCLUSION

In collaboration with key stakeholders, the EDCD has developed the malaria control policies, strategies, guidelines, and plans aligned with international guidance and national health sector strategy. These all documents are fundamental for moving Nepal towards malaria elimination by 2025.

On the other hand, there are needs to enhance the strategic interventions including monitoring and evaluation, surveillance and response and improve sector-wide and intersectoral consultations to ensure all-inclusive, harmonized, and coordinated malaria policies and strategies implementation for the elimination.

This National Malaria Program Audit (2021) is the first program self- audit for the country. Key findings and recommendations of the audit will guide the National Program in tracking current progress, operational and policy intervention challenges and will also identify key strategic interventions which needs to be strengthened to achieving the malaria elimination by 2025.

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All refer files link **HERE**

ANNEXES

ANNEX 1: CORE GROUP MEMBERS TO CONDUCT THE MALARIA PROGRAM SELF AUDIT

The following personnel were appointed as the members of the Core Task Team to support the National malaria program in conducting the self-audit.

1. Mr. Uttam Raj Pyakurel, Vector Control Inspector, EDCD
2. Dr Subhash Lakhe, NPO, Communicable Disease Unit, WHO
3. Dr Suman Thapa, Sr. Technical Advisor, SCI
4. Mr. Shambu Nath Jha, Sr. Program Manager, SCI/PMU
5. Mr. Suresh Bhandari, Documentation Officer, SCI/PMU

The National Consultant Dr Sujan Marahatta was recruited to provide technical expertise to conduct the malaria program self-assessment with technical supervision and support from the WHO Country Office

ANNEX 2: ACTIVITIES CONDUCTED AS PART OF THE MALARIA PROGRAM SELF-AUDIT

Activities	Timeline
• Briefing on Malaria audit/ Audit Tools • Introduction of the consultant	6th May 2021
• Consultant to review progress based on MEAT • Consultation with the key stakeholders at the federal, provincial and local level • Prepare the draft malaria program self-audit	May-June, 2021
• Stakeholders meeting on Malaria • Sharing of the review • Consensus on the gaps and achievements • Develop recommendations for the program	28th May 2021
• Final document of Malaria program self-audit released by the EDCD.	July 2021

ANNEX 3: SUMMARY OF MALARIA PROGRAM SELF-AUDIT

Malaria Elimination Audit Tool (MEAT) Domains/ Critical Elements		SCORE
1	**National strategy, coordination, policies and advocacy**	
1.1	**1.1 National strategic elimination plan** Elimination plans define the key results to be achieved and the outputs and activities that will contribute to the final goal; plans are costed to inform and facilitate resource mobilization.	3
1.2	**1.2 Committee formation** An independent national malaria elimination advisory is recommended to provide an independent view of progress and gaps and can be used during the certification process.	3
1.3	**1.3 Communications and advocacy** There is a general awareness of the existence and goals of the elimination program, and advocacy for resources	2
1.4	**1.4 National programme structure** All programmes require a central structure to oversee the implementation of national strategies, provide technical leadership, set policies and guidelines, coordinate national training, communicate with donors and evaluate overall progress.	2
1.5	**1.5 Community engagement** Directly engaging communities in co-planning, co-implementing and co-evaluating malaria elimination programmes will improve the coverage and effectiveness of elimination strategies.	1
2	**Stratification**	
2.1	**2.1 National stratification maps** Accurate stratification of malaria transmission is essential for effective targeting of interventions.	4
2.2	**2.2 Intervention targeting** Interventions are targeted according to the level of transmission, degree of receptivity and risk of importation	3
3	**Diagnosis**	
3.1	**3.1 Diagnostic network** The laboratory or testing center network is functional and provides prompt and quality-assured parasitologic diagnosis to the entire population	3
3.2	**3.2 Microscopy quality assurance system** A clear structure for a quality assurance system is in place with defined roles and responsibilities.	3
3.3	**3.3 Microscopy quality control** Both internal quality control and external quality assurance systems are in place to ensure that all tests are performed accurately and precisely.	3
3.4	**3.4 Rapid diagnostic tests** Rapid diagnostic tests are recommended for malaria diagnosis at all health facilities.	3
4	**Case management**	
4.1	**4.1 Guidelines** Malaria case management, consisting of early diagnosis and prompt, effective treatment, remains a vital component of malaria control and elimination strategies	4
4.2	**4.2 Training** Health care providers are skilled at identifying suspected patients, diagnosis, treatment using the correct treatment regimens and the referral system for severe cases.	3
4.3	**4.3 Referral system** A system is in place to refer severe patients to hospitals.	3
4.4	**4.4 Treatment for uncomplicated malaria infections** Treatment maximizes the likelihood of rapid clinical and parasitological cure and minimizes onward transmission from the treated infection.	4

