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Malaria vector control in different settings

Webinar on Integrated Vector Management in sync with Global Vector Control Response
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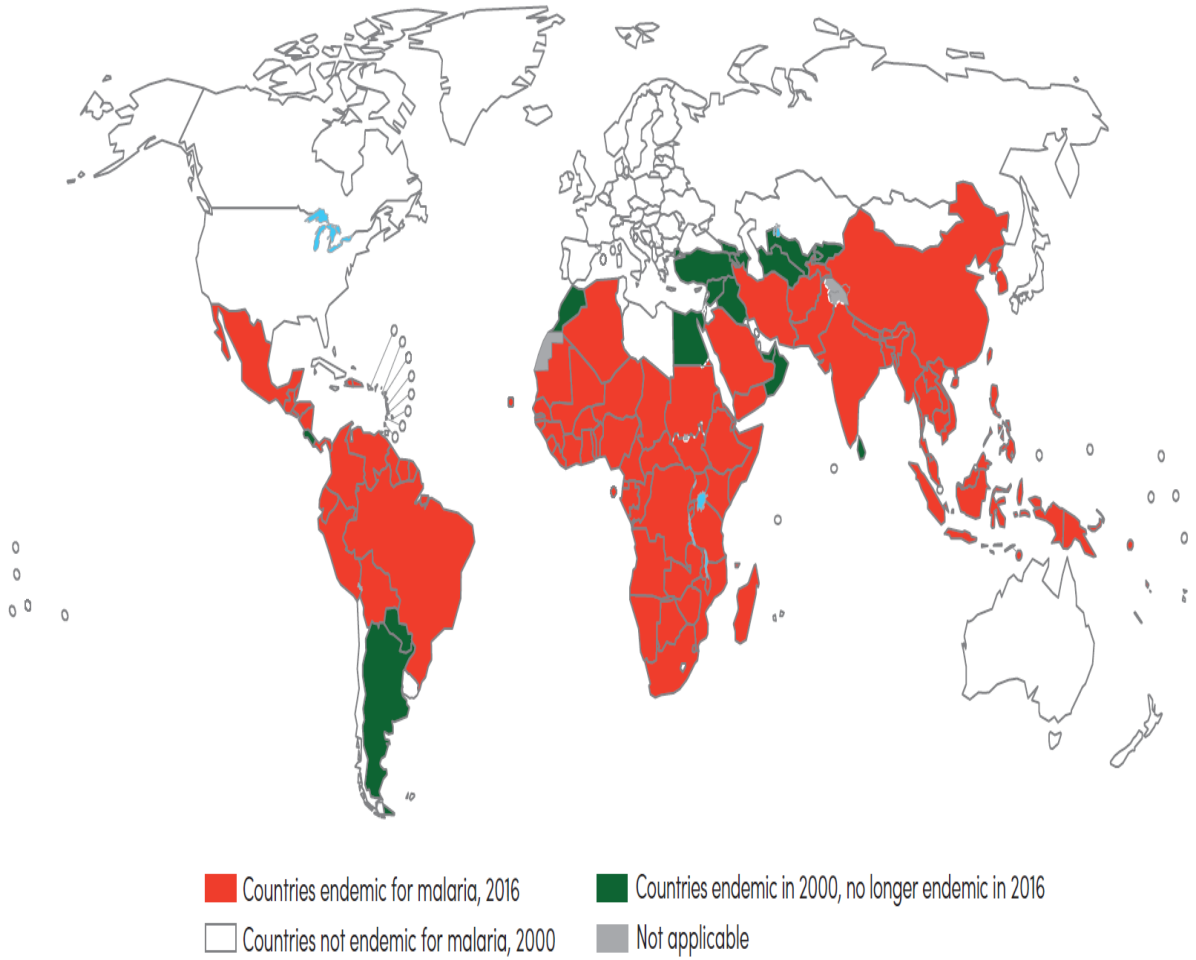
Malaria, is the best-known and the biggest killer among VBDs



- World Malaria Report 2019, there were an estimated 228 million cases in 89 countries and 405,000 estimated deaths in 2018.
- Most malaria cases were in the WHO African Region (**213 million or 93%**), followed by the WHO South-East Asia Region with 3.4% of the cases and the WHO Eastern Mediterranean Region with 2.1%.
- India contributed 3% of the global malaria.
- Globally, 53% of the P. vivax burden is in the WHO SEA Region, with the majority being in India (47%).

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India’s commitment to malaria elimination

- National Framework for Malaria Elimination (NFME) launched on 11 February 2016 towards commitment to Malaria Elimination by 2030 in line with the GTS and Asia Pacific Leaders Malaria Alliance (APLMA) roadmap
- The NFME outlining elimination target in a phased manner and milestone and targets are set for 2020, 2024, 2027 and 2030.

