

Operational aspect of Malaria Case
Management, Present Scenario, Category of
State, Strategies, Testing criteria, Logistic
Management for Elimination of Malaria-2030

IBD-CELL

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Introduction

- ❖ Malaria is one of the most important public health issue in India in respect of morbidity & mortality contributing huge economic burden in India.
- ❖ Almost all the states are endemic. In India the epidemiology of malaria is complex due to its diverse geological setup, multiethnicity and wide distribution of nine anopheline vectors transmitting mainly two Plasmodium species.
- ❖ West Bengal State is now category-1 (except KMC) .

Where we are standing in the year 2021?

- ❖ 241 million malaria cases and 6,27,000 deaths (reported from 85 Countries)
- ❖ 1,58,326 malaria cases and 80 deaths in India (Source: NVBDCP, GoI data)
- ❖ In West Bengal, 28,987 malaria cases and 3 deaths
- ❖ KMC areas are the main concern – Special Focus and continuous monitoring on international cross-border districts like Alipurduar, Jalpaiguri, Kalimpong and Darjeeling



Milestones in malaria control programme in India

Year	Programme
1947	75 million cases and 0.8 million deaths estimated to be due to malaria
1953	National Malaria Control Programme (NMCP) launched
1958	National Malaria Eradication Programme (NMEP) launched
1965	Malaria cases reduced to 0.1 million
Early 1970's	Resurgence of malaria in some towns and cities
1971	Urban Malaria Scheme launched
1976	Malaria cases rose to 6.46 million, highest since mid-1950s
1977	Modified Plan of Operation (MPO) implemented
1984 to 1998	Annual incidence of malaria reduced to 2-3 million cases

