



# NEWS & VIEWS

ISSUE 17, MARCH 2022

Upcoming Event

Lecture Series on Infectious Diseases  
Lecture 10: Prof Anuradha Chowdhary

## A Child's Perception of Malaria



## Interviews

Dr S K Subbarao,  
Former Director,  
ICMR-NIMR, Delhi



## National Science Day 2022



Sir CV Raman Memorial Lecture  
28<sup>th</sup> February, 2022

*"Discovering and deploying scientific knowledge and innovations at grassroots"*

Padma Shri Professor Anil Gupta

Founder - Honey Bee Network, SRISTI, GIAN & NIF Visiting Faculty - IIMA & IITB; Academy Professor - AcSIR



Dr Avdhesh Kumar,  
Former Additional  
Director & Head, Malaria  
Directorate of NVBDCP, Delhi

Editorial | Activities | Research in Spotlight | Resource for Malaria Researchers: WWARN

**MALARIA ELIMINATION RESEARCH ALLIANCE-INDIA**

## Editorial

Dear Readers,

MERA-India team brings you the seventeenth issue of our newsletter.

Empowering women leads to gender parity and emancipation of women. Science and technology have pervaded the patriarchal mindset and provided women with an opportunity to have intellectual liberation. Educational opportunities at the grassroots level have given women decision-making power and self-confidence than they had in the past. As we celebrated International Women's Day on 08<sup>th</sup> March 2022, our hearts fill with honor to recognize the awe-inspiring achievements of women in every field irrespective of the tremendous struggle and constraints that they have to face through their journey.

Here at MERA-India, we realize that women are effective leaders and without women empowerment, sustainable development in different sectors could not be achieved. Henceforth, we would like to take this opportunity to express our sincere appreciation to all women scientists in our scientific Lecture Series and invited talks who have contributed immensely to the fight against malaria.

From the International Science Day for Women and Girls in Science and National Science Day to International Women's Day, March 2022 newsletter issue gives you all the possible reasons to celebrate.

On 28<sup>th</sup> February, we celebrated National Science Day with the rejoicing talk of Padma Shri awardee Professor Anil K Gupta, founder of Honey Bee Network, focusing on innovations at grassroots levels. Details of the event are provided in this issue.

It was gratifying to experience listening to the scientific talks by Professor Kamini Mendis, University of Colombo, Sri Lanka and Dr Tavpritesh Sethi, Indraprastha Institute of Information Technology, Delhi. These lectures made apt points about the control and elimination of malaria, and health system preparedness for infectious diseases. The summaries of the lectures are provided in this issue.

As you browse through this issue, you will find fascinating and motivational interviews in the 'Malaria Scientists to Watch' section by Dr Sarala K. Subbarao and Dr Avdhesh Kumar. Our current issue will also give you an update about the latest findings in malaria research into the continuing progress in malaria detection and antimalarial interventions. Furthermore, we have highlighted the WorldWide Antimalarial Resistance Network (WWARN), an online platform with enormous data on antimalarial drug resistance thereby providing research communities with reliable and comprehensive information on malaria drug resistance, under the "Resource for Malaria Researchers" section. In the "A Child's Perception of Malaria" section, we have presented another sketch from a young kid demonstrating her understanding of malaria disease.

We are excited to listen to Professor Anuradha Chowdhary from the Department of Medical

Mycology, Vallabhbhai Patel Chest Institute, University of Delhi as our next speaker in the “Lecture Series on Infectious Diseases”, to be held on 29<sup>th</sup> March 2022. We invite all our readers to attend this lecture (link to join: <https://bit.ly/Lecture10Mar>).

We hope that you will find this issue mind stimulating and enjoyable. Please write to us for any feedback or suggestions regarding the content of the newsletter at [meranewsletter@gmail.com](mailto:meranewsletter@gmail.com).

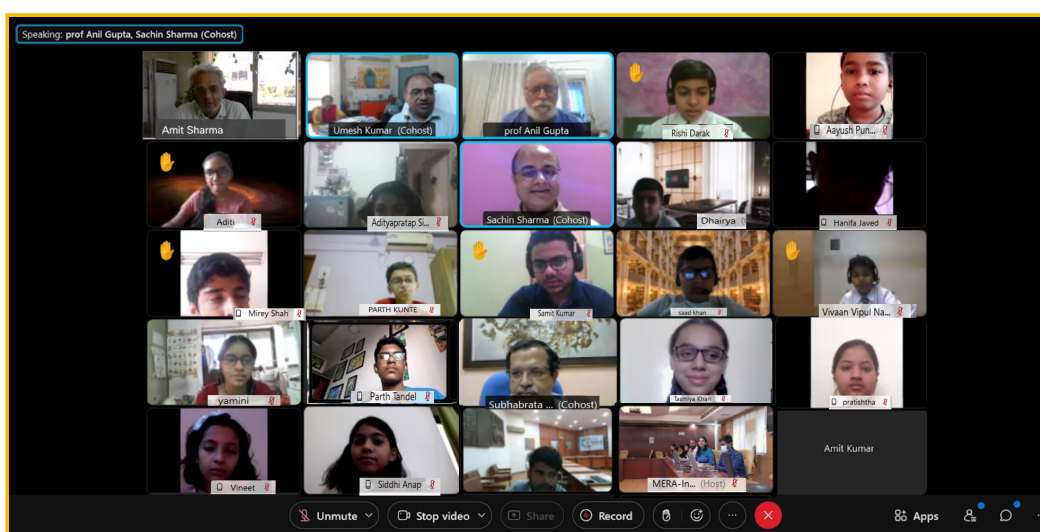
With best wishes  
MERA-India team

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## ICMR-NIMR & MERA-India Activities