CATEGORISATION OF STATES BASED ON MALARIA BURDEN (API)

TARGETS FOR MALARIA ELIMINATION

Category 1
(15 States)
States and their districts reporting an API of <1 case per 1000 population

2020 – Zero indigenous cases and deaths in all **15 low transmission states and UTs**

Category 2

(11 States)

State <1 API but some districts report API ≥ 1 case per 1000 population

2022- Zero indigenous cases and deaths in all **11 moderate transmission states and UTs**

Category 3

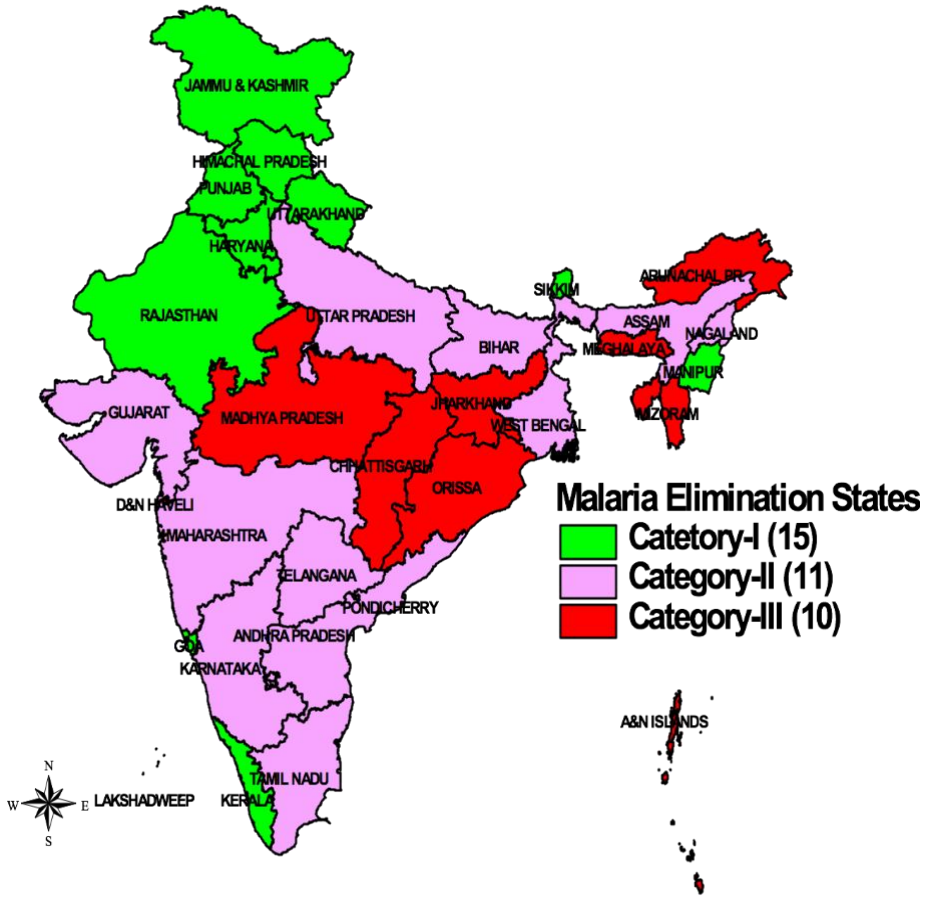
(10)

States with API of 1 or more per 1000 population

2024 - Reduce the incidence of malaria to <1 case per 1000 population in all States\UTs and districts .

2027- Zero indigenous cases and deaths in entire country and Prevention of re-establishment of local transmission of malaria

2030- Certification by WHO



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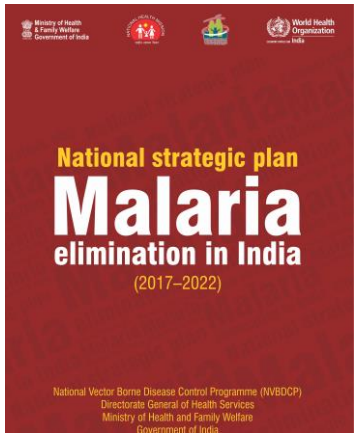
National Strategic Plan -Policy and guidelines update for accelerated action towards elimination