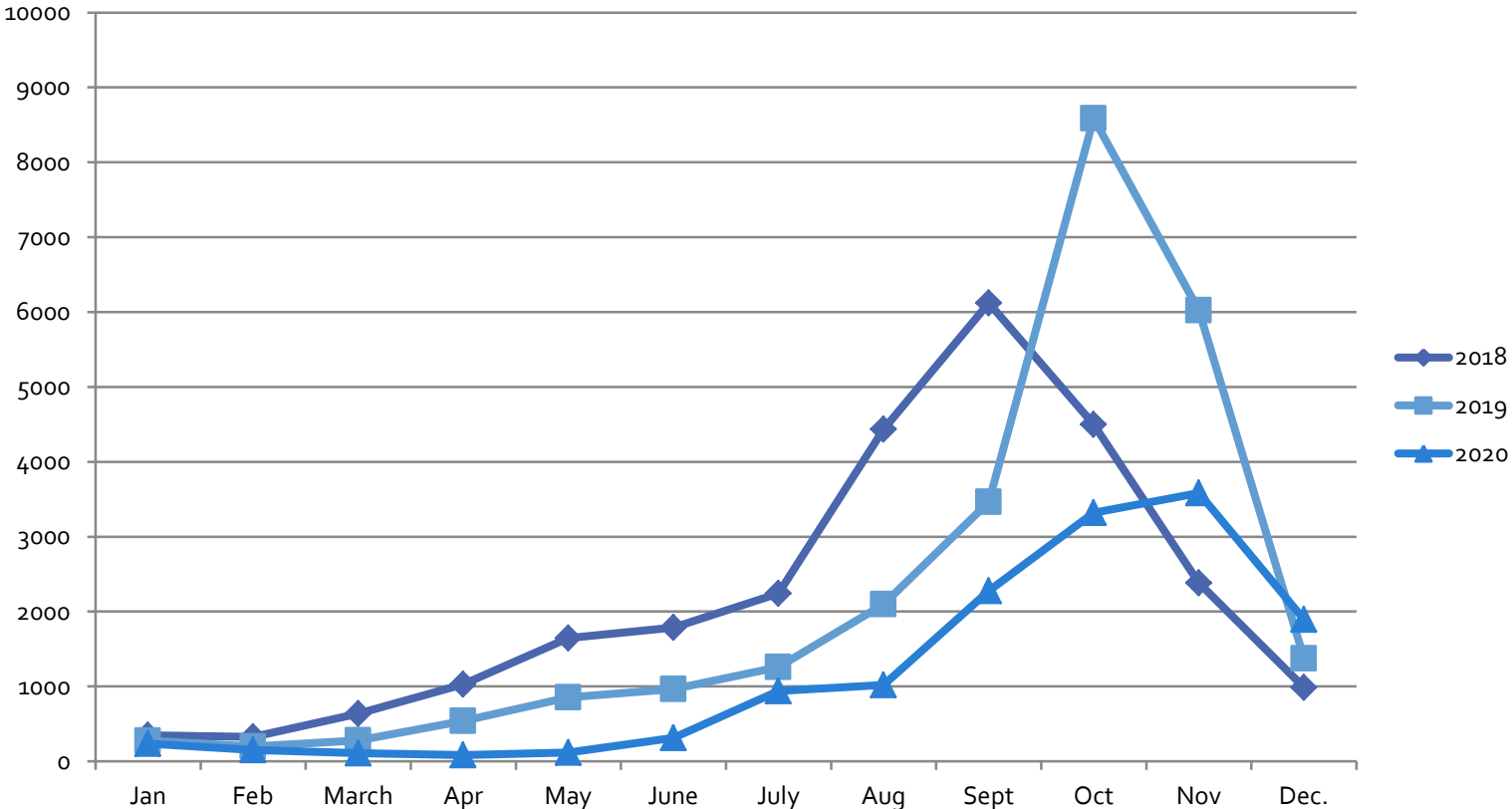
Continued

Year	Programme
1995	Modified Action Plan for malaria control implemented
1997	World Bank assisted Enhanced Malaria Control Project launched
1999	NMCP renamed as National Anti-Malaria Programme (NAMP)
2002	Integration of malaria control programme into the NVBDCP
2005	Global fund (Round 4) assisted intensified malaria control project 3 Introduction 3 (IMCP) launched; Monovalent RDTs introduced in the programme
2006	ACT introduced in areas with Chloroquine resistance in <i>P. falciparum</i>
2008	ACT introduced in <i>P. falciparum</i> predominant districts; World Bank assisted National Vector Borne Disease Control Support Project launched
2009	LLINs introduced; Oral artemisinin monotherapy banned
2010	Malaria drug policy revised with extending ACT use for all <i>P. falciparum</i> cases; Global Fund (Round 9) assisted IMCP-II launched
2013	2013 Bivalent RDTs introduced in programme; ACT-AL started in NE States
2014-15	Newer insecticides and larvicide introduced
2016	National Framework for Malaria Elimination in India launched