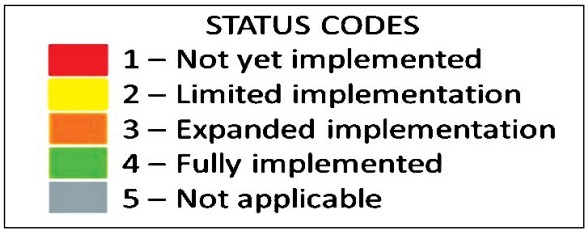
Malaria Elimination Audit Tool (MEAT) Domains/ Critical Elements		SCORE
4.5	**4.5 Treatment for severe malaria** Treatment for severe malaria includes intravenous or intramuscular artesunate for at least 24 h and until the patient can tolerate oral medication, followed by complete treatment with 3 days of artemisinin-based combination therapy.	3
4.6	**4.6 Patient follow-up** All malaria patients have their treatment supervised to ensure adherence, and blood slides taken (at a minimum) at day 28 (or 42, depending on drug regimen) to ensure parasite clearance.	2
4.7	**4.7 Monitoring drug efficacy** As countries progress to very low numbers of indigenous malaria cases, monitoring of drug efficacy is integrated into national malaria case-based surveillance, replacing regular studies of therapeutic efficacy.	1
4.8	**4.8 Drug supply** Systems are needed to ensure that sufficient treatment courses are available when and where needed.	2
4.9	**4.9 Private sector** In many countries, the private sector treats a large proportion of malaria cases and needs to be trained in and follow national treatment and surveillance guidelines.	2
5	**Surveillance**	
5.1	**5.1 Guidelines and standard operating procedures** Surveillance is a key intervention in elimination settings and operating procedures need to be described and aligned with WHO guidance.	3
5.2	**5.2 Training** Surveillance as an intervention requires a different skill set than routine surveillance and all personnel involved in case or focus investigations ne ed special training on protocols and procedures.	3
5.3	**5.3 Passive case detection** Suspected malaria cases are identified by health workers or by community health workers through passive case detection. If the population has good access to health care, passive case detection can result in early identification and treatment of cases reducing the risk for ongoing transmission.	3
5.4	**5.4 Private clinics** A strategy for ensuring that private clinics are reporting data to the ministry of health exists.	2
5.5	**5.5 Proactive case detection** Proactive case detection can play an important role by targeting high risk populations who may not receive a timely diagnosis of malaria through passive case detection.	3
5.6	**5.6 Reactive case detection** Reactive case detection may be used to identify co-travellers or other community members exposed to the same risk factors as the index case. Reactive case detection may be used to help support classification of cases as imported or introduced, may be considered the first step in focus investigations and may help in increasing the sensitivity of the surveillance system.	3
5.7	**5.7 Surveillance coverage** In elimination settings, all cases must be identified by the surveillance system	3
5.8	**5.8 Case investigations** Case investigations determine the likely locations of infections to determine the locations requiring response.	3
5.9	**5.9 Data analyses** Decisions on programme policies, strategies, approaches and priorities are based on the best available evidence to ensure maximum impact with the available resources, improve the results that programmes can achieve, and enhance accountability. Leaders at all levels of the malaria programme are empowered to collect and analyze data regularly.	3