### National Science Day

To mark the National Science Day 2022 (28<sup>th</sup> February), ICMR-NIMR & MERA-India in collaboration with the Nehru Science Centre - Mumbai (National Council of Science Museums, Ministry of Culture, Government of India), organized Sir CV Raman Memorial Lecture.



This virtual lecture entitled “Discovering and deploying scientific knowledge & innovations at grassroots” was delivered by Padma Shri Professor Anil Kumar Gupta. Professor Gupta is the founder of the Honey Bee Network, National Innovation Foundation (NIF), Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and Grassroots Innovations Augmentation Network (GIAN).

While the lecture was open to everyone, invitations for attending this lecture were especially extended to the school students & undergraduate students across India, and their teachers. Dr Amit Sharma (Director NIMR) and Mr Shubhabrata Chaudhuri (Director, Nehru Science Centre, Mumbai) welcomed all the students and attendees and thanked the speaker for accepting the invitation to deliver the lecture. Dr Sachin Sharma, Chief Consultant, MERA-India introduced the speaker.

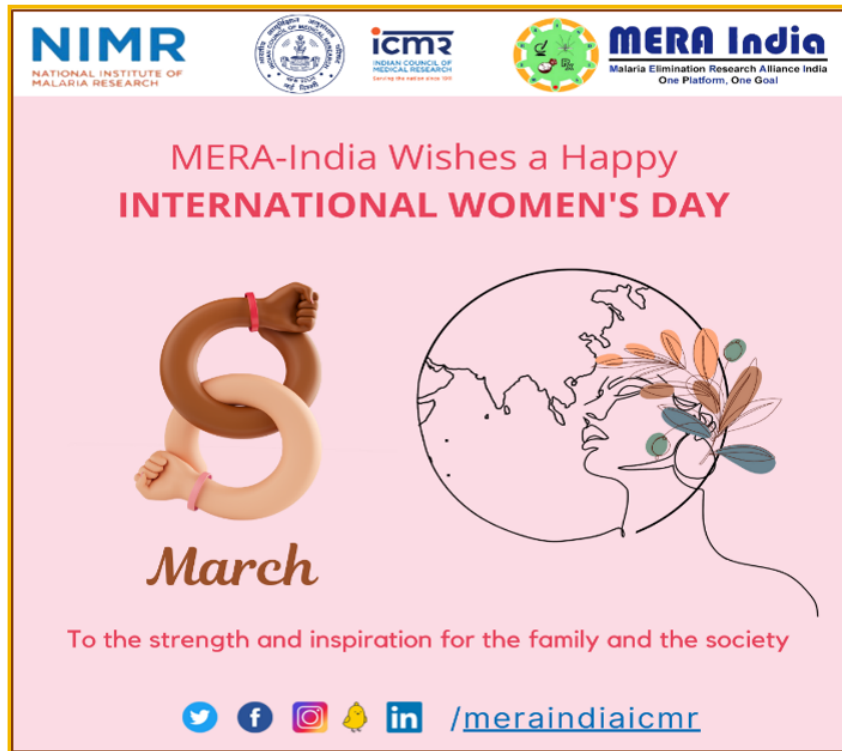
During the lecture, Professor Gupta interacted with the young students and shared motivating thoughts and several inspiring examples involving the discovery and application of knowledge and innovations at the grassroots. He urged the youngsters to be observant of the problems and phenomena around them, ask questions, come up with innovative and sustainable solutions, and not be hesitant or discouraged because of criticism due to thinking differently than the trend. He also called upon the teachers to create open-source standards of excellence, like innovations by young children, which could further drive the emergence of new scientific concepts.

After the lecture, Professor Gupta discussed the innovative ideas from the students. The event concluded with Dr Sachin Sharma, Dr Shubhabrata Chaudhuri and Mr Umesh Rustagi (Curator 'G' & Head, Education Cell, Nehru Science Centre, Mumbai) thanking the speaker and the attendees. The recording of this lecture is available on the MERA-India website ([https://meraindia.org.in/video\\_gallery](https://meraindia.org.in/video_gallery)).

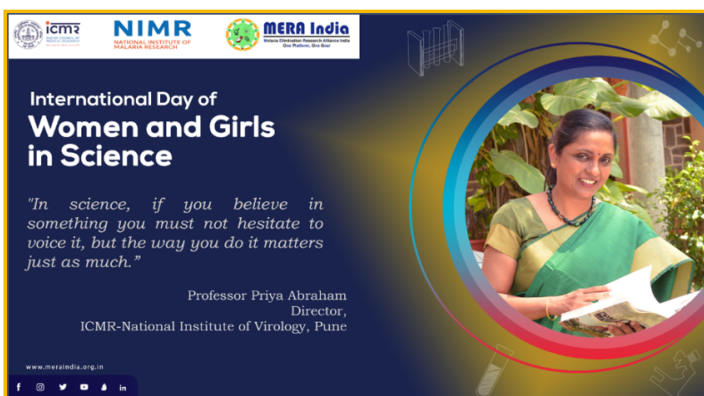
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## International Women's Day

08<sup>th</sup> March is celebrated across the globe as International Women's Day. MERA-India salutes the contribution of women in all walks of life. We are committed to gender equity and equal opportunities for all.