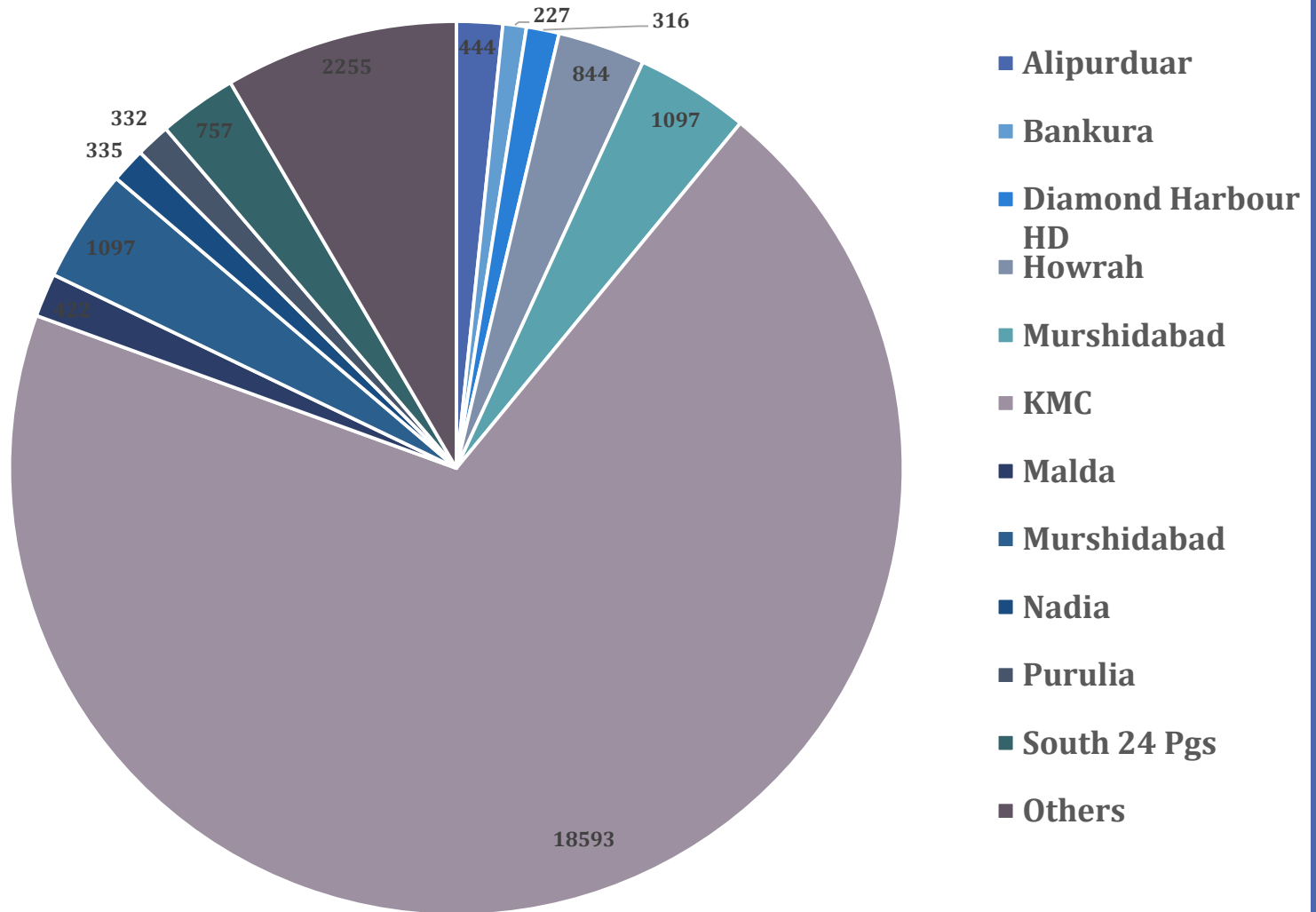
Epidemiological Status of Malaria-WB

Year	Total case	Pf	PV	ABER	SPR	Pf%	Pv%	Death	API
2012	55793	8669	47124	5.65	1.08	15.52	84.48	30	0.61
2013	34717	3724	30993	6.2	0.6	10.7	89.3	16	0.4
2014	26484	4981	21503	7.28	0.39	18.81	81.79	65	0.28
2015	24209	5776	18433	8.18	0.31	23.86	76.14	34	0.26
2016	35236	5928	29308	9.76	0.38	16.82	83.18	59	0.37
2017	31188	26271	4917	11.71	0.28	15.76	84.24	28	0.33
2018	26440	3162	23278	12.1	0.22	11.95	88.05	8	0.27
2019	20665	1745	18921	12.61	0.17	8.44	91.56	6	0.21
2020	14049	2399	11650	6.35	0.23	17.07	82.93	7	0.14
2021	28987	9694	19293	8.36	0.35	33.4	66.6	3	0.29

