

National Vector Borne Disease Control Programme



What are vectors?

Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans.

Many of these vectors are bloodsucking insects that ingest disease-producing micro-organisms during a blood meal from an infected host (human or animal) and later inject them into a new host during their next blood meal.

Mosquitoes are the best known disease vector. Others include certain species of ticks, flies, sand-flies, fleas, bugs and freshwater snails.

Vector-borne diseases Key facts

- Vector-borne diseases account for more than 17% of all infectious diseases, causing more than 1 million deaths annually.
- More than 2.5 billion people in over 100 countries are at risk of contracting dengue alone.
- Malaria causes more than 400 000 deaths every year globally, most of them children under 5 years of age.
- Other diseases such as Chagas disease, leishmaniasis and schistosomiasis affect hundreds of millions of people worldwide.
- Many of these diseases are preventable through informed protective measures.

Vectors and the diseases that they can transmit

Vector	Diseases
Mosquitoes:	
<i>Aedes aegypti</i>	Dengue, yellow fever, chikungunya, Zika virus
<i>Aedes albopictus</i>	Chikungunya, dengue, West Nile virus
<i>Culex quinquefasciatus</i>	Lymphatic filariasis
<i>Anopheles</i> (more than 60 known species can transmit diseases)	Malaria, lymphatic filariasis (in Africa)
<i>Haemagogus</i>	Yellow fever
Sandflies	Leishmaniasis
Triatomine bugs	Chagas disease
Ticks	Crimean-Congo haemorrhagic fever, tick-borne encephalitis, typhus, Lyme disease
Fleas	Plague, Murine typhus
Flies (various species)	Human African trypanosomiasis, onchocerciasis

Aedes
Chikungunya

Aedes
Zika
virus

Aedes
Dengue

Culex
West
Nile
virus

Anopheles
Malaria

Aedes
Yellow fever

The National Vector Borne Disease Control Programme

- The National Vector Borne Disease Control Programme (NVBDCP) is an umbrella programme for prevention and control of malaria and other vector borne diseases.
- Under the programme, it is ensured that the disadvantaged and marginalised sections benefit from the delivery of services so that the desired National Health Policy and Rural Health Mission goals are achieved.
- The Directorate of NVBDCP under the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, is the nodal agency responsible for planning, coordination, implementation, monitoring and evaluation of NVBDCP programme at all levels.