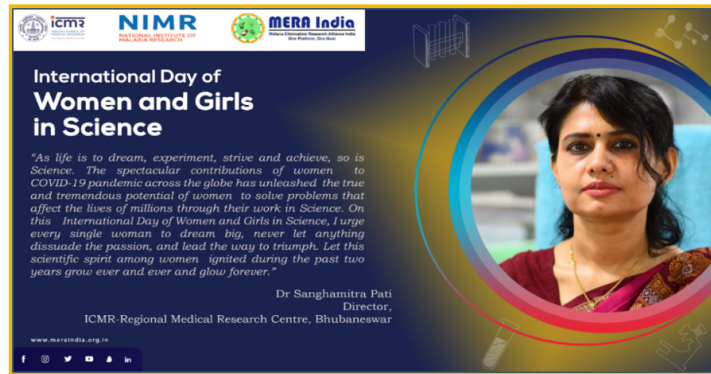


On the International Day of Women and Girls in Science (11<sup>th</sup> February), we approached the Indian women scientists, who have played a key role in planning, managing and execution of India's COVID-19 response, to share their message regarding the importance of women empowerment in science.



**Professor Priya Abraham** has been leading the ICMR-National Institute of Virology (NIV), Pune as the Director. ICMR-NIV has been at the forefront of India's COVID-19 response under her leadership.

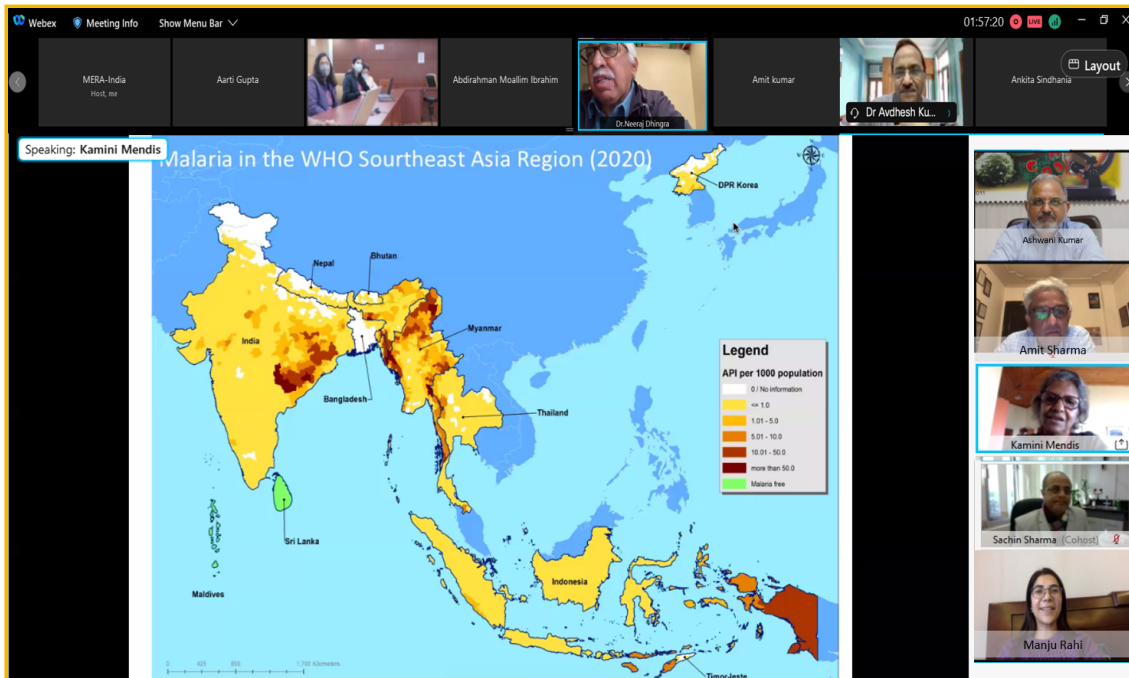
**Dr Sanghamitra Pati**, Director, ICMR-RMRC, Bhubaneswar, contributed significantly to the response and effective management of COVID-19 in Odisha and neighbouring states.



**Dr Nivedita Gupta**, Head of Virology unit at ICMR Headquarters, Delhi, contributed to devising India's COVID-19 response strategy & coordinated diagnosis across India. She formulated testing protocols, advisories & commissioning of testing platforms.

We hope that the contribution of women scientists would serve as a motivation for all the scientific community, and would also encourage women scientists and young researchers.