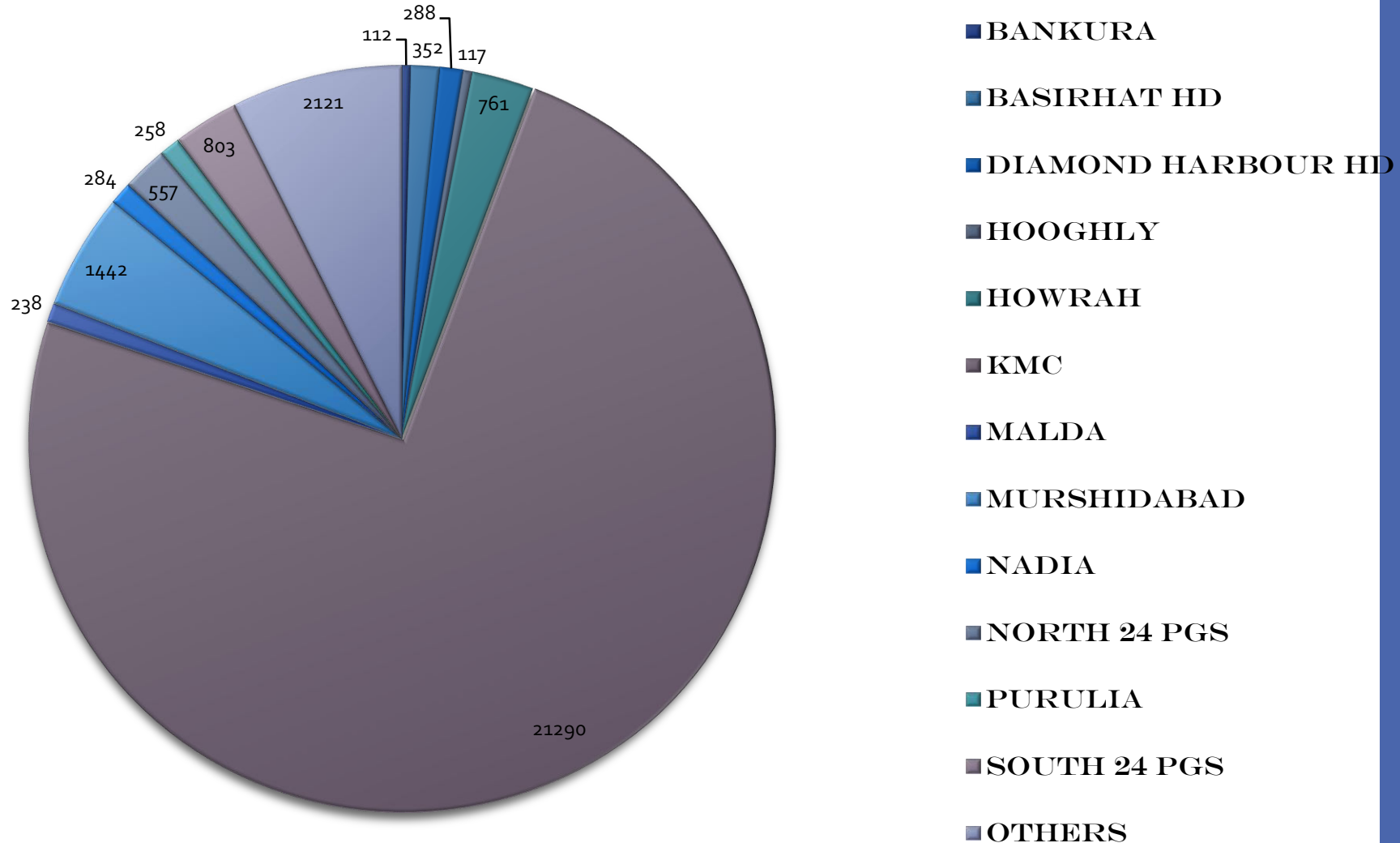
Month wise trend of Malaria in WB



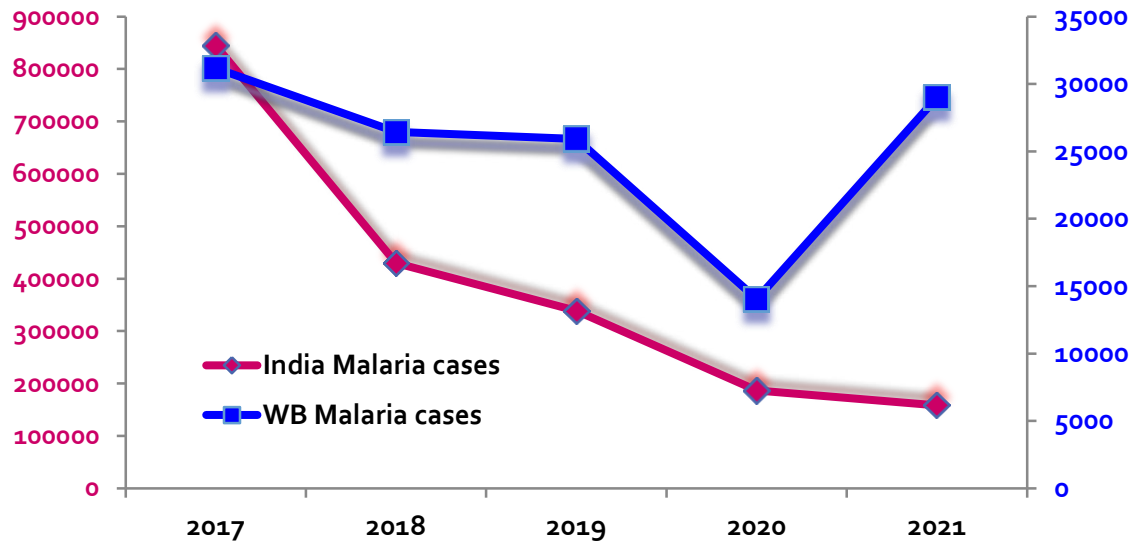
CASE CONTRIBUTED BY DISTRICTS IN 2019



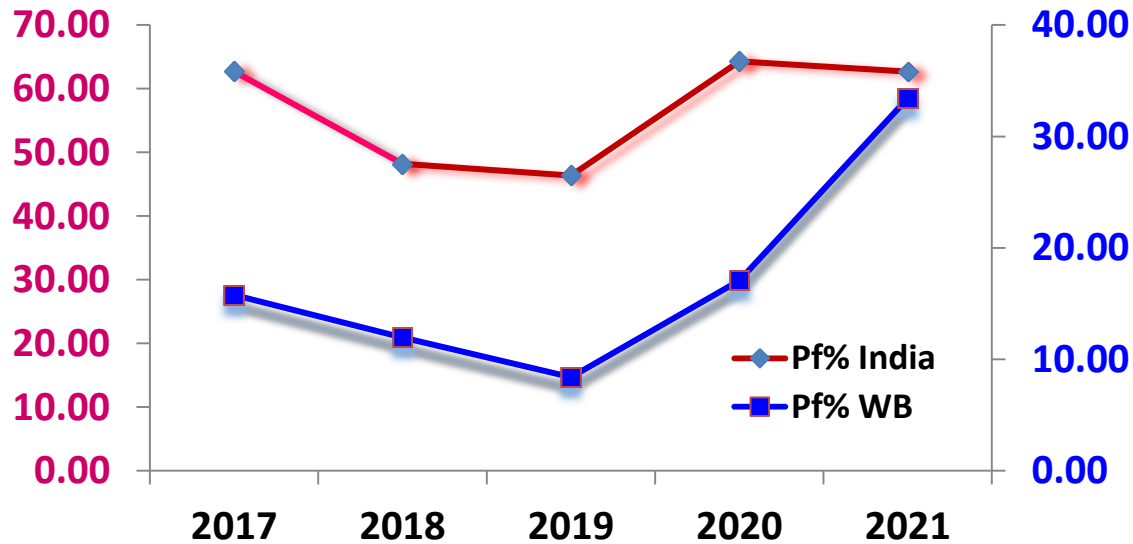
CASE CONTRIBUTED BY DISTRICTS IN 2021



1. (OPD and indoor wards)



Increasing trends of Malaria cases in West Bengal in comparison to India



Percentage of Pf Malaria in West Bengal (33%) low in comparison to India (63%).

Programmatic Aspects

Vision

- Eliminate malaria nationally and contribute to improved health, quality of life and alleviation of poverty.

Goals

WHO Global Technical Strategy (GTS) for Malaria(2016–2030) the goals of the National Framework for Malaria Elimination in India 2016–2030 are:

1. Eliminate malaria (zero indigenous cases) throughout the entire country by 2030
2. Maintain malaria-free status in areas where malaria transmission has been interrupted and prevent re-introduction of malaria.