Introduction

Launched in year 2003-04

Major vector borne diseases-

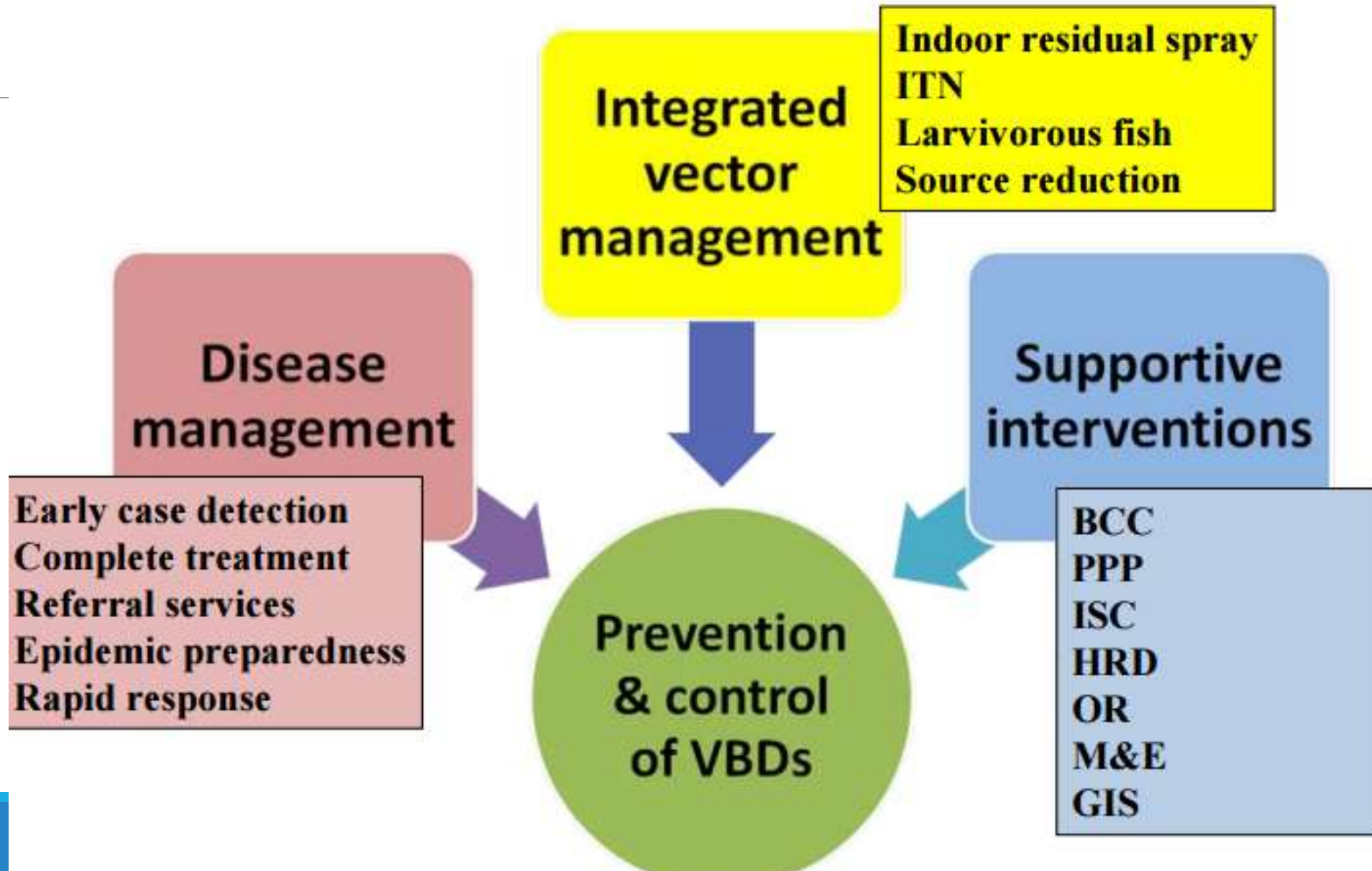
- Malaria
- Filaria
- Kala-azar
- Japanese Encephalitis
- Dengue / Dengue Hemorrhagic fevers
- Chikungunya

Mission statement

Integrated accelerated action towards

- Reducing mortality on account of Malaria, Dengue and JE by half
- Elimination of Kala-azar by 2010
- Elimination of lymphatic filariasis by year 2015.