## Distinguished Lecture by Professor Kamini Mendis



In the ICMR-NIMR & MERA-India “Distinguished Lecture Series” for the month of February, we had Professor Kamini Mendis as the speaker. Professor Mendis is a malariologist, formerly of the Global Malaria Programme, World Health Organisation, Geneva, and currently Professor Emeritus at the University of Colombo, Sri Lanka. She is an expert in the research, control and elimination of malaria, and has played a key role in the certification of malaria elimination from Sri Lanka. Dr Amit Sharma, the Director ICMR-NIMR, welcomed Professor Mendis and thanked her for taking out time and accepting the invitation to deliver the lecture. Dr Sachin Sharma, Chief Consultant, MERA-India, introduced Professor Mendis to the attendees.

Professor Mendis’ lecture was entitled “Malaria Elimination from Sri Lanka: through the eyes of a researcher and policy adviser”. In this insightful lecture, Professor Mendis shared her experience over the last five decades, while working as a malaria researcher and policymaker. She talked about the challenges faced and the strategies adopted by Sri Lanka on its path to achieving malaria-free status in 2016, despite an ongoing civil war in the country during the malaria elimination phase. She highlighted the importance of equitable health care to each individual and framing of the strategies for disease elimination based on locally generated evidence. She cautioned that malaria elimination is not the endpoint, and a continuous vigil is needed to maintain zero malaria and prevent its reintroduction once eliminated. She also stressed upon giving equal importance of all facets of malaria research (basic, applied, and operational & implementation research), to support the National Malaria Elimination programmes in meeting the elimination targets. She called upon the researchers & programme staff to work together in understanding the most relevant research needs for achieving the goal of successful malaria elimination.

After the lecture, Professor Mendis answered the questions from the attendees. The session concluded with Dr Sachin Sharma thanking the speaker and the attendees.

The recording of this lecture is available on the MERA-India website (<https://www.meraindia.org.in/lecture-series>).



## Lecture Series on Infectious Diseases Lecture 09 by Dr Tavpritesh Sethi



Dr Tavpritesh Sethi was the speaker for the ninth lecture in the ICMR-NIMR & MERA-India “Lecture Series on Infectious Diseases”. Dr Sethi is a physician-scientist, an Associate Professor in the Department of Computational Biology, and the founding head of CoE in Healthcare at Indraprastha Institute of Information Technology (IIIT), Delhi. His area of expertise is computational medicine and he has built artificial intelligence solutions for ICUs, COVID-19 and antibiotic resistance. Dr Sachin Sharma, Chief Consultant MERA-India, welcomed everyone and introduced Dr Sethi.

Dr Sethi delivered the lecture on the topic entitled “Building Pathogen Surveillance and Healthcare Preparedness with Data and AI”. He discussed the need of addressing three gaps *i.e.* data gap, knowledge gap and policy gap for pathogen surveillance and pandemic response. He explained how the AI-based Integrated Federated Health Platform (IFHP) has filled these gaps with a seamless data exchange mechanism and has provided AI-driven solutions for COVID-19. This included three important components (i) *StrainFlow* – for predicting emerging strains by using genomic information as part of genomic surveillance (ii) *EvidenceFlow* – for mining evidence from the growing scientific literature (iii) *VacSim* – for allocation of resources such as vaccines. He detailed about *StrainFlow i.e.* how they implemented language modelling (AI model) to capture the spatiotemporal relationship of the mutations in the spike region of SARS-CoV2 sequences and how they predicted new COVID-19 cases with machine learning (ML) model. The dashboard displays how the number of cases might change in the near future in a few countries. He further described

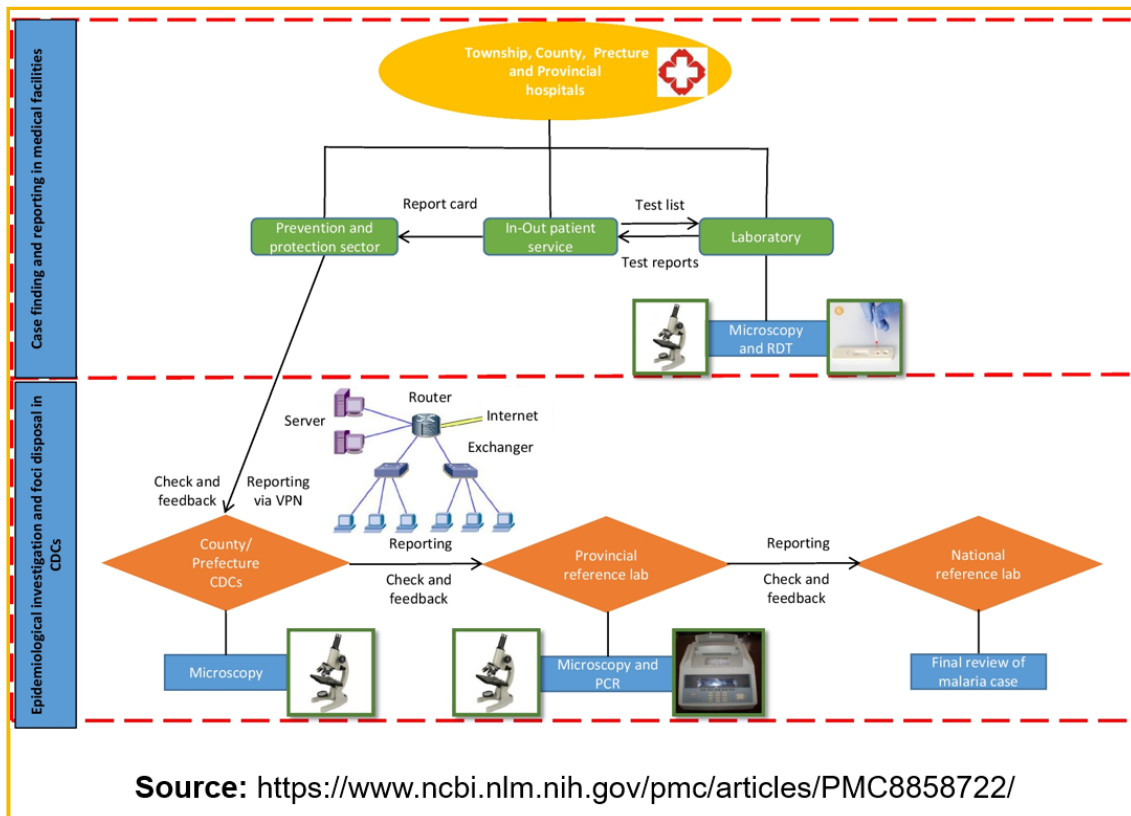
*EvidenceFlow* where AI models are used to track and predict novel insights from COVID-19 literature and reinforcement learning models in optimizing the distribution of but not limited to COVID-19 vaccines. He also talked about the AI-driven public health app “Washkaro” developed with the goal of mitigating misinformation and providing the right information to the right people in the right format at the right time. He showed how natural language processing and machine translation could be used to deliver right information matched with WHO guidelines in local languages. He also briefly described the use of language models to understand how state bulletins and tweets coupled to each other during COVID-19 infodemic.

