

IMPLEMENTING NVBDCP- ASSESSING THE EFFECTIVENESS OF DIAGNOSIS OF MALARIA AND DENGUE: A CASE OF CHC GOVINDGARH

Mustafa Mohammed Dhaiban
MBBS,MPH(IS) S.D.Gupta School Of Public Health

Acknowledgments

I would like to express my heartfelt gratitude and appreciation to the following individuals and groups who have been instrumental in the success of my project:

First and foremost, I would like to extend my sincere thanks to my advisor, Prof. Neetu Purohit. Her unwavering support, inspiration, and guidance have been invaluable throughout this journey. Her expertise and encouragement have pushed me to strive for excellence, and I am truly grateful for her mentorship.

I would also like to acknowledge the incredible assistance and support provided by my friends in the NVBDCP team. Their collaboration, valuable insights, and willingness to help have greatly contributed to the accomplishment of my project. I am grateful for their dedication and teamwork.

A special thanks goes to all the health workers in CHC Govindgarh. Their exceptional work, commitment, and kindness have left a lasting impression on me. Their tireless efforts in providing healthcare services and their willingness to go above and beyond are truly commendable. I am grateful for their selfless dedication to improving the well-being of the community.

Furthermore, I would like to express my gratitude to the S.D. Gupta School of Public Health for providing me with the opportunity to embark on this field visit. Their arrangements and support have been crucial in facilitating my learning and research. I am thankful for the chance to gain practical experience and apply my knowledge in a real-world setting.

In conclusion, I am indebted to each and every person mentioned above for their invaluable contributions, support, and encouragement. Without their involvement and assistance, this project would not have been possible. Thank you all for your unwavering belief in me and for being an integral part of my academic and personal journey.

Warm regards,

Mustafa Dhaiban

Contents

Background :	1
History of dengue & malaria in India	2
History of dengue:	2
Epidemiology Of Dengue in the Indian	2
Malaria in India	2
National Malaria Control Programme (NMCP)	3
Capstone work area & Objectives.	5
Objectives:	5
1. To review the implementation of key activities listed under Malaria Strategy (2016-2030) at a Community Health Center	5
2. To assess the accuracy of the recorded data for malaria and dengue at the CHC	5
3. To assess the implementation of system of diagnosis for malaria and dengue at the CHC	5
Methodology:	5
Finding:	7
Objective 1:	7
Objective 2	8
Objective 3:	9
Recommendation:	11
Field visit documentation	12
References :	14
Annexures	16
Table 1 Classification of states/UTs based on API as primary criteria	16
Table 2 Specific objectives and key interventions in elimination phase	16
Dengue and Malaria Treatment and Diagnosis Questionnaire	18
Section 1: Background Information	18
Section 2: Diagnosis of Dengue and Malaria	18
Section 3: Treatment of Dengue and Malaria	18
Clinical Malaria:	19
Section 4: Prevention and Control Strategies	19

Background :

According to World health organization (WHO), more than 80% of the global population , approximately 5.5 billion people are threatened by at least one major Vector Borne Disease (VBD) and the more than the half at risk for two or more. In recent years, there has been a significant increase in VBDs, as observed in the intensified transmission in endemic areas, re-emergence after a gap of several decades and spread to newer areas. The high incidence of VBDs is an indicator of deficient health and well-being of the community as well as leading to personal and national economic loss due to health disease burden associated with morbidity and mortality. The direct cost of VBDs include a combination of personal and public expenditures on both prevention and treatment. The indirect cost includes productivity or income loss due to illness or premature death.

The National Vector Borne Disease Control Program (NVBDCP), under the ministry of health and family welfare Gov. of India is the nodal agency for prevention and control for vector borne disease viz. malaria, lymphatic filariasis (FL) kala-azar, which is transmitted by sandfly, other five VBDs are transmitted by mosquitoes .NVBDCP is mandated for planning including financing , policy making , technical guidance , monitoring evaluation , while states are responsible for implementation of the programme .

History of dengue & malaria in India

History of dengue:

The occurrence and spread of dengue fever (DF) and dengue hemorrhagic fever (DHF) in India have undergone significant changes over the past six decades. The first recorded outbreak of DF in India was in Calcutta and the Eastern Coast in 1963-1964. DHF, however, remained absent in India despite the presence of risk factors until 1988-1989 when it started appearing in different parts of the country. The first widespread epidemics of DHF/DSS occurred in 1996, initially affecting areas around Delhi and Lucknow and subsequently spreading nationwide.