Three pronged strategy

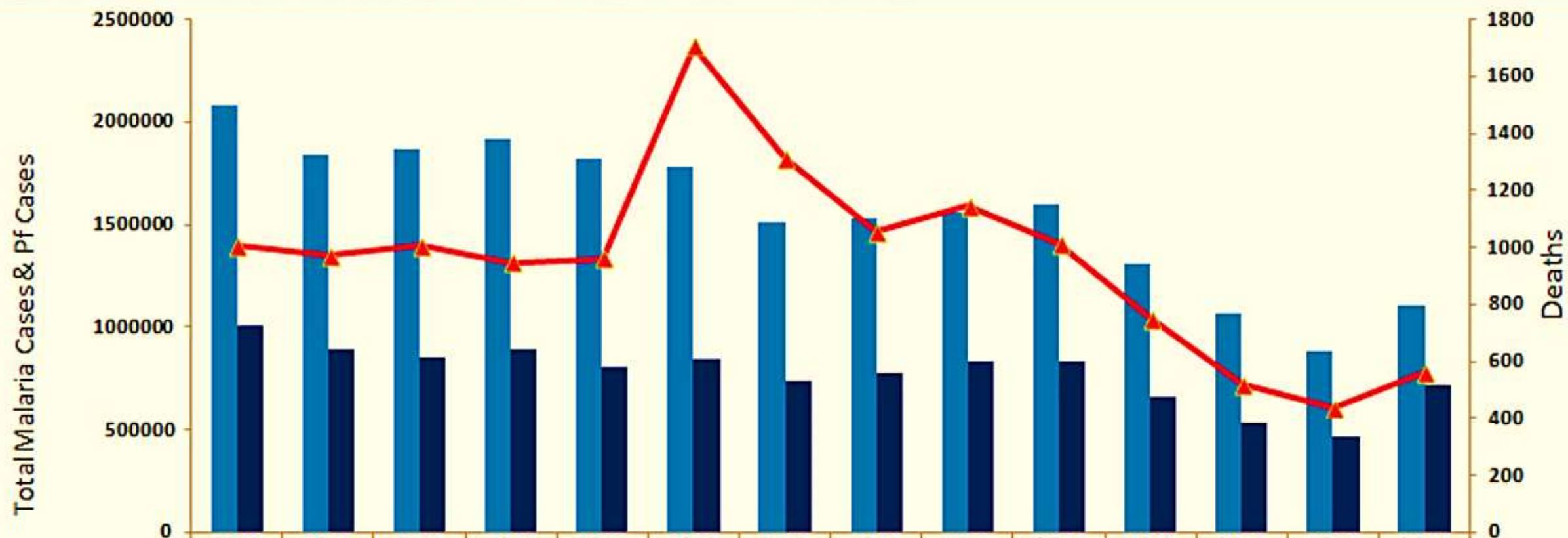


Malaria

INTRODUCTION

- Malaria is a potentially life threatening parasitic disease caused by parasites known as Plasmodium vivax (P.vivax), Plasmodium falciparum (P.falciparum), Plasmodium malariae (P.malariae) and Plasmodium ovale (P.ovale)
- It is transmitted by the infective bite of Anopheles mosquito
- Man develops disease after 10 to 14 days of being bitten by an infective mosquito
- There are two types of parasites of human malaria, Plasmodium vivax, P. falciparum, which are commonly reported from India.
- Inside the human host, the parasite undergoes a series of changes as part of its complex life cycle. (Plasmodium is a protozoan parasite)
- The parasite completes life cycle in liver cells (pre-erythrocytic schizogony) and red blood cells (erythrocytic schizogony)
- Infection with P.falciparum is the most deadly form of malaria

Fig 1: Trend of Malaria Cases And Deaths 2001-2014*



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Malaria Cases	2085484	1841229	1869403	1915363	1816569	1785129	1508927	1526210	1563574	1599986	1310656	1067824	881730	1102205
Pf Cases	1005236	897446	857101	890152	805077	840360	741076	775523	839877	834364	665004	533695	463846	722546
Deaths	1005	973	1006	949	963	1707	1311	1055	1144	1018	754	519	440	561



MALARIA CONTROL STRATEGIES

1. Early case Detection and Prompt Treatment (EDPT)

- EDPT is the main strategy of malaria control - radical treatment is necessary for all the cases of malaria to prevent transmission of malaria.
- Chloroquine is the main anti-malaria drug for uncomplicated malaria.
- Drug Distribution Centres (DDCs) and Fever Treatment Depots (FTDs) have been established in the rural areas for providing easy access to anti-malarial drugs to the community.
- Alternative drugs for chloroquine resistant malaria are recommended as per the drug policy of malaria.

2. Vector Control

(i) Chemical Control

Use of Indoor Residual Spray (IRS) with insecticides recommended under the programme, Use of chemical larvicides like Abate in potable water. Aerosol space spray during day time. Malathion fogging during outbreaks

(ii) Biological Control

Use of larvivorous fish in ornamental tanks, fountains etc. Use of biocides.

(iii) Personal Prophylactic Measures that individuals/communities can take up

Use of mosquito repellent creams, liquids, coils, mats etc.

Screening of the houses with wire mesh

Use of bednets treated with insecticide

Wearing clothes that cover maximum surface area of the body

4. Community Participation

- Sensitizing and involving the community for detection of Anopheles breeding places and their elimination
- NGO schemes involving them in programme strategies
- Collaboration with CII/ASSOCHAM/FICCI

5. Environmental Management & Source Reduction Methods

- Source reduction i.e. filling of the breeding places
- Proper covering of stored water
- Channelization of breeding source

6. Monitoring and Evaluation of the programme

- Monthly Computerized Management Information System(CMIS)
- Field visits by state by State National Programme Officers
- Field visits by Malaria Research Centres and other ICMR Institutes
- Feedback to states on field observations for correction actions.