FROM CONTROL TO

STRATEGIC APPROACHES FOR MALARIA ELIMINATION

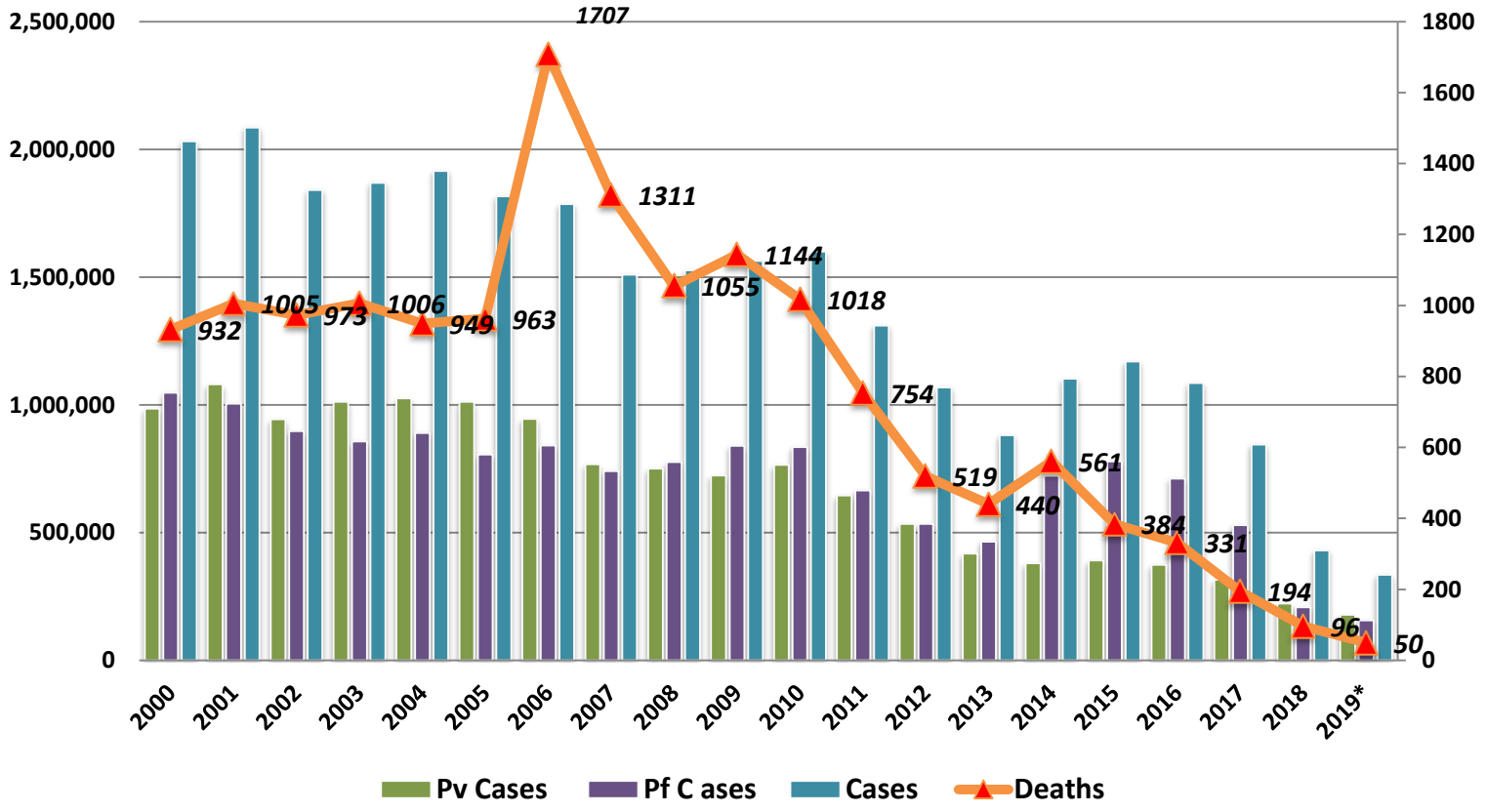
Category of districts	Definition	Number (%)
Category 0: Prevention of re-establishment phase	Districts/units historically considered to be without local transmission and reporting no case for last 3 years. Vigilance will be maintained in these districts to prevent reintroduction of malaria in view of climate change	**75 (11.0)**
Category 1: Elimination phase	Districts/units having API less than 1 per 1000 population	**448 (66.1)**
Category 2: Pre-elimination phase	Districts/units having API 1 and above, but less than 2 per 1000 population. These are targeted for elimination in the subsequent years	**46 (6.8)**
Category 3: Intensified control phase	Districts/units having API 2 and above per 1000 population. These are positioned for elimination targeting in the subsequent years	109 **(16.1)**

- WHO has assisted the government in the development of the new National Strategic Plan for Malaria Elimination 2017-2022. It was released by Mr J.P.Nadda, Union Minister for Health & Family Welfare
- The Districts have been categorized into four groups based on average reported API

High Burden High Impact Approaches in high burden 4 states

INDIA- Progress towards malaria Elimination

Malaria trend in India (Source : NVBDCP)



- 71 % decline of malaria cases and 80% deaths in 2019 as compared to 2015.
- In 2018, cases declined by 49.09% (429928 cases) compared to 2017 (844,558 cases) and the malaria deaths were reduced by 50.52% from 194 in 2017 to 96 in 2018.
- Further malaria situation has been improved in the country in 2019.

In 2020, 38392 cases and 5 deaths reported till April

Update on policy guidance on malaria entomology and vector control

- Vector control is a major component of malaria prevention
- The Guidelines for malaria vector control provide a **“one-stop shop”** for all those involved in the research, development or implementation of malaria vector control interventions.
- consolidate more than 20 sets of recommendations and good practice statements in one document
- ‘what to do’ and the ‘how to do it’ of malaria vector control

Malaria Vector control

- Vector control is a core component of malaria prevention. This principally involves the use of either insecticide-treated mosquito nets (ITNs) (1) or indoor residual spraying (IRS) of insecticides (2). Larval source management (LSM) can be employed as a supplementary measure under specific conditions .
- WHO currently recommends universal coverage with effective vector control of all persons at risk of malaria.

Pyrethroid-only long-lasting insecticidal nets (LLINs) prequalified by WHO recommended for use as a core intervention in all malaria-endemic settings
IRS spraying using a WHO prequalified product recommended as a core intervention in all malaria endemic settings2

2. DDT continues to be recommended but is not prequalified

Supplementary interventions

- Larviciding recommended as a supplementary intervention in areas where high coverage with a core intervention has been achieved, where habitats of principal malaria vector(s) are **few, fixed and findable, and where its application is both feasible and cost-effective**

Personal protection measures

- Use of insecticide-treated clothing not recommended as an intervention with public health value but may be beneficial to provide personal protection in specific population groups

- the new guidelines make clear that space spraying should not be undertaken for malaria vector control

- Limited evidence that combining IRS with LLINs in areas of high LLIN coverage reduce malaria burden.
- Only be combined when managing insecticide resistance using a non-pyrethroid for IRS.
- **Control program should deliver either IRS or LLINs at high coverage** and high quality and not as a means to compensate for the deficiencies of the primary intervention.
- universal coverage of nets or maximal coverage of indoor residual spraying.
- Programmes that are currently implementing both in the same areas should evaluate the effectiveness of the two intervention – evidence is needed.

http://www.who.int/malaria/publications/atoz/who-guidance-combining-irs_llins-mar2014.pdf