Epidemiology Of Dengue in the Indian

The epidemiology of dengue in the Indian subcontinent has been complex, with changes in prevalent strains, affected areas, and disease severity. The earliest documented report of dengue fever in India dates back to 1946, but significant dengue activities were not reported for the next 18 years. In 1963-1964, an epidemic was reported on the Eastern Coast, spreading northwards to Delhi and Kanpur. Concurrently, it affected the southern part of the country, leading to widespread epidemics and the presence of all four serotypes of the dengue virus (DV).

Malaria in India

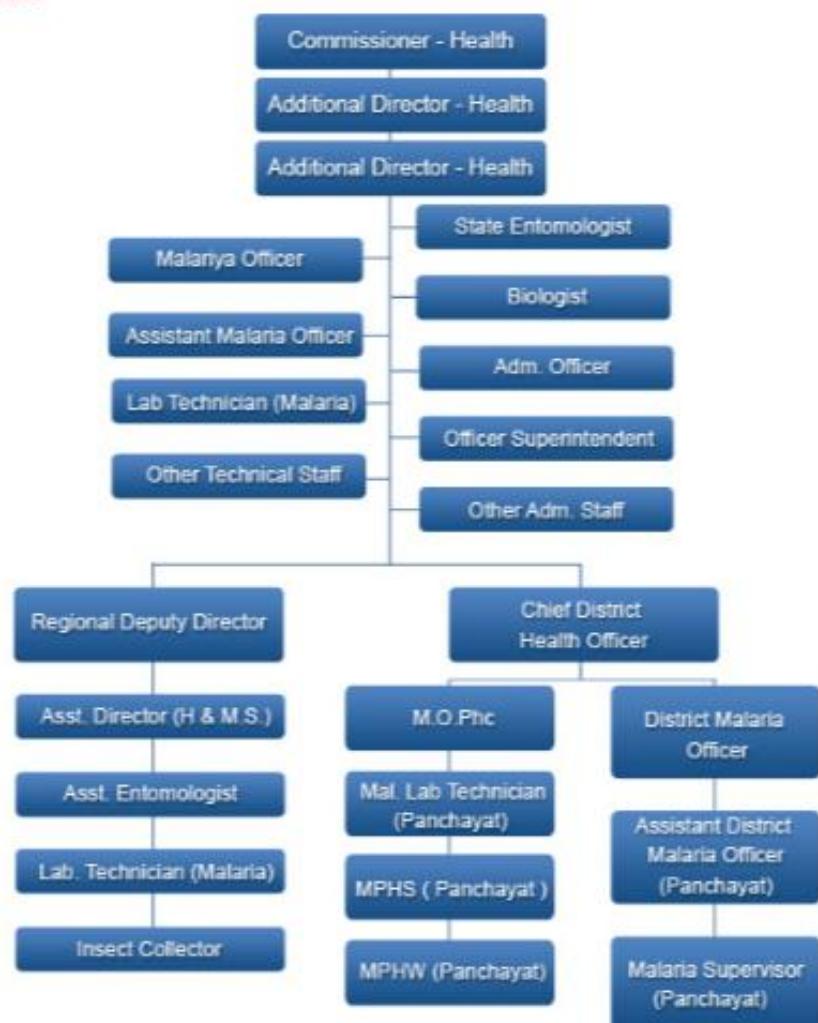
Malaria in India is influenced by geographical and ecological diversity, a diverse population, and various Anopheline vectors transmitting different Plasmodial species. In 1947, around 75 million malaria cases were reported among a population of 330 million. Malaria control efforts led to a significant decline in cases by 1964. However, there was a resurgence of malaria thereafter, and by 1976, the number of cases reached 6.4 million. The proportion of *P. falciparum* cases gradually increased and now accounts for nearly 50% of malaria cases.

National Malaria Control Programme (NMCP)

The National Malaria Control Programme (NMCP), initiated in 1947, focused on insecticidal residual spray, monitoring and surveillance, and treatment. It led to a decline in malaria-related morbidity and mortality. The program was converted into the National Malaria Eradication Programme (NMEP) in 1958 but faced a resurgence of malaria in 1976. Subsequent initiatives like the Modified Plan of Operations (MPO), Enhanced Malaria Control Project (EMCP), and Intensified Malaria Control Project (IMCP) were launched to combat the disease.