The lecture was followed by answers to the questions from attendees and ended with a note of thanks from Dr Sachin Sharma. The recording of this lecture is available on the MERA-India website (<https://www.meraindia.org.in/lecture-series>).

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## Research in Spotlight

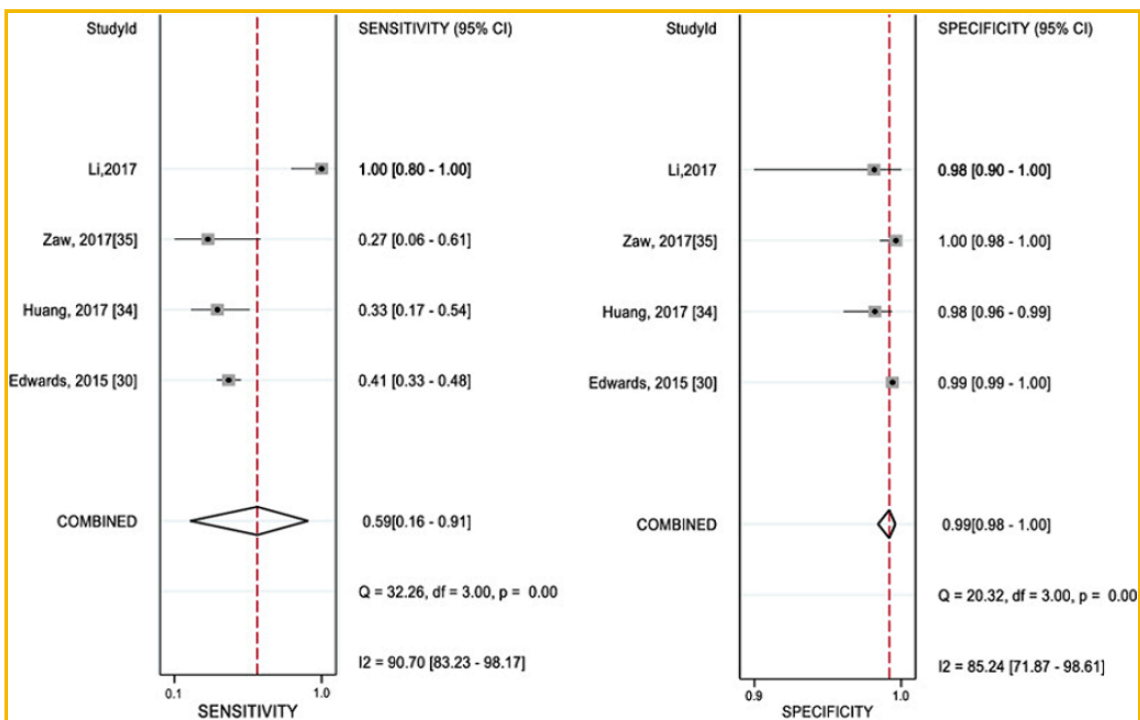
Cao Y *et al.*, *Infect Dis Poverty*, 2022: Improving the surveillance and response system to achieve and maintain malaria elimination: a retrospective analysis in Jiangsu Province, China



