NATIONAL STRATEGIC PLAN "FROM MALARIA CONTROL TO ELIMINATION IN AFGHANISTAN" 2018-2022

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Table of Contents

Acknowledgements

The *National Malaria Strategic Plan "from Malaria Control to Elimination" 2018-2022 in Afghanistan (NMSP 2018-2022)* has been developed through an extensive consultative process with senior NMLCP staff at central and provincial levels, World Health Organization (WHO), United Nations Development Programme/Global Fund (UNDP/GF), members of Technical Strategy Group on Malaria and many others concerned un

der the overall leadership of the Ministry of Public Health (MoPH) and its NMLCP in close collaboration with the WHO Country Office for Afghanistan starting from January 2017, culminating in the launching of the NMSP 2018-2022 by the MoPH.

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Foreword:

The National Strategic Plan - From Malaria Control to Elimination in Afghanistan – 2018 – 2022, has been developed with the goal to ensure that Afghanistan is on track to eliminate malaria by 2030, contributing towards country's development and the Sustainable Development Goals.

National strategy provides comprehensive technical guidance to National Malaria & Leishmaniasis Control Programme, Ministry of Public Health and all the partners contributing to malaria control in Afghanistan on the importance of scaling up malaria responses and moving towards elimination. It also highlights the urgent need to increase investments across all interventions – including preventive measures, diagnostic testing, treatment and disease surveillance – as well as in harnessing innovations in community-based interventions, inter-sectoral collaboration and advocacy, cross-border and regional cooperation and health system strengthening and expanding research. Guidance provided in the Global Technical Strategy for Malaria 2016-2030 has been taken into account while developing this strategy.

Recent progress on malaria has shown us that, with adequate investments and the right mix of strategies, we can indeed make remarkable strides against this complicated enemy. We will need strong political commitment to see this through and expanded financing. We should act with resolve, and remain focused on our shared goal: to create Afghanistan in which no one dies of malaria.

I remain confident that if we act with urgency and determination, we can beat this disease once and for all.

HE Minister of public Health

Acronyms

API	Annual Parasite Index
AS	Artesunate
BHC	Basic Health Center
BPHS	Basic Package of Health Services
CBMM	Community Base Management of Malaria
CHW	Community Health Worker
CQ	Chloroquine
DOT	Directly Observed Treatment
DH	District Hospital
EPHS	Essential Package of Hospital Services
EPR	Epidemic Preparedness and Response
G6PD	Glucose- 6 Phosphatase dehydrogenase
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
HP	Health Post
HSCs	Health Sub-centres'
IEC	Information Education and Communications
IVM	Integrated Vector Management
LLINs	Long Lasting Insecticide Treated Nets
M&E	Monitoring and Evaluation
MoPH	Ministry of Public Health
MHTs	Mobile Health Teams
NGOs	Non-Governmental Organisations
NMLCP	National Malaria and Leishmaniasis Control Programme
NMSP	National Malaria Strategic Plan
NTG	National Treatment Guideline
PMLCP	Provincial Malaria and Leishmaniasis Control Programme
PQ	Primaquine
QA	Quality assurance
QAC	Quality assurance and control
RDT	Rapid Diagnostic Test
UNDP	United Nations Development Programme
WHO	World Health Organization
WHOPES	WHO Pesticide Evaluation Scheme

Executive Summary

Malaria is still a public health problem in Afghanistan, particularly eastern provinces (Nangarhar, Kunar and Laghman) located along the border with Pakistan and reporting more than 80% of the total cases of the country. these areas have reported several outbreaks of malaria in 2014-2016.

With support of national and international partners, significant progress has been made toward control of malaria in Afghanistan. The number of malaria cases, particularly *P. falciparum* has dropped significantly in north-eastern, northern and western provinces. these areas became eligible for species-specific and sub-national malaria elimination. It is becoming evident that some provinces may have already interrupted and other provinces could interrupt transmission of *P. falciparum* malaria in the years ahead.

The substantial impact of scaled up interventions in Afghanistan along with the mobilized serious commitment of the government and international partners at national, regional and global levels all converge to facilitate actions to move from malaria control to elimination.

The proposed *National Strategic Plan "from Malaria Control to Elimination" 2018-2022 in Afghanistan (NSP 2018-2022)* has been developed through an extensive consultative process with senior NMLCP staff at central and provincial levels, WHO, UNDP/GF, members of Technical Strategy Group on Malaria and many others concerned under the overall leadership of the Ministry of Public Health (MoPH) and its National Malaria and Leishmaniasis Control Program (NMLCP) in close collaboration with the WHO Regional and Country Office for Afghanistan. The *NSP 2018-2022* was developed in line with the WHO Global Technical Strategy (GTS) for Malaria 2016-2030.

The goal of NSP 2018-2022 is to ensure that Afghanistan is on track to eliminate malaria by 2030 – contributing towards country development and the Sustainable Development Goals. The plan's objectives are directed at ; (1) reducing the reported malaria incidence by 73% at the national level compared with 2016; (2) Interrupting indigenous transmission of malaria, specifically Pf, in 23 Provinces (Badghis, Baghlan, Farah, Ghor, Hirat, Jawzjan, Kabul, Kunduz, Nimroz, Parwan, Samangan, Balkh, Bamyan, Dykundi, Kapisa, Panjsher, Sar-e-Pul, Takhar, Urozgan, Badakhshan, Faryab, Logar & Zabul) by 2022; and (3) preventing the re-establishment of local malaria transmission due to importation in all areas where it has been eliminated.

However, the interruption of transmission will be a challenge by the end of 2022 in 12 provinces (Khost, Nooristan, Paktika, Paktya, Ghazni, Helmand, Kandahar, Zabul, Wardak, Nangarhar, Kunar and Laghman) mainly due to security problems, specifically in Nangarhar, Kunar and Laghman which have the highest burden of malaria, beside security problems.
Extra effort is needed to achieve the goal of interrupting indigenous transmission in these Provinces.

Based on reported *Annual Parasite Incidence (API)* that has been used as a primary criterion for selection and other secondary criteria such as *Test Positivity Rates (TPR)*, local malaria epidemiology, the degree of development of health systems as well as political and development priorities of the government, the entire country can be sub-divided into three malaria Categories, namely:

- Category 1 with Provinces/Districts (where *API* of 1 or above case per 1000 population at risk and elimination of malaria; *TPRs* are relatively high (9% and above); efficient malaria vector such as *An. stephensi* is highly prevalent; there is a close proximity to endemic areas of Pakistan

with uncontrolled migration between both countries; development of socio-economic and health systems are not sufficient etc.) that are still in the transmission-reduction phase and malaria elimination does not appear to be feasible at present;

- Category 2 with Provinces/Districts (where *API* of less than 1 case per 1000 population at risk per year; *TPRs* are relatively low (substantially below 9%); the absence of efficient malaria vectors; bordering countries such as Turkmenistan, Tajikistan, Uzbekistan and areas of Iran there where malaria has been eliminated etc.), where malaria elimination is recommended;
- Category 3, 13 targeted provinces are targeted to start implementation of case based surveillance and case investigation from 2019, provinces free from local transmission will be recommended for prevention of re-establishment of malaria transmission.

The possible choices of malaria interventions for each particular Category should be based on existing situation and risk factors related to malaria as well as the established objectives:

- In areas under Category 1, where malaria is still widespread and the primary objective is to reduce further the malaria burden, the interventions should be focused on the progressive strengthening of capacities and capabilities of public and private health services and mobilizing community actions to reach universal coverage of interventions; provide early diagnosis and adequate treatment, to promote technically sound and sustainable preventive measures, to prevent, detect early and contain outbreaks and to assess regularly a changing malaria situation;
- In areas under Category 2, where malaria elimination is recommended, malaria shows a focal distribution of indigenous cases and imported cases may comprise a significant proportion of all cases. In this phase, the country has to consider changing the approach to malaria surveillance and have to investigate each case and foci to ascertain whether it is locally acquired or imported; and
- The transition from malaria elimination to prevention of malaria re-establishment is possible only when adequate and effective surveillance of the disease in the country has proved that malaria transmission has been interrupted, and that all reported cases of malaria have an imported nature. For these areas under Category 3, the particular focus should be placed on maintenance of the results achieved by deploying all efforts to detect any possible occurrence of malaria transmission, notifying as soon as possible all suspected cases and applying rapid remedial actions. Prevention of re-establishment of local transmission is a long-term policy that requires continuous investment of funds and personnel.

To facilitate an elimination effort in Afghanistan, the health system in the country has to be further strengthened in terms of human resources, financing, information systems and governance. Due to the need for strong malaria surveillance with total coverage of all geographical areas of the country and high quality of operations, human resources must increase at all levels. In the elimination phase, enforcing the mandatory notification of malaria will be a major challenge in Afghanistan where many fever patients seek care in the informal private sector. Financial allocations need to be maintained, despite low burden of malaria. Launching a new malaria elimination programme increases the need for leadership and management, and operations have to be managed with rigor and flexibility, supported by robust monitoring and quality control.

Monitoring & Evaluation (M&E) is the central component of the NSP 2018-2022. In the reduction-transmission phase, the main focus should be given to establishing adequate epidemiological services and information systems, with an operational research component, capable of planning, monitoring and

evaluating control interventions. Once an administrative unit entered the elimination phase or even before, the attention should be re-focused to ensuring that adequate elimination-oriented surveillance system has been established and is properly functional with absolutely total coverage of this administrative unit. Different set of outcomes and impact indicators are required depending on the stage on the continuum to malaria elimination.

Successful malaria elimination campaign requires adequate planning and budgeting, and campaign should be conducted with sufficient lead time and the necessary resource mobilization. A continuous flow of financial inputs from different governmental sources and partners is critical to the success of malaria elimination in Afghanistan. There is some risk that the funding agencies would not be able to provide and/or sustain the level of inputs to see a visible programme impact: delays in disbursements can rapidly lead to malaria resurgences, where gains made over 5 years can be lost in a few months.

The National Malaria Elimination Committee (NMEC) that is responsible for overall coordination and guidance of elimination activities should be established and periodically review the programme to ensure that it remains on track, and the level of inputs required to see the desired programme impact is provided and sustained, since there is always some risk that financial provisions of the government and funding agencies could not be sufficient. A mechanism for periodic external reviews of the programme to assess the progress against milestones and targets, identify possible gaps and advise on actions to solve these problems should be built-in.

The proposed NMSP 2018-2022 will provide strategic guidance and technical support for those who involved in planning and implementing malaria interventions, and monitoring and evaluating the progress towards burden reduction and malaria elimination the country. NMSP 2018-2022 will serve as a guide for provinces in rolling out specific interventions for containing ongoing outbreaks and eliminating progressively malaria across Afghanistan.

1. Introduction

In some northern, western and southern provinces the number of malaria cases, particularly *P. falciparum* has dropped significantly. These provinces made a good progress on the way from malaria control to elimination, and became eligible for species-specific and sub-national malaria elimination. It is becoming evident that some provinces have already interrupted and other provinces could interrupt transmission of *P. falciparum* malaria in the years ahead, however, in some eastern provinces along the border with Pakistan, continuous outbreaks have caused increase of malaria cases in 2014-2016.
In 2016, 85% of confirmed P.v and 84% of P.f. cases were reported from 5 provinces - Nangahar, Laghman, Kunar, Khost and Paktika. 89% of malaria deaths were reported from Nangahar, Kabul and Kunar. There has been gradual increase in the access to malaria confirmation due to expansion of CBMM, using RDT. Compared to microscopy, the proportion of malaria cases confirmed by RDTs has substantially increased from 27% in 2014 to 44% in 2016, and probable Malaria cases decreased from 72% in 2014 to 51% in 2016.

Malaria control and elimination in Afghanistan is the responsibility of NMLCP in the CDC Department of the General Directorate of Preventive Medicine in MoPH. The goal of National Strategic Plan on Malaria Control and Elimination, 2013-2017 is to contribute to the improvement of the health status in Afghanistan through the reduction of morbidity and mortality associated with malaria with a vision to completely interrupt transmission of *P. falciparum* by 2020. NMLCP has 34 PMLCP units, majority of them are operating. Key functions of them are to provide coordination with NMLCP, facilitate capacity building of the health staff, monitoring and evaluation of malaria activities such as surveillance, diagnosis treatment etc. National malaria control efforts are mainly supported by the external donors with major funding support from the GF-ATM.

Despite these recent advances, malaria remains a major public health issue in the country. The proposed NSP 2018-2022 will provide strategic guidance and technical support for those who involved in planning and implementing malaria interventions, and monitoring and evaluating the progress towards malaria elimination in the country. NSP 2018-2022 will serve as a guide for Provinces in rolling out specific interventions for reducing burden of malaria and moving progressively from malaria control to elimination across Afghanistan.

2. The need for move from malaria control to elimination

The substantial impact of scaled up interventions in Afghanistan along with the mobilized serious commitment of the government and international partners at national, regional and global levels all converge to facilitate actions to move from malaria control to elimination. The principles of the WHO Global Technical Strategy (GTS) for Malaria 2016-2030 ***(1)*** officially endorsed by all malaria-affected countries have guided the process of the development of the *NSP 2018-2022*. This is in line with regional objective to interrupt malaria transmission in 25% of endemic district with incidence of less than 1 case per 10,000 by 2020.

Thus, the rationale for undertaking a species-specific and sub-national malaria elimination effort in Afghanistan is based on the following principles:

- Solid evidence accumulated in relation to proven approaches for malaria control and epidemic containment in Afghanistan in recent years;
- The substantial progress achieved towards addressing the malaria problem and lowering the disease burden in the country;
- It has been proven that the elimination of malaria, particularly *P. falciparum* is technically and operationally feasible in Afghanistan in the years ahead;
- It is expected that indigenous transmission of *P. falciparum* will be interrupted by 2020;
- The government and partners reaffirmed their political and financial commitments to achieve a greater impact on malaria in Afghanistan;
- Effective mechanism will be established to ensure proper coordination of malaria elimination activities, particularly where movement across international boundaries occurs, between Afghanistan and neighboring countries.

3. National Strategic Plan "From Malaria Control to Elimination in Afghanistan" 2018-2022

Vision

Afghanistan is free from malaria by 2030.

Mission

The NMLCP of the MoPH of Afghanistan aims to reduce the burden of malaria and achieve malaria elimination by ensuring equitable and universal access to effective curative and preventive services to everyone at risk of malaria in close coordination with the efforts of the all communities, national and international non-government organizations, private sector stakeholders, United Nations agencies and financial partners. Achieving the vision of "Afghanistan is free from malaria" will contribute significantly to poverty alleviation as malaria is most prevalent in the poorest segment of the population.

Goal

To ensure that Afghanistan is on track to eliminate malaria by 2030 – contributing towards country development and the Sustainable Development Goals.

Specific Objectives

- Reducing the reported malaria incidence by 73% at the national level compared with 2016;
- Interrupting indigenous transmission of malaria, specifically Pf, in 23 Provinces (Badghis, Baghlan, Farah, Ghor, Hirat, Jawzjan, Kabul, Kunduz, Nimroz, Parwan, Samangan, Balkh, Bamyan, Dykundi, Kapisa, Panjsher, Sar-e-Pul, Takhar, Urozgan, Badakhshan, Faryab, Logar & Zabul) by 2022;
- Preventing the re-establishment of local malaria transmission due to importation in all areas where it has been eliminated.

4. Strategic Approaches

Programme priorities

Parasite species

Bearing in mind the uppermost public health importance of *P. falciparum* malaria in terms of disease burden and socio-economic losses, there is agreement that for the elimination of malaria in Afghanistan, *P. falciparum* malaria should be a priority. Based on the past experience one can expect that *P. falciparum* disappears from an area before P. vivax (3-5 years earlier), and *P. falciparum* elimination is usually sustainable. Current disease diagnostic, management and preventive interventions perhaps better target and have a greater impact on *P. falciparum* than on *P. vivax (**2**)*. It is worthwhile to note that the planned interventions against *P. falciparum* in Afghanistan will impact on *P. vivax* transmission as well.

Reducing burden

The malaria situation in Afghanistan is rather complicated, because of its heterogeneity. Resources (human more than financial) are limited initially, imposing a need for **prioritization**, where the following should be considered:

- Despite visible progress in dealing with malaria in Afghanistan, the goal of eliminating malaria is more distant because the rapidity in achieving the declared goal is influenced by the relatively high burden of malaria, insufficient development of national health systems as well as technical and operational constraints.
- In areas where elimination of malaria does not appear to be feasible at present, massive scaling up of existing disease management and preventive approaches and tools, aimed at a further reduction in the burden and risk of malaria in a short run, may form a transitional stage on the path to elimination. Furthermore, burden reduction saves lives.