The National Vector Borne Disease Control Programme (NVBDCP) is responsible for preventing and controlling vector-borne diseases in India. It operates under the Directorate General of Health Services and provides technical guidelines, budgeting, and monitoring. Regional Offices for Health and Family Welfare (ROH & FW) coordinate and monitor national programs at the state level. State Vector Borne Disease Control Units and District/Reporting Malaria Units facilitate coordination and implementation at the state and district levels. Primary healthcare is delivered through Sub-centres, Community Health Centers, and Primary Health Centers, which conduct passive and active surveillance. Accredited Social Health Activists (ASHAs) play a significant role in passive surveillance. The National Institute of Malaria Research (NIMR) and other institutes contribute to malaria research and provide technical support.

Organisation Structure



Capstone work area & Objectives.

Implementing NVBDCP- Assessing the effectiveness of Diagnosis of Malaria and Dengue: A Case CHC Govindgarh .

Objectives:

1. To review the implementation of key activities listed under Malaria Strategy (2016-2030) at a Community Health Center
2. To assess the accuracy of the recorded data for malaria and dengue at the CHC
3. To assess the implementation of system of diagnosis for malaria and dengue at the CHC

Methodology:

This study utilized a comprehensive methodology to cover the working area and objectives, incorporating multiple data sources and literature reviews. The following steps were taken to gather the necessary information:

1. . Literature reviews: Relevant literature related to malaria and dengue diseases, health policy implementation, and best practices in diagnosis and treatment were reviewed. This included. The literature review helped in gaining insights into current practices, identifying gaps, and exploring potential solutions.
2. Review of the national malaria strategy Literature reviews , Questionnaire administration, Field visit observations
3. : The key activities outlined in the national malaria strategy for the period of 2016-2030 were reviewed. This involved studying the strategy document to understand the recommended approaches, goals, and interventions related to malaria diagnosis, treatment, surveillance, and prevention.
4. Questionnaire administration: A structured questionnaire was administered to doctors working at CHC Govindgarh. The questionnaire was designed to collect specific

information related to the objectives of the study, including healthcare facilities, diagnostic procedures, treatment options, prevention strategies, and the level of knowledge and expertise of medical staff in diagnosing and treating malaria and dengue diseases.

5. Field visit observations: A field visit was conducted to CHC Govindgarh to directly observe the medical services provided for malaria and dengue diseases. During the visit, various aspects were assessed, such as the accuracy of data collection, diagnostic procedures, treatment protocols, prevention strategies, and the proficiency of the laboratory in conducting diagnostic tests.
6. Data synthesis and analysis: The information gathered from the questionnaire, field visit observations, national malaria strategy, and literature reviews were synthesized and analyzed. The data were examined for common themes, patterns, and discrepancies. This analysis provided a comprehensive understanding of the working area and objectives, allowing for the identification of gaps and areas requiring improvement.

The combination of questionnaire administration, field visit observations, analysis of the national malaria strategy, and literature reviews ensured a comprehensive and multi-faceted approach to gather the necessary information. This methodology enabled a thorough assessment of the working area and objectives, facilitating the identification of key findings and recommendations for enhancing the implementation of the health policy for the diagnosis of malaria and dengue diseases at CHC Govindgarh.

Finding:

Objective 1:

The National Vector Borne Disease Control Program (NVBDCP) has established a comprehensive national framework for malaria elimination in India for the period 2016-2030. This framework encompasses strategic approaches aimed at effectively addressing the malaria burden in the country.

To facilitate the malaria elimination efforts, the program has implemented a phased approach. This is due to the variation in malaria endemicity across different regions of the country, influenced by factors such as eco-epidemiological settings, socioeconomic conditions, health system development, and past achievements in malaria control. The program recognizes that it is crucial to first lower the malaria incidence in high transmission areas (Category 3) before proceeding with individual case investigations.

States and Union Territories (UTs) are classified into four categories based primarily on their annual parasite incidence (API), with the annual blood examination rate (ABER) and slide positivity rate (SPR) serving as secondary criteria (refer to annexures Table 1, Table 2 for details).