The '1-3-7' approach developed and followed by China during its malaria elimination drive has played a key role in the success of the elimination programme through timely detection, surveillance and response to the malaria cases. In this [study](#), the authors have conducted a retrospective analysis to understand the impact of the measures adopted on the surveillance and response to imported malaria cases, over the period from 2001 to 2020, in China's Jiangsu Province. During this period, 9,879 malaria cases were reported in Jiangsu Province. While there was a rise in the number of imported malaria cases, however, since 2012 no indigenous malaria cases were reported in this Province. Measures to provide health education, strengthening the health facilities for improved malaria diagnosis and prompt treatment and robust implementation of the '1-3-7' approach were undertaken. In the 2,423 imported malaria cases between 2012-2020, 687 (28.4%) visited hospitals on the first day after symptom onset, while 1,104 (45.6%) cases visited the hospital on the second day of symptom onset, thus demonstrating an improved health-seeking behaviour as a result of the health education initiatives. A total of 1,502 (61.9%) cases were diagnosed on the first day, demonstrating the diagnostic competency in the health facilities. Looking at the targets under the '1-3-7' approach, 100% of cases were detected and notified within one day, 99.4% cases were investigated within three days, and 98.3% foci response and case disposition were achieved within seven days. Thus the success of the malaria elimination

and maintaining malaria-free status in Jiangsu Province could be owed to imparting health education leading to timely healthcare-seeking practice amongst the suspected cases, accurate and timely diagnosis as a result of the health capacity strengthening, and the surveillance of the imported cases as well as a rapid response to curtail the onwards malaria transmission. These approaches could thus be adopted by other countries working towards the goal of malaria elimination.

**Naing C et al., Malar. J., 2022: Detection of asymptomatic malaria in Asian countries: a meta-analysis of diagnostic accuracy**