Eliminating malaria

This prioritization does not mean that efforts to eliminate malaria in low transmission areas (sub-national elimination) and prevent its re-establishment should be put on hold, only that such efforts must not take precedence over addressing burden reduction and epidemic containment. Once the epidemiological landscape has been flattened, then the area should be eligible for elimination phase (***2***). The results may have been achieved in some parts of Afghanistan, particularly north-eastern, northern, western and central parts, where malaria transmission is limited and incidence/risk became extremely low, need to be further consolidated with the goal of interrupting the transmission of malaria as soon as possible. Wherever malaria elimination has good prospects it should be pursued with vigor towards the defined goal.

Preventing the re-establishment of local transmission

When importation of malaria due to the arrival of refugees, migrant workers from an endemic area coincides with increasing in receptivity as a result of halting anti-malaria measures, socio-economic development of an area etc., the re-establishment of malaria transmission could take place. In the absence of appropriate action, the area is likely to become malarious again and the time is determined by the level of receptivity and vulnerability ***(3)***. In this setting, the special attention should be paid to (1) notifying early on and investigating each suspected case of malaria; (2) detecting any possible re-introduction and re-establishment of malaria transmission; (3) determining the underlying causes of resumed transmission of malaria; (4) applying rapid curative and preventive measures; and (5) maintaining malaria-free status in areas where it had been eliminated.

The proposed priorities should be as follows:

- Flattening the epidemiological landscape by reducing transmission in remaining high-transmission areas, with special focus on epidemic-prone situations;
- Interrupting indigenous transmission of *P. falciparum* malaria in the country;
- Halting indigenous transmission in selected provinces that are eligible for malaria elimination and where local conditions exist to reduce the number of locally acquired cases to zero; and
- Additional country-level priorities such as measures targeting high-risk populations identified by local analysis.

Programme phasing

Phasing is necessary, because premature application of the elimination phase interventions would be prohibitively demanding: the malaria burden must be lowered before it is possible and rational to investigate and treat every case. Programme phasing on the path to malaria elimination can be summarized as follows:

- Transmission-reduction phase is aimed at bringing the malaria incidence down to less than 1 case per 1000 population at risk per year when elimination could be considered. The revision of surveillance system and development of elimination programme should be completed by the end of this phase before entering elimination;
- Elimination phase, where surveillance becomes the core intervention starts in an area where data from all health facilities/services show a malaria incidence of less than 1 case per 1000 population at risk per year, which is confirmed by very high and reliable case notification, mandatory reporting of each case, full participation of the public/private/community-based sectors assuming well-developed health services and a strong conviction that nothing is being missed.

Malaria elimination in Afghanistan should be carried out in a phased manner and interim targets have been set up (1) by parasite species with a priority to be given to elimination of *P. falciparum* and (2) by geographical area with different parts of the county being at different programme phases simultaneously.

Phasing should be applied to large areas, where certain parts of a country may belong to the different phases. For relatively large and heterogeneous country like Afghanistan, the emphasis will be given to assessing major administrative areas, typically starting from the 1st Provincial administrative level down to the 2nd District level. In Afghanistan, some provinces have already entered the elimination phase and become eligible for elimination. If their health systems are strong enough, it will be rational to pilot surveillance and other elimination activities focusing on setting up adequate surveillance, databases and quality assurance systems, preparing and testing relevant Standard Operating Procedures (SOPs) and training different categories of health staff.

Based on reported *Annual Parasite Incidence (API)* that has been used as a primary criterion for selection and other secondary criteria such as *Test Positivity Rates (TPR)*, local malaria epidemiology, the degree of development of health systems as well as political and development priorities of the government, the entire country can be sub-divided into three malaria Categories (see Annex 3), namely:

- **Category 1** with Provinces/Districts (where *API* of 1 or above case per 1000 population at risk of malaria; *TPRs* are relatively high (9% and above); efficient malaria vector such as *An. stephensi* is highly prevalent; there is a close proximity to endemic areas of Pakistan with uncontrolled migration between both countries; development of socio-economic and health systems are not sufficient etc.) that **are still in the transmission-reduction phase and malaria elimination does not appear to be feasible at present**;

- **Category 2** with Provinces/Districts (where *API* of less than 1 case per 1000 population at risk per year; *TPRs* are relatively low (substantially below 9%); the absence of efficient malaria vectors; bordering countries such as Turkmenistan, Tajikistan, Uzbekistan and areas of Iran there where malaria has been eliminated etc.), where **malaria elimination is recommended**;

- **Category 3** with Provinces/Districts that presently free from indigenous malaria, where **prevention of malaria re-establishment of transmission is recommended**.

Some Provinces are already in the elimination phase while others are still in the transmission-reduction phase. Provinces that are presently in the elimination phase may have some districts that are still in the transmission-reduction phase. At the same time, there are some Provinces which are still in the transmission-reduction phase but have some districts that are already in the elimination phase (see Annex 3).

In Provinces that became eligible for elimination adequate case- and foci-based surveillance should be established in order to mark the limits of locations with different types of foci of malaria, namely

Milestones and Targets

The following timetable with broad milestones and targets is proposed for implementation of the NSP 2018-2022 in Afghanistan (See Table 1):

By the end of 2018:

- An estimated reduction in the reported malaria incidence of 30% at the national level compared with 2016;
- Transmission of *P. falciparum* malaria interrupted and zero incidence of indigenous cases of *P. falciparum* attained at least in 5 Provinces (Balkh, Samangan, Jawzjan Faryab and Sar-e-Pul);

By the end of 2020:

- An estimated reduction in the reported malaria incidence of 50% at the national level compared with 2016;
- Transmission of malaria, specifically Pf, interrupted and zero incidence of indigenous cases of malaria attained in 10 Provinces (Badghis, Farah, Ghor, Hirat, Nimrozl, Baghlan, Kunduz, Takhar and Badakhshan)
- The re-establishment of local transmission prevented in areas where malaria has been eliminated.

By the end of 2022:

- An estimated reduction in the reported malaria incidence of 73% at the national level compared with 2016;
- Transmission of malaria, specifically Pf, interrupted and zero incidence of indigenous cases of malaria attained in 8 Provinces (Kabul, Logar, Parwan, Dykundi, Kapisa, Panjsher & Urozgan) and these Provinces moved from Category 2 to Category 3; and
- The re-establishment of local transmission prevented in areas where malaria has been eliminated.

However, the interruption of transmission will be a challenge by the end of 2022 in 12 provinces (Khost, Nooristan, Paktika, Paktya, Ghazni, Helmand, Kandahar, Zabul, Wardak, Nangarhar, Kunar and Laghman) mainly due to security problems, specifically in Nangarhar, Kunar and Laghman which have the highest burden of malaria, beside security problems.

Extra effort is needed to achieve the goal of interrupting indigenous transmission in these Provinces.

It is worthwhile to note that the progress towards containing outbreaks, interrupting local transmission and eliminating malaria will be, to a large extent, conditional to how successfully technical/operational challenges are addressed within each particular Province and District, taking into account reaching universal coverage and good quality of curative/preventive measures covering everyone at risk; setting up adequate information, surveillance and M&E systems; strengthening general health services; motivating and sustaining health staff concerned; and providing administrative and management provisions to govern the programme properly.

Table 1: Province-wise projected milestones and targets by programme phase and year, 2015-2022

Provinces	Years							
	2015	2016	2017	2018	2019	2020	2021	2022
Badakhshan								
Badghis								
Baghlan								
Balkh								
Bamyan								
Dykundi								
Farah								
Faryab								
Ghazni								
Ghor								
Helmand								
Hirat								
Jawzjan								
Kabul								
Kandahar								
Kapisa								
Khost								
Kunar								
Kunduz								
Laghman								
Logar								
Nangarhar								
Nimroz								
Nooristan								
Paktika								
Paktya								
Panjsher								
Parwan								
Samangan								
Sar-e-Pul								
Takhar								
Urozgan								
Wardak								
Zabul								

Transmission-Reduction Phase
Elimination Phase
Prevention of Re-establishment Phase

5. Key Interventions

General principles

The possible choices of malaria interventions for each particular Category should be based on existing situation and risk factors related to malaria as well as the established objectives:

- In areas under Category 1, where malaria is still widespread and the primary objective is to reduce further the malaria burden, the interventions should be focused on the progressive strengthening of capacities and capabilities of public and private health services and mobilizing community actions to reach universal coverage of interventions; provide early diagnosis and adequate treatment, to promote technically sound and sustainable preventive measures to prevent, detect early and contain outbreaks and to assess regularly a changing malaria situation;
- In areas under Category 2, where malaria elimination is recommended, malaria shows a focal distribution of indigenous cases and imported cases may comprise a significant proportion of all cases. In this phase, the country has to consider changing the approach to malaria surveillance and have to investigate each case to ascertain whether it is locally acquired or imported; and
- The transition from malaria elimination to prevention of malaria re-establishment is possible only when adequate and effective surveillance of the disease in the country has proved that malaria transmission has been interrupted, and that all reported cases of malaria have an imported nature. For these areas under Category 3, the particular focus should be placed on maintenance of the results achieved by deploying all efforts to detect any possible occurrence of malaria transmission, notifying as soon as possible all suspected cases and applying rapid remedial actions. Prevention of re-establishment of local transmission is a long-term policy that requires continuous investment of funds and personnel.

Key interventions by Categories

Case management

In recent years, the coverage and quality of case management has greatly improved in Afghanistan as a result of strengthening public health services, expanding community-based services and providing adequate diagnostics and medicine, particularly at the periphery. Substantial effort has been taken to enhance quality assurance of diagnostics, antimalarial medicines and case management services. Despite change in the treatment policy advocating parasitological diagnosis for all suspected cases, most cases are still diagnosed clinically (51%), and only 49% are presently diagnosed by microscopy or bivalent RDTs ***(4)***. Diagnosis and treatment of malaria has been integrated into the BPHS, EPHS and there is an initiative for the Community Based Management of Malaria (CBMM) ***(5, 6 & 7)***. The current malaria treatment guidelines updated in 2017 ***(8)***. Specific recommendations for treatment of cases during pregnancy are also included in the guidelines. At present, there is no user-friendly test at point of care to detect G6PD deficiency reflecting that no wide scale use of Primaquine (PQ) has occurred. There is a variable proportion of G6PD deficiency among Afghan populations with highest among the Pashtun/Pashai group (8.9%) and 2% in rest of the population ***(9)***. A study comparing 14 day PQ and its weekly dose for 8 weeks is presently being conducted. In Afghan refugees residing in Pakistan weekly dose of PQ for 8 weeks has been found to be better than CQ alone in preventing relapse and not associated with major side effects. QA for diagnosis and treatment of malaria has been adopted by NMCLP. So far, no resistance of *vivax* infection to chloroquine was found. Despite continued use of

ACT, a combination of AS+SP has been found to be effective for treatment of uncomplicated *P. falciparum* malaria, although resistance to S-P was found in the country ***(10)***.

Table 2 lists the main differences between case management policies and practices in areas under Categories 1 (Transmission-Reduction Phase), 2 (Elimination Phase) & 3 (Prevention of Re-Establishment Phase).

Table 2: Case management policies and practices recommended for different Categories

Categories	Transmission-Reduction Phase (Category 1)	Elimination Phase (Category 2)	Prevention of Re-Establishment Phase (Category 3)
Purpose	Early diagnosis and effective treatment of all symptomatic infections to reduce morbidity and mortality and transmission as well	Early detection (ACD & PCD) and management of all infections including asymptomatic, to prevent onward transmission	Early diagnosis and treatment of imported malaria, and prevention of introduced and indigenous cases
Diagnosis policy	All suspected cases should be examined by RDT or microscopy	All suspected cases must be examined by RDT or microscopy All positive cases confirmed by RDT should be re-confirmed by microscopy Mandatory reporting and notification on each confirmed case within 24 hours	Adequate case notification system is established and fully functional Awareness on drug resistance patters within and outside the country, to formulate preventive guidelines for evidence-based pre-travel health advice
Treatment policy	*Pf*: ACT as defined by national treatment policy and as long as efficacy is confirmed by TES; single dose of PQ is recommended in areas that are about to move to elimination *Pv*: CQ + PQ as defined by national treatment policy and as long as efficacy is confirmed by TES, otherwise ACT	*Pf*: ACT as defined by national treatment policy and a single dose PQ is mandatory *Pv*: CQ as defined by national treatment policy and PQ is mandatory according to NTG	Cases should be treated in line with national treatment policy if imported internally. External imported cases should be treated based on the treatment policy of originated infection. DOT approach can be considered for treatment of imported cases
Service delivery	By all public health services, private medical practitioners, not-for-profit sectors (NGOs), informal private sector and community-based services	Largely, universal coverage has been achieved in this stage Public health sector must play a major role and supervise other sectors involved Over-the counter-sale of antimalarial drugs prohibited	Public health facilities. private health services provider must refer cases to public

		Service provision by other sectors, e.g. defense, police, corporate sector etc. should follow national norms and is monitored	
Quality assurance of diagnostics, antimalarial medicine and case management services	Yes	Yes	-
Monitoring of antimalarial therapeutic efficacy	Monitoring of suspected resistance Therapeutic efficacy studies (TES) in areas with drug resistance reported or suspected	Monitoring of suspected resistance Therapeutic efficacy studies (TES) in areas with drug resistance reported or suspected	-

Case diagnosis and management

- In Afghanistan, the public health sector is still under-resourced, facing human resource and supply chain challenges, and its service network is not sufficiently dense in many areas. Unlicensed providers should not be allowed to provide malaria diagnosis or treatment for malaria. Malaria staff along with district/provincial health departments should identify facilities in violation of this statute and enforce this regulation. The country needs to develop a strategy for involvement and supervision of the different kinds of private providers. Community-based services are usually the best solution for remote areas. There are, however, many challenges. The large numbers and high turnover lead to challenges of training, retraining, supply, supervision and reporting. When malaria incidence is very low, Community Health Workers (CHWs) may not see enough cases to maintain their skills and the population may not see their value.

- In the elimination phase, the roles and responsibilities for each channel should be defined, considering that public health sector must play a major role and supervise all other sectors involved, to ensure optimal case management and surveillance with a total coverage of all active foci. The principle of total coverage of all active foci should be applied to case management. Blood samples should be taken for parasitological examination by microscopy or Rapid Diagnostic Tests (RDTs). Active screening for malaria cases should be actively advocated for focus investigation. ACD should be particularly enhanced in active foci of malaria that show signs of refractoriness. The norms may be less rigid in foci that have demonstrated a good response to the applied measures. Along with PCD every attempt should be taken to screen high-risk populations (HRPs) and ethnic groups by ACD in remote and border areas. It is well known that malaria tends to take refuge in such places and populations, as they often neglected and not adequately covered by the health services. A good rapport has to be established with the defense and police medical services, and the same applies to jails and other institutions across the country.

  The role of quality-assured microscopy remains critical and even increases in the elimination phase. RDTs are usually used in situations where microscopy is not available, particularly at peripheral level in high-risk populations (HRPs) without access to adequate laboratory facilities

and in the private sector as well. In settings eligible for elimination, it is recommended that RDTs and blood slides should be taken simultaneously from suspected cases. It is recommended that all the positive cases confirmed by RDTs should be cross-checked by quality-assured microscopy (or even if feasible by PCR-based diagnostics) that should be available at district and higher levels. National standard operating procedures (SOPs) on PCD and ACD and the role of RDTs, microscopy and PCR-based diagnostics at different levels in the transmission-reduction and elimination phases should be developed.

- Treatment of malaria cases should be based on national treatment policies (***8***). The radical treatment of uncomplicated *P. vivax* malaria weekly administration of PQ for 8 weeks can be considered for prescription in G6PD deficient patients. The directly observed/supervised treatment (DOT) of *P. vivax* cases with PQ should be always considered, particularly in the elimination phase, when the number of cases becomes low.

- All service providers authorized to diagnose malaria should be properly trained. National malaria programmes should standardize training curriculum and ensure consistent knowledge and skills related to malaria diagnosis among the entire healthcare workforce concerned. Training and re-training of all laboratory technicians should be continued, and all laboratories should participate in quality assurance and control procedures. Private laboratories certified for malaria diagnosis should refer all confirmed malaria cases to public health providers and facilities for treatment. The programme staff on a regular basis should carry out regular support and supervision visits to monitor the quality of treatment services at all public, private and community-based facilities and services. Other service providers (military, police etc.), should be regularly monitored by designate staff.

- In areas with poor public health infrastructure and services, the establishment of a network of CHWs is the best and often only option to reach the total coverage of curative and preventive services, in order to detect, notify and treat every malaria infection in a proper and timely manner. To improve access to case management, especially in remote communities, the number of villages and working sites with HRPs, where CHWs are present should be increased. The target should be to place at least one CHW or work site volunteer or mobile health team in every village and major working sites that are considered with on-going local transmission or at risk of malaria. In low-transmission areas eligible for elimination, CHWs along with health staff should be actively involved in case detection and reporting, and may support case and foci investigation and response. The public health staff should manage the work of CHWs and other volunteers in collaboration with relevant malaria health personnel. All CHWs should receive annual training on case management, malaria prevention and health education, and case reporting as well.