Rajasthan state has been categorized under Category 1 for the elimination phase. The analysis of the key activities and the current activities at CHC Govindgarh reveals several gaps that need to be addressed to align the CHC's efforts with the national malaria elimination strategy. These gaps include the lack of notification from the private sector, insufficient case-based surveillance and management, inadequate quality assurance of diagnostics, insufficient training for lab technicians and doctors, and the absence of specific

measures for investigating foci and screening suspected cases. Addressing these gaps is crucial for enhancing malaria diagnosis, surveillance, and treatment, ultimately contributing to the overall success of malaria elimination efforts in the region

Gaps identified in the implementation of key activities at CHC Govindgarh include:

- Lack of notification from the private sector regarding malaria cases.
- Insufficient case-based surveillance and management.
- Inadequate quality assurance of diagnostics.
- Insufficient training for lab technicians and doctors.
- Absence of specific measures for investigating foci and screening suspected cases.
- Addressing these gaps is crucial for enhancing malaria diagnosis, surveillance, and treatment, aligning with the national malaria elimination strategy.

Objective 2:

During the visit to CHC Govindgarh, concerns were raised regarding the accuracy of dengue data collected. The total number of positive RDT cases showed a significant variation compared to the number of outpatient and inpatient cases reported from 2020 to 2022. In 2020, only one positive RDT case was recorded, while two cases (one inpatient and one outpatient) were treated. In 2021, 684 positive RDT cases were reported, with 56% of the cases admitted. Studies conducted in Thailand and Brazil found lower admission rates (26.7% and 30.4% respectively), indicating a potential problem with data collection. In 2022, 202 positive RDT cases were recorded, but only 10.8% were admitted. These discrepancies suggest a need for improved data accuracy and consistency. (for more details about CHC dengue data please see Table 3 in the annexures section .)

- Concerns were raised regarding the accuracy and consistency of dengue data collected at CHC Govindgarh.
- Significant variations were observed between the number of positive RDT cases and the reported outpatient and inpatient cases.
- Discrepancies in data suggest a need for improved data accuracy, consistency, and collection methods to ensure reliable dengue data.

Objective 3:

1. Overlapping Symptoms:

- Malaria and COVID-19 share similar symptoms, including fever, fatigue, body aches, and headache. This overlap makes it challenging to differentiate between the two diseases based solely on clinical presentation.
- Dengue also presents with symptoms such as high fever, headache, muscle and joint pain, which can be similar to COVID-19 symptoms.

2. Diagnostic Difficulties:

- The similarities in symptoms between dengue, malaria, and COVID-19 pose challenges in accurately diagnosing the specific infection.
- False positive or false negative results can occur, leading to misdiagnosis or delayed diagnosis of the actual underlying infection.
- Limited testing capacity and resources, particularly during the COVID-19 pandemic, can further hinder timely and accurate diagnosis.

3. Co-Infections and Complications:

- Co-infections of dengue, malaria, and COVID-19 have been reported, with overlapping symptoms adding to the complexity of diagnosis.
- The co-infection of COVID-19 and dengue or malaria can lead to more severe outcomes, such as septic shock, acute respiratory distress syndrome (ARDS), and multi-organ failure.
- In pregnant women, co-infection with COVID-19, dengue, and malaria can result in health complications, including an increased risk of miscarriage.

Recommendation:

1. Strengthen collaboration and communication with the private sector to ensure comprehensive reporting and notification of malaria cases.
2. Enhance case-based surveillance and management systems to improve early detection and effective treatment of malaria cases.
3. Provide regular and updated training for lab technicians and doctors on malaria diagnosis, treatment, and surveillance.
4. Develop clear and updated treatment guidelines for dengue and malaria that account for overlapping symptoms with COVID-19.
5. Promote interdisciplinary collaboration and coordination between malaria, dengue, and COVID-19 control programs to address co-infections and associated complications effectively

Field visit documentation

During the field visit , to CHC Govindgarh and Sub Centre Donblai, the purpose was to assess the implementation of health policy for diagnosis malaria and dengue disease . The visit aimed to gather information about the healthcare facilities and their efforts in combating these diseases. The documentation summarizes the key findings and observations from the visit.

Due to overcrowding, the medical manager in the OTP clinic directed the team to gather information from other medical staff. Meetings were held with the doctors, lab and nursing staff, who provided a detailed explanation of their work related to dengue and malaria.

The laboratory at CHC Govinda pur was well-equipped with necessary tools, including RDT and rapid malaria tests, to diagnose patients. Blood films were consistently used to ensure accurate diagnosis of malaria. Quality control measures were in place, with monthly random sampling of blood film slides for examination in different labs, yielding good results.

Surveillance activities at the center included daily electronic and paper reporting of malaria and dengue cases. Interestingly, there were no reported cases of malaria or dengue in recent years at CHC Govinda pur. Additionally, no cases were reported from private sector health centers. An analysis of the data from 2020 to 2022 raised concerns about the accuracy of dengue patient admissions in 2021, as the numbers appeared to align with the total number of OTP and positive RDT results.

After the visit to CHC Govinda pur, the team proceeded to Sub Centre Donblai. The community officer at CHC Govinda pur facilitated the visit and accompanied the team to the sub center. At Sub Centre Donblai, discussions were held with three ASHA workers and one NMS to gain insight into the medical services provided by them.

The ASHA workers were actively involved in community awareness programs to educate people about vector-borne diseases. Surprisingly, they had not encountered any patients with malaria or dengue in the past two years. The ASHA workers were trained to make blood slides for testing, receiving a payment of 15 Rs per slide and an additional 75 Rs as an incentive if the slide yielded a positive malaria result. The sub center provided treatment and RDT/MPS facilities, and the ASHA workers conducted ten household visits daily.

Two significant challenges were faced during the visit. Firstly, a language barrier hindered effective communication, affecting the accuracy of information gathered. Secondly, the low incidence of malaria and dengue in the visited area posed challenges in evaluating the program and assessing personal motivation.

In conclusion, the field visit to CHC Govinda pur and Sub Centre Donlblai provided valuable insights into the medical services provided for vector-borne diseases, particularly malaria and dengue. The ASHA workers at Sub Centre Donlblai played a crucial role in community education. However, the low incidence of malaria and dengue affected the accuracy of information obtained during the visit.

References :

1. ARIYANACHI K, LAKSHMI JT, SHIREEN NS, VIDYA MS, SUPRIYA G, SARANYA M, et al. Vector-Borne Diseases amidst COVID-19 Pandemic in India – A Mini-Review. *Maedica (Bucur)*. 2022 Mar;17(1):201–4.
2. Chatterjee S, Singh A, Kar SK. Service bonds in rural health care in India - Challenges and the way forward. *The Lancet Regional Health - Southeast Asia*. 2022 Nov;6:100060.
3. Fonseca-Portilla R, Martínez-Gil M, Morgenstern-Kaplan D. Risk factors for hospitalization and mortality due to dengue fever in a Mexican population: a retrospective cohort study. *International Journal of Infectious Diseases*. 2021 Sep;110:332–6.
4. Gupta N, Srivastava S, Jain A, Chaturvedi UC. Dengue in India. *Indian J Med Res*. 2012 Sep;136(3):373–90.
5. Harapan H, Ryan M, Yohan B, Abidin RS, Nainu F, Rakib A, et al. Covid-19 and dengue: Double punches for dengue-endemic countries in Asia. *Rev Med Virol*. 2021 Mar;31(2):e2161.
6. Islam A, Cockcroft C, Elshazly S, Ahmed J, Joyce K, Mahfuz H, et al. Coagulopathy of Dengue and COVID-19: Clinical Considerations. *Tropical Medicine and Infectious Disease*. 2022 Sep;7(9):210.
7. Kumar A, Valecha N, Jain T, Dash AP. Burden of Malaria in India: Retrospective and Prospective View. In: *Defining and Defeating the Intolerable Burden of Malaria III: Progress and Perspectives: Supplement to Volume 77(6) of American Journal of Tropical Medicine and Hygiene* [Internet]. American Society of Tropical Medicine and Hygiene; 2007 [cited 2023 Jun 20]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK1720/>
8. Malavige GN, Jeewandara C, Ogg GS. Dengue and COVID-19: two sides of the same coin. *J Biomed Sci*. 2022 Jul 3;29(1):48.
9. Mohan A, Wara UU, Amjad SW, Rackimuthu S, Hunain R, Khan H, et al. Malaria amidst COVID-19 in India: Challenges, Efforts, and Recommendations. *Clin Epidemiol Glob Health*. 2021;12:100867.
10. Mohanan M, Hay K, Mor N. Quality Of Health Care In India: Challenges, Priorities, And The Road Ahead. *Health Affairs*. 2016 Oct;35(10):1753–8.
11. Patil S. Does clinical-laboratory workup in COVID-19 cases misdiagnosed as Dengue fever in tropical setting or these are two sides of same coin? *EJMA* [Internet]. 2022 [cited 2023 Jun 16]; Available from: <https://ejmad.org/jvi.aspx?un=EJMA-77486&volume=>
12. Patil SV, Bhadake M, Acharya A. 'Dengue-COVID-19 overlap': Is it an 'antigenic mimicry' or coexistent two different viral genotypic diseases? Prospective, observational study in tertiary care setting in India. *ELECTRON J GEN MED*. 2022 Jul 26;19(6):em400.
13. Rosso F, Parra-Lara LG, Agudelo-Rojas OL, Martinez-Ruiz DM. Differentiating Dengue from COVID-19: Comparison of Cases in Colombia. *Am J Trop Med Hyg*. 2021 Sep;105(3):745–50.
14. Shankar MB, Rodríguez-Acosta RL, Sharp TM, Tomashek KM, Margolis HS, Meltzer MI. Estimating dengue under-reporting in Puerto Rico using a multiplier model. *PLOS Neglected Tropical Diseases*. 2018 Aug 6;12(8):e0006650.
15. Sheeba A, Anbu S. Health Care System in India : An Overview. In 2020. p. 215–8.