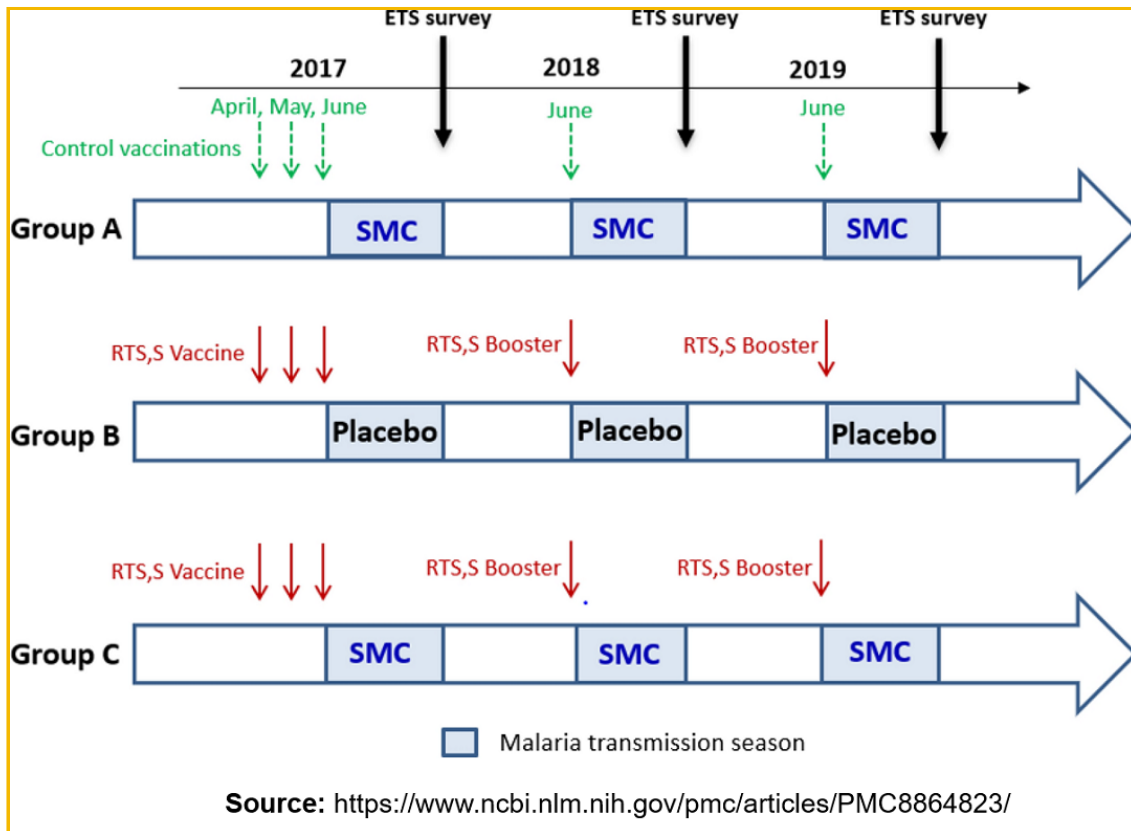


Forest plot of sensitivity and specificity of RDT for *P. falciparum*

**Source:** <https://pubmed.ncbi.nlm.nih.gov/35172833/>

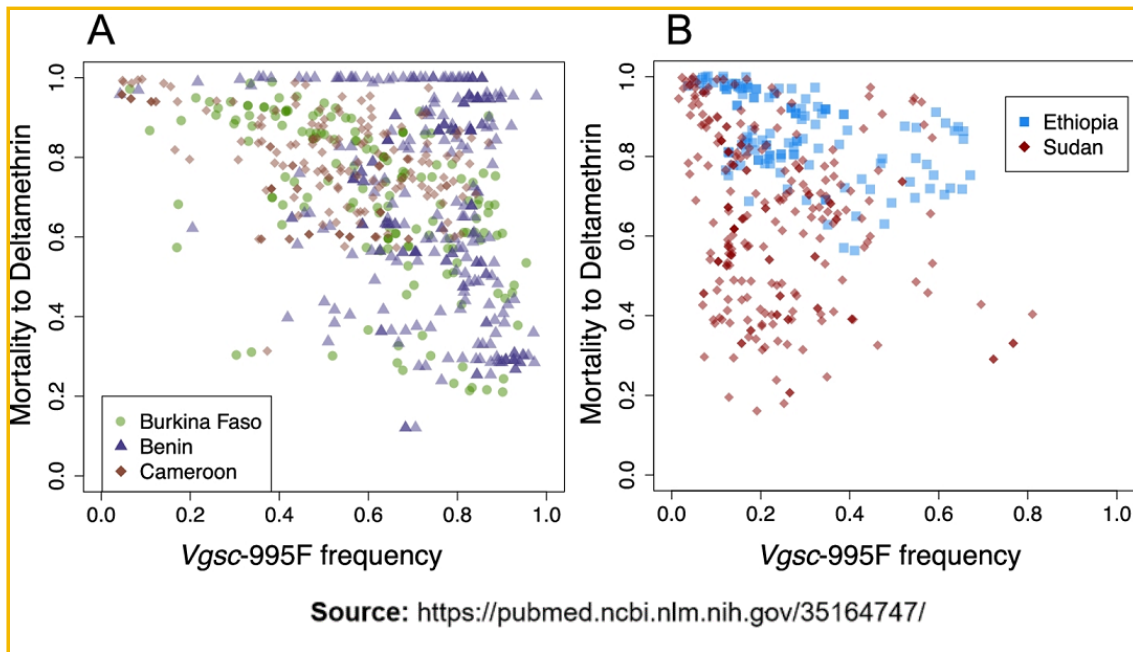
This [article](#) is a meta-analysis of various studies assessing the accuracy of diagnostic tests. The authors assessed ten such studies using self-defined keywords in various publication repositories and then tested the quality of the study using the QUADAS-2 tool. For the meta-analysis, only the studies that tested the accuracy of RDT/Microscope using PCR assays were included. They found that the sensitivity of microscopy studies has a high degree of variation *i.e.* from 19 to 100% with an average variation of 54% in the case of asymptomatic *P. falciparum*, whereas, in the case of RDT, the sensitivity was found to be in the range of 27 to 100% with an average of 59%. A similar case was observed with asymptomatic *P. vivax* where the sensitivity of microscopy was in the range of 9-100% (average 54%) and for RDT it was between 7 - 94% (average 51%). Thus the study successfully established that the RDT and microscopy have low detection sensitivity for asymptomatic malaria cases. The authors suggest a combinatorial approach for the detection of asymptomatic case detection with the inclusion of various other assays such as PCR or LAMP. However, this requires further validation before implementing such a combinatorial diagnostic strategy on large scale.

**Grant J *et al.*, *Malar. J.*, 2022: Impact of seasonal RTS,S/AS01<sub>E</sub> vaccination plus seasonal malaria chemoprevention on the nutritional status of children in Burkina Faso and Mali**



In the above [study](#) conducted in Burkina Faso and Mali, the authors have studied the impact in children's nutritional status (acute or chronic malnutrition) upon the administration of seasonal malaria chemoprevention (SMC) and malaria vaccine RTS,S/AS01E. For this, anthropometric measurements were made during the malaria transmission seasons between 2017-2019, in children who received the SMC or the malaria vaccine, either alone or in combination. These measurements were used to derive the nutritional status indicators. The populations under this study observe a high malaria prevalence as well as malnutrition. While the use of both the interventions together (SMC and vaccination) led to a reduction in uncomplicated and severe malaria incidence (60% fewer clinical malaria cases and 70% fewer hospital admissions with severe malaria), only a slight impact on the nutritional status was observed. Thus, more interventions are required to address the problem of malnutrition in the children in malaria-endemic areas.

Hancock PA *et al.*, *BMC Biol.*, 2022: Modelling spatiotemporal trends in the frequency of genetic mutations conferring insecticide target-site resistance in African mosquito malaria vector species



Pyrethroids represent the most widely used class of insecticides being used against malaria vectors. The authors of this [article](#) studied the prevalence of pyrethroid target-site resistance among three vector species of *Anopheles coluzzii*, *An. gambiae* and *An. arabiensis* during 2005-2017 [*i.e.* the years evidencing the major scale-up of insecticide-treated bed nets (ITN) distribution] across 27 African countries. Resistance to pyrethroids is mainly caused by three single nucleotide polymorphic (SNP) variants in the voltage-gated sodium channel (*Vgsc*) gene. The authors developed a species-specific Bayesian statistical spatiotemporal model from the data collected from 27 African countries to predict the geographical distribution and frequency trends of the two most common SNPs of *Vgsc* gene. They further developed annual predictive maps showing the geographical distribution of each mutation for three individual vector species across the nine selected African countries. The authors also show the influence of ITNs coverage on the frequency of gene variants in *An. gambiae* and *An. coluzzii*. The study thus demonstrates the importance of local phenotypic surveillances, vector species composition and resistance genetics information in designing the resistance management strategies.