- Special case management and screening services should be provided through existing/new malaria clinics/Health posts in high risk areas and at key migration transit points, including formal and informal international border crossings. For settled populations, mobile services should be only a temporary measure to fill the gap-pending provision of static community-based services, which should be rolled out as quickly as possible. Malaria case detection and management services within the Defense and Police Services should be strengthened and brought in line with national standards and norms.

Quality assurance and control

- Quality assurance (QA) of diagnostics, treatment and patient care is important in the intensified control and elimination phases ***(12, 13)***. The only difference is that quality assurance of microscopy has a higher priority in the elimination phase. For case management, it is critical to ensure quality of both microscopy and RDTs as well as the quality of available and to be supplied malaria commodities through adequate registration, good procurement practices and regular quality monitoring at all levels. National guidelines on QA and quality control (QC) along with SOPs for laboratory diagnosis of malaria should be developed and disseminated to all service providers. Health staff at central and provincial laboratories should be trained on QA/QC. For QC, performance of work of laboratory technicians should be accessed by reference laboratories usually at province/region and central levels. All positive blood slides and at least 10% randomly selected negative ones should be cross-checked by reference laboratories in the elimination phase. A national slide bank should be strengthening to support QA/QC and training on malaria diagnosis. Reference laboratories should participate in Accredited External Competency Assessment (ECA), which requires strong regional coordination, supported by WHO. Supervision is the key to QA of patient care, and should be applied at all levels with clear protocols and monitoring systems. Malaria QA program must be implemented to all those providers and facilities that provide parasitological diagnosis and treatment of malaria in the country.

Monitoring of resistance to anti-malarial

- Monitoring of antimalarial therapeutic efficacy and carrying out relevant studies (TES) at sentinel sites throughout the country should be continued in collaboration with WHO to keep relevant maps updated and revise national treatment policy accordingly.

Disease prevention

The main vector control intervention is long-lasting insecticidal nets (LLINs). Other vector control measures include indoor residual spraying (IRS), environmental management, larviciding, and livestock sponging. IRS is recommended for controlling malaria outbreaks and malaria elimination program. Anti-larval measures using temephos is considered when house spraying is impractical around urban areas or when there are limited, recognizable and accessible numbers of breeding sites making these interventions cost effective in producing a desired result. However, these require some additional evidence of effectiveness through operational research. IVM strategies and its framework needed for coordination and legislation have been put in place ***(14)***. However, if elimination is on the national agenda, IRS, LLINs, larviciding and other vector control options should be considered ***(15)***. As insecticide resistance in the main malaria vectors in Afghanistan is evident, implementation of the IVM strategies including larval source management with community participation, larviciding (using temephos and/or BTi), using alternative insecticide(s) for IRS, and implementing insecticide resistance management strategies are highly recommended. Thus, there are two principal vector control measures such as LLINs that is widely used to reduce transmission and prevent malaria in local communities and high-risk populations and IRS that is mostly restricted to the control of outbreaks.

Table 3 lists the main differences between disease preventive policies and practices in areas under Categories 1 (Transmission- Reduction Phase), 2 (Elimination Phase) & 3 (Prevention of Re-Establishment Phase).

Table 3: Disease preventive policies and practices recommended for different Categories

Categories	Transmission-Reduction Phase (Category 1)	Elimination Phase (Category 2)	Prevention of Re-Establishment Phase (Category 3)
Purpose	To reduce transmission intensity	To reduce onward transmission from existing cases	To reduce onward transmission from imported cases
Stratification of malaria situation	Definition of major eco-epidemiological types with selection of appropriate vector control options for different malaria strata based on local epidemiology	Foci-based stratification with categorization of different foci of malaria	-
Vector control policy	Transmission reduction through universal population coverage and usage of LLINs, IRS and personal protective measures Special emphasis on HRPs Larval control wherever is feasible Sustainable and cost-effective vector control and environmental management based on IVM is recommended	Geographical reconnaissance Vector control, on a strict total coverage of all active foci of malaria, with a view to interrupting transmission as soon as possible all over the target area through IRS	In areas of high vulnerability and receptivity, it may be necessary to reduce receptivity by the use of appropriate vector control measures
Entomological surveillance	Yes	Yes	As a part of vigilance, particularly in areas with high receptivity and vulnerability
Monitoring and management of insecticide resistance.	Yes	Yes	-
Epidemic preparedness and response	To be established in epidemic-prone areas with focus on populations at risk	The system must be fully functional throughout the areas eligible for elimination	As a part of a malaria alert and response system, particularly in areas with high receptivity and vulnerability
Research, technology, monitoring and evaluation	To introduce a GIS-based database on malaria vectors To consider operational research to guide vector control by consideration of technical and operational feasibility, effectiveness and sustainability	A central repository of information related to entomological monitoring and applied vector control interventions established and fully functional	-

Long-Lasting Insecticide Nets and other materials

- LLINs should be further distributed at no cost to reach the universal coverage of all populations at risk, and distribution should be based on outcomes of stratification of transmission intensity. Distribution of LLINs should be coupled with locally appropriate and gender sensitive Information, Education & Communication (IEC)/Behavior, Change & Communication (BCC) to ensure community participation and correct LLIN usage. Distribution campaigns, particularly in areas reporting low LLINs ownership should be carried out based on their actual utilization and needs, and led by trained health staff and CHWs at district level. Among high-risk groups, LLINs and other materials should be distributed to workers at their workplace through employers, malaria clinics and volunteers (e.g. farms, industrial commercial projects, construction sites, new settlements etc. as identified by malaria programme and health staff), and efforts will be taken to encourage employers to provide this service to their employees at their own cost in future. Additional LLINs should be given to pregnant women and children under five years in communities targeted for mass LLIN distribution through ante-natal care (ANC) and EPI services maximizing LLIN coverage. Defense/police service personnel based in or operating in malaria risk areas should be protected by distributing LLINS. In the event of disasters and outbreaks, LLINs should be provided to anyone who has not already been covered. LLINs ownership and utilization should be permanently monitored and evaluated following distribution campaigns.

Focal indoor residual spraying

- The programme should conduct focal IRS in the event of outbreaks and active foci of malaria in areas eligible for elimination where case and foci investigations are in place, and entomological evidence and other factors indicate that interruption of transmission can be expected. The well-defined SOP should be developed for IRS planning, implementation, and monitoring. Malaria entomological and health staff should be trained on IRS to support its application and monitor quality of IRS operations. In the elimination phase, focal IRS should be considered (if feasible) along with other preventive measures (LLINs and other insecticide-treated materials etc.), with a view to interrupting transmission as soon as possible in all active foci over the target area. In addition to IRS and other measures, mass drug administration (MDA) in specific condition for control of malaria outbreak, which implies the distribution of an antimalarial drug to every individual in a given population can be considered.

Environmental and larval source management

- Environmental management, which deserves to be used more often by communities for collective protection from malaria vectors should include drainage, filling, land leveling, stream flushing, regulation of the water level in reservoirs, vegetation removal, shading and exposure to sunlight etc. A strong inter-sectoral collaboration is required for deployment of environmental management at local level. In areas where there are generating high densities of malaria vectors associated with significant level of malaria transmission, the use of chemical and biological larvicides can be recommended as successful preventive measures, if it involves regular treatment of all breeding sites and careful inspection at frequent intervals.

Entomological surveillance and insecticide resistance monitoring

- National malaria programme should build capacity necessary for entomological surveillance, and SOPs related to entomological monitoring and surveillance should be developed. Entomological

surveillance should include identification of vector species, monitoring vector behaviors and bionomics, mapping species distribution and density, identification of host preference, seasonal fluctuation of species, and assessment of an area's receptivity. Entomological surveillance should also be carried out in epidemic-prone areas based on set outbreak thresholds. Insecticide resistance is one of the greatest threats to any concerted or prolonged attempt at malaria transmission control, whether the goal is intensified control or elimination. Particular attention should be paid to monitoring and management of insecticide resistance ***(16)***. All existing and possible breeding sites of *Anopheles* mosquitoes should be properly mapped in relation to active foci of malaria, particularly in areas eligible for elimination.

Malaria surveillance

In the control phase, surveillance is based on aggregate numbers, and indicators such as mortality/morbidity rates, incidence of severe/complicated cases, case fatality rate (*CFR*), annual parasite incidence (*API*) etc. are calculated to measure the impact of programme interventions ***(17)***. In the elimination phase, as a transmission is progressively reduced, it becomes increasingly possible and necessary to track and respond to each individual case (***18***).

Although WHO now recommends that all suspected cases of malaria be confirmed with a diagnostic test (microscopy or RDTs), this is not yet the practice in Afghanistan due to poor access to diagnostic testing, which, however, has substantially improved in recent years. It is important to report clinically-suspected and confirmed cases separately as their final values are not comparable over time.

Routine malaria surveillance is presently conducted through HMIS, and malaria reporting from BPHS and EPHS is integrated with HMIS. Malaria diagnosis and treatment is integrated with BPHS and EPHS services, malaria diagnosis and treatment are provided from health post level up to regional hospitals. HMIS collects data on priority disease including malaria in pretested standard form. The services and interventions that are monitored through the HMIS are limited to those that focus on the priority target groups and conditions of the BPHS and EPHS. Standard reporting formats with 102 indicators including 2 related to malaria are processed and analyzed monthly at health facility level and reports to provincial HMIS department. The HMIS central department analyses the data and shares the analyzed data with other departments and BPHS implementers on quarterly basis ***(19)***. DEWS sentinel surveillance is presently conducted through sentinel sites to show malaria trend, to detect epidemics/outbreaks. The surveillance data would be useful not only for M&E, but also for assessing malaria mortality and morbidity trends, evaluating the programme effectiveness and determining the progress towards malaria elimination.

Table 4 lists the main differences between disease preventive policies and practices in areas under Categories 1 (Transmission-Reduction Phase), 2 (Elimination Phase) & 3 (Prevention of Re-Establishment Phase).

Table 4: Malaria surveillance policies and practices recommended for different Categories

Categories	Transmission-Reduction Phase (Category 1)	Elimination Phase (Category 2)	Prevention of Re-Establishment Phase (Category 3)
Purpose	To allow targeting interventions, detecting potential outbreaks and tracking progress	To discover any evidence of the continuation or resumption transmission, detect local and imported cases as early as possible, investigate and classify each case and focus of malaria, provide a rapid and adequate response and monitor progress towards malaria elimination	To prevent introduced cases and indigenous cases secondary to introduced ones
Epidemiological evaluation	Reduction of the malaria burden in terms of prevalence, incidence and mortality	Proven disappearance of locally acquired cases	Reduction onward transmission from imported cases Prevention of introduced and indigenous cases secondary to introduced ones
Data reporting, recording and indicators used	Private sector is requested to report cases Aggregate numbers of out-and in-patients, uncomplicated malaria, severe malaria and deaths due to malaria Malaria indicators such as *APR, TPR, ABER* are reported TES indicators such as Day3 positivity rate and treatment failures after 28 or 42 days	Malaria must be a notifiable disease Private sector, military medical services and others must report every case by law Reported number of acquired locally and imported cases Reported number of active, non-active residual and potential foci of malaria TES indicators could be used	Malaria is a notifiable disease must report every case by law
Detection methods	PCD health facility-based and through VHVs/other volunteers at worksites ACD by health staff and mobile teams is recommended for remote villages, border areas and development projects Blood screening and treatment of positive cases at crossing border and transit points, and new settlements as well	The same as in the Transmission-Reduction Phase with special attention to ACD ACD to fill gaps in PCD to detect all infections including asymptomatic in areas eligible for elimination and populations at risk where the number of cases became low All cases and foci of malaria in this phase must be fully investigated	In principle, PCD However, under exceptional circumstances, especially where importation of malaria is intense and when introduced and indigenous cases reported, ACD is recommended Screening of returnees/migrants from endemic areas can be

	Therapeutic Efficacy Study	Therapeutic Efficacy Study	recommended
Case and foci identification, investigation and classification	No	Yes	Yes
Technology, monitoring and evaluation	Consolidating the use of new tools such as web-based data transmission, volunteer reporting via SMS and introducing case-based malaria surveillance	Adequate case- and foci-based malaria surveillance fully functional across the entire territory of a country National computerized malaria elimination database/registers established National malaria elimination monitoring committee set up	Adequate case- based malaria surveillance fully functional across the entire territory of a country
Integration with other health programmes	Often as an integrated public health programme usually with a centralized management component	Usually as a special programme with a highly specific and time-limited objective	Usually as an integrated public health programme

Surveillance policies and practices

- Routine malaria surveillance should be strengthened across the country to ensure complete and timely reporting from all health sectors including the public facilities and private sector, CHWs, military/police health services, and other parties concerned. The national malaria information system in the districts under Category 1 (Transmission-Reduction Phase) should be expanded and modernized in support of the move towards elimination. The system should be upgraded to allow proper reporting and presentation of data down to household level based on Geographical Information System (GIS), and more emphasis should be placed on providing timely feedback from Central and Provincial levels to peripheral health staff. A case-based surveillance and response system based on GIS should be established initially in priority Provinces that are eligible for malaria elimination, and later it should be expanded to other Provinces as appropriate.

- The transition from the transmission-reduction to elimination will require revision of guidelines, recruitment of staff, training and supervision related to surveillance. In the elimination phase, national operational manual along with respective SOPs on malaria surveillance should be developed including detailed description of tasks and responsibilities for malaria programme and other health staff at all levels, and updated as necessary. To ensure adherence to standard surveillance procedures and practices in line with national guidelines and SOPs, malaria programme staff should lead trainings on surveillance for all categories of health staff concerned and other partners involved. Such trainings can be integrated into other malaria trainings if possible.

- Thus, malaria surveillance in the elimination phase is aimed at (1) immediate detection of and mandatory notification on all malaria infections, whether symptomatic or not within 24 hours, and ensure that they are early and properly treated in order to prevent generating secondary cases;

and (2) investigation of each malaria case to determine whether it was locally acquired or imported, ideally within 24 hours. Once a local case of malaria has been detected and notified, a focus investigation should be carried out by malaria staff within 72 hours (3 days). The functional status of malaria foci is a cornerstone for measuring the progress towards reaching set targets and stated goals. Focus investigation includes clinical and epidemiological diagnosis of the reported case, description of the locality in relation to receptivity and vulnerability and anti-malarial measures carried out, and as a result, the focus is classified.

Tables 5 and 6 list the types of malaria foci by definition, operational criteria and recommended minimum of standards of response.

Table 5: Types of malaria foci based on evidence of transmission and presence of cases

Type	Evidence of transmission	Presence of cases
Active focus	A focus with local transmission	Yes, locally acquired cases – indigenous and/or introduced cases reported
Non-active residual focus	A focus with no local transmission that has been interrupted recently (1-3 years ago)	Yes, but only imported or induced or relapsing cases may occur
Cleared focus	A focus with no local transmission for more than 3 years and which is no longer considered as non-active residual focus	Yes, but only imported or induced or relapsing cases may occur

Table 6: Types of malaria foci with operational criteria and recommended minimum standards of response

Type	Operational criteria	Recommended minimum standards of response
Active focus	Locally acquired case(s) - indigenous and/or introduced have been detected within the current transmission season/ calendar year	All feasible measures including detailed investigation of each case and focus of malaria to interrupt local transmission as soon as possible should be applied
Non-active residual focus	The last locally acquired case(s) – indigenous and/or introduced have been detected in the previous transmission season/calendar year or up to 3 years earlier Only imported or induced or relapsing/old cases may occur	PCD is accessible to the entire population at risk and supported by supervision ACD is conducted regularly and covers the entire population at risk Epidemiological investigation and classification of every case reported Diagnosis by quality-assured microscopy and RDTs or even PCR-based techniques Early/adequate/radical treatment of all cases Continuous use of LLINs Entomological surveillance Health education

		Measures applied in a non-active residual focus may be less comprehensive than in an active focus, but standards of quality and coverage should be the same
Cleared focus	A focus with absence of locally-acquired case(s) for more than 3 years Only imported, induced or relapsing/old cases may occur in current transmission season/calendar year	Vigilance measures by general health services PCD, and ACD if cases reported Entomological surveillance is recommended In case of high degree of receptivity and vulnerability vector control measures can be recommended Health education

- Malaria must be a notifiable disease for all providers at the public, private and community-based health sectors in the elimination phase. Recording and reporting mechanisms and systems within existing public, private and community-based health sectors and autonomous health services, such as military, border forces, police, private companies, development projects etc. should be established to address elimination challenges by timely detecting and immediately notifying the malaria programme on all confirmed cases by fastest means possible. National legislative/legal requirements and administrative acts should be in place to facilitate compulsory notification of confirmed malaria cases.