NSP 2017-22 -Vector control interventions are implemented under umbrella of IVM in India

- The prioritization for implementation of vector control measures in India is broadly based on the API of the area.
- First understanding **the local vector ecology and local patterns of disease transmission**, and then choosing the appropriate vector control tools from the range of options available
- Stratification for vector control -up to sub centre level which is the unit for IVM
- **IRS-**
- **Personal protection** LLINs–7 NE States and Odisha are saturated with LLINs and showing declining trend of malaria there.
- **Environmental management**,
- B**iological controls** (e.g. bacterial larvicides and larvivorous fish)

Category	Vector control measures
Category 0 (No case)	➢ Mapping of potential vector breeding sites ➢ Regular adult vector monitoring (prevalence and density). ➢ Environmental management and modification in – Rural areas through Village Health, Sanitation & Nutrition Committee(VHSNC), MNREGA & Swachh Bharat Abhiyan and – Urban areas by de-silting, de-weeding, channelizing, larviciding, through Urban VBD scheme. ➢ Biological control- Larvivorous fish ➢ Foci based adult vector control interventions – in and around 50 houses of positive case- Space spray followed by IRS
Category 1, 2 and 3 States	
Subcentres with API < 1	Same as in category 0 above
Subcentres with API ≥ 1	Universal coverage with LLINs of all subcentres with API > 1 ➢ In sub-centres with API>1, if not covered with LLIN, two regular rounds of supervised IRS (sub centre as unit) ➢ In LLIN covered sub-centre, if there is upsurge of cases, efforts to be made to increase the compliance rate of LLIN usage. ➢ In outbreak situations - additional round of IRS ➢ Anti larval measures in urban areas with main focus in slum clusters. In outbreak situation Slum clusters can also be covered with IRS. ➢ Larval control through source reduction and biological and environmental measures
Low endemic sub centres i.e. with 0 or <1 API should be treated as under Category 1 activities.	

Approaches to malaria elimination in low endemic settings

- Stratification – data analysis ,Gap analysis-
- Micro strategic/ operational plan/action plan of the state/District- with Time lines
- Surveillance – response
- Case investigation and Foci investigation and response

Surveillance Systems - Elimination Settings

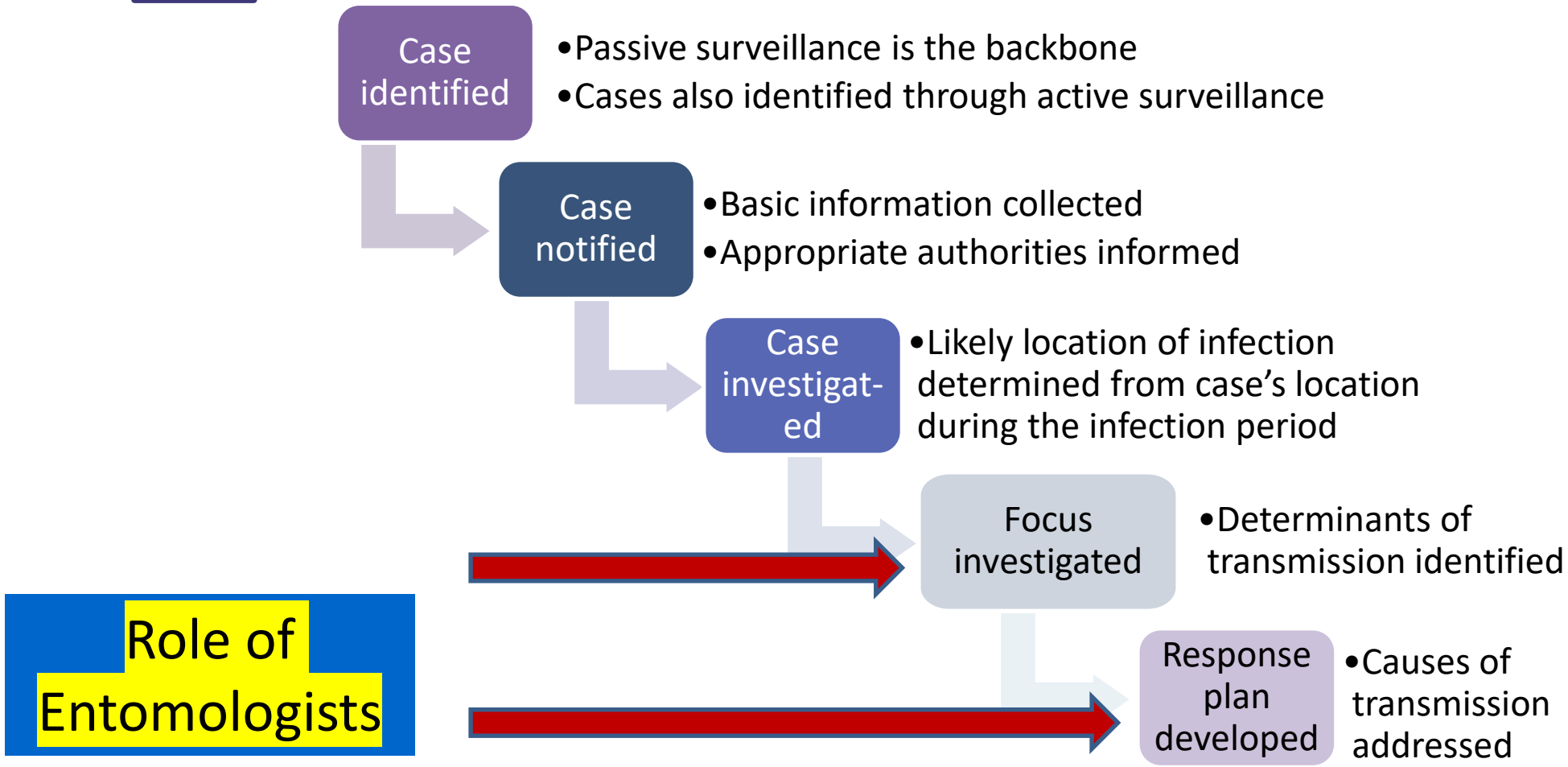
The malaria surveillance system in elimination settings must be capable of:

1. Early detection, diagnosis and treatment of all malaria infections

2. Investigation of cases to determine the likely location of infection and case classification

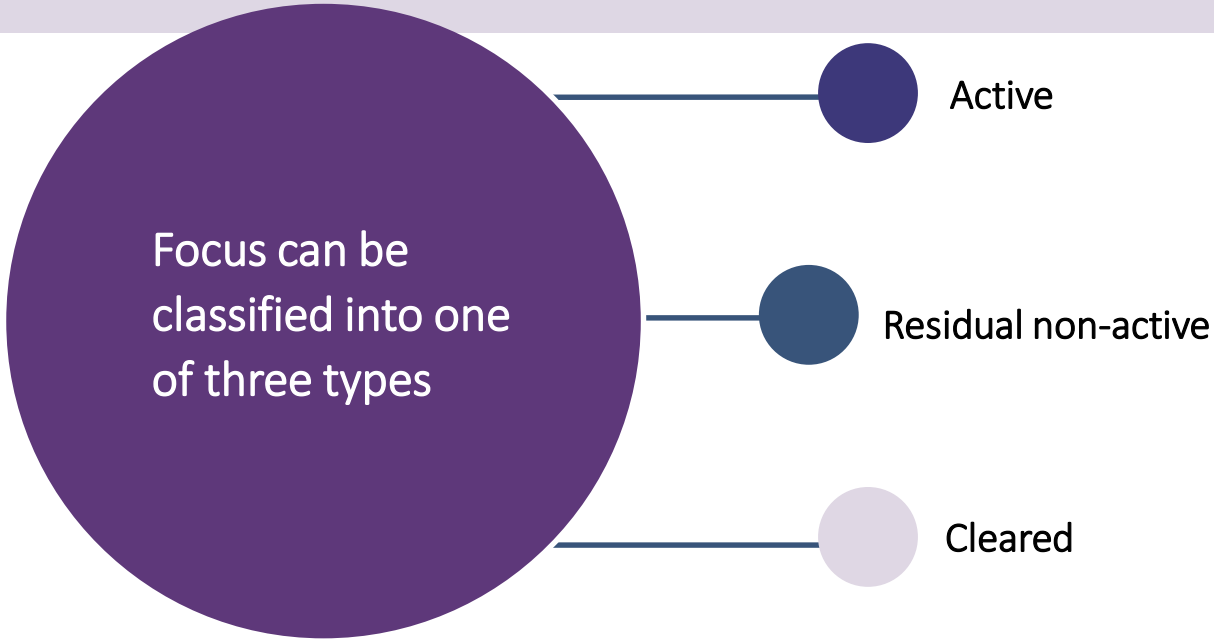
3. Investigation of foci to determine causes of transmission and develop a focus response plan

Overview of Surveillance Procedures and Response in Elimination Settings



Focus Definition

A focus is a defined and circumscribed area situated in a current or former malarious area that contains the epidemiological and ecological factors necessary for malaria transmission



Why Conduct a Focus Investigation?

To understand why malaria transmission is occurring in a small area in order to develop an appropriate response plan to eliminate transmission

To understand why transmission is continuing in a certain area in order to adjust or strengthen existing activities or begin interventions

Focus investigations are not included as a component of a surveillance system until transmission is very low and good quality case investigations are already under way