Milestones of Malaria control activities in INDIA

National Malaria control program – 1953 -75 million deaths due to malaria

1958 – NMCP was changed into National Malaria Eradication program

1965 – Cases reduced to 0.1 million

Early 1970s resurgence of malaria by 6.46 million cases

1977 – Modified plan of operations implemented

1997 – World Bank assisted Enhanced malaria control project (EMCP)

1999 – Renaming of project to National Anti-malarial program (NAMP)

2002 - Renaming NAMP to NVBDCP

2005 – Global fund assisted Intensified Malaria control project (IMCP),RDT included

2006 – ACT introduced

2008 – ACT extended and World Bank supported National Malaria Control project launched

2009 – Introduction of LLINs

2010 - new drug policy

2012 – Introduction of bivalent RDT

2013 – New drug policy 2013

The Main activities of the programme

- 1) Formulating policies and guidelines
- 2) Technical guidance
- 3) Planning
- 4) Logistics
- 5) Monitoring and evaluation
- 6) Coordination of activities through state/UTs and in consultation with National Centre for disease control (NCDC), National Institute of Malarial Research (NIMR)
- 7) Collaborating with international organizations like the WHO, World Bank, GFATM and other donor agencies
- 8) Training
- 9) Facilitating research through NCDC, NIMR, Regional medical research centers
- 10) Coordinating control activities in the inter-state and inter country border areas.

Fever Treatment Depots (FTDs)

- To avoid delay in detection of cases which occur in between visits of MPW, it can be supplemented with establishment of Fever Treatment Depots in villages especially in areas which are remote/ inaccessible and have low population density, for example in hilly terrain of Jharkhand, Chattisgarh and MP and arid areas of Rajasthan.
- The FTD holder should be given training for one or two days at the PHC Headquarters in the collection of blood smears, administration of presumptive treatment, impregnation of bed nets, promotion of larvivorous fish etc.
- He should be paid TA/DA/honorarium as per guidelines of NVBDCP for attending training.

Drug Distribution Centre (DDC)

- If it is not possible to have FTD, the medical officer should establish DDC.
- The function of DDCs are the same as those of FTDs, except that the DDCs do not take blood slides but administer drugs to fever cases.
- Volunteers identified for running DDCs should be imported one-two day induction/ orientation training in identification of fever cases, administration of presumptive treatment, promotion of preventive measures like distribution & impregnation of bed nets, larvivorous fish, source reduction etc. for vector control.

Urban Malaria Scheme (UMS)

- The proposal of urban malaria scheme (UMS) was sanctioned in 1971 when it was realized that urban malaria was a significant problem and if effective anti-larval measures were not undertaken in urban areas, the proliferation of malaria cases from urban to rural might occur in a bigger way.
- In this scheme all the towns having more than 40,000 population and showing more than 2 API in last 3 years are to be covered. At present 131 towns and cities in 19 states and union territories are under the UMS.

OBJECTIVES of Urban Malaria Scheme

The main aim is the reduction of the disease to a tolerable level in which the human population can be protected from malaria transmission with the available means.

The Urban Malaria Scheme aims at :

- a) To prevent deaths due to malaria.
- b) Reduction in transmission and morbidity.

Control Strategies under Urban Malaria Scheme

1. **Parasite control**
2. **Vector control comprises of the following components**
 - Source reduction
 - Use of larvicides
 - Use of larvivorous fish
 - Space spray
 - Minor engineering
 - Legislative measure

Strategic Plan for Malaria Control in India 2012-2017

A Five-year Strategic Plan

Vision

- The country has a document 'The Vision 2002' which emphasizes the expectations from the
- health care delivery system for malaria by 2025.