16. Thisyakorn U, Saokaew S, Gallagher E, Kastner R, Sruamsiri R, Oliver L, et al. Epidemiology and costs of dengue in Thailand: A systematic literature review. *PLOS Neglected Tropical Diseases*. 2022 Dec 19;16(12):e0010966.
17. Tsheten T, Clements ACA, Gray DJ, Adhikary RK, Wangdi K. Clinical features and outcomes of COVID-19 and dengue co-infection: a systematic review. *BMC Infectious Diseases*. 2021 Aug 2;21(1):729.
18. Dengue Infection - prevalence and seasonal variation among patients attending a tertiary care hospital at Chamarajanagar, Karnataka. *IJMR*. 2020 Dec 28;5(2):275–9.

Annexures

Table 1 Classification of states/UTs based on API as primary criteria

S.NO	Categories of states/UTs	Definition
1	Category 0: Prevention of re-establishment phase	States/UTs with zero indigenous cases of malaria.
2	Category 1: Elimination phase	States/UTs (15) including their districts reporting an API of less than 1 case per 1000 population at risk .
3	Category 2: Pre elimination phase	States/UTs (11) with an API of less than 1 case per 1000 population at risk, but some of their districts are reporting an API of 1 case per 1000 population at risk or above.
4	Category 3: Intensified control phase	States/UTs (10) with an API of 1 case per 1000 population at risk

Table 2 Specific objectives and key interventions in elimination phase

Specific objectives	Key interventions
-Interrupt transmission of malaria. -Immediately notify each detected case. - Detect any possible continuation of malaria transmission. -Determine the underlying causes of residual transmission. -Forecast and prevent any unusual situations related to malaria, ensure epidemic preparedness and respond in a timely and efficient manner to outbreak situations. - Prevent re-establishment of local transmission of malaria. -Ascertain elimination of malaria.	In elimination areas, where transmission is focal and incidence/ risk has become extremely low, all efforts will be directed at interrupting local transmission in all active foci of malaria. • Mandatory notification of each case of malaria from the private sector, other organized government sectors or any other health facility. • Adequate case-based surveillance and complete case management established and fully functional across the entire country to handle each case of malaria. • Investigation and classification of all foci of malaria. • A strict total coverage of all active foci by effective vector control measures. • Early detection and treatment of all cases of malaria by means of active and/or passive case detection to prevent onward transmission. • State and national level malaria elimination database established and operational. • Implementation of interventions for effective screening, management and prevention of malaria among mobile and migrant populations. • Establishment of an effective epidemic forecasting and response system. • Ensuring rigorous quality assurance of all medicines and diagnostics. • Setting up a national-level reference laboratory which will serve the following two functions. — All positive and a fixed percentage of negative slides will be referred to this laboratory for confirmation of diagnosis and cross-checking. After elimination has been achieved in each State/UT, 100% of cases will be notified to this laboratory for confirmation of diagnosis. The laboratory will be notified

	immediately on all positive cases of malaria by each state/UT through either SMS, e-mail or telephone with information on name, gender, address (village and district), date and type of testing and type of parasite for each positive case of malaria so that a national level database can be maintained. — Training of master trainers and accreditation/certification of microscopists as per Indian Public Health Standards shall also be at this laboratory. • During investigation of foci, all suspected cases of malaria are to be screened for malaria. These could include household members, neighbours, schoolchildren, workplace colleagues and relatives. • Surveillance of special groups, migrant populations or populations residing in the vicinity of industrial areas are also to be covered under surveillance operations.
--	--