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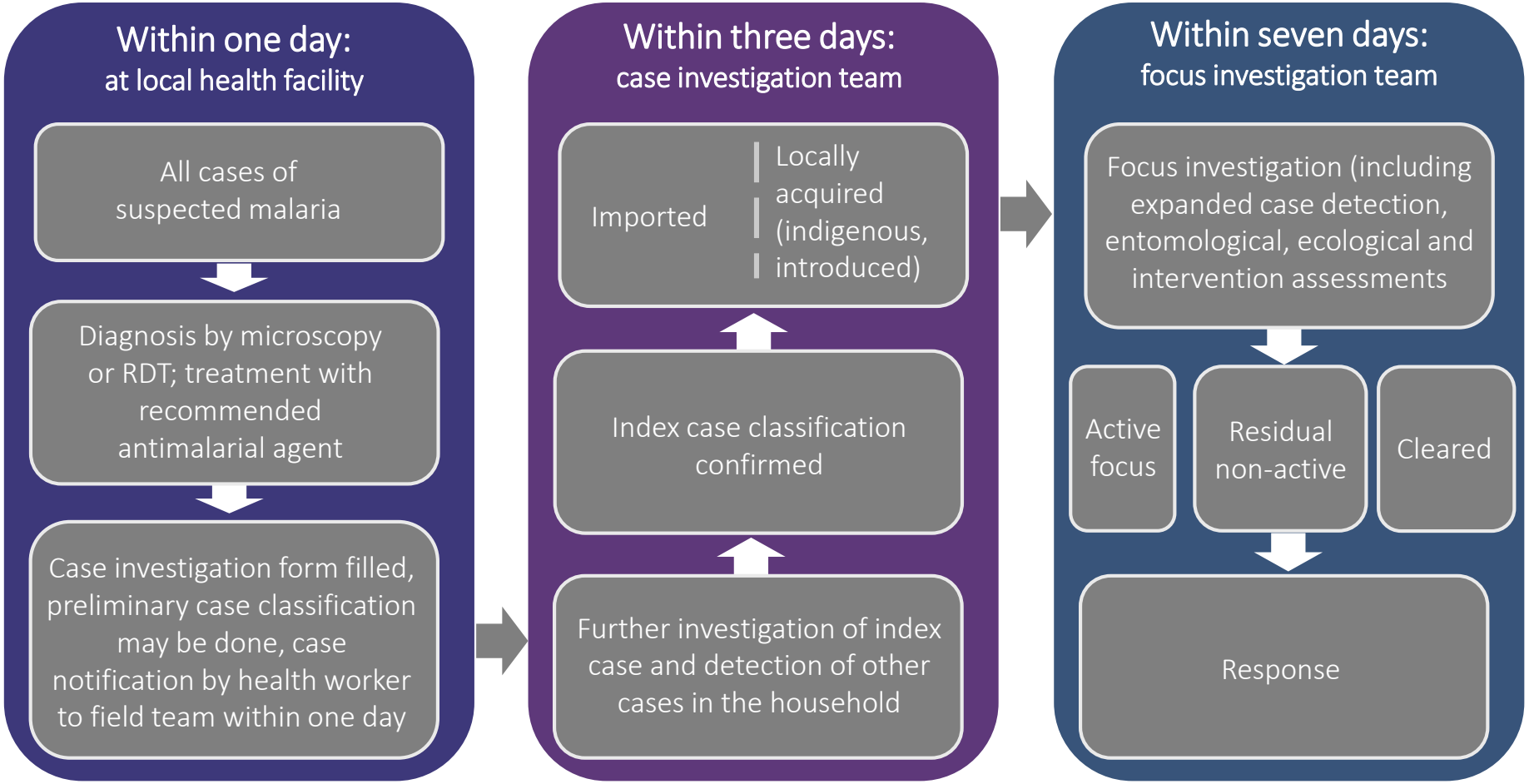
Focus Classification

Types of malaria foci with operational criteria

TYPE OF FOCUS	DEFINITION	OPERATIONAL CRITERIA
Active	A focus with ongoing indigenous transmission	Indigenous case(s) have been detected within the current calendar year
Residual non-active	Transmission interrupted recently (1-3 years ago)	The last indigenous case(s) was detected in the previous calendar year or up to three years earlier
Cleared	A focus with no indigenous transmission for more than three years	There has been no indigenous case for more than three years, and only imported or/and relapsing or/and recrudescent or/and induced cases may occur during the current calendar year

Case Notification, Case and Focus Investigation Systems



Case and Focus Investigation Team

The team may comprise:

a health worker at a health facility or district who understands malaria epidemiology and has experience in field investigation of malaria cases

a skilled laboratory technician or health worker with good training in laboratory diagnostics

an entomology technician

local health facility personnel and village health volunteers who know the area

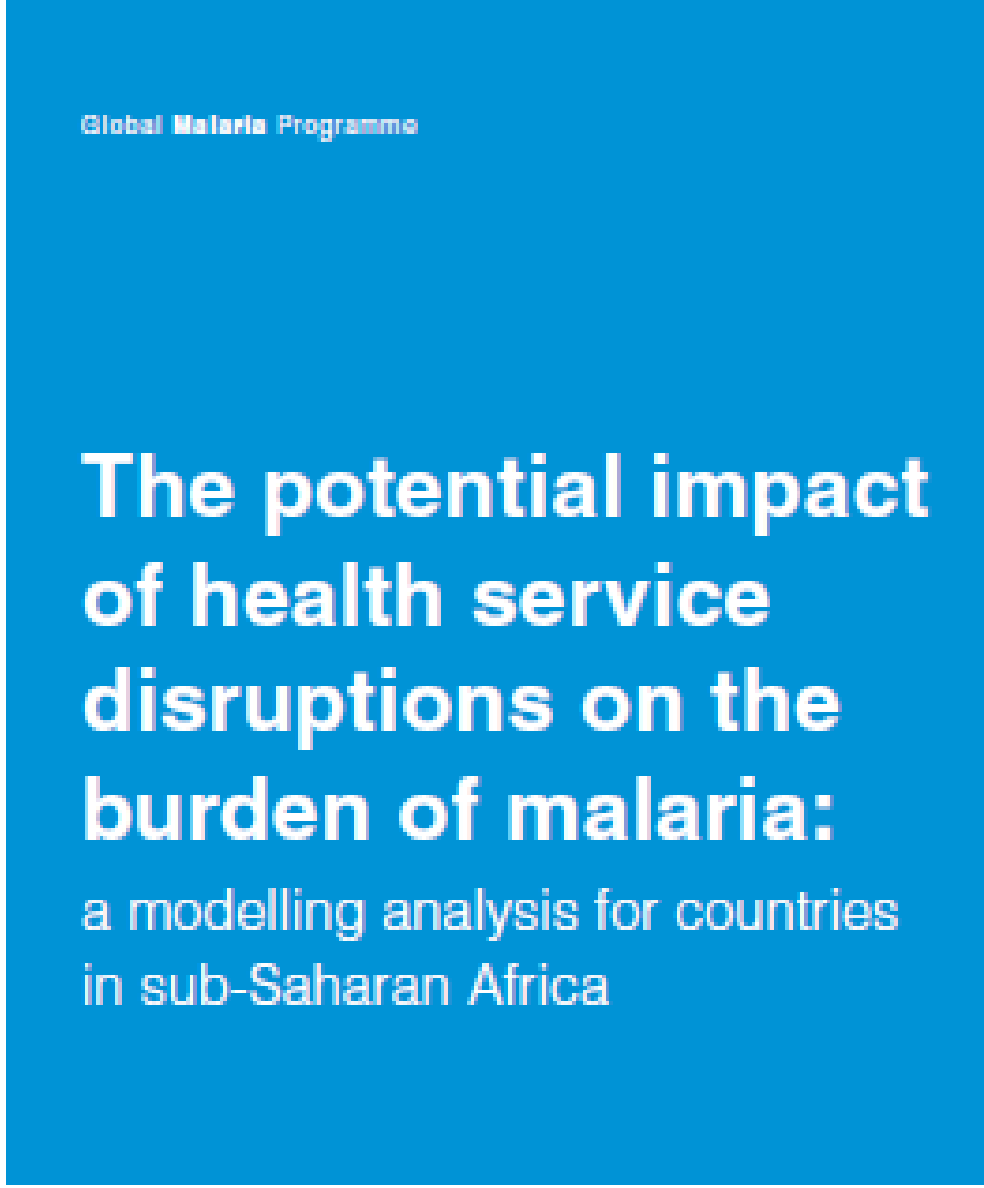
From Focus Investigation to Response Plan