Mission

To reduce the morbidity and mortality due to malaria and improving the quality of life,

thereby contributing to health and alleviation of poverty in the country

Goals

- Screening all fever cases suspected for malaria (60% through quality microscopy and 40% by Rapid Diagnostic Test)
- Treating all *P. falciparum* cases with full course of effective ACT and primaquine and all *P. vivax* cases with 3 days chloroquine and 14 days primaquine
- Equipping all health Institutions (PHC level and above), especially in high-risk areas, with microscopy facility and RDT for emergency use and injectable artemisinin derivatives
- Strengthening all district and sub-district hospitals in malaria endemic areas as per IPHS with facilities for management of severe malaria cases.

Objective

To achieve by the end of 2017, API < 1 per 1000 Population

Outcome Indicators

- At least 80% of those suffering from malaria get correct, affordable and appropriate and complete treatment within 24 hours of reporting to the health system, by the year 2017
- At least 80% of those at high risk of malaria get protected by effective preventive measures such as ITN/LLIN or IRS by 2017
- At least 10% of the population in high-risk areas is surveyed annually (Annual Blood Examination Rate >10%)

Impact Indicators

- To bring down annual incidence of malaria to less than 1 per 1000 population at national level by 2017.
- At least 50% reduction in mortality due to malaria by the year 2017, taking 2010 level as baseline

Strategies

India's National Malaria Strategic Plan (2012-17) is in line with the following broad strategies of the Regional Malaria Strategy of WHO/SEARO.

- Reform approaches to programme planning and management
- Improve and enhance surveillance and strengthen monitoring and evaluation
- Scale up coverage and proper use of insecticide treated bed nets
- Target interventions to risk groups
- Scale up control of *P vivax*

The programme plans to implement activities to:

- Promote the implementation of evidence based strategies for malaria control through sustained technical support and partnerships;
- Facilitate access of populations at risk to effective and complete treatment of malaria;
- Support the application of effective preventive measures against malaria for the population at risk through IVM;
- Strengthen capacity building of the field staff for malaria control in the country;
- Strengthen malaria surveillance system and the monitoring and evaluation of malaria control measures at all levels

Categorized strategic interventions for achieving pre-elimination status

Category	Definition	Strategies
Category 1	States with API less than one and all the districts in the state are with API less than one	<ul style="list-style-type: none"> • Active, passive and sentinel surveillance with focus on quality surveillance Screening of migrants. • Screening of migrants. • IVM with involvement of Village Health and Sanitation Committees, other PRIs and MNREGA schemes. • Supportive interventions including BCC activities.
Category 2	States having API less than one and one or more districts reporting API more than one	<ul style="list-style-type: none"> • Epidemiological surveillance and disease management (3 Ts—Test, Treat and Track). • Screening of migrants. • IVM by source reduction through minor engineering, environmental management and focal spray. • Supportive interventions including BCC activities with involvement of private health care providers, community involvement and NGOs.
Category 3	States with API more than one	<ul style="list-style-type: none"> • Epidemiological surveillance and disease management: by Early Diagnosis and Complete Treatment (EDCT). • Management of severe malaria cases by strengthening of district and sub-district hospitals and quality referral services. • IVM by IRS and LLIN distribution so as to saturate the entire high risk population. • Supportive interventions.

Major activities according to API

❑ For areas having API less than 1

Vector control by minor engineering measures like desilting, deweeding and cleaning of canals and irrigation channels, biological control by use of larvicides and environmental management. Involving PRIs by sensitizing them in rural areas and municipal bodies in urban areas. Cooperation from VHSCs and nodal officers from MNREGA

❑ For areas having API between 1-2

Vector control by source reduction and biological control. Active surveillance by ASHA/ANM and positioning of MPW in SCs where there is provision for 2nd ANM

❑ For areas having API between 1-2

Vector control by source reduction and biological control, Active surveillance by ASHA/ANM and positioning of MPW in SCs where there is provision for 2nd ANM

Major activities according to API

❑ For areas having API between 2-5

Vector control by distribution of LLIN if acceptability of IRS is low @ 2 LLIN per household of 5 members. For areas which can be supervised and accessible, quality IRS for selective vector control based on epidemiological impact of earlier vector control measures, if needed; these areas can also be provided with LLINs

❑ For areas having API above 5

For areas having perennial transmission (more than 5 months in a year), 2 rounds of IRS with DDT and 3 rounds with Malathion, Priority distribution of LLINs as per the guidelines, Vector bionomics studies for future change of strategy, For areas having seasonal transmission (less than 5 months in a year), 1 round of IRS with DDT before start of transmission, Focal spray whenever and wherever needed, Priority distribution of LLINs as per the guidelines