Malaria Elimination Audit Tool (MEAT) Domains/ Critical Elements		SCORE
5.1	**5.10 Bulletins** Publication of regular bulletins provides a transparent and timely manner to disseminate information on malaria cases to the public and neighboring health areas or countries. Annual malaria surveillance reports provide official data on the number of malaria cases reported in the country.	2
5.11	**5.11 Monitoring and evaluation** Monitoring and evaluation are essential for measuring how well an elimination programme is operating over time and whether it is achieving its milestones and goals.	3
6	**Focus investigations, microplans and epidemic response**	
6.1	**6.1 Definition** The programme has set the definition and size of their foci based on WHO guidance and availability of human and logistical resources.	4
6.2	**6.2 Classification** Foci are classified and monitored to target malaria interventions and determine response elements.	3
6.3	**6.3 Focus investigations** Focus investigations are conducted to delimit and characterize the area and population at risk, and to understand the determinants of transmission in the area.	3
6.4	**6.4 Foci response plans** A plan is developed to respond to the findings of the focus investigation and to communicate to health staff, community leaders, and other relevant local actors what steps need to be taken when and by whom to eliminate transmission, and to monitor progress.	2
6.5	**6.5 Epidemics and outbreaks** As the prevalence of malaria decreases, transmission becomes unstable, and countries are at increasing risk for epidemics.	4
7	**Vector control and entomological surveillance**	
7.1	**7.1 Entomological surveillance** Entomological data are collected to determine where and when vector control is needed and which insecticide must be used.	3
7.2	**7.2 Vector species and behavior** An understanding of local vector biology (species diversity and seasonal density fluctuations), their behaviour and ecology (preferred oviposition site, host choice and resting location) is important to inform decisions on the deployment of cost effective vector control interventions	2
7.3	**7.3 Insecticide susceptibility** Monitoring insecticide susceptibility is useful to predict vulnerability of vectors to insecticide-based interventions and essential to inform choice of alternative insecticides	3
7.4	**7.4 Vector control** Vector control, together with case management, is the most effective method for malaria control and elimination	3
7.5	**7.5 Monitoring** Malaria vector control programmes need to monitor vector control interventions to quickly detect and respond to changes	3
8	**Accelerating strategies**	
8.1	**8.1 Population-wide parasite clearance** Mass drug administration could be used to accelerate elimination of P. falciparum transmission in areas where a high coverage of the intervention can be achieved, there is effective implementation of vector control and surveillance and limited risk of re-introduction of infection.	
9	**Prevention of re-establishment**	
9.1	**9.1 National plan for prevention of re-establishment of transmission** The plan to prevent re-establishment defines the objectives to be achieved, the activities to be conducted, the entities responsible for conducting the activities, the resources necessary at central and subnational levels and the timeline for implementation. The plan is reviewed regularly to adapt it to changes in receptivity and risk of importation.	