- In the elimination phase, all confirmed cases have to be epidemiologically investigated to determine whether it was locally acquired or imported, and a standard case investigation record form has to be completed. Before the focus investigation that should be based on the case investigation, a malaria case investigation form should be completed with as much information as possible by either peripheral health staff or a CHW at the time when the positive malaria diagnosis is parasitological confirmed and the information should be sent to the malaria focal point. The same should be done in case if diagnosis confirmed by RDTs at community level (CHWs or health staff). The malaria focal point should send information about the confirmed case to the National level. All confirmed cases have to be classified into locally acquired (introduced, indigenous, relapsing), imported due to mosquito-borne transmission, or induced not due to mosquito-borne transmission.

- In the elimination phase, all foci where locally acquired cases reported have to be epidemiologically investigated to describe the locality where malaria occurred, and a standard malaria foci investigation record form has to be completed. Once the focus investigation is complete, the malaria team leader and entomologist should be able to decide if local transmission is occurring and should be able to provide a classification of the focus. The malaria team leader should decide on a response plan based on the results of focus investigation. At the provincial level, a technical group of adequately trained professionals including malaria mobile team members should be set up, working under the supervision of a provincial malaria manager. Entomological expertise is needed to identify the time and place of transmission of confirmed case(s) within a particular focus. All foci have to be classified into active, non-active residual and cleared. A formal listing of all malaria foci with continuous updates of their functional status should be updated every year. At the beginning of the elimination phase, records for all foci should be entered the database, then new foci are entered, and the status of the foci are changed

on an ongoing basis. The database must be structured so that records of the change in foci classification status and date of status change are maintained.

Prevention and control of malaria outbreaks

The genesis and mechanisms of malaria outbreaks are usually complex and depend on both qualitative and quantitative relationships between the human host, the parasite and its vector as well as on the biological, physical, political and economic characteristics of the environment ***(20)***.

In most parts of Afghanistan, particularly bordering Pakistan where malaria transmission is unstable with most of the populations having little or no immunity, malaria outbreaks represent a major public health problem. During 2013- 2015 in some districts of the eastern provinces of Nangarhar, Kunar, Laghman and Badakhshan, malaria outbreaks caused by *P. vivax* and *P. falciparum* malaria were reported by DEWS and Provincial MLCPs and investigated by technical unit staff of NMLCP in collaboration with partners. Different factors may have contributed to development of these outbreaks, including lack of effective vector control measures as well as timely diagnosis and adequate treatment of cases, shortages of primaquine for anti-relapse therapy of *P. vivax* cases at health facilities, and insufficient epidemic preparedness. The existing EPR mechanism is inadequate to prevent outbreaks, and manpower/logistics and the mechanism for their rapid mobilization and deployment are insufficient to curb the on-going epidemic. Ministry of Public Health with collaboration of its partners is responsible for all types of emergency situations including malaria epidemics. At present, malaria outbreaks detected through DEWS that has around 543 sentinel sites all over the country.

Epidemic-prone situations should be identified by means of the process of stratification of the malaria problem into discrete situations, populations and areas with outbreaks of various magnitudes. As a result of further analysis, it will be possible to define major precipitating factors which cause epidemics so that in the future they can be monitored for epidemic prediction purposes. An adequate outbreak monitoring system should constitute a part of national malaria epidemiological surveillance system. Its primary task is to identify early signs of an impending epidemic related either to a particular area or to a population group.

Control of a malaria outbreak should involve measures aimed at (1) minimizing clinical consequences; (2) containing transmission, if possible, in the affected area; (3) preventing further spread of the epidemic; and (4) improving emergency preparedness in order to prevent future epidemics. The first two objectives require the application, as soon as possible, of effective containment measures, while the last two involve assessment of risk and the application of preventive measures. Space spraying of insecticides is, in principle, the best method of rapidly reducing vector density by attacking adult mosquitoes, but it is nevertheless expensive in insecticides, requires special equipment and vehicle resources, and poses serious problems of accessibility. in the specific conditions mass drug administration (MDA) can be considered to all the people to be at risk to reduce quickly the parasite reservoir in the affected population.

The prevention of outbreaks by planned interventions should be one of the major tasks of NMLCP. It is expected that emergency situations within epidemic-prone areas or population groups in the country are likely occur. Prevention of further spread of the outbreak and its recurrence in subsequent years requires the application of sustainable methods of vector control. IRS, if feasible, continues to be the most easily applicable transmission control measure. IRS, to be fully effective, should achieve total coverage of all

houses within the affected area based on adequate provision of insecticides, spraying equipment, transport and deployment of vector control programme staff. In epidemic-prone areas, where LLINs and other insecticide-impregnated materials are already widely used, this approach may be the most effective way of controlling transmission and preventing its spread to new areas or its renewal in subsequent years.

Emergency preparedness for malaria outbreaks should be part of the general organization of emergency health services, which in turn should be an integral part of national health system. Preparedness for malaria outbreaks should be based on an understanding of the epidemiology of malaria and of the epidemic risk factors. The more complete that understanding and the more developed the information system and the monitoring of risk factors, the higher is the level of preparedness, the more accurate the forecasting and the more adequate the response. Malaria preparedness should include the identification of resources (appropriate manpower, supplies, equipment and logistical arrangements including administrative and technical procedures, responsibilities of health and other sectors) and the required mechanisms for their rapid mobilization.

6. Cross-cutting interventions

Political commitment and partnership action

Government of Islamic Republic of Afghanistan is committed to control and eliminate malaria from this country. The country has managed to get its country-level partnership movement off the ground and, as a result, the burden of malaria has been substantially reduced. At present, the government and international partners have reaffirmed their political and financial commitments to take all possible efforts aimed at further reducing malaria-specific mortality and morbidity in areas where elimination does not appear to be feasible at present; ultimately interrupting transmission of malaria in areas eligible for elimination and preventing the re-establishment of local transmission in areas where it has been eliminated.

Programme organization, management and administration

The Vector-Borne Disease Task Force coordinates and oversees the implementation of malaria strategy. The taskforce is chaired by the NMLCP, with representation from partners i.e., WHO, UNDP and BPHS implementing NGOs.

NMLCP under the leadership of MoPH coordinates the PMLCP by providing managerial guidance and technical assistance in case management, disease prevention, malaria surveillance, capacity building, community mobilization, operational research and monitoring and evaluation. However, almost all the departments of NMLCP obviously require more manpower and financial resources to make the programme more productive and fully functional at all levels. NMLCP coordinates malaria control and elimination activities with different local and international partners including BPHS implementers, UNDP, WHO, non-governmental organizations and private health sectors. Malaria control and elimination to be successful requires concerted efforts from various health and non-health sectors including health, education, information and communication, finance and agriculture etc.

There is a lack of competent senior programme staff in most programme departments, particularly at provincial level at present. It has been noted that many of the professional and technical staff of NMLCP has frequently moved out to search for a better job, and NMLCP should find the way/incentives to retain the programme staff. Holding regular regional coordination meeting in the malaria-affected regions could enable the programme managers from central level to understand better malaria-related situations, problems, constraints and gaps that exist at the regional and lower levels and to improve support for programme implementation. NMLCP should pay special attention to field work for the central- and provincial-level programme staff aimed at providing the necessary technical guidance and improving collaboration with BPHS implementers, private health sector providers and other involved in programme implementation.

The following are essential on a path to the phased elimination of malaria from Afghanistan:

- Sufficient background information including epidemiological and operational data as well as ecological, social, economic and demographic information should be available to provide an adequate basis for planning of epidemic containment and elimination operations;
- Goals, objectives, milestones and targets as well as interventions to attain the agreed milestones and targets should be specified in detail and evidence should be provided. The evidence can be obtained from the experience of pilot projects in the country concerned or from the experience in neighboring countries;
- A considerable effort should be taken to increase human resources and train, motivate and sustain health staff including the programme personnel at all levels until malaria eliminated across the entire country. The presence of a respected and inspiring national leader is a crucial element for success of the elimination campaign;
- Adequate legislative and administrative provisions to govern the programme should be officially approved to cover the programme's requirements, including the right of entry by malaria staff with the purpose of investigation or spraying, mandatory notification and reporting of malaria cases etc. Regulation of the private sector as a major elimination challenge in Afghanistan should be properly addressed;
- The formulation, authority, organization and responsibility of the programme should be specified and the administrative policy should be clearly defined, with authority to have full control over its budgetary allocations and to formulate financial procedures suitable for its efficient functioning. Moreover, the programme should be delegated powers for formulating the terms of service of its personnel and for exercising administrative and disciplinary control over them;
- Adequate provisions should be made for monitoring and evaluating the progress made towards the phased elimination of malaria. Regular assessments by an independent team of experts should form an essential element of the programme;
- The programme's budget should be sufficient and realistic, including adequate reserve provisions to meet possible problems that are liable to occur during its implementation, and the source(s) of funds should be clearly indicated; and
- Adequate provisions should be made available for effective vigilance activities after the attainment of malaria-free status.

Capacity building

Special attention should be paid to the training of professional and managerial staff of the public and specialized health services. Adequate training should be provided to meet the progressive needs of the programmes for new staff, and regular refresher courses for all staff in service at all levels. National training programmes should be supported and coordinated to:

- Establish or maintain a group of trainers with the necessary malaria expertise to assist in organization of training activities at national level;
- Improve knowledge and enhance skills of different categories of the public and specialized health personnel involved in malaria control, elimination and prevention with particular attention to malaria surveillance;
- Ensure that training programmes and their contents are constantly adapted to and appropriate for the existing strategy. Trainings should be "task-oriented" and "problem-solving", and basic training is supplemented by regular supervision and refresher training courses;
- Develop a systematic and objective assessment of performance of the training and proper feedback for purposes of its improvement;
- Ensure that the training increases the motivation of health staff to maintain their skills and competence, and remain in service; and
- Secure adequate financial support for capacity building.

There is a desperate need for strengthening the entomological component of the national malaria programme. Since vector control is an essential tool to reduce and halt transmission of malaria, it is highly advisable that special training courses will be organized for existing and new entomological staff, and entomologists will play a greater role in the decision on malaria elimination and prevention of its re-establishment of malaria ***(21)***.
Substantial effort should be directed towards development and publications of national guidelines and instruction materials to address malaria elimination issues. The country may consider organizing joint inter-country trainings with neighboring countries with similar training needs.

Inter-sectoral collaboration and advocacy

Inter-sectoral collaboration is a key factor for success for the shift from malaria control to elimination. Existing collaborative mechanisms within and between the formal and informal sectors, and channels of communication among policy-makers, local administration, public health personnel and partners should be further strengthened to promote information sharing and joint planning for malaria elimination as well as to ensure that additional funds are earmarked for malaria elimination. The health sector has to work jointly with other departments such as planning, land development, trade and industry, environment, water and irrigation, infrastructure, work and transport, food and agriculture, education, security, culture and community development, especially at peripheral levels. Establishment of Malaria Elimination Committee (MEC) will be supporting and facilitating the inter-sectorial collaboration.

The adequate communication/advocacy strategy has to be developed to involve everyone concerned. To be most successful, the government must play a leadership role in coordinating and organizing programme activities, and in engaging their populations in national and local efforts. The government needs to work together with all existing and potential partners that operate in Afghanistan, and may

consider appointing a focal person to coordinate all partners and harmonize their activities under the endorsed NMSP 2018-2022. National and provincial administrations should be also engaged, and steering committees at different levels could be an option to oversee the inter-sectoral work directed at malaria elimination. Review meetings should be periodically conducted to present achievements/problems/constraints and indicate future plans to enhance the existing collaboration, and relevant meeting reports have to be produced and widely disseminated among all parties concerned.

Community-based interventions

NMLCP developed its IEC/BCC guidelines in 2008 aiming to inspire people who are at risks and suffer from malaria to change their behaviors. The strategy is aimed at improving knowledge and awareness on vector control, disease management and prevention. Approaches and activities that are undertaken to translate the current IEC/BCC strategies in Afghanistan include (1) community events with school students and in women shuraa; (2) distribution of notebook, posters and brochures with messages on malaria control and prevention; (3) informal discussions on prevention and control in the meeting with students, teachers; and (4) TV and radio talk show with malaria experts to improve public awareness. During commemoration of the World Malaria Day celebrated annually at the central level and some provinces, IEC materials like posters, brochures, booklets with malaria messages are distributed to the health facilities. NMLCP has a plan and standard curriculum to conduct IEC activities every year, which are communicated to provinces and down to district level.

In the context of the national plan for malaria elimination, NMLCP should map all the current IEC/BCC strategies and revise them, if necessary, to align with existing strategies on case management, disease prevention and surveillance for malaria elimination. Specifically, strategies on community mobilization should be incorporated with an overall aim to deliver quality malaria-related information on treatment and prevention at the community level.

To promote behavior's change related to health seeking and personal protection, NMLCP should develop and disseminate IEC-related materials/messages to the public, and a multi-media strategy to deploy messages via radio, television broadly utilized. The messages should target the most at-risk and underserved populations. Different IEC/BCC materials/messages should be harmonized across different ethnic minorities and mobile/migrant populations. To improve coordination, NMLCP may convene an annual meeting to share with all partners involved progress on IEC/BCC activities, identify best practices and challenges in implementation, update key messages and develop new IEC/BCC materials/messages in the context of malaria elimination. NMLCP should include key IEC/BCC messages into training modules and learning materials to be used for training purpose of public health staff, private health providers and CHWs.

NMLCP along with general health staff and CHWs should work with community leaders to mobilize communities and increase awareness about malaria prevention. Community sensitization and training workshops should be organized by involving important community actors including community healthcare workers, private sectors providers, police/military, religious leaders, village chiefs, village health support groups, teachers and other stakeholders to strengthen the linkages between the key actors and quality malaria service providers.

Services for high-risk populations (HRPs)

To provide information on the high-risk group and specify the services that they are receiving.

People that move either within a country or between neighboring countries for temporary work or re-settlement and national security forces posted along borders, are among the highest risk groups for malaria infection. Unfortunately, given the difficulty in reaching and tracking these groups, there is usually poor surveillance of malaria. Analysis should be carried out on a regular basis within the country to identify the main high-risk groups and their areas to be targeted for interventions. The mapping exercises and available outcomes of operational research among HRPs should be utilized to update approaches to address these issues. National focal points can be appointed by NMLCP to coordinate activities directed towards HRPs. NMLCP should collaborate with other sectors, such as Ministry of Foreign Affairs and the Ministry of Immigration, the Department of nomads of ministry border and tribal affairs, ministry of agriculture, Province/District administration and partners' organizations involved to appropriately target these populations at risk.

Cross-border activities should take into consideration specific interventions for HRPs. IEC/BCC activities should be considered for minorities, tribal populations and at the working sites of large-scale deployment of mobile population groups using CHWs. Military and police personnel deployed inside and travelling outside the country, considered as the most easily accessible HRP group should be targeted for engagement. Industries supporting employment of HRPs, forestry, plantation and farming, construction, and tourism in at-risk areas should be engaged in malaria elimination and prevention.

It is critical to differentiate between different types of HRPs, based on their key characteristics and risks that would help to determine the most effective strategies to target and reach these populations with the most appropriate elimination interventions. Ongoing challenges include characterizing and defining HRPs, developing an intervention and surveillance strategy, adapted to the country's conditions, responding to the local needs, and aimed at better targeting these hard-to reach populations by technically sound and sustainable measures within the country.

Thus, better understanding the various groups of HRPs and the situations, which place them at risk of malaria is required, in order to develop targeted behavior change and outreach interventions for HRPs. There is an urgent need to develop appropriate and accessible malaria services for HRPs in different settings. In addition, in the context of universal coverage and access to basic health services, these remote and often marginalized populations (socially, economically or geographically) should be able to have an easy access to adequate and affordable health care.

Cross-border and regional cooperation

Malaria in border areas requires special attention because of the intense population movements within as well as across national borders. The movements may be illegal; even if they are not, they may be difficult to track. Furthermore, communication maybe constrained by different languages. For obvious reasons, border areas are often the most remote and neglected, and there is little information and control over what happens across the border. If there are malaria control or elimination activities on both sides of borders, their policies, strategies and approaches may be different. Realizing that a substantial number

of cases are border malaria, there is a great need for NMLCP to focus their activities on vulnerable, often underserved, groups of migrating populations in border areas.

Border malaria calls for effective co-operation between neighboring countries. However, there are many constraints such as administrative hurdles, political sensitivities in dealing with the most concerned areas, and the remoteness and inaccessibility of most of the problem zones. In the context of malaria elimination, particular emphasis should be given to situations, where there is a risk of spread of malaria between neighboring countries, and all necessary steps should be taken to assist in solving common malaria problems in border areas. The existing mechanisms and approaches being applied should be reviewed and ways for their improvements should be recommended.

The existing regional mechanisms like PIAM-Net, G5, Kabul Declaration, etc. should be used to improve further coordination and enhance cooperation between Afghanistan and other countries to solve common malaria-related border problems. Particularly where movements across national boundaries occurs. Particular emphasis should be placed on assessment of current situations and identification of problems encountered, regular and timely information exchange, notification on unusual malaria situations as well as development and implementation of joint plans of action for harmonization of malaria elimination activities in border areas.

Health system strengthening

To facilitate an elimination effort in Afghanistan, the health system in the country has to be further strengthened in terms of human resources, financing, information systems and governance. Due to the need for strong malaria surveillance with total coverage of all geographical areas of the country and high quality of operations, human resources must increase at all levels. Some public health staff may be devoted to malaria to have sufficient time for surveillance and response operations, and respective health personnel should be trained accordingly. In the elimination phase, enforcing the mandatory notification of malaria will be a major challenge in Afghanistan where many fever patients seek care in the informal private sector. Financial support to the program need to be maintained, when the burden of malaria is decreasing to continue malaria elimination. Launching a new malaria elimination programme increases the need for leadership and management, and operations have to be managed with rigor and flexibility, supported by robust monitoring and quality control.

Focused research

In recent years, the malaria control program in Afghanistan in collaboration with other related agencies have conducted some researches on malaria control interventions e.g. vector control, case management, new intervention (treatment regimes, or case management), drug efficacy and program evaluation ***(9, 10, 24, 25, 26, 27, 28, 29)***.

The objectives of the research should be closely tied to the particular situation and problems identified within a particular country and intervention strategies being applied. Such research should be relevant to existing control or elimination strategy, addressing not only the efficacy/effectiveness of specific interventions but also social, economic, cultural and behavioral factors that may affect programme activities. MoPH/NMLCP should oversight the research activities at country to minimize unnecessary duplication and to take full advantage of any opportunities for collaborative research, innovation and synergy.

Malaria in conflict areas

A violent conflict may cause population displacement and destruction of infrastructure, as well as the breakdown of health services, including routine disease control programs, which can lead to outbreaks. Additionally, the lack of clean water supplies, poor sanitation and waste management, overcrowding and poor shelter can increase the risk of communicable diseases including malaria. The increase in malaria morbidity and mortality due to conflicts have been observed in many conflict areas. The increase in malaria incidence in refugees and displaced populations has been well documented in conflict situations.

In conflicts or in complex emergencies, factors that may contribute to the increase in malaria morbidity and mortality include the breakdown of general health and specialized malaria services, movement of people from low to high transmission areas, and environmental deterioration encouraging vector breeding. Major malaria outbreaks during the crisis can be prevented by early application of effective malaria interventions. Prioritizing LLINs distribution to pregnant women and young children during the crisis in high-transmission areas can be appropriate given that child mortality due to communicable diseases including malaria are often raised in conflict settings.

It is important that the crisis response should be collaboratively and rapidly organized by the Ministry of Public Health, UN Agencies and the NGO community, and effectively coordinated by the Ministry Public of Health. Malaria control activities are implemented at areas of conflict through the available health facility and community. The intervention response must be planned in advance, and adequate resources and expertise should be made available to assure the proper containment of possible outbreaks. Research should be advocated to improve malaria control in both normal and emergency circumstances in areas in which displaced populations are present.

7. Measuring Progress and Impact

General principles

The following principles should be taken into account:

- In the reduction-transmission phase, the main focus should be given to establishing adequate epidemiological services and information systems, with an operational research component, capable of planning, monitoring and evaluating control interventions;
- Once an administrative unit entered the elimination phase or even before, the attention should be re-focused to ensuring that adequate elimination-oriented surveillance system has been established and is properly functional with absolutely total coverage of this administrative unit;
- Monitoring & Evaluation (M&E) is the central component in the elimination phase. Operationally, the main information requirement is to indicate exactly which administrative units have reached the elimination target at a given point in time;
- Different set of outcomes and impact indicators are required depending on the stage on the continuum to malaria elimination;
- Indicators on impact and adequacy of surveillance are central to verification about interruption of malaria transmission, its elimination and maintenance of malaria-free status.

Monitoring and evaluation

National malaria programme should be evaluated at regular intervals for compliance with set targets and stated objectives. Information should be collected through a national information system for malaria surveillance and health management. Parameters should be established to monitor and evaluate all programme areas.

The national malaria database should be operationalized and updated to include components needed for elimination stage when a decision has been made to go for elimination ***(2)***. This database will serve as the national repository of all information related to malaria elimination

Implementation and coordination mechanism

M&E is a fundamental component of the National Strategic Plan for Malaria Control and Elimination. Through M&E, programme impact, outcome, output and input indicators are measured to provide the basis for accountability and informed decision making at both programme and policy level.

M&E Directorate within the General Directorate for Policy and Planning of the MoPH is the departmental body responsible for implementing the M&E Strategic Plan of MoPH. The M&E Directorate is closely linked to HMIS, DEWS, Research and Informatics departments and Human Resource Database. M&E department coordinates and guides all M&E activities among the various departments in MoPH, Provincial Public Health Directorate and NGOs.

NMLCP is responsible for monitoring and evaluation of all malaria related activities by M&E department of NMLCP at central level and the M&E officers of PMLCPs at provincial level. There is lack of adequate technical capacity for data analysis and interpretation, particularly at the provincial level. Besides the M&E department of NMLCP, which is responsible for M&E in the field of malaria, WHO and PR also have M&E system to monitor and evaluate their related malaria activities. Partners should submit their M&E finding to NMLCP.

M&E department is responsible to oversee the performance of programme implementation and regularly conducts supervision visits to provinces to monitor the programme performance, detect problems/constraints and provide on job training, if needed. In cooperation with NMLCP M&E department, provincial malaria M&E officers are responsible for all M&E malaria-related activities at their respective provinces. All PRs conduct joint supportive supervisory visits to improve quality of malaria interventions and fill gaps.

Recommended indicators to measure impact and adequacy of surveillance

In the transmission-reduction and elimination phases, progress should be monitored through a set of impact and outcome indicators, which are routinely tracked by NMLCP. A recommended core set of indicators to measure the progress towards interrupting transmission of indigenous malaria is listed in M&E framework:
Since an annual surveillance report as good epidemiological practice provides a synthesis of all available information on malaria and its elimination and is required for the future verification/certification process of malaria elimination such reports should be prepared on annual basis.

8. Cost of Implementing the Plan

It is crucial for any country aiming for elimination to ensure that adequate financial support is available from beginning to end. A continuous flow of financial inputs from different governmental sources and partners is critical to the success of malaria transmission reduction and elimination in Afghanistan. There is some risk that the funding agencies would not be able to provide and/or sustain the level of inputs to see a visible programme impact: delays in disbursements can rapidly lead to malaria resurgences, where gains made over 5 years can be lost in a few months.
total cost of this strategy for reduction of transmission and elimination of malaria in targeted areas over next 5 years has been estimated (Annex 05). the cost of surveillance activities that is a core function of elimination programme should be gradually increased, and be kept at a sufficient level until the national elimination goal is achieved. Sufficient financial provisions should be made for monitoring and evaluating the progress made towards malaria elimination to ensure the set milestones/targets and stated objectives/goals are met. During the elimination phase, financial allocations should be maintained, despite a low burden. Adequate financial resources should be also available for effective vigilance activities after attainment of malaria-free status, because adequative surveillance to prevent the re-establishment of local transmission can be relatively costly in Afghanistan assuming a high degree of vulnerability and receptivity.

It is expected that implementing the NSP 2018-2022 would bring substantial benefits in terms of saving lives and averting the socio-economic losses provoked by the disease than the total cost and investments made to execute this elimination strategy.

9. Governance and coordination

It is highly advisable to establish a strong and proactive National Malaria Elimination Committee (NMEC) responsible for guidance, coordination and monitoring progress on the way from malaria control to elimination. The NMEC should have the Vice President as Patron, the Minister for Public Health as Chairperson, the Deputy Ministers for Public Health as Vice-chairs, the Director General of the Department of Preventive Medicine as Secretary and the Director of NMLCP as joint Secretary.

MoPH has established the Vector Borne Disease Task force committee as an independent focal body to coordinate malaria related issues among government entities, international partners, NGOs, private sector and civil societies. This is a multi-sectorial structure which reflects the full commitment and priorities of the government of Afghanistan and the development partners responding to malaria in line with the Afghanistan National Development Strategy. NMLCP takes the leading role in epidemic containment and malaria elimination providing all the necessary support to general health and specialized programme staff based at Provincial, District and lower levels.

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Annex 1: Country profile

Geography and Climate

The geography and climate in Afghanistan are highly variable and generally characterized by rugged topography, patchy rainfall and extreme aridity in large parts of the country. Almost half of the country land surface lies above altitudes of more than 2000 meters. In the northeast, the country is dominated by the Hindu Kush mountain range which is prone to earthquakes and comprises the Wakhan Corridor-Pamir Knot, Badakhshan, Central Mountains, Eastern Mountains, Northern Mountains and Foothills, Southern Mountains and Foothills. The Turkistan Plains, Herat-Farah Lowlands, Sistan Basin-Helmand Valley, Western Stony Desert, and Southwestern Sandy Desert surround the Mountains in the north, west and southwest.

During the winter, temperatures in the central highlands of the country, the area around Nuristan and the Wakhan corridor, drop to below -15 °C while in the summer in July the low-lying areas of the Sistan Basin of the southwest, the Jalalabad basin in the east, and the Turkistan plains along the Amu River in the north temperatures average over 35 °C. The Sistan Basin is one of the driest areas in the world while much of the south and south west has desert climate. Average rainfall in the country is approximately 210 mm per year with the main rainy season from December to April, although some areas in the south-east receive monsoonal summer rain. The country drainage system is dominated by four main rivers: Amu (Oxus) to the north, the Hari Rud to the west, the Helmand River in the south and the Kabul River in the east. Forests, found mainly in the eastern provinces of Nuristan and Paktiya, cover barely 2.9% of the country's area although these are diminishing. In the eastern and north-eastern provinces, irrigated rice cultivation is widely practiced and is a major contributor to anopheles breeding ***(31)***.

Population and Demography

As of 1 January 2016, the population of Afghanistan was estimated to be 33 045 440 people within a total geographical area of 647,500 sq. km. Approximately 76% of the population lives in rural areas. About 2.7 million Afghan refugees are living in Pakistan and Iran. The sex ratio of the total population was 1.072 males per 1 000 females, which is higher than global sex ratio. During 2016 Afghanistan population is projected to increase by 997 642 people and reach 34 043 082 in the beginning of 2017. Afghanistan population density is 50.7 people per square kilometer as of November 2016. Total life expectancy (both sexes) at birth for Afghanistan is 61 years. Literacy rate for adult male population is 51.99% and this rate for adult female population is 24.15%.

The population of Afghanistan includes many different ethnic groups. The Pashtuns, who make up more then half the population, have traditionally been the dominant ethnic group. Their homeland lies south of the Hindu Kush, but Pashtun groups live in all parts of the country. Many Pashtuns also live in northwestern Pakistan, where they are called Pathans. Pashtuns are usually farmers, though many them are nomads, living in tents made of black goat hair. The Pashtuns speak Pashto, which is an Indo-European language and one of the two official languages of Afghanistan. The Tajiks, are the second largest ethnic group in Afghanistan. They live in the valleys north of Kabul and in Badakhshan. They are farmers, artisans, and merchants. The Tajiks speak Dari, also an Indo-European language and the other official language of Afghanistan. Dari is more widely spoken than Pashto in most of the cities. In the central ranges live the Hazaras. Although their ancestors came from the Xinjiang region of northwestern China, the Hazaras speak an archaic Dari. Most are farmers and sheepherders. In the east, north of the Kabul River, is an isolated wooded mountainous region known as Noristan. The Noristani

people who live there speak a wide variety of Indo-European dialects. In the far south live the Baluchi, whose Indo-European language (called Baluchi) is also spoken in southwestern Pakistan and southeastern Iran. To the north of the Hindu Kush, on the steppes near the Amu Darya, live several groups who speak Turkic languages. The Uzbeks are the largest of these groups, which also include Turkmen and, in the extreme northeast Vakhan Corridor, the Kyrgyz people. These groups are settled farmers, merchants, and seminomadic sheepherders. The nomads live in *yurts*, or round, felt-covered tents of the Mongolian or Central Asian type.

Agriculture is the backbone of the Afghan economy, the rugged topography and low rainfall are severe constraints on productivity. Rice is intensively cultivated through snow-fed irrigation in the eastern and northeastern provinces and is a major contributor to anopheline breeding sites.

Political Structure and Administration

Afghanistan is made up of 34 provinces (***Figure 1)***, which are the primary administrative divisions 2with around 400 districts. Each province encompasses several districts or usually over 1,000 villages. Provincial governments are led by a governor who is appointed by the President of Afghanistan. Each province is represented in the government of Afghanistan by two members in the House of Elders. One is elected by the provincial council to a four-year term while the second is elected by the district councils to a three-year term. Representation in the House of the People is directly from the districts, although in each province, two or more of the representatives must be women. They are appointed by the President of Afghanistan.

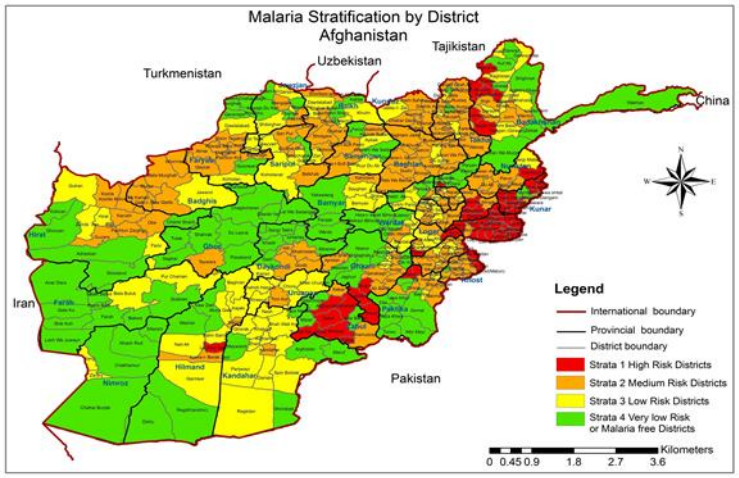
Figure 1: Administrative province-wise map of Afghanistan (*source: CSO/Afghanistan, 2015*)

ID	Province
1	Nimruz
2	Kandahar
3	Zabol (Zabul)
4	Oruzgan (Uruzgan)
5	Helmand
6	Paktika
7	Farah
8	Khowst
9	Paktia
10	Ghazni
11	Lowgar
12	Daykondi
13	Nangarhar
14	Vardak (Wardag)
15	Kabol (Kabul)
16	Kapisa
17	Laghman
18	Ghowr
19	Parvan (Parwan)
20	Bamian
21	Konar (Kunar)
22	Herat
23	Panjshir
24	Badghis
25	Nurestan
26	Baghlan
27	Sar-e Pol
28	Samangan
29	Faryab
30	Kondoz (Kunduz)
31	Balkh
32	Jowzjan
33	Takhar
34	Badakhshan

Annex 2: Malaria epidemiology

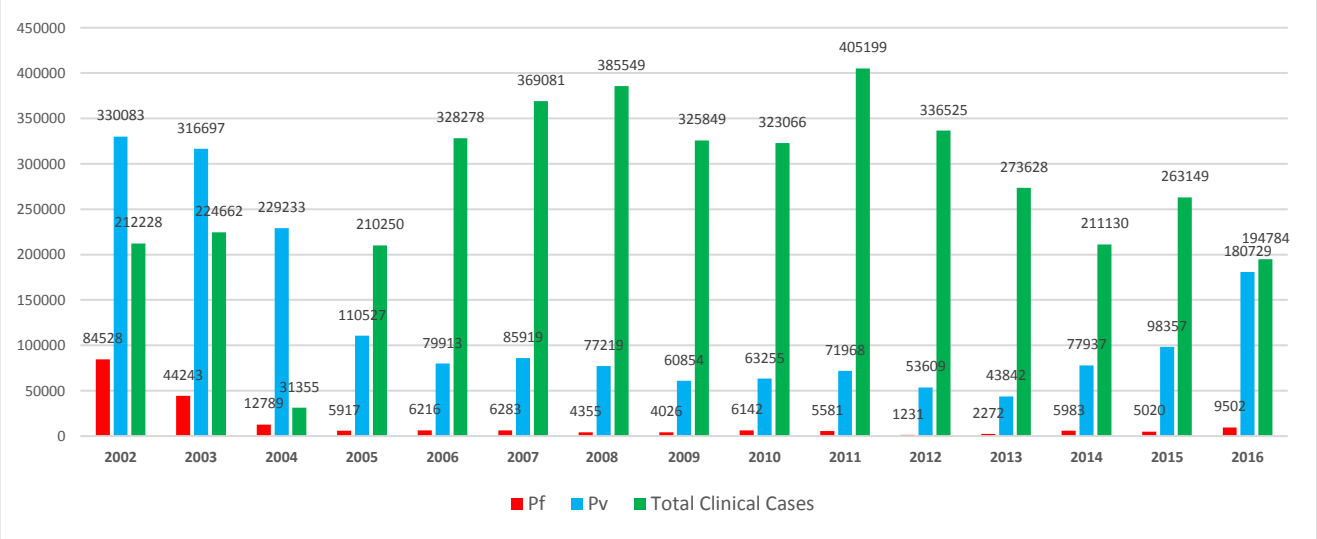
Malaria is still a major public health problem in Afghanistan. based on 2016 data, 27% of Afghan population lives in areas at high risk for malaria, 49% at medium risk and the remaining 24% live in areas with no risk or very low risk of malaria transmission. Malaria is a complex disease and its distribution in Afghanistan varies largely from place to place, and is dependent upon a variety of factors related to parasites, vectors and human populations under different geographical, ecological and socio-economic conditions. Using a combination of available malaria and environmental data, all districts in Afghanistan were classified into four main strata with high, medium, low and very low risk of malaria transmission or its absence in malaria free areas (***Figure 2***).

Figure 2: District-wise stratification of Afghanistan by high, medium, low risk of malaria and areas with no risk (*source: NMSP 2013-2017*)



At present, *P. vivax* malaria is the most prevalent species accounting for almost 95% of all parasitologically confirmed cases, with less than 5% of total cases attributed to *P. falciparum* with a decrease in its proportion over the past years. Malaria transmission is seasonal from June to November. The *P. falciparum* peak is in August to October, a few months after the summer peak of *P. vivax*. Many *Plasmodium vivax* infections relapse during the spring season and this may give rise to a vivax peak around July Transmission of *P. falciparum*, at the edge of its geographical range, is unstable, and can fluctuate markedly from year to year. The distribution of *Anopheline* mosquitoes in Afghanistan varied by ecological zones, and is included *An. stephensi, An. culicifacies, An. fluviatilus, An. annularis, An. pulcherrimus, An. superpictus* and *An. hycranus* ***(32, 33).*** There is a profound diversity in ethnic groups residing across the country. The genotypic study of the Mediterranean variant of G6PD deficiency in males in nine provinces in Afghanistan confirms that the 563C.T mutation reaches its highest frequencies in Pashtuns and Pashais (8.9%), with lower prevalence in groups historically associated with northern provinces and countries to the north of Afghanistan ***(9).***

Figure 3: The number of clinically-suspected and parasitoilogically confirmed cases of *P. vivax* and *P. falciparum* in Afghanistan, 2002-2016 (*source: NMLCP/MoPH, 2016*)



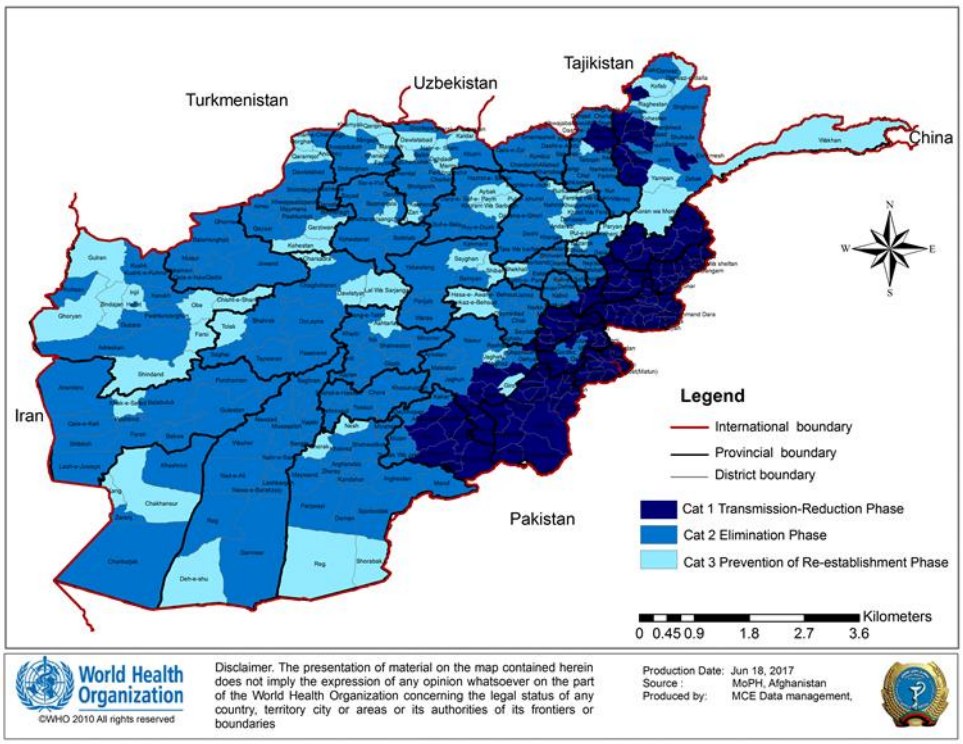
Annex 3: District-wise malariological stratification, Afghanistan, 2015-2016

Indicators Year/Province		# Districts	# Districts: Category			% Confirmed Cases	Annual Parasite Incidence			% *Pf* cases	ABER	TPR	# Malaria Deaths
			1	2	3		API	APfI	APvI				
2015	Badakhshan	28				25	1.98	0.06	1.92	3.2	2.2	9.1	0
2016	Badakhshan	28	9	12	7	24.69	1.10	0.01	1.09	0.22	1.25	10.1	0
2015	Badghis	7				0.50	0.04	0.00	0.04	10.00	0.2	1.9	0
2016	Badghis	7		7		60.62	0.02	0.00	0.02	0.00	2.05	33.07	0
2015	Baghlan	15				27.50	0.04	0.01	0.03	5.60	0.6	0.7	0
2016	Baghlan	15		10	5	78.63	0.09	0.00	0.08	1.71	0.57	1.49	0
2015	Balkh	16				11.00	0.14	0.01	0.13	10.00	0.9	1.6	0
2016	Balkh	16		9	7	12.13	0.11	0.01	0.10	1.55	0.29	0.36	0
2015	Bamyan	7				6.00	0.10	0.04	0.06	37.20	0.5	1.9	0
2016	Bamyan	7		5	2	62.68	0.02	0.01	0.02	0.36	0.54	22.79	0
2015	Dykundi	9				2.50	0.10	0.02	0.08	20.50	0.4	2.7	0
2016	Dykundi	9		8	1	8.11	0.26	0.06	0.21	0.96	0.6	7.03	0
2015	Farah	11				5.00	0.04	0.01	0.03	35.00	0.2	2.5	0
2016	Farah	11		10	1	13.13	0.04	0.01	0.03	2.02	0.61	1.21	0
2015	Faryab*	14				25.90	1.03	0.00	1.03	0.00	0.5	19.7	0
2016	Faryab	14		9	5	0.54	0.01	0.00	0.01	0.00	0.39	0.35	0
2015	Ghazni	19				25.10	0.74	0.05	0.69	7.40	1.4	5.2	0
2016	Ghazni	19	7	10	2	28.28	0.70	0.04	0.66	1.13	1.8	4.04	0
2015	Ghor	10				3.50	0.05	0.01	0.04	81.00	0.1	5.3	0
2016	Ghor	10		6	4	5.43	0.03	0.01	0.03	0.88	0.19	2.1	0
2015	Helmand	13				0.90	0.13	0.01	0.12	6.80	1.4	0.9	0
2016	Helmand	13		12	1	1.54	0.06	0.01	0.05	0.12	1.31	1.01	1

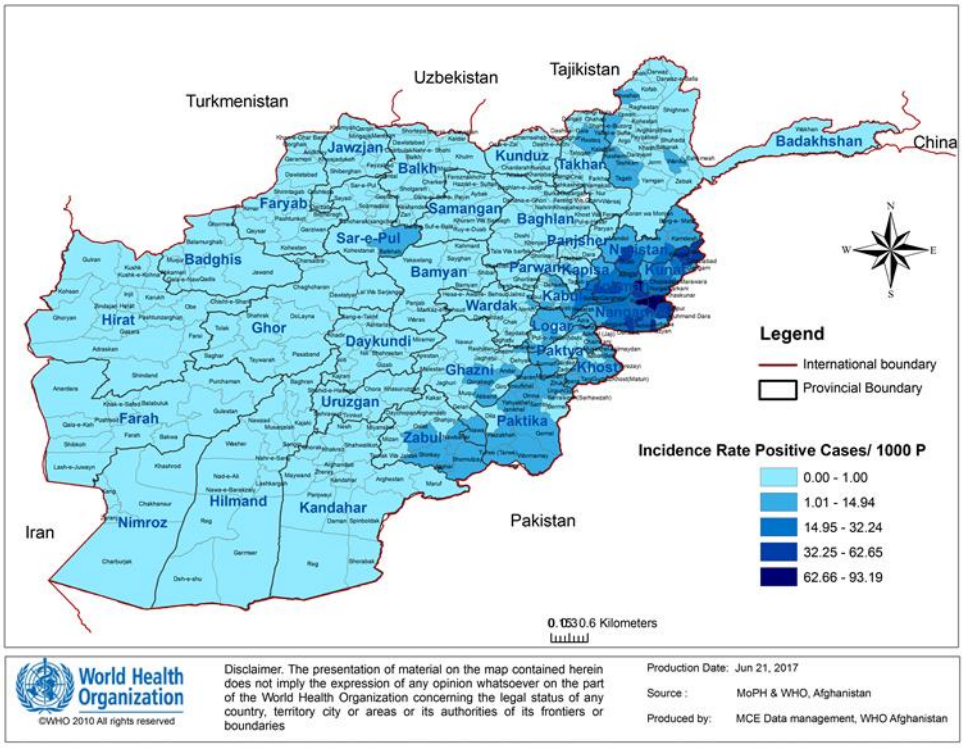
2015	Hirat	16				0.90	0.01	0.00	0.01	8.30	0.4	0.2	0
2016	Hirat	16		8	8	1.66	0.01	0.00	0.01	0.31	0.17	0.46	0
2015	Jawzjan	11				1.10	0.06	0.00	0.06	0.00	0.5	1.2	0
2016	Jawzjan	11		6	5	0.68	0.01	0.01	0.01	0.42	0.32	0.46	0
2015	Kabul	15				26.20	0.79	0.02	0.77	2.30	0.7	11.5	0
2016	Kabul	15	2	13		49.35	1.71	0.05	1.66	0.95	1.18	20.76	5
2015	Kandahar	16				3.00	0.12	0.00	0.12	0.70	0.6	2.1	0
2016	Kandahar	16		12	4	3.00	0.06	0.00	0.06	0.07	1.01	0.74	0
2015	Kapisa	7				17.70	0.32	0.00	0.32	0.00	1.3	2.4	0
2016	Kapisa	7		7		27.36	1.32	0.00	1.31	0.06	1.96	9.15	0
2015	Khost	13				23.00	3.35	0.34	2.50	10.10	3.4	9.8	0
2016	Khost	13	13			42.20	3.30	0.28	3.02	2.18	3.97	12.16	1
2015	Kunar	15				27.60	27.64	0.63	26.96	2.30	12.4	19	4
2016	Kunar	15	15			44.02	33.54	0.86	32.68	0.74	15.4	29.73	3
2015	Kunduz	7				4.10	0.02	0.00	0.02	0.00	0.7	0.3	0
2016	Kunduz	7		7		14.64	0.04	0.00	0.03	0.99	0.74	0.81	0
2015	Laghman	5				33.10	41.94	1.86	39.91	4.40	17.6	23.9	0
2016	Laghman	5	5			66.25	49.15	3.14	46.01	1.37	38.06	39.79	1
2015	Logar	7				23.30	1.47	0.03	1.38	2.30	1.2	12.7	0
2016	Logar	7	7			50.03	1.69	0.11	1.59	1.46	2.14	15.32	0
2015	Nangarhar	22				36.40	36.69	1.58	34.99	4.30	18.1	20.3	45
2016	Nangarhar	22	22			55.50	37.08	1.69	35.40	1.79	20.42	22.27	35
2015	Nimroz	5				2.40	0.04	0.01	0.03	83.30	0.1	3.1	0
2016	Nimroz	5		3	2	11.02	0.04	0.02	0.01	3.39	0.48	1.69	0
2015	Nooristan	8				29.00	11.95	0.28	11.66	2.40	6.9	17.5	0
2016	Nooristan	8	8			67.06	23.60	1.02	22.58	1.86	9.66	26.61	0
2015	Paktika	19				12.90	5.10	0.39	4.69	7.60	5.7	9	0
2016	Paktika	19	19			33.96	3.63	0.31	3.32	1.75	6.27	8.33	1
2015	Paktya	11				31.90	2.57	0.07	5.50	2.50	2.4	10.7	0
2016	Paktya	11	8	3		57.67	1.35	0.09	1.26	1.83	2.46	10.54	0
2015	Panjsher	7				10.80	0.12	0.00	0.12	0.00	1.4	0.9	0
2016	Panjsher	7		4	3	16.05	0.08	0.02	0.06	3.70	0.85	1.06	0
2015	Parwan	10				9.60	0.08	0.00	0.08	0.00	0.5	1.8	0
2016	Parwan	10		9	1	21.60	0.15	0.00	0.15	0.00	0.37	5.29	0
2015	Samangan	7				0.60	0.01	0.00	0.01	0.00	0.5	0.2	0
2016	Samangan	7		5	2	4.43	0.01	0.00	0.01	0.00	0.3	3.35	0
2015	Sar-e-Pul	7				8.00	0.21	0.02	0.19	11.00	1.1	1.9	0
2016	Sar-e-Pul	7		6	1	1.39	0.02	0.01	0.01	0.54	0.3	0.76	0
2015	Takhar	17				12.50	0.44	0.04	0.40	0.70	2	2.2	0
2016	Takhar	17	1	15	1	12.98	0.28	0.00	0.28	0.03	1.28	3.96	0
2015	Urozgan	5				4.40	0.28	0.03	0.25	11.80	1.1	2.5	0
2016	Urozgan	5		5		11.96	0.17	0.03	0.15	0.95	1.29	2.32	0
2015	Wardak	9				34.80	0.78	0.03	0.75	3.70	0.9	8.8	0
2016	Wardak	9		8	1	60.09	0.90	0.02	0.88	1.32	0.83	10.85	0
2015	Zabul	11				10.10	1.07	0.01	1.06	0.90	5	2.1	0
2016	Zabul	11	7	4		34.66	0.55	0.06	0.49	1.10	8.1	2.29	0

Annex 4: Malaria categorization & Risk Maps

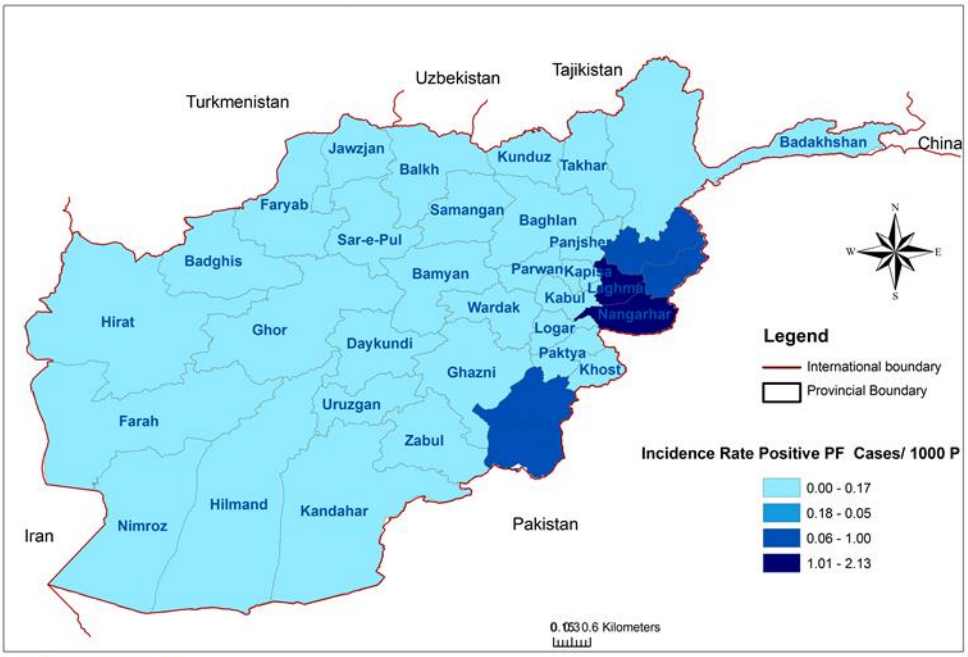
Districts-wise malaria categorization (stratification) 2018-2022



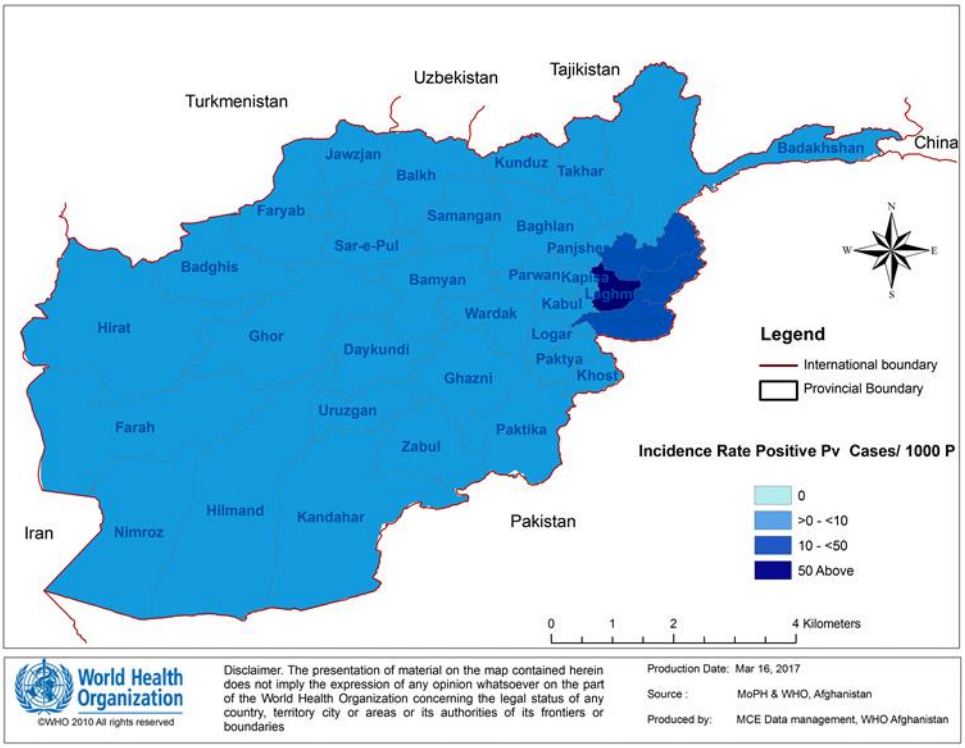
District-wise malaria map on *API* in Afghanistan



Province-wise malaria map on *APf* in Afghanistan



Province-wise malaria map on *APv* in Afghanistan, 2016



Annex 5: NMSP estimated budget

Activity	Sub-Activity	Assumptions / cost in USD	Measurement unit	Unit cost (USD)	2018		2019		2020		2021		2022		Total Five Years (2018-2022)	
					Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Quantity	Total Amount	Total Quantity	Total amount
1. training for health staff in stratum one and two districts	1.1 refresher training on malaria microscopy for lab technician of health facilities with active lab	5 days refresher training for Total 921 participant from (276 BHC with lab +413 CHC + 81*2 DH + 28*2 PH + 7*2 RH) in 61 batches (15 participant/batch and 2facilitators/batch) facilitator/ day 30 * 7 days*2 facilitator =420+ (Round trip/facilitator 80*2)=580/batch perdium/participant, 30*6= 180 +20 transportation/ participant=200/ participant refreshment/ participant 3 , Stationary/ Participant 2 200+3+2=205/participant *15 participant=3075/batch **G. Total / batch= 580 facilitator+3075 participants=3655**	Per batch	3655	0	0	61	222,955	0	0	0	0	61	222,955	122	445,910
	1.2 training of health facilities staff (Doctors, Nurse or pharmacist) on malaria RDT For those HF without lab (BHC, MHT, SHC)	2 days training for Total 1587 participant from (831 BHC +596 SHC + 160 MHT) in 63 batches (25 participant/batch and 1facilitators/batch) facilitator/ day 10 * 2 days =20/batch perdium/participant, 30*3= 90+20 transportation/ participant=110/participant refreshment/ participant 3 , Stationary/ Participant 2 110+3+2=115/participant *25 participant=2875/batch **G. Total / batch= 20 facilitator+2875 participants=2895**	Per batch	2895	63	182,385	0	0	0	0	63	182,385	0	0	126	364,770
	1.3 training on G6PD test for lab tech or in charge of DH,PH, RH, CHCs, BHC, SHC and MHT	1 days refresher training for G6PD testing (point of care) for Total 2116 participant from (831 BHC +596 SHC + 160 MHT +413 CHC + 81 DH + 28 PH + 7 RH) in 84 batches (25 participant/batch and 2facilitators/batch) facilitator/ day 10 * 1 days =10 perdium/participant, 30*2= 60 +20 transportation/ participant=80/ participant refreshment/ participant 3 , Stationary/ Participant 2 80+3+2=85/participant *25 participant= 2125/batch **G. Total / batch= 10/ facilitator+2125 participants=2135**	Per batch	2135	84	179,340	0	0	0	0	84	179,340	0	0	168	358,680
2. improvement of malaria diagnosis and treatment	2.1 provision of malaria RDTs under CBMM strategy for HPs and health facilities	RDT/year to cover all Health post, Health facilities without lab and EPR Cost of RDT (1 test/0.6 USD) including procurement, storage and distribution **Grand total = 0.6/ RDT**	per year	0.6	460,035	276,021	493,903	296,342	502,949	301,769	502,949	301,769	502,949	301,769	2462785	1,477,671
	2.2 provision of G6PD tests (Point of Care) for radical treatment of P. vivax cases in DH, PH, RH, CHC, BHC, SHC, MHT	G6PD test (PoC); cost per test 1.5	per year	1.5	139,071	208,607	118,256	177,384	96,535	144,803	96,535	144,803	96,535	144,803	546,932	820,398
	2.3 provision of ACT for treatment of Pf case at lower HFs and community	cost per ACT (AL); 1	per dose	1	14,301	14,301	13,899	13,899	13,480	13,480	13,480	13,480	13,480	13,480	68,640	68,640
	2.4. Provision of Primaquine for radical treatment of Pv cases	cost per dose: 0.3	per dose	0.3	139,071	41,721	118,256	35,477	96,535	28,961	96,535	28,961	96,535	28,961	546,932	164,080

	2.5. Provision of Artesunate Inj for treatment of sever Pf cases	**Cost per Artesunate Inj: 1.8**	per injection	1.8	2000	3,600	2000	3,600	2000	3,600	2000	3,600	2000	3,600	10000	18,000
3. revision of NTG 2010, according to national and international evidences based findings	3.1 two days National workshop for updating national treatment guideline (40 participant)	2 days for 50 participants (BPHS, PR, PMLCP officers and partners) perdium/participant, 30*3= 90 +80 transportation/ participant=170/ participant*29= 4930 refreshment, Lunch and Stationary/ Participant = 9*50 participants=450 **Total=4930+450=5380**	Per workshop	5380	0	0	0	0	1	5,380	0	0	0	0	1	5,380
4. provision of revised National Treatment guideline for all health facilities	4.1. designing, translation, Printing and distribution of revised NTG to all Health facilities	3500 copies, designing and printing cost 2 **Total=2/copy of NTG**	Per NTG	2	3500	7,000	0	0	0	0	3500	7,000	0	0	7000	14,000
5. adoption of update NTG through conducting related trainings for the health staff of targeted health facilities staff	5.1 training of related health facilities staff (mainly OPD doctors) on revised NTG	Two days training on revised NTG for Total 2645 participant from (831 BHC +596 SHC + 160 MHT +413*2 CHC + 81*2 DH + 28*2 PH + 7*2 RH) in 106 batches (25 participant/batch and 2facilitators/batch) facilitator/ day 30 * 3 days =90 + 80 transportation cost=170 perdium/participant, 30*3= 90 +20 transportation/ participant=110/ participant refreshment/ participant 3 , Stationary/ Participant 2 110+3+2=115/participant *25 participant= 2875/batch **G. Total / batch= 170/ facilitator+2875 participants=3045/Batch**	per batch	3045	106	322,770	0	0	0	0	106	322,770	0	0	212	645,540
6. Sustain anti-malarial drug sensitivity surveillance	6.1 Anti malaria drug sensitivity surveillance	Incentive for the 10 staff*150* 6months(10 * 150*6=9000)transportation cost for patients (coming for follow up) 200patients*4*7days (200*7*4= 5600) refreshment for 200patients*0.5* 7 (200*0.5*7= 700) for cross check requirement of 2 lab technician for one month 300/ month/ lab tech (300*2*1 =600) data entry and data analysis by third person 2000/ dissemination of results by the consultant 1500 Consumable and other material for TES (15600) **Total Cost= 9000+5600+700+600+2000+1500+15600=35000USD**	per year	35000	1	35,000	1	35,000	1	35,000	1	35,000	1	35,000	5	175,000
7. Involvement of private health sector practitioner on Malaria diagnoses, treatment and reporting system Category one (Control) and Category two (Elimination) areas .	7.1, Assessment of private sector health service provider (Doctor and Lab technician) to specify the number of provider at provincial level	Assessment of private sector at category 1 & 2 provinces /each category by 2 teams with 2 staff for each team *6 days /team. Perdiem 30*2 staff * 2 team * 6 days=720 Transportation cost per team 440 *2 team/province=880/province **720 perdiem+880 transportation = 1600/ province**	assessment of private sector at provincial level	1600	6	9,600	7	11,200	7	11,200	7	11,200	7	11,200	34	54,400
	7.2, Training of private practitioner (Doctors) on malaria treatment according to NTG	Two days training for average 100 private practitioners per province in 4 batches/provinces: (25 participants + 2 facilitators /batch): cost; (1 National level facilitator; 30* 3=90 perdium,/ batch *4 batch + 80 =440/province), (1 internal facilitator; 10* 2=20 perdium/batch*4 batch=80/province)= total facilitator 520/ province participants cost; 30* 3=90 perdium, + 3 refreshment, 2 USD Stationary+ 30 round trip= 125/ participant * 25 participant* 4 batched= 12500 **Total: facilitator 520+ participant 12500 = 13020 USD/ province**	Per province	13020	6	78120	7	91,140	7	91,140	7	91,140	7	91,140	34	442,680
	7.3, Training of private Lab technicians on malaria diagnosis (microscopy and RDT)	Three days training for average 80 private lab technician per province in 4 batches/provinces: (20 participants + 2 facilitators /batch): cost; (1 National level facilitator; 30* 4=120 perdium,/ batch *4 batch + round trip 80=560/province), (1 internal facilitator; 10* 3=30 perdium/batch*4 batch=120/province)= total facilitator 680/ province participants cost; 30* 3=90 perdium, + 3 refreshment, 2 USD Stationary+ 30 round trip= 125/ participant * 20 participant* 4 batched= 10000 **Total: facilitator 680+ participant 10000 = 10680 USD/ province**	per province	10680	6	64080	7	74760	7	74760	7	74760	7	74760	34	363,120

8. conducting regular M&E and QAC supervisory visits by NMLCP and PMLCP to ensure quality services by private practitioners	8.1, conduct annual one day workshop with Private sector health provider and MOPH related department for feedback on progress of malaria services provision in private sector	one day workshop for central and 13 category one provinces Total number of 40 participant from private sector and MoPH related department, workshop cost; Refreshment 3*40 participant = 120 Stationary 2*40 participant= 80 Lunch 5*40 participant = 200 local transportation cost= 6*40=240 G. Total 120+80+200+240= 640/per province	per province	640	14	8960	14	8960	14	8960	14	8960	14	8960	70	44,800
	8.2, supervisory visits of private sector health service delivery centers for malaria services (from PMLCP to private health facilities)	100 visits/year (each mission for 1 days) by 2 visitors (1 doctor and 1 QA staff) : Costing/visitor; 30 USD/day including perdiem, accommodation and etc,40 USD round trip **Total: 30/ visitor+40 /transportation=70* 2= 140/ visit**	per visit	140	100	14000	100	14000	100	14000	100	14000	100	14000	500	70,000
9. Training for health staff of Northern, North-east and North-west provinces under Pf elimination program	9.1. Orientation workshop regarding Pf elimination for PHDs, DEWS, HMIS, CDC, PMLCP officers and BPHS implementers	1 days' workshop for Total 12 participant per province cost: 2 facilitators/ day 30* 3=180 USD for perdium Transportation 80/ person *2=160 Refreshment and stationary 5*15=75 USD, Lunch 6*15 participant=90 Total USD=505/province	per province	505	22	11110	3	1515	0	0	4	2020	0	0	29	14645
	9.2. Assessment of health facilities lab technologist/Microscopist on malaria microscopy and RDT diagnosis	total 558 lab technician (356 participant CHC and 202 participants from 101 DH, PH and RH) average 20 participant / province 3 days assessment 20 tech/microscopist 30*3*20=1800 USD Perdiem, stationary 20*1, Refreshment 20*2=40), transport 20*20=400. Facilitator 2*30*5=300USD, 2*80=160 USD round trip) = 2720/ province	per province	2720	22	59840	3	8160	0	0	4	10880	0	0	29	78880
	9.3. Training of Public health facilities staff (Doctors, Nurse, pharmacist) on Pf elimination program	2 days training 1806 H/F staff 2*30*62=3720 USD, Travel cost 20*62= 1240 USD, stationary, 62*1, Refreshment 2*2*65=260, Facilitator 2*4*30=2,400 transport 80*2=160 USD , Total; 7842/province	per province	7842	22	172524	3	23526	0	0	4	31368	0	0	29	227418
	9.4. Training of private health facilities staff (Doctors, Nurse, pharmacist) on Pf elimination program	2 days training of 50 private practitioner per province 2*30*50=3000 USD, Travel cost 20*50= 1000 USD , stationary, 50*1, Refreshment 2*2*50=200 , Facilitator 2*4*30=2,400 transport 80*2=160 USD , Total; 6810/province	per province	6810	22	149820	3	20430	0	0	4	27240	0	0	29	197490
	9.5.Provision of RDT and anti-malarial (ACT, PQ, CQ) for active case detection	Per province 5000 RDT*0.6 cost= 3000 ACT 100 dose * 1 USD = 100 CQ 250 dose * 0.5 USD = 125 PQ 250 dose * 0.5 USD = 125 Total cost=3350/ per province	per province	3350	22	73700	25	83750	25	83750	29	97150	29	97150	130	435500
10. Malaria Pf case and foci investigation	10.1. Develop and printing of investigation forms	Case Investigation, Foci Investigation, OPD and Lab registers, epidemiology forms /year USD 2000/per province	per province	2000	22	44000	25	50000	25	50000	29	58000	29	58000	130	260000
	10.2. Training for investigation team in target provinces (Epidemiology ,Entomology, QA, PMLCP manager)	2 days training for 5 staff / provinces: Facilitator; 2*4*30=2400 perdiem, travel cost 80*2=160 Participant cost; 5*6*2=60 Lunch, 2*7*2=28 refreshment, 1*5=5 Stationary Total: 2653USD/ province	per province	2653	22	58366	3	7959	0	0	4	10612	0	0	29	76937

	10.3. Active case detection in Pf elimination provinces with transportation (Epidemiological Surveillance)	Transportation cost For ACD 400 USD/province	per province	400	22	8800	25	10000	25	10000	29	11600	29	11600	130	52000
11. Communication	11.1. Provision of incentive to health facility staff for reporting Malaria case within 24 hours for investigation.	cost per case reporting within 24 hour is 8 USD/ per case in 29 targeted province for elimination estimated case/year	per year/per case	8	27200	217600	23120	184960	19652	157216	1670	13360	1419	11352	73061	584488
12. conduct regular meetings of IVM steering committee	12.1. biannually meetings or as per need in NMLCP	20 participants/meeting *2 /year cost: local transportation for IVM external members10USD* 12 = 120; lunch +refreshment for 20 participants (7*20=140USD) **G. Total=140+120=260USD**	per IVM meeting	260	2	520	2	520	2	520	2	520	2	520	10	2,600
13. Training for formers in the community regarding vector control and use of pesticide jointly with IVM member ministries, especially ministry of Agriculture	13.1. community sessions for formers in malaria category one districts	one-day community session for 10 formers in all 123 category one districts. Costing/session: one facilitator; Per diem 30+20 transportation=50, participants; 5 USD for refreshment. **Total: 50 +(5*10)= 100 USD/meeting**	per meeting	100	123	12300	123	12300	123	12300	123	12300	123	12300	615	61,500
14. provision and house to house free distribution of LLINs in category one districts,	14.1. procurement, transporting, storage, distribution of LLINs	provision of estimated 9 million LLINs (4349028 in 2018 and 4620655 for replacement in 2021) for entire at risk population of the country, according to WHO recommendation (1 LLIN/2 person). Costing/LLIN; 4 USD for procurement, transportation, storage and distribution	per LLIN	4	4,349,028	17396112	0	0	0	0	4,620,655	18482620.		0	8969683.1	35,878,732
15. Provision of LLINs for continuous distribution for at risk population	15.1. continuous distribution for pregnant women through ANC	LLIN distribution pregnant women which makes 5% of population. Considering public health facility coverage of 70%, 75%, 80%, 82% and 85% respectively in 2018-2022	per LLIN	4	304,432	121772	332,831	133132	362,262	144904	378,894	151557	400,768	160307	177918	7,116,748
	15.2. continuous distribution for <5 children through EPI	LLIN distribution for <5 children which makes 5% of population.	Per LLIN	2.5	4,742,240	1185560	332,831	832077.	362,262	905655	4,995,91	1248978	384,433	961082.	1081767	27,044,198
16. IEC/ BCC regarding usage of LLINs	16.1. community awareness sessions regarding proper usage of LLIN	3 meetings per quarter per province. 30 participants/session, 3 USD cost/participant **total cost/meeting: 3*30=90 USD,**	Per quarter/province	90	408	36720	408	36720	408	36720	408	36720	408	36720	2040	183,600
	16.2. Developing IEC materials (brusher, poster, billboard, charts…)	Developing, printing and distribution of IEC materials for 34 provinces biannually **Lump Sum: 50,000USD**	Per year	50,000	1	50000	1	50000	1	50000	1	50000	1	50000	5	250,000
17. regular monitoring of LLIN supply and distribution procedure	17.1. Monitoring and assessment of LLINs distribution and utilization at field level after distribution.	88 field visit by entomology staff per year to targeted provinces, three days each visit. Cost per visit (30*3 USD perdium and 80 USD Round trip)=170	per visit	170	88	14960	88	14960	88	14960	88	14960	88	14960	440	74,800
	17.2. Monitoring visit of LLINs distribution and utilization at field level after distribution by PMLCP	6 field visit per province per year, one day each visit. Cost per visit (30*1 USD perdium and 20 USD Round trip)=50	per visit	50	88	4400	88	4400	88	4400	88	4400	88	4400	440	22,000

18. Bioassay tests/ susceptibility test of LLIN at field level (PMLCP)	18.1. Bioassay test on LLINs	Test will be conducted in Nangarhar, Kunduz, Badakhshan, Balkh and Herat provinces. 150 LLINs and Larva will be collected from 3 village in every province, cost per test/province is 2500 USD/province	per province	2500	5	12500	5	12500	5	12500	5	12500	5	12500	25	62,500
	18.2. Susceptibility test on adult mosquitoes to insecticide	Test will be conducted in Nangarhar, Kunduz, Badakhshan, Balkh and Herat provinces. Larva will be collected from 3 village in every province and tested against insecticide, cost per test/province is 2500 USD/province	per province	2500	5	12500	5	12500	5	12500	5	12500	5	12500	25	62,500
19. quality test of LLIN in WHOPES recommended lab to comply WHOPES specification	19.1 Quality control or Measurement test of LLINS in WHO recommended lab	Transportation and test cost of 10 LLINs. Cost 10000 USD	Per Test	10000	1	10000	1	10000	1	10000	1	10000	1	10000	5	50,000
20. maintaining of all three insectaria with human resource and regular supply provision	20.1. regular provision of consumable and material for three insectaria	1000 USD running cost of three insectaria/quarter/insectaria (1000*4*3) 12000/year	per year	12000	1	12000	1	12000	1	12000	1	12000	1	12000	5	60,000
	20.2. HR cost for 3 insectarium staff	3 staff for each insectarium (total 9 staff should be recruited). Costing/staff: 500 USD/month for salary **Total: 500*9 = 4500 USD**	per month	4500	12	54000	12	54000	12	54000	12	54000	12	54000	60	270,000
21. training of entomology technicians on Vectors resistance management and other vector control approaches	21.1. training the entomology staff (technicians) on sample collection, spices identification, vector resistance management and other vector control approaches	5 days entomology training for Total 13 participants (from 13 province with stratum one districts) in one batches, cost, 80 USD round trip/participant, 30*6= 180 USD for accommodation and lunch. 3 USD refreshment/ participant, 2 USD Stationary/ Participant, **Total (180+80+15+2)*13= 3601**	per batch	3601	1	3601	0	0	0	0	1	3601	0	0	2	7,202
22. Operational research on entomological aspect of different approach	22.1. Operational research on entomological aspect of different approach	Collection of Larva and Adult Ades mosquito and morphological identification in (Kandahar, Kunar, Laghman and Nangarhar) provinces **Total cost: 25000 USD**	per research	25000	0	0	1	25000	0	0	0	0	0	0	1	25,000
23. Regular monitoring of health Facilities	23.1. Monitoring and supervision of health centers (by NMLCP to province level)	34 supervisory visits/quarter (each visit for 3 days) by 2 visitors (1 doctor and 1 QA staff) : **Costing/visitor**; 30 USD/day including perdiem, accommodation and etc,80 USD round trip **Total:** 30*2*4+80*2= **400 USD**	per visit	400	34	13,600	34	13,600	34	13,600	34	13,600	34	13,600	170	68,000
	23.2. Monitoring and supervision of health centers at provincial level (by PMLCP to the district level)	1632 supervisory visits/year by 2 visitors (1 doctor and 1 QA staff) : **Costing/visitor**; 15 USD local transportation **Total:** 20*2 +30*2= 1**00 USD**	per visit	100	1632	163,200	1632	163,200	1632	163,200	1632	163,200	1632	163,200	8160	816,000
24. Refresher training for provincial EPR teams	24.1. Training of EPR teams	Two days refresher training for34 provinces EPR teams (2 per each province, total 68 participant, in 2 batches, 34 participants / batch) Costing: 30 *3 USD perdiem and accommodation/participant 2USD stationary/participant and 3 *2 USD refreshment/ participant, 80 USD round trip/participant = 178 USD/ participant	per participant	178	68	12,104	0	0	68	12,104	0	0	68	12,104	204	36,312
25. Developing malaria EPR database and malaria threshold for timely detection of epidemics	25.1. EPR database	**Total cost: 5000 USD**	per data base	5000	1	5,000	0	0		0		0		0	1	5,000

26. Revision of EPR guideline	26.1. designing, translation, Printing and distribution of revised NTG to all Health facilities	100 copies, designing and translating cost in both languages(Translation=300 USD ,Distribution cost=600 USD Printing 1500*5 USD=7,500USD) **Total=8100 USD**	per year	8100	0	0	1	8,100		0		0		0	1	8,100
27. vector control activities for detection and control of epidemics	27.1. Provision of equipment at center and 6 region (entomology stock)	Hand pump, IRS complete suit and etc... **Total cost: 10000 USD**	per stock	10000	7	70,000	0	0	0	0	0	0	0	0	7	70,000
	27.2. Provision of insecticide stocks at center and 6 region (entomology stock)	893 Kg per region total six region (Nangarhar, Paktia, Kandahar, Herat, Balkh, Kunduz and center) Total insecticide need for one year is 6250 Kg Cost per Kg 100$ *893=89300	per stock	89300	7	625,100	7	625,100	7	625,100	7	625,100	7	625,100	35	3,125,500
	27.3. Provision of operational cost for vector control activities including IRS for epidemic control	25 spray man and 5 supervisor for IRS for 14 days per district **Cost; 30*10*14=4200/district*5 district/year**	per year	21000	1	21,000	1	21,000	1	21,000	1	21,000	1	21,000	5	105,000
28. Maintaining EPR teams with regular provision of (Anti malaria drugs, RDT, EPR guideline, forms, EPR equipment's, Running cost….)	28.1. Provision of emergency stock of Anti malaria drugs (ACT, CQ and PQ), RDT and other required material and equipment for EPR centers	10000 RDT and required consumable (Glove, safety box, etc.…), 50 ACT doses, 950 dose CQ and 1000 dose Premaquine Cost; 6000 RDT+800 consumable + 560 ACT+240 CQ+250 PQ=7850/ year	per year	7850	1	7,850	1	7,850	1	7,850	1	7,850	1	7,850	5	39,250
29. Advocate and facilitate increase of government budgetary allocation for malaria	29.1. Malaria advocacy through conducting annual events (World Malaria Day celebration and Malaria conferences)	every year malaria advocacy events will be conducted. The participants will be MoPH leadership, malaria partners, donors, UN agencies, international and national NGOs and related ministries eats. cost for refreshment, printing and stationary: **Total: 10000 USD**	per year	10000	1	10,000	1	10,000	1	10,000	1	10,000	1	10,000	5	50,000
30. Participate the international training and conference	30.1. international conference/ training	6 participant (2 central and 4 provincial), once / year **total cost: 20000/year**	per year	20000	1	20,000	1	20,000	1	20,000	1	20,000	1	20,000	5	100,000
31. Conduct national seminars and review meetings at national level	31.1. Annual meeting or seminar	3 days Annual review meeting for 68 participants (PMLCP & QA officers) from 34 provinces Cost: 30* 68*4=8160 USD perdiem (3*3day refreshment*68 participant) + (2 USD stationary pre participant *68)=748 USD Round trip of participant, 80USD * 68=5440USD **Total cost: 14348USD**	per year	14348	1	14,348	1	14,348	1	14,348	1	14,348	1	14,348	5	71,740
	31.2. Semiannual Review coordination meetings with HF staff /Center and provinces	One day review meeting with head of (1364) HF (BHC, CHC, DH, PH & RH) at provincial level 1. perdium: 30/head/day *1days 2. transportation: 20/head one time, 3. Refreshment: 3/head/day *1 day 4. stationary: 2/head one time) **Total cost; 55/participant *1364 participant =75020/meeting**	Meeting	75020	2	150,040	2	150,040	2	150,040	2	150,040	2	150,040	10	750,200

32. Establishment of MMIS	32.1. MMIS training for Health facility staff,	One day training with head of health facilities at provincial level (2116) HF (SHC, MHT, BHC, CHC, DH, PH & RH): 1. perdium: 30/head/day *1days 2. transportation: 20/head one time, 3. Refreshment: 3/head/day *1 day 4. stationary: 2/head one time) **Total cost; 55/participant *2116 participant =116380/training**	training/year	116380	1	116,380	0	0	0	0	0	0	0	0	0	1	116,380
	32.2. MMIS training for HMIS officers and provincial team	Two days meeting with 34 HMIS officers, 34 PMLCP and 34 BPHS HMIS Officer: at central level 1. perdium: 30/head/day *3days 2. transportation: 80/head one time, 3. Refreshment: 3/head/day *2 day 4. stationary: 2/head one time) **Total cost; 178/participant *102 participant =18156/Training**	per training	18156	1	18,156	0	0	0	0	0	0	0	0	0	1	18,156
33. Contributing carry on NMLCP and PMLCP staff salary and incentives based on developed organogram	33.1. salary and incentives	**Lump Sum: 564000USD / year**	per year	564000	1	564,000	1	564,000	1	564,000	1	564,000	1	564,000	5	2,820,000
	33.2. Operational cost for NMLCP	including stationary, maintenance cost and other **Total: 5000 USD /month**	per month	5000	12	60,000	12	60,000	12	60,000	12	60,000	12	60,000	60	300,000
34. Coordination meetings with bordering countries in establishing a mechanism for exchanging the information among bordering countries	34.1. Coordination meeting with all bordering countries	Meeting with bordering countries (Pakistan, Iran, Tajikistan, Turkmenistan and Uzbekistan) 5 meetings / year, each meeting **total cost will be: 5000 USD**	per meeting	5000	5	25,000	5	25,000	5	25,000	5	25,000	5	25,000	25	125,000
35. Exposure visit one of the malaria eliminated country for better understanding of field implementation of intervention and activity of each other's	35.1. Exposure visit to malaria eliminated country for better understanding of field implementation	Exposure visit / year, for 5 staff each person **total cost will be:5000 USD**	per exposure visit	5000	1	5,000	1	5,000	0	0	0	0	0	0	2	10,000
36. Attending regional conferences for effective coordination among bordering countries	36.1. Attend in regional conferences	attend regional conferences once / year **cost: 4000 USD /conference**	per year	4000	1	4,000	1	4,000	1	4,000	1	4,000	1	4,000	5	20,000
37. Develop guidelines for performing high quality microscopic diagnosis of malaria	37.1. Develop and printing guidelines (in both languages) based on WHO standards	3500 copies, designing and translating cost in both languages(Translation=USD 500,Distribution cost=USD 34*30=1020, Printing 3500*5 USD=17,500USD) **G. Total=19,020USD**	One time	19020	1	19020	0	0	0	0	1	19020	0	0	2	38,040
38. Trainings for national and provincial malaria program QA staff at national and international level	38.1. Refresher training for National and provincial QAC officers	5 days refresher training on malaria QA for 72 participants(one QA officer and one technician from all 34 provinces and 4 QA supervisor from center) in 5 batches / year, 2 facilitator, Cost: 80USD round trip for 68 participants = 5440, 30USD pardiem 7 days *68= 14280 perdiem (3*5*72 refreshment and stationary) = 1080 10 USD facilitator pardiem for 2 =20*5 days=100USD *5 batches=500 **Total cost: 5440 + 14280+ +1080 +500=21300USD/ 5 batches=4260 / batch**	per/batch	4260	5	21300	0	0	0	0	5	21300	2	8520	12	51,120

	38.2. International training for QA staff (central and provincial)	Advance training course on quality assurance and Malaria microscopy for two participant/ year, perdium 6000*2= 12000, travel cost 2000, **Total Cost=14000**	Per year	14000	1	14000	1	14,000	1	14000	1	14000	1	14000	5	70,000
39. Cross checking of the HF slides for validation of standard procedures and result	39.1. As per routine activity	No cost required	0	0	34	0	34	0	34	0	34	0	34	0	170	0
40. Provision of the required materials and equipment for setup of a national malaria slide bank	40.1. Maintenance of National slide Bank	1200 USD/year for maintenance of National slide bank and it is set up	per year	1200	1	1200	1	1,200	1	1200	1	1200	1	1200	5	6,000
41. Conducts community health forums for raising awareness on malaria symptoms, transmission route and prevention Malaria health sessions through HFs, school, Masjid and etc.	41.1. Community health sessions	6 session per quarter per province category one and two provinces. 25 participant/ session Cost/ session : stationary and refreshment (3 USD/ participant *25 participant)=75 USD/ session **Total cost/quarter: 75USD*6*34 province =15300 USD/quarter**	sessions / quarter for 34 Provinces	15300	4	61,200	4	61,200	4	61,200	4	61,200	4	61,200	20	306,000
42. Provision of malaria IEC materials (poster, brochure, leaflet etc.) for community health session	42.1. Developing, printing and distribution of IEC materials once per year	developing , printing and distribution of IEC materials once/ year **Total cost: 10000USD/year**	per year	10000	1	10,000	1	10,000	1	10,000	1	10,000	1	10,000	5	50,000
43. Broadcast TV and Radio spots regarding malaria prevention and timely diagnosis & treatment	43.1. Production of TV and Radio spots before and during malaria transmission	production of one TV spot will be cost = 3000 USD and production of one Radio spot will be cost = 1500 **Total cost=3000+1500 =4500USD**	one time	4500	1	4,500	0	0	0	0	0	0	0	0	1	4,500
	43.2. Broadcasting TV and Radio spots before and during malaria transmission	broadcasting of one TV spot 400 USD and it will broadcasting 300 times / year during malaria transmission cost: 400* 360= 144000USD, and broadcasting of one radio spot 50 USD and will broadcasting 360 times / year cost: 50*360= 18000USD **Total cost= 144000+18000= 162000 USD/year**	per year	162000	1	162,000	1	162,000	1	162,000	1	162,000	1	162,000	5	810,000
44. Conducting a malaria research project based on the prioritization	44.1. Conducting research project	**Estimated cost: 20,000 USD**	per research project	20000	1	20,000	1	20000	1	20000	1	20,000	1	20000	5	100,000
45. Conduct national MIS (malaria indicator survey)	45.1. MIS	Estimated cost **Lump sum=180000 USD**	per survey	180000	0	0	0	0	1	180000		0	0	0	1	180,000
Grand Total						35152204		5742957		5747264		3637973 4		5879946		88,902,104