The results of the focus investigation are analysed to understand the likely drivers of transmission, which are then used to formulate a response plan.

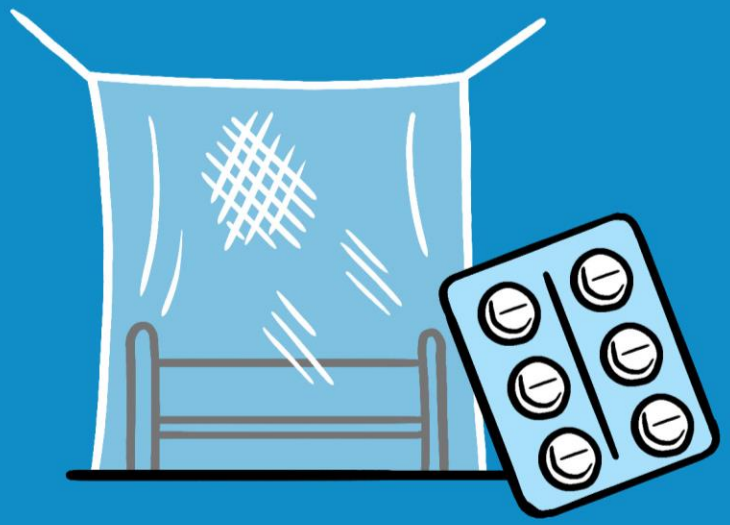
Malaria Vector Control in Covid 19 situation/ disasters

Challenges ?Why we should worry….

- Modelling analysis for sub-Saharan Africa has shown that under worst-case scenario if ITN campaigns are suspended and there is 75% decrease in access to treatment, the malaria deaths may double as compared to 2018
- Some challenges currently faced by malaria program :
  - Movement restrictions due to varying degree of lockdowns
  - Safety concerns for front-line health workers
  - Disruptions in training programmes
  - In some counties IRS and LLINs distribution delayed

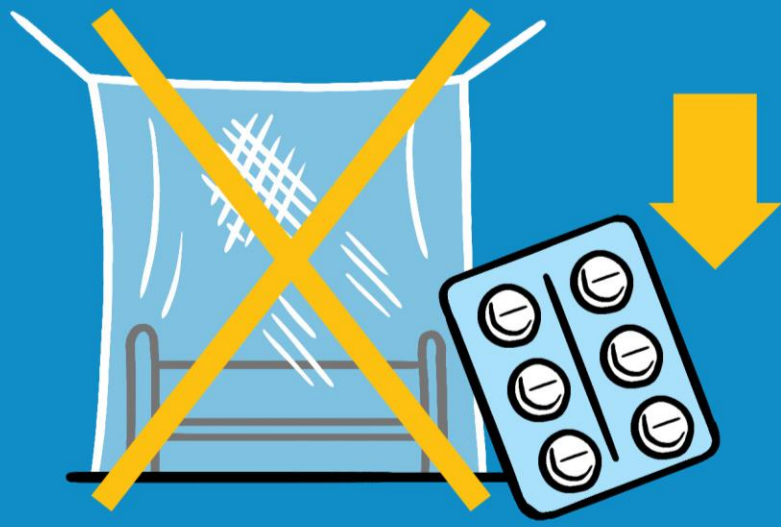


WHO analysis supports the call for maintaining essential malaria services during the COVID-19 pandemic.