Epidemiological surveillance and disease management

1. Early case detection by further strengthening existing surveillance system and involving private providers

- Strengthening of active, passive and sentinel surveillance by providing additional MPWs, LTs and involving more ASHAs, GPs, RMPs and medical practitioners of other health partners.
- Strengthening diagnosis by providing additional microscopes and scaling up use of RDTs.
- Diagnostic and treatment facilities will be strengthened by increasing the number of microscopy centres and capacity building of technicians, scaling up use of RDTs and providing microscopes and by establishing malaria clinics @ 1 clinic per 20,000 population in urban slums.
- Ensuring continued availability of diagnostics and anti-malarial drugs at all levels of health facilities
- Adopting newer evidence-based technologies for improving diagnosis and treatment services like introduction of bivalent RDT, fixed dose ACT etc.

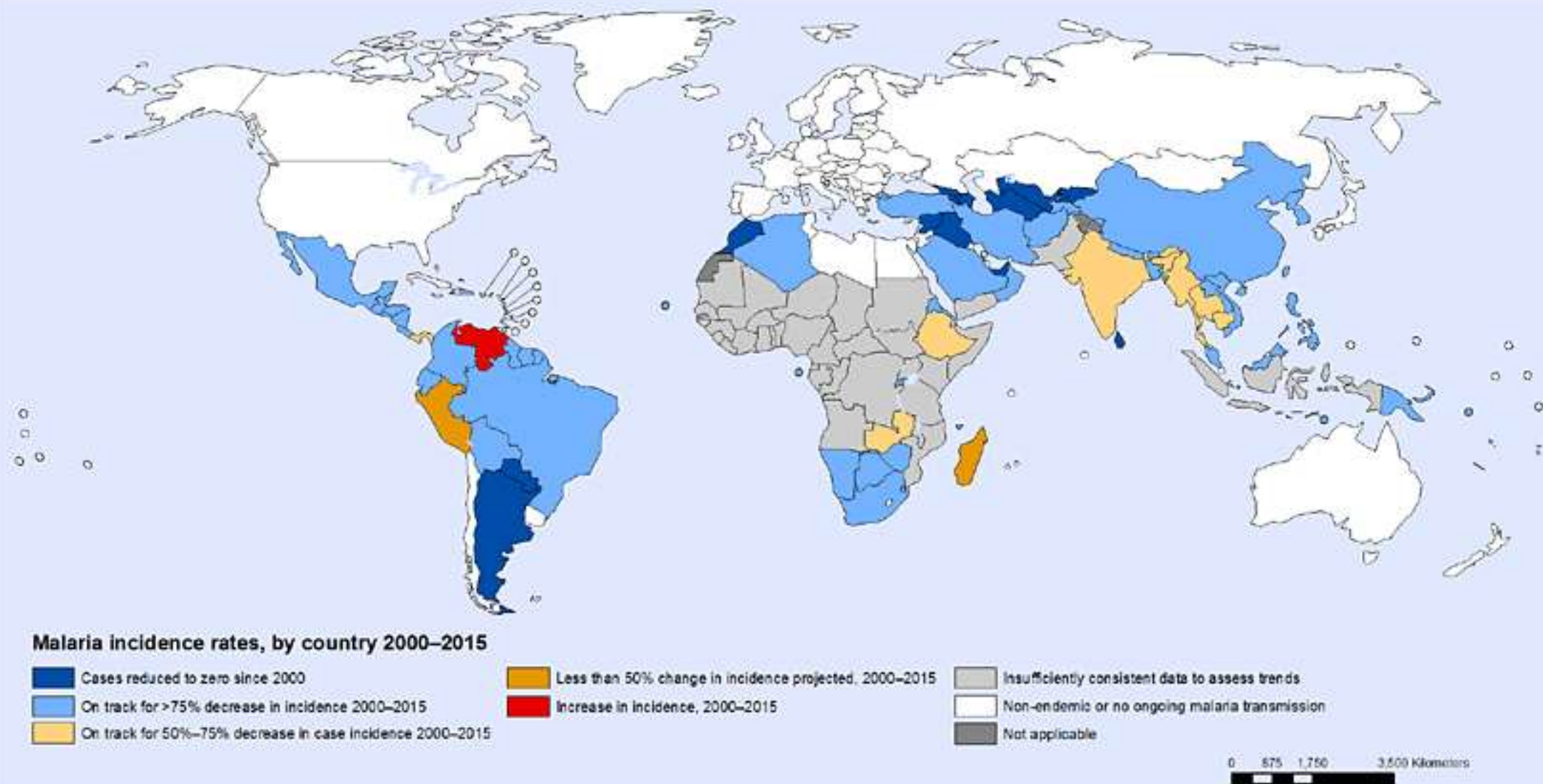
2. Strengthening of referral services

- For rapid transportation of severe malaria cases to the nearest health facility, transport available under NRHM will be used and if not available, programme will support transportation.
- Strengthening of referral centers by equipping them with requisite diagnostics and anti-malarials for management of severe malaria cases.
- Optimal utilization of life-saving support systems available under NRHM.

3. Epidemic preparedness and rapid response

- Use of early warning system for detection of likely epidemic in coordination with IDSP.