Malaria Elimination Audit Tool (MEAT) Domains/ Critical Elements		SCORE
9.2	**9.2 National programme structure** All programmes require a central structure to oversee implementation of national strategies, provide technical leadership, set policies and guidelines, coordinate national training and evaluate overall progress.	
9.3	**9.3 Diagnosis** The network of laboratories (or testing centres) is functional and can provide quality-assured parasitological confirmation of malaria infection in all populations. A microscopy quality assurance system is in place and functional.	
9.4	**9.4 Case management** A system that provides good-quality curative services is functional throughout the country	
9.5	**9.5 Surveillance and response system** A system of early detection, treatment, mandatory notification, case and focus investigation is in place throughout the country. The capacity and the quality of case investigation, malaria outbreak investigation and response are maintained; all malaria cases are investigated, and the collected information is kept in the national case register.	
9.6	**9.6 Entomological surveillance and vector control** Entomological surveillance and vector control are continued in areas with malariogenic potential. The capacity to respond to possible resurgences with appropriate vector control is maintained.	
9.7	**9.7 Multi-sectoral collaboration** Coordination and collaboration with non-health sectors ensures optimal coverage and use of interventions by high risk populations, and the implementation of interventions achieve impact and efficiency.	
9.8	**9.8 Inter-country information-sharing and functional border collaboration** Effective coordination and communication among neighbouring countries can mitigate the risk of re-establishment.	
9.9	**9.9 Raising awareness and provision of prevention strategies** Early detection can be improved, and re-establishment of malaria could be avoided, if the population at risk of malaria is aware of the risk and they are provided information, measures and strategies to be used to prevent illness and to obtain care	
10	**Documents and records for certification of elimination**	
10.1	**10.1 National malaria elimination strategic plan and operational or implementation plans** To understand how the country arrived at 0 indigenous cases and provide an overview of elimination strategy	No
10.2	**10.2 Plan of action for prevention of re-establishment of malaria** To help assess the likelihood that malaria-free status can be maintained in the country	No
10.3	**10.3 Annual malaria programme reports** To provide an overview of malaria activities undertaken and evidence that an annual review system is in place to monitor programme progress and optimize response.	Yes
10.4	**10.4 Recent published and unpublished reports of studies on malaria epidemiology and malaria vectors** To substantiate current strategies to prevent re-establishment	Yes
10.5	**10.5 Legislation or regulations related to malaria and vector control** To demonstrate that malaria is a mandatory notifiable disease	No
10.6	**10.6 Guidelines and SOPs for malaria surveillance** To assess whether the surveillance system is operating appropriately for an elimination setting	Yes
10.7	**10.7 Annual malaria surveillance reports** To describe changes in malaria transmission over time	No
10.8	**10.8 Malaria case database** To provide minimal essential data on cases to validate case classification	Yes
10.9	**10.9 Malaria case investigation forms** The original case investigation forms must be provided to permit evaluation of the completeness of data collection and correctness of case classification.	Yes

	Malaria Elimination Audit Tool (MEAT) Domains/ Critical Elements	SCORE
10.10	**10.10 Focus register, focus investigation forms and maps** These include reports on focus management and response to demonstrate effective activities to interrupt transmission in the last foci.	Yes
10.11	**10.11 SOPs and bench aids for malaria diagnostics** To demonstrate that laboratories have correct guidance, aligned with that of WHO.	Yes
10.13 10.14 10.15 10.16 10.17 10.18	**10.13 Reports (or records) of quality control and assurance activities for diagnosis** To demonstrate that malaria diagnosis is quality-assured in the country and the capacity is likely to be sustained.	Yes
	10.14 Laboratory sample register To validate case notifications against the primary source material.	Yes
	10.15 National malaria treatment guidelines To determine whether guidelines are aligned with WHO recommendations.	Yes
	10.16 Patient log or register To determine whether cases have been provided appropriate antimalarials.	Yes
	10.17 Guidelines or SOPs for entomological surveillance and vector control To determine whether guidelines match WHO recommendations or appropriate.	Yes
	10.18 Annual reports of entomological and vector control activities To understand how the country arrived at 0 indigenous cases and whether re-establishment can be prevented.	No

The following scheme is used with color coding:



1. **Not yet implemented**. None of the milestones of the element have been reached.
2. **Limited implementation.** Implementation has started with some milestones achieved and others begun.
3. **Expanded implementation.** Most but not all of the milestones have been reached, or there remain significant gaps in the implementation of several milestones, or there are significant concerns about the sustainability of activities.
4. **Fully implemented.** All milestones have been reached and activities are sustainable.

TECHNICAL SUPPORT BY: