⚠️ This is for informational purposes only. For medical advice or diagnosis, consult a professional.

# Analysis of Malaria Epidemiology, Clinical Management, and Institutional Frameworks in Indore and Madhya Pradesh
# Foundational Overview of Malaria Pathophysiology and Biology

*The clinical entity of malaria represents a significant global public health challenge, manifesting as a complex febrile illness caused by protozoan parasites of the genus Plasmodium. These parasites are transmitted to humans exclusively through the bites of infected female Anopheles mosquitoes, which serve as the definitive biological vector. While the genus Plasmodium includes numerous species, only five are consistently recognized as the causative agents of human infection: Plasmodium falciparum, Plasmodium vivax, Plasmodium malariae, Plasmodium ovale, and the zoonotic species Plasmodium knowlesi.*

*The pathophysiology of malaria is characterized by a multi-stage lifecycle involving both a human host and a mosquito vector. The process initiates when an infected mosquito injects sporozoites into the human bloodstream during a blood meal. These sporozoites rapidly migrate to the liver, where they infect hepatocytes and undergo a period of intense asexual replication known as the exo-erythrocytic or hepatic stage.*
*For species such as P. vivax and P. ovale, a subset of these parasites can transition into a dormant phase called hypnozoites. These dormant forms can persist in the liver for weeks or even years, eventually reactivating to cause clinical relapses in the absence of new mosquito bites, thereby complicating elimination strategies.*

*Following the hepatic stage, the parasites emerge as merozoites and enter the circulatory system to initiate the erythrocytic or blood-stage cycle. By invading red blood cells (RBCs), they undergo further rounds of replication, leading to the synchronous rupture of infected RBCs. This cyclical rupture releases merozoites, metabolic waste, and toxins into the blood, triggering the classic paroxysms of malaria: high fever, shaking chills, rigors, and profuse sweating. P. falciparum is distinguished by its ability to cause severe disease due to the phenomenon of sequestration, where infected RBCs adhere to the vascular endothelium, leading to organ failure, cerebral malaria, and potentially death if not treated within 24 hours.*

## Global and National Epidemiological Context

*The 2024 and 2025 World Malaria Reports provide a nuanced view of the global disease burden. In 2024, there were an estimated 282 million new malaria cases in 80 endemic countries, representing a significant increase from 273 million in 2023. Global mortality also rose, with 610,000 deaths in 2024 compared to 598,000 in 2023. The WHO African Region continues to bear a disproportionate burden, accounting for 94% of cases and 95% of deaths globally, with children under five remaining the most vulnerable demographic.*

*India represents a strategic priority for global malaria elimination, particularly in the South-East Asian region where it accounts for a substantial percentage of the regional burden. The country's historical progress is noteworthy; since independence, India has reduced its annual malaria caseload by over 97% from an initial 75 million cases. A landmark achievement occurred in 2024 when India officially exited the WHO's "High Burden to High Impact" (HBHI) group, signifying a paradigm shift in the national trajectory.*



⚠️ This is for informational purposes only. For medical advice or diagnosis, consult a professional.

*Despite these successes, recent national surveillance data indicates a rising trend in confirmed cases domestically. Reported infections grew from 161,753 in 2021 to 227,564 in 2023, reaching approximately 255,500 in 2024. This surge underscores the heterogeneity of transmission in India, influenced by diverse topographies and socio-environmental factors. P. vivax accounts for 30-55% of national cases, with 13 districts identified as persistent hotspots for this species.*

### National Malaria Burden and Indicators in India

| Indicator | Estimated/Reported Value (2023-2024) |
|---|---|
| Population at Risk | 1,324,206,563 |
| Reported Deaths | 83 |
| Estimated Deaths (WHO) | 5,511 |
| Estimated Cases (WHO) | 3,389,400 |
| P. vivax proportion | ~39-40% |
| Annual Blood Examination Rate (ABER) | 11.62 |

### Regional Deep-Dive: Madhya Pradesh and Indore District

*Madhya Pradesh has transitioned from a high-burden state to a medium-to-low burden status over the past decade. Under the National Framework for Malaria Elimination (NFME) 2016–2030, the state is categorized as Category 1, focusing on achieving zero indigenous cases by 2027. The state's strategy is driven by the Intensified Malaria Elimination Project (IMEP), with IMEP-III (2024–2027) currently prioritizing 159 high-burden districts across India, including several in Madhya Pradesh.*

### District Stratification in Madhya Pradesh

*The state administration employs a categorization system based on Annual Parasite Incidence (API) to tailor interventions.*

- ***Category 0 (Zero Indigenous Cases):*** *Four districts—Vidisha, Tikamgarh, Harda, and Agar Malwa—have achieved zero status and are entering the subnational elimination verification phase.*
- ***Category 1 (API < 1):*** *Indore is currently positioned in this category due to its reporting of low absolute case numbers in recent years.*

*In 2024, Indore district reported a total of seven malaria cases. While this reflects a significant reduction compared to historical data, health officials remain vigilant because urban environments often facilitate the breeding of Anopheles stephensi, a vector proficient at utilizing man-made water containers. During the same period, Indore faced a higher burden of other mosquito-borne diseases, recording approximately 550 dengue cases and 20 chikungunya cases. The overlapping symptoms of these febrile illnesses necessitate a high volume of diagnostic testing, often coordinated through state-level task forces for malaria elimination.*

### Local Healthcare Infrastructure and Diagnostic Services in Indore

*Indore serves as a tertiary medical hub for Central India, possessing a robust tiered healthcare system that combines large government teaching hospitals with sophisticated private institutions.*

### Government Facilities and Fever Clinics

*The Maharaja Yeshwantrao (MY) Group of Hospitals is the cornerstone of public health in Indore,*



⚠ This is for informational purposes only. For medical advice or diagnosis, consult a professional.

*functioning as the primary teaching facility for Mahatma Gandhi Memorial Medical College.*

### *Maharaja Yeshwantrao Hospital (MYH)*

*Located in the heart of the city on A.B. Road, MYH is a major referral center for Ujjain and Indore divisions.*

- ***Current Capacity and Expansion:*** *The MYH group currently has a total strength of 3,000 beds. In 2025, the Government of Madhya Pradesh sanctioned 700 crore rupees for a new 1,700-bed facility within the campus, which will eventually raise the total capacity to 4,700 beds, making it one of the largest medical complexes in India.*

- ***Specialized Units:*** *The campus includes the 200-bed Chacha Nehru Children's Hospital, a 100-bed TB hospital, a 100-bed cancer hospital, and a 600-bed Super Speciality hospital.*

- ***Emergency and OPD Services:*** *Emergency medicine services are available 24/7, supported by a 16-bed Medical Intensive Care Unit (MICU) and a 16-bed ICU/ICCU facility. Regular OPD for general medicine and infectious diseases operates from Monday to Saturday, 08:30 AM to 02:00 PM.*

- ***Diagnostics:*** *All primary health centers (PHCs) in the district, such as those in Palia, Dakachya, and Dhannad, are equipped to perform blood smear examinations for malaria parasites.*

*Government P.C. Sethi Hospital*
*Situated in Bhawar Kuan, this hospital is a critical secondary care center providing high-quality treatment and 24-hour emergency services. It acts as a major hub for pediatric and maternal care, often managing initial fever triaging for local residents.*

### *Private Healthcare and Diagnostic Labs*

*The private sector in Indore provides advanced diagnostic capabilities, including molecular DNA detection by PCR, which offers higher sensitivity than traditional microscopy.*

### *Private Hospital Infrastructure*

| Hospital Name | Location | Capacity/Accreditation | Contact Details |
|---|---|---|---|
| Choithram Hospital & Research Centre | Manik Bagh Road | 350 beds, NABH Accredited | 0731-2362491 / 9827453104 |
| Apollo Hospitals | Vijay Nagar | Multi-specialty | 0731-2438100 |
| Bombay Hospital | Vijay Nagar | 24x7 Operations | 0731-4001716 |
| Medanta Super Speciality Hospital | AB Road | Tertiary care | 0731-7111000 |

### *Private Diagnostic Laboratory Services*

*Private laboratories in Indore have expanded their footprint through home collection services and rapid report turnaround times, which are essential for managing acute febrile illnesses during the peak monsoon transmission season.*



⚠ This is for informational purposes only. For medical advice or diagnosis, consult a professional.

| Lab Name | Test Type | Estimated Price (INR) | TAT | Features |
|---|---|---|---|---|
| Metropolis Healthcare | PCR (DNA Detection) | 3,705 | 24 Hours | Real-time PCR for species ID |
| Metropolis Healthcare | Blood Smear (MP) | 130 - 310 | 4 Hours | Microscopic thin/thick smears |
| Redcliffe Labs | Antigen Detection | 649 - 727 | 12 Hours | Rapid Card Test (RDT) |
| Redcliffe Labs | MP Smear | 179 - 199 | 12 Hours | Discounted home collection |
| Tata 1mg Labs | PCR (DNA Detection) | 3,240 | 120 Hours | At-home collection via app |
| Max Lab | Antigen Test | 600 - 700 | 24-48 Hours | NABL accredited results |
| Sterling Accuris | PS for MP | 200 | Same Day | Quick peripheral smears |

### Strategic Innovation: The Drone Vector Control Initiative

*Indore, recognized as India's cleanest city, has launched a pioneering mission to leverage drone technology to achieve its 2030 malaria elimination target. This initiative represents a technological shift from manual intervention to automated, precision-based vector control.*

### Core Components of the Drone Strategy

1. ***Precision Spraying:*** *Indore Municipal Corporation (IMC) uses drones to apply eco-friendly larvicides directly to breeding grounds that are manually inaccessible, such as rooftops, marshlands, abandoned construction sites, and deep water bodies.*

2. ***Surveillance and Mapping:*** *Drones equipped with high-resolution sensors provide real-time data on potential mosquito habitats. This information is integrated with Geographic Information System (GIS) mapping to identify high-risk zones and prioritize drone operations.*

3. ***Efficiency Gains:*** *The deployment of drones significantly reduces the time and manpower required for vector control. Automated spraying can cover extensive geographical areas with high accuracy, addressing the limitations of manual fogging.*

4. ***Data-Driven Decision Making:*** *A dedicated command center monitors drone operations, enabling health officials to analyze larval density trends and deploy resources dynamically based on real-time surveillance.*

*This innovative approach is expected to serve as a roadmap for other districts in Madhya Pradesh and throughout India as the country works toward achieving zero indigenous cases by 2027.*

### Clinical Guidelines and Treatment Protocols

*The National Center for Vector Borne Diseases Control (NCVBDC) mandates specific treatment regimens based on the infecting species and the risk profile of the geographical area.*

### Treatment for Plasmodium vivax



⚠ This is for informational purposes only. For medical advice or diagnosis, consult a professional.

*The objective for P. vivax management is a radical cure to prevent the recurrence of symptoms due to liver-stage hypnozoites.*

- ***Blood-stage treatment:*** *Chloroquine (CQ) is the first-line drug, administered at 25 mg/kg body weight over three days (10 mg/kg on Day 1, 10 mg/kg on Day 2, and 5 mg/kg on Day 3).*
- ***Hepatic-stage radical cure:*** *Primaquine (PQ) must be administered at 0.25 mg/kg body weight daily for 14 days.*
- ***Contraindications:*** *Primaquine is strictly contraindicated in pregnant women, infants under one year, and individuals with G6PD deficiency due to the risk of severe hemolysis.*

### *Treatment for Plasmodium falciparum*

*P. falciparum requires immediate intervention with Artemisinin-based Combination Therapy (ACT) to prevent progression to severe disease.*

- ***Standard Regimen (Other States including MP):*** *Artesunate (AS) for 3 days combined with Sulfadoxine-Pyrimethamine (SP) as a single dose on the first day.*
- ***Transmission Blocking:*** *A single dose of Primaquine (0.75 mg/kg) is administered on the second day.*
- ***Resistance Alternatives:*** *In areas with confirmed Chloroquine resistance or ACT-SP failure, Artemether-Lumefantrine (ACT-AL) is used as an alternative regimen.*

### *Management of Severe and Complicated Malaria*

*Severe malaria is treated as a medical emergency requiring hospitalization and parenteral therapy.*

- ***Drug of Choice:*** *Intravenous or intramuscular Artesunate is the gold standard for both adults and children.*
- ***Alternative:*** *Intravenous Quinine dihydrochloride is used when artemisinin derivatives are unavailable, typically starting with a loading dose of 20 mg/kg followed by maintenance doses of 10 mg/kg every 8 hours.*
- ***Triage Criteria:*** *Clinical indicators of severe malaria include cerebral malaria (impaired consciousness), acute renal failure, jaundice (bilirubin >3 mg/dl), and hyperparasitaemia (>2% or 100,000 parasites/µl).*

### *Status of Malaria Vaccines: RTS,S/AS01 and R21/Matrix-M*

*The approval and prequalification of the world's first malaria vaccines represent a historic breakthrough in immunology and global health strategy.*

### *Comparison of WHO-Recommended Vaccines*

| *Attribute* | *RTS,S/AS01 (Mosquirix)* | *R21/Matrix-M* |
|---|---|---|
| *Developer* | *GSK, PATH, MVI* | *University of Oxford* |



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

| Attribute | RTS,S/AS01 (Mosquirix) | R21/Matrix-M |
|---|---|---|
| WHO Recommendation | October 2021 | October 2023 |
| WHO Prequalification | July 2022 | December 2023 |
| Adjuvant | AS01 (Liposome-based) | Matrix-M (Saponin-based) |
| Efficacy (approx.) | 36% - 55.8% | 75% - 77% |
| Manufacturer | GSK / Bharat Biotech (transfer by 2028) | Serum Institute of India (SII) |
| Target Parasite | P. falciparum | P. falciparum |
| Cost per Dose | Progressing to <$5 | ~US$ 3.90 (SII aiming for $2.99) |
| Schedule | 4 Doses | 4 Doses |
| Sources | | |

### Global and National Implementation

*As of November 2025, 24 African countries have introduced malaria vaccines into their routine childhood immunization programs, with over 40 million doses delivered through Gavi-supported programs. In India, the vaccines are being integrated into the National Framework for Malaria Elimination, with the Serum Institute of India and Bharat Biotech playing critical roles in ensuring a sustainable and affordable supply.*

*The introduction of the R21 vaccine, which is the first to meet the WHO's goal of at least 75% efficacy, is expected to accelerate adoption globally due to its lower manufacturing cost and the massive production capacity of the Serum Institute. Modeling suggests that these vaccines could prevent half a million child deaths by 2035 if scaled up in high-transmission areas.*

### Key Institutional and Administrative Frameworks

*The coordination of malaria control in India involves a tiered administrative structure from the national level down to the district malaria officers.*

### National Coordinating Centers

- ***National Center for Vector Borne Diseases Control (NCVBDC):*** *Based in Delhi, this center is responsible for policy formulation, the National Strategic Plan (2023–2027), and technical oversight for malaria, dengue, chikungunya, and Japanese Encephalitis.*

- ***Indian Council of Medical Research (ICMR):*** *The National Institute of Malaria Research (NIMR) and the Malaria Elimination Research Alliance-India (MERA-India) focus on operational research, monitoring drug resistance, and evaluating new vector control tools.*

### Regional Administrative Contacts for Madhya Pradesh

*The implementation of malaria elimination strategies within the state is overseen by the Directorate of Health Services in Bhopal.*

| Official Position | Name / Address | Contact Information |
|---|---|---|
| State Programme Officer | Dr. Himanshu Jayswar, DHS, JP Hospital Campus, Bhopal | Ph: 0755-4283672 / 9826215665 |
| Sr. Regional Director | Dr. Chandrasekhar Marotrao Gedam, A-28 Vidhya Nagar, | Ph: 0755-4901220 / 08888820780 |



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

| Official Position | Name / Address | Contact Information |
|---|---|---|
| | Bhopal | |
| Joint Director (M&F) | Dr. K.K. Thassu, Satpura Bhawan, 6th Floor, Bhopal | Ph: 0755-2553250 |
| State Consultant M&E | Mr. J.C. Paliwal | Mob: 09826110242 |
| State Consultant Training | Ms. Pallavi Karade | Mob: 09179123421 |
| District Malaria Officer | Daulat Patel (Indore District) | |

### Emerging Threats and Environmental Risk Factors

*As India approaches its 2030 elimination target, several emerging factors threaten to derail progress, including zoonotic shifts, environmental crises, and evolving parasite genetics.*