- Strengthening of rapid response team in each district with financial support from NVBDCP.
- For tackling outbreaks, adequate stocks of antimalarial, diagnostics, insecticides etc. will be provided by earmarking 20% buffer stock

Projected changes in malaria incidence rates, by country, 2000–2015



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Malaria Report 2015
Map Production: Global Malaria Programme
World Health Organization



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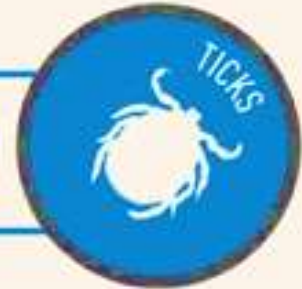
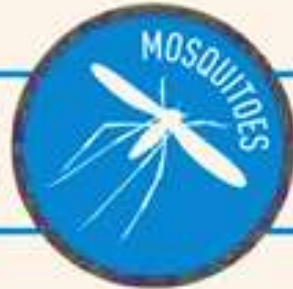


VECTOR-BORNE DISEASES

VECTORS MAY BE A THREAT TO YOU, AT HOME AND WHEN TRAVELLING

VECTORS ARE SMALL ORGANISMS THAT CARRY SERIOUS DISEASES

COMMON VECTORS



WITH JUST 1 BITE

they can transmit diseases such as:

- Malaria
- Dengue

- Leishmaniasis
- Lyme disease

- Yellow fever
- Japanese encephalitis



Diseases spread by vectors **kill a million people** every year and **more than half of the world's population is at risk**

TAKE SIMPLE MEASURES TO PROTECT YOURSELF AND YOUR FAMILY

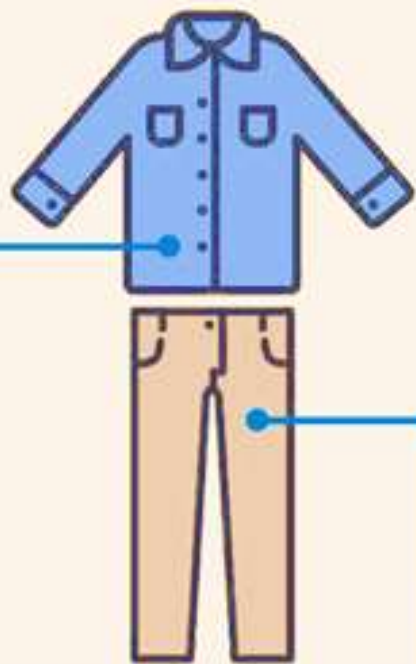
Get vaccinated against yellow fever and Japanese encephalitis



Install



window screens



Wear light-coloured, long-sleeved shirts and trousers



Use **insect repellent**

Sleep under an **insecticide-treated bed net**



Get rid of stagnant water from places **where mosquitoes breed**, such as in old containers, flower pots and used tyres



For more information, contact your health-care professional
www.who.int/world-health-day