Strategies

The broad strategies of the malaria elimination framework are-

- Early diagnosis and radical treatment.
- Case-based surveillance and rapid response
- Integrated vector management (IVM)
 - a) Indoor residual spray (IRS)
 - b) Long-lasting insecticidal nets (LLINs) / Insecticide-treated bed nets (ITNs)
 - c) Larval source management (LSM).
 - d) Environmental management.
 - e) Epidemic preparedness and early response.
 - f) Monitoring and evaluation.
 - g) Advocacy, coordination and partnerships.
 - h) Behavior change communication and community mobilization.
 - i) Programme planning and management.

❖ Early Diagnosis & Complete Treatment (EDCT)

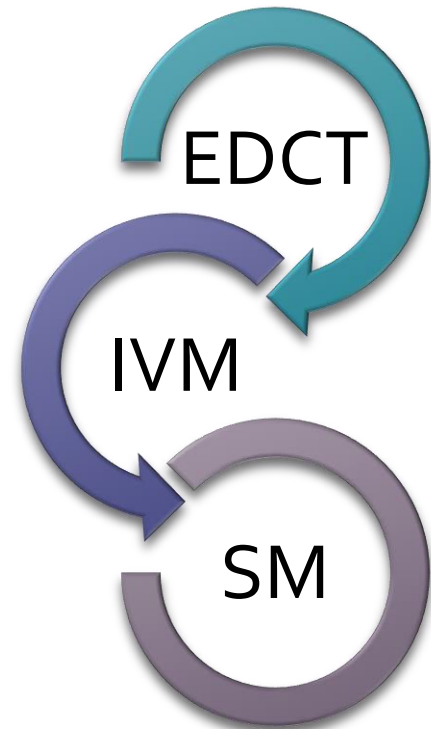
- Case detection (Passive & Active)
- Case Management adhering to national Treatment Protocol
- Sentinel surveillance
- Monitoring & Evaluation (M&E)
- Capacity Building of HWs
- Continuous flow of Logistics- chain

❖ Integrated vector Management (IVM)

- Indoor Residual Spray (IRS)
- Long Lasting Insecticide Nets (LLIN)
- **Entomological Survey**, Epidemic preparedness & Early Response

❖ Social Mobilization & other supportive interventions

- Social Mobilization (SM)/ IEC/ BCC- **Mobile Medical Camps, Anti Malaria Month (AMM) Observation in June, WMD observation etc.**
- Intersectoral collaboration
- Operational Research



Few Definition

Annual blood examination rate. The number of examinations for malaria by slides for microscopy or RDT per 100 population per year.

Case-based surveillance. Every case is reported and investigated immediately and also included in the weekly reporting system.

Case notification. Compulsory reporting of all malaria cases by all medical units and medical practitioners, to either the health department or the malaria elimination programme (as laid down by law or regulation) as it is a notifiable disease in WB.

Confirmed malaria case. Malaria case (or infection) in which the parasite has been detected by a diagnostic test, i.e. microscopy, rapid diagnostic test, or molecular diagnostic test.

Cross-border malaria. Malaria transmission associated with the movement of individuals or mosquitoes across borders.

Endemic area. Applied in malaria to an area in which there is an ongoing, measurable incidence of infection and mosquito-borne transmission over a succession of years.

Epidemic. Occurrence of malaria cases in excess of the number expected in a given place and time.

False negative (or false positive). A negative (or positive) result in a test when the opposite is true.

Imported case. Malaria case or infection in which the infection was acquired outside the area in which it is diagnosed.

Incubation period. The period between inoculation of malaria parasites and onset of clinical symptoms.

Indigenous case. A case contracted locally with no evidence of being imported or being directly linked to transmission from an imported case. It includes delayed first attacks of *P. vivax* malaria due to locally acquired infection followed by a long incubation period.

Induced case. A case whose origin can be traced to a blood transfusion or other form of parenteral inoculation of the parasite but not to transmission by a natural mosquito-borne inoculation.

Introduced case. A case contracted locally, with strong epidemiological evidence linking it directly to a known imported case (first generation from an imported case, i.e. the mosquito was infected from a case classified as imported).

Malaria elimination. Interruption of local transmission (reduction to zero incidence) of human malaria parasites in a defined geographical area as a result of deliberate efforts. Continued measures to prevent re-establishment of transmission are required.

Malaria incidence. The number of newly diagnosed malaria cases during a defined period of time in a specified population.