### Zoonotic Malaria: Plasmodium knowlesi

*Plasmodium knowlesi, primarily a parasite of long-tailed and pig-tailed macaques, is increasingly recognized as a major cause of zoonotic malaria in humans.*

- ***Incidence in India:*** *While historically associated with Southeast Asia, human cases have been reported in India as recently as June 2022 in Delhi, Haryana, and Uttar Pradesh.*

- ***Mechanism of Transmission:*** *Deforestation and improper land use increase human interaction with macaque reservoirs and the Anopheles Leucosphyrus group mosquitoes that transmit the parasite.*
- *L*
- ***Clinical Risk:*** *P. knowlesi can cause rapidly progressing, severe illness with complications like acute kidney failure and respiratory distress. It is frequently misidentified by microscopy as P. falciparum or P. malariae, requiring PCR for definitive diagnosis.*

### Environmental and Climate Factors

*Climate change is observed to be expanding the geographical reach of malaria vectors by altering temperature and rainfall patterns. Extreme weather events can create unpredictable outbreaks in regions previously considered near-elimination. Furthermore, the invasion of Anopheles stephensi into new urban territories in Africa and Asia poses a threat to urban malaria control due to its high resistance to common insecticides.*

### Overlapping Outbreaks in Indore

*Indore has recently demonstrated the pressure that overlapping outbreaks can place on healthcare systems. In late 2025 and early 2026, the Bhagirathpura area and Mhow tehsil experienced a significant diarrheal outbreak caused by sewage contamination of the drinking water supply. The outbreak resulted in at least 22 deaths and over 459 hospitalizations due to Cholera and E. coli. Such crises highlight the necessity for comprehensive clinical triaging in hospitals like MYH and P.C. Sethi, where patients presenting with acute fever and systemic symptoms must be rapidly screened for both vector-borne and waterborne pathogens.*

### Strategic Outlook and Recommendations

*Indore and Madhya Pradesh are currently at a critical phase of the malaria elimination lifecycle. The state's re-categorization to low-burden status and Indore's success in maintaining single-digit case numbers in 2024 are indicative of the effectiveness of the National Strategic Plan's "Test, Treat, Track" approach.*



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

*To ensure the achievement of total elimination by 2030, the following priorities must be maintained:*

1. ***Scaling Innovation:*** *The expansion of drone-based vector control should be continued, with particular focus on mapping new construction sites and industrial zones that provide permanent breeding habitats for A. stephensi.*

2. ***Private Sector Integration:*** *Mandatory notification of malaria cases from private clinics and hospitals is essential for accurate surveillance. Current studies suggest significant sub-microscopic and private-sector cases go unreported in official NCVBDC data.*

3. ***Vaccine Deployment:*** *Preparations for the large-scale integration of the SII-manufactured R21 vaccine into the public immunization program in high-burden tribal pockets of Madhya Pradesh will be a decisive factor in reducing transmission.*

4. ***Strengthening Infrastructure:*** *The ongoing massive expansion of the MY Hospital group must be accompanied by enhanced molecular diagnostic capacity at the district level to ensure rapid identification of zoonotic species like P. knowlesi.*

*By combining high-tech vector management with the deployment of next-generation vaccines and robust community engagement, Indore is well-positioned to serve as a national model for achieving a malaria-free urban environment by 2030.*

***Works cited***

***1. Malaria in India: Statistics & Facts,*** *https://www.severemalaria.org/countries/india*

***2. World Malaria Report 2024 - Drishti IAS,***
*https://www.drishtiias.com/daily-updates/daily-news-analysis/world-malaria-report-2024*

***3. Malaria - World Health Organization (WHO),***
*https://www.who.int/news-room/fact-sheets/detail/malaria*

***4. Malaria - NaTHNaC,*** *https://travelhealthpro.org.uk/factsheet/52/malaria*

***5. World Malaria Day – 2025 - PIB,*** *https://www.pib.gov.in/PressReleasePage.aspx?PRID=2124334*

***6. Plasmodium mono and mixed-infections in India: a tale of see-saw in species misidentification - Frontiers,***
*https://www.frontiersin.org/journals/cellular-and-infection-microbiology/articles/10.3389/fcimb.2025.1695062/full*

***7. Eliminating malaria through access and innovation 5,***
*https://www.mmv.org/sites/default/files/content/document/MMV_AnnualReport2024_ENGLISH_Chapter5.pdf*

***8. Hotspot districts of persistent Plasmodium vivax malaria pose a formidable challenge to malaria elimination in India - PMC,*** *https://pmc.ncbi.nlm.nih.gov/articles/PMC12481114/*



⚠ ***This is for informational purposes only. For medical advice or diagnosis, consult a professional.***

***9. TREATMENT OF MALARIA - ncvbdc,***
*https://ncvbdc.mohfw.gov.in/WriteReadData/l892s/TREATMENT%20OF%20MALARIA%20-%202.doc*

***10. Malaria Claimed Over 6 Lakh Lives In 2024, Drug Resistance A Major Threat: WHO Annual Report - NDTV,***
*https://www.ndtv.com/health/over-6-lakh-lives-lost-due-to-malaria-in-2024-drug-resistance-a-major-threat-who-9750235*

***11. Malaria Treatment Recommendations 2025,***
*https://www.ssttm.ch/dokumente/swisstph-malaria-tx-recommendations-21-10-2025-clean.pdf*

***12. Malaria facts & statistics 2025,***
*https://www.mmv.org/malaria/about-malaria/malaria-facts-statistics-2025*

***13. World malaria report 2025 - World Health Organization (WHO),***
*https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2025*

***14. World Malaria Report 2025,*** *https://targetmalaria.org/latest/news/world-malaria-report-2025/*

***15. Malaria vaccines (RTS,S and R21) - World Health Organization (WHO),***
*https://www.who.int/news-room/questions-and-answers/item/q-a-on-rts-s-malaria-vaccine*

***16. India Malaria Vaccine Market Size, Share, Growth, Report 2033,***
*https://www.imarcgroup.com/india-malaria-vaccine-market*

***17. Multicentric longitudinal study on malaria burden, vector bionomics and health system assessment in diverse eco-epidemiological settings in the context of malaria elimination in India - PMC,***
*https://pmc.ncbi.nlm.nih.gov/articles/PMC12887457/*

***18. Multicentric longitudinal study on malaria burden, vector bionomics and health system assessment in diverse eco- epidemiological,***
*https://media.malariaworld.org/Multicentric_longitudinal_study_on_malaria_burden_vector_bionomics_and_health_system_assessment_in_diverse_eco_epidemiological_settings_in_the_context_of_malaria_elimination_in_India_ae4b1c554e.pdf*

***19. P. vivax malaria in India | PVIVAX,***
*https://www.vivaxmalaria.org/regions-countries/south-east-asia/p-vivax-malaria-india*

***20. Indore to use drone tech to eliminate malaria by 2030 - The Times of India,***
*https://timesofindia.indiatimes.com/city/indore/indore-to-use-drone-tech-to-eliminate-malaria-by-2030/articleshow/119353997.cms*

***21. Tracking district-level performance in the context of achieving zero indigenous case status by 2027 | PLOS Global Public Health - Research journals,***
*https://journals.plos.org/globalpublichealth/article?id=10.1371/journal.pgph.0001292*

***22. Indore's Bold Mission: Using Drones to Wipe Out Malaria by 2030 - insideFPV,***



⚠️ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

*https://insidefpv.com/blogs/blogs/indore-s-bold-mission-using-drones-to-wipe-out-malaria-by-2030*

***23. Indore Congress Protests IMC's Inaction Amid Rising Dengue and Malaria Cases,***
*https://timesofindia.indiatimes.com/city/indore/indore-congress-protests-imcs-inaction-amid-rising-dengue-and-malaria-cases/articleshow/114017072.cms*

***24. CATEGORY – I STATES/UTs,***
*https://ncvbdc.mohfw.gov.in/Doc/MMIS/2025/MMIS-Report-Category-1-Oct-2025.pdf*

***25. Maharaja Yeshwantrao Hospital - Wikipedia,***
*https://en.wikipedia.org/wiki/Maharaja_Yeshwantrao_Hospital*

***26. Choithram Hospital and research center Indore - Contact number, Doctors, Address,***
*https://www.bajajfinservhealth.in/hospitals/indore/choithram-hospital-and-research-center-indore*

***27. Facts about Choithram Hospital, Madhya Pradesh - Housing,***
*https://housing.com/news/facts-about-choithram-hospital-madhya-pradesh/*

***28. Maharaja Yeshwantrao Hospital in My Road,Indore - Justdial,***
*https://www.justdial.com/Indore/Maharaja-Yeshwantrao-Hospital-Scheme-No-54-Opposite-Gaurav-Compound-My-Road/0731P731STD10171_BZDET*

***29. Maharaja Yeshwantrao Hospital (MYH) - Mahatma Gandhi Memorial Medical College Indore,***
*https://www.mgmmcindore.in/hospitals.aspx?type=maharaja-yeshwant-rao-hospital*

***30. maharaja yeshwant rao hospital,indore,*** *https://oldsite.mgmmcindore.in/hospitals.html*

***31. Chapter 1 Introduction and State Profile - National Health Mission,***
*https://www.nhm.gov.in/images/pdf/nrhm-in-state/factsheet-district-report/district-report/indore.pdf*

***32. Government P C Sethi Hospital in Bhawar Kuan,Indore - Justdial,***
*https://www.justdial.com/Indore/Government-P-C-Sethi-Hospital-Opposite-Cpo-Complex-Bhawar-Kuan/0731PX731-X731-241202201239-W5B8_BZDET*

***33. Government Hospitals | District Indore, Goverment Of Madhya Pradesh | India,***
*https://indore.nic.in/en/public-utility-category/government-hospitals/*

***34. Govt. P C Sethi Hospital, Indore | District Indore,Goverment Of Madhya Pradesh | India,***
*https://indore.nic.in/en/public-utility/govt-p-c-sethi-hospital-indore/*

***35. Book Malaria DNA Detection by PCR Test in Indore - Best Price & Home Sample Collection,***
*https://www.1mg.com/labs/test/malaria-dna-detection-by-pcr-36363/indore/price*

***36. Malaria DNA Detection By Real Time PCR - Blood in Indore - Metropolis Healthcare,***
*https://www.metropolisindia.com/parameter/indore/malaria-by-real-time-pcr-blood*

***37. Malaria Antigen Detection Test (Rapid) in Indore - Redcliffe Labs,***
*https://redcliffelabs.com/indore/tests/malaria-antigen-detection-test*



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

***38. Blood Test Lab Near Me in Indore | 60 Minute Home Collection,*** *https://www.lalpathlabs.com/test/city/indore*

***39. Malaria Antigen Detection Test (Rapid) in Prime Colony, Indore - Redcliffe Labs,*** *https://redcliffelabs.com/indore/prime-colony/tests/malaria-antigen-detection-test*

***40. Malaria Screening Panel in Indore, Affordable Price - Redcliffe Labs,*** *https://redcliffelabs.com/indore/package/malaria-screening-panel*

***41. Indore Sets Ambitious Target to Eliminate Malaria by 2030 Using Drone Technology,*** *https://medgatetoday.com/indore-sets-ambitious-target-to-eliminate-malaria-by-2030-using-drone-technology/*

***42. Diagnosis and Treatment of Malaria - ncvbdc,*** *https://ncvbdc.mohfw.gov.in/Doc/Diagnosis-Treatment-Malaria-2013.pdf*

***43. malaria - National Health Mission,*** *https://www.nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/stg/malaria-stg.pdf*

***44. Keeping the momentum: suggestions for treatment policy updates in the final push to eliminate malaria in India - PMC,*** *https://pmc.ncbi.nlm.nih.gov/articles/PMC10114449/*

***45. Malaria Training Module for ASHA 2025 - ncvbdc,*** *https://ncvbdc.mohfw.gov.in/Doc/Malaria-Training-Module-ASHA-2025.pdf*

***46. Drug Resistance :: National Center for Vector Borne Diseases Control (NCVBDC),*** *https://ncvbdc.mohfw.gov.in/index1.php?lang=1&level=1&sublinkid=5811&lid=3799*

***47. Treatment of Chloroquine-Resistant Plasmodium vivax Malaria in India - ResearchGate,*** *https://www.researchgate.net/publication/388403371_Treatment_of_Chloroquine-Resistant_Plasmodium_vivax_Malaria_in_India*

***48. Malaria vaccine - Wikipedia,*** *https://en.wikipedia.org/wiki/Malaria_vaccine*

***49. The RTS,S malaria vaccine - PATH,*** *https://media.path.org/documents/RTSS_fact_sheet_March_2024.pdf*

***50. Gavi, UNICEF announce new agreement to make R21/Matrix-M malaria vaccines more accessible - The Hindu,*** *https://www.thehindu.com/sci-tech/health/gavi-unicef-announce-new-agreement-to-make-r21matrix-m-malaria-vaccines-more-accessible/article70317510.ece*

***51. Gavi and UNICEF announce equitable pricing deal for malaria vaccine to protect 7 million more children by end of decade,*** *https://www.unicef.org/press-releases/gavi-and-unicef-announce-equitable-pricing-deal-malaria-vaccine-protect-7-million*



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

***52. New Malaria Vaccine R21/Matrix-M - PMF IAS,*** *https://www.pmfias.com/r21-matrixm/*

***53. National Strategic Plan: Malaria Elimination 2023-27 - ncvbdc,***
*https://ncvbdc.mohfw.gov.in/Doc/National-Strategic-Plan-Malaria-2023-27.pdf*

***54. NCVBDC officers - Ministry of Health & Family Welfare,***
*https://ncvbdc.mohfw.gov.in/index1.php?lang=1&level=1&sublinkid=5824&lid=3812*

***55. State Programme Officers :: National Center for Vector Borne Diseases Control (NCVBDC),***
*https://ncvbdc.mohfw.gov.in/index1.php?lang=1&level=1&sublinkid=5800&lid=3804*

***56. Tackling the Emerging Threat of Zoonotic Malaria in India - PMC,***
*https://pmc.ncbi.nlm.nih.gov/articles/PMC12735400/*

***57. Indore Water Contamination: 22 Deaths and Health Crisis | Omnicuris,***
*https://www.omnicuris.com/medshots/daily_updates/indore-water-contamination-outbreak-deaths-report*

***58. Plasmodium knowlesi in Southeast Asia - Blog - APLMA,***
*https://www.aplma.org/blog/plasmodium-knowlesi-in-southeast-asia*

***59. (PDF) Updating estimates of Plasmodium knowlesi malaria risk in response to changing land use patterns across Southeast Asia - ResearchGate,***
*https://www.researchgate.net/publication/377597340_Updating_estimates_of_Plasmodium_knowlesi_malaria_risk_in_response_to_changing_land_use_patterns_across_Southeast_Asia*

***60. Updating estimates of Plasmodium knowlesi malaria risk in response to changing land use patterns across Southeast Asia - PubMed,*** *https://pubmed.ncbi.nlm.nih.gov/38252650/*

***61. Rolling out vaccines to beat malaria together,***
*https://www.gavi.org/news-insights/insight-reports/rolling-out-vaccines-beat-malaria-together-time-harness-power-immunisation-malaria-free-future*

***62. Retrospective analysis of malaria prevalence over ten years (2015–2024) at Bichena Primary Hospital, Amhara Region, Ethiopia | PLOS One,***
*https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0322570*

***63. 25 fall ill, many hospitalised in Indore town days after deaths due to contaminated water,***
*https://www.hindustantimes.com/india-news/25-fall-ill-many-hospitalised-in-indore-town-days-after-deaths-due-to-contaminated-water-101769148939482.html*

***64. Indore water contamination deaths: Congress probe team visits bereaved families,***
*https://www.newindianexpress.com/nation/2026/Jan/06/indore-water-contamination-deaths-congress-probe-team-visits-bereaved-families*

***65. Nine fall ill due to water contamination in Madhya Pradesh's Mhow - The Hindu,***
*https://www.thehindu.com/news/national/madhya-pradesh/nine-fall-ill-due-to-water-contamination-in-mhow/article70540981.ece*



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*

***66. MALARIA CONTROL STRATEGIESE - ncvbdc - Ministry of Health & Family Welfare,***
*https://ncvbdc.mohfw.gov.in/index4.php?lang=1&level=0&linkid=421&lid=3707*



⚠ *This is for informational purposes only. For medical advice or diagnosis, consult a professional.*