Table 3 :

National Vector Borne Disease Control Program
PART I- Service Statistics (This needs to be filled in by the concerned facility)

	2020	2021	2022	Remarks
I. Malaria				
A. Microscopy				
1. Total Blood Smear Examined for Malaria	2160	3693	4636	
2. Malaria (Microscopy -P Vivax Test +ve)	0	0	0	
3. Malaria (Microscopy -P Falciparum Test +ve)	0	0	0	
B. Malaria RDT				
4. RDT conducted for Malaria	146	202	19	
5. Malaria RDT Conducted P Vivax Test +ve)	3	16	2	
6. Malaria RDT Conducted P Falciparum Test +ve)	0	0	0	
7. Patients Treated on Outpatient Basis for Malaria	3	16	2	
8. Patients admitted with Malaria	0	0	0	
9. Deaths Due to Malaria	0	0	0	
II. Dengue				
- Total RDT	28	704	234	
1. RDT Test +ve	1	684	202	
2. Elisa Test +Ve	0	0	0	
3. Patients Treated for Dengue as outpatients	1	300	190	
4. Patients Admitted for Dengue	1	384	22	
5. Deaths due to Dengue	0	0	0	

Dengue and Malaria Treatment and Diagnosis Questionnaire

Section 1: Background Information

1. Full Name:

- Doctor's Answer: Dr. Dashrat

2. Current Designation and Workplace:

- Doctor's Answer: Pediatrician

3. Years of Experience in the Medical Field:

- Doctor's Answer: 15 years

4. Training or Certification in Tropical Diseases like Dengue and Malaria:

- Doctor's Answer: Yes, one-time training 7 years ago

Section 2: Diagnosis of Dengue and Malaria

6. Common Signs and Symptoms to Differentiate Dengue from Malaria:

- Doctor's Answer: Intermittent fever with shivering, malaise, nausea

7. Diagnosis Confirmation Methods for Dengue and Malaria (Please describe the diagnostic methods you employ):

- Doctor's Answer: History followed by laboratory tests, including microscopic test for malaria and Rapid Diagnostic Test (RDT) for dengue

8. Key Laboratory Tests Used for Diagnosing Dengue and Malaria:

- Doctor's Answer: Microscopic test for malaria and RDT for dengue

10. Potential Complications Associated with Dengue and Malaria and Methods of Identification:

- Doctor's Answer: Low platelet count (PLT), low hematocrit (HCT), bleeding, and low blood pressure (BP) are the main causes for admission. Dengue stages and their symptoms are recognized by the doctor, but there may be doubts.

Section 3: Treatment of Dengue and Malaria

11. Current Recommended Treatment Guidelines for Dengue and Malaria in India:

- Doctor's Answer: No knowledge about the treatment policy or guidelines

12. Different Treatment Options Available for Dengue and Malaria and Determining the Most Appropriate Course of Treatment:

- Doctor's Answer: Familiar with Primaquine, but lacks knowledge about other treatment options or required doses

14. Medications or Therapies Contraindicated in Dengue or Malaria Treatment:

- Doctor's Answer: Avoid treatments that may lead to bleeding, such as intramuscular injections or drugs like dechlorphenat

Clinical Malaria:

15. Definition of Clinical Malaria:

- Doctor's Answer: Clinical malaria is defined as patients with malaria symptoms without laboratory support. It usually accounts for 30-40% of total cases.

Section 4: Prevention and Control Strategies

16. Preventive Measures Advised for Individuals in High-Risk Areas for Dengue and Malaria:

- Doctor's Answer: Educate the patient with the help of ANM (Auxiliary Nurse Midwife) and Anganwadi worker.

17. Methods of Educating Patients and Their Families about the Prevention and Control of Dengue and Malaria:

- Doctor's Answer: Advise them to wear long clothes and dispose of mosquito breeding sites.

18. Availability and Opinion on Vaccines for Dengue or Malaria:

- Doctor's Answer: According to the doctor's knowledge, there is no vaccine available.

19. Methods of Staying Updated on the Latest Advancements and Research in Dengue and Malaria Treatment and Diagnosis:

20. Additional Comments or Anything You Would Like to Add:

- Doctor's Answer: The treatment of malaria or dengue is usually handled by the medical and health department, while different departments are responsible for water supply. There is a lack of coordination between them.