386 000

DEATHS, 2018



769 000

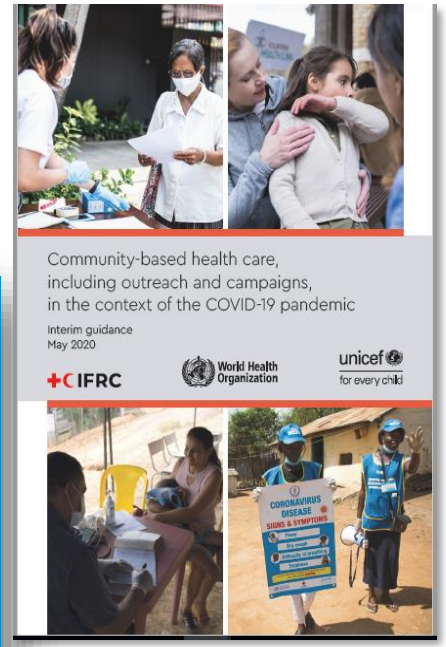
ESTIMATED DEATHS, 2020

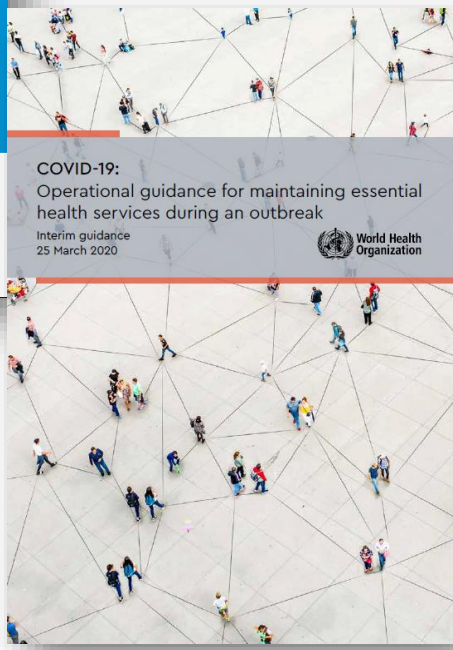
In the worst-case scenario – with major disruptions in access to nets and effective medicines – the number of malaria deaths in sub-Saharan Africa would double.

19 May 2020

Covid19 and Malaria Response

- "In these unprecedented times, when the COVID-19 pandemic is testing the resilience of health systems in countries across the world, **sustaining efforts to prevent, detect and treat malaria, and employing best practices to protect health workers and communities is absolutely critical.**
- WHO urges countries to ensure the continuity of malaria services in the context of the COVID-19 pandemic.
- Advocacy- to continue essential services –Malaria &VBD
- WHO has provided – "Operational Guidelines for maintaining essential health services"
- Provided a guidelines for "Tailoring malaria interventions in the COVID-19 response".





Entomological surveillance

Recommend temporarily suspending routine entomological surveillance activities for until COVID -19 transmission wanes, with some exceptions:

- **Insecticide resistance monitoring:** Continue resistance testing, but only conduct testing using mosquitoes reared from larvae, not from adult collections.
- **IRS spray quality and residual efficacy:** Conduct initial wall cone bioassays (one time) to assess spray quality, but suspend all subsequent monthly bioassays until the situation warrants re-evaluation.
- **Insectary maintenance:** Make efforts to maintain mosquito colonies, while adhering to additional safety precautions
- Suspend vector bionomics monitoring, IRS durability monitoring and non-routine entomological monitoring

Recommendations for Indoor Residual Spraying

- Move forward with current/planned IRS campaigns, implementing the following key actions:
  - In addition to standard infection prevention and control measures:
    - To ensure, all spray team members should **wear face masks** (including N95 face masks if available) and use other routine PPE (preferably cotton) as soon as they enter operations sites.
    - Soaps, face shield/ covering head, boots
    - Vehicle passengers should be limited to one team at a time
  - Health checks should be reinforced for all members, adding temperature checks where feasible.
  - Teams should practice physical distancing, e.g., 2 metres between people, segregation of teams, no more than 10 people in a training (LLINs mass campaign)

Recommandations for ITN/LLIN distribution

- All ITN campaign activities – e.g., training, registration, social and behavior change communication (SBCC) activities, fixed-site distribution, etc. – should be organized in a manner that **minimizes the gathering of people and participants**
- should use available precautions for personal protection.
- Alternatively, house to house visit for IEC/BCC and LLIN distribution could be considered with adequate protective measures for COVID-19
- Adaptations might include suspending some data and accountability procedures that increase person-to-person contact and the risk for COVID-19 transmission (for example, not requiring signature for ITNs received by a household).

Malaria control in Chhattisgarh amidst COVID-19 pandemic

The health services are stretched to manage the COVID-19 response. However, the frontline workers continue to detect and treat malaria, and promote the widespread use of LLINs and strengthen surveillance to reduce the malaria burden in the state.

- A young boy getting tested for malaria at a sub-health centre in Daldali block, Kawardha district, Chhattisgarh. Early detection and appropriate treatment can save lives.

- ASHA worker (‘Mitanin’), conducting malaria test on a local woman, using a rapid diagnosis test kit.

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IRS Continue in Punjab during Covid 19 Pandemic

- Punjab has reported total 1140 malaria cases among 424 villages. Among these villages 15 villages have been qualified for IRS (with API more than 5).
- IRS started from 18 June 2020 in 15 high burden villages and focal spray
- IRS guidelines in local language
- Precautions have been taken by the health staff and COVID norms like use of protective measures, masks and social distancing etc.

Few glimpses from the activities of district.

Epidemiological and entomological Survey during Covid 19 pandemic in in SAS Nagar district, **Punjab**

Health worker collecting slide during fever survey around 50-60 houses around a malaria positive case in SAS Nagar district, by taking protective measures.

During malaria case investigation by State team the- breeding checked along with the Sarpanch Mukhiya) of the village and team of NIMR.

THANKS

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