Malaria prevalence. Proportion of the population with malaria infection at one point in time in a specified population (also known as parasite prevalence).

Relapse. Recurrence of asexual parasitaemia in *P. vivax* or *P. ovale* infections. Relapse occurs when blood-stage infection has been eliminated but hypnozoites persist in liver and mature to form hepatic schizonts, which after an interval (generally, three weeks to one year), rupture and release asexual parasites (merozoites) into the bloodstream.

Slide (Test) positivity rate. Proportion of blood smears (including Rapid Diagnostic Tests) found to be positive among all slides examined (and all Rapid Diagnostic tests done).

Classification of States/UTs for malaria elimination in India

Each district should stratify its PHCs and subcentres (with their population) into the following five strata, as those with:

- zero cases;
- API > 0 to < 1 ;
- API 1 to < 2 ;
- API 2 to < 5 ; and
- API ≥ 5 .

Based on the above information, each district should have ready information on PHCs, subcentres and even villages in each of the above five strata and also information on them moving from higher to lower endemicity. Each state must have the above information for all its districts and the Directorate of NVBDCP will have the information for all its States every year.

1. Special Strategy for *P. vivax* Elimination

India accounts for more than 50% of the estimated *P. vivax* cases in the world⁵. Elimination of *P. vivax* from India is a serious challenge due to its magnitude as well as the need for a special strategy as *P. vivax* usually disappears from an area after *P. falciparum* because:

- *P. vivax* hypnozoites prolong the parasite's lifespan and are difficult to detect;
- RDTs currently available to detect *P. vivax* are less sensitive than RDTs for *P. falciparum* detection;
- Radical treatment for *P. vivax* requires 14 days of primaquine therapy to kill the hypnozoites whereas treatment for *P. falciparum* can be completed in only 3 days; and
- *P. vivax* strains have a longer incubation period

The states and UTs with *P. vivax* preponderance should now initiate special measures for elimination of *P. vivax*: expanding bivalent RDTs and quality microscopy services to detect all *P. vivax* infections; ensuring compliance of the 14-days radical treatment by affected individuals; and tackling urban malaria by targeting *An. stephensi* by antilarval measures.

1. Routine Reporting

The following reports are submitted on a routine basis as per scheduled timelines for monitoring case detection and management, IVM and programme management.

• Case detection and management reports

M-1: Report of malaria surveillance by ASHA / health care provider / health facility

M-2: Slide examination request to laboratory

M-3: Laboratory register of slide examination in laboratory

M-4: Fortnightly report of malaria surveillance from subcentre / PHC / district / State

• IVM reports

VC-1: Primary record of IRS VC-1S: Wall stencil

VC-2: District IRS output form

Timely reporting is most important for programme Management

Drugs and Logistics for Malaria Management

Drugs :

1. Tab. CQ 250 mg
2. TabPQe 7.,5 mg
3. TabPQ2.5 mg
4. TabQuinine sulphate 300mg
5. ACT Combiblister age wise (0-1, 1-4, 5-8,9-14, 15 & above)
6. Inj. Artisunate Combi pack
7. Inj. Quinine dihydrochloride

Logistics:

1. Blood Slide
2. Lancet
3. Staining Materials
4. Bi-Valent RDK
5. DDT 50%
6. LLIN

Uninterrupted supply of Ant-Malaria Drugs and Logistics at all levels throughout the year:

1. MCHs (Emergency MMW,FMW, Pediatric ward and opd)
2. DH (Emergency MMW,FMW, Pediatric ward and opd) and DRS
3. SDH (Emergency MMW,FMW, Pediatric ward and opd)
4. SSH (Emergency MMW,FMW, Pediatric ward and opd)
5. SGH (Emergency MMW,FMW, Pediatric ward and opd)
6. RH (Emergency MMW,FMW, Pediatric ward and opd)
7. BPHC (OPD and indoor wards)
8. Bedded PHC (OPD and indoor wards)
9. PHC (Non Bedded) OPD
10. Sub-Center
11. ASHA

Availability of Drugs & Logistics must be ensured by the respective Health Facility Head on the basis of last 3yrs. Case incidence.