## Malaria Scientists to Watch

### An interview with Dr Sarala K. Subbarao



**Dr Sarala K. Subbarao**  
**Formerly Consultant, Vector Borne Diseases**  
**Science Forum, ICMR, Delhi**  
**Formerly Director, National Institute of Malaria**  
**Research, Delhi**

*1. What has been your most significant finding in the field of malaria research?*

I started my journey in malaria research with a background in *Drosophila* genetics. This was the area of research for my PhD in Genetics that was awarded by the University of Illinois, Urbana-Champaign, USA. My malaria research started in 1977 at the Malaria Research Centre established by the Indian Council of Medical Research.

As a first step, we colonized *Anopheles stephensi* and *Anopheles culicifacies* in our laboratory, the two important malaria vectors in the country responsible for ~ 80% of cases annually. The research started with screening for resistance to different insecticides in the laboratory colonies and the field. Cyto-taxonomic studies of malaria vectors in wild populations led to the identification of more members of the *Culicifacies complex*, and for the first-time recognition of *Anopheles fluviatilis* and *Anopheles annularis* as species complexes. The next immediate step we took was to establish pure colonies of *An. culicifacies* species A, B and C. Realizing the limitations of using polytene chromosomes as a diagnostic marker, field-friendly molecular diagnostic tools were developed. With these tools, we could establish the distribution of sibling species in the country, and inter-species variations in sibling species bionomics namely resting habits, feeding times, host-feeding preferences, differential development of resistance to insecticides, and importantly vectorial potential. These attributes were relevant for the planning and implementing strategies for vector control and consequently for disease control. We further proposed an insecticide spray strategy for the control of *An. culicifacies*, the major vector. Next, we stratified the malaria-endemic areas in the country based on *An. culicifacies* and *An. fluviatilis* sibling species distribution and their biological characters and proposed stratum specific vector control strategies.

Knowing the importance of species complexes in malaria transmission dynamics and control, we were elated that our research was pivotal to malaria epidemiology and control in India. This journey of establishing a laboratory to work on major malaria vectors was fascinating but was filled with the usual difficulties of taking basic research studies to that of

applied value. Even though parasitological research was ongoing in my lab, still the successes achieved made me select '*Anopheles* species complexes' as my major area of research in malaria. I could tread this path with the support of a group of enthusiastic and dedicated scientists and staff in my laboratory.

*2. How would you view India's progress, since independence, towards the malaria elimination goal?*

The anti-malaria campaign in India successfully started with the use of DDT as a residual insecticide in indoor sprays in the early 1940s. In 1953 the National Malaria Control Programme was launched, and in 1958 the National Malaria Eradication Programme (NMEP) intensified the effort to eliminate malaria before the resistance to insecticides is developed in malaria vectors. With the launching of this strategy, there was a spectacular reduction in malaria in the country to 0.05 million in 1961. This success did not last long owing to technical and operational reasons that led to a resurgence in malaria cases to 6.46 million in 1976.

In 1976, NMEP implemented a Modified Plan of Operation with changes in technical and organizational policies. And in 1977, the Malaria Research Centre in Delhi (now National Institute of Malaria Research) was established by the Indian Council of Medical Research (ICMR)/Govt. of India to facilitate research to address the challenges in the control of malaria by the programme. And later in the 1980s, ICMR established Regional Medical Research Centres in different parts of the country to address local health issues, and a few of them were in tribal-dominated areas where malaria is a major health issue. This disease has always been a major public health concern, and several academic institutions have been involved in malaria research. ICMR and its Institutes have been striving to address the issues and have been providing new and innovative interventions successfully. These efforts strengthened the capacity of the country to address the challenges at hand. Simultaneously more sensitive parasite diagnostic tools, effective drugs, and improved vector control interventions were available. With these inclusions and changes in control strategies, a drastic reduction was seen in malaria cases and deaths in many parts of the country. India now is targeted to eliminate malaria by 2030 through a structured framework. Already, substantial gains have been evidenced on the ground with most of the states in the plains and the North East reporting decreased incidences. There is a need to sustain these gains and achieve the desired elimination goal.

*3. What challenges do you see for women working in STEM?*

Our socio-cultural practices pose challenges to women to pursue a career in general and more so in STEM areas. Building a career in STEM areas requires commitment, continuity and time that poses difficulty to women to balance between family and career. Science poses more challenges as it requires them to invest countless hours in the lab. Women are resourceful and determined to better their lives, so if their goal is to succeed in STEM, like so many women before them, they can do so.

*4. What is one piece of advice that you would like to give to aspiring scientists and young researchers about to set up their own lab?*



Youngsters who chose to become scientists have to have the motivation and patience to do research. My first advice is not to wait to acquire everything that one wishes to have in the lab to start research. Initiate with whatever is available and with the help of senior colleagues who have established labs. Writing research proposals to seek funding from external sources helps in getting equipment. It also aids logical planning of research methods and their utilization to address and achieve the objectives. Challenges and failures are normal but if accepted as sources of learning one can overcome and succeed.

*5. What significance do you see for MERA-India in achieving India's malaria elimination target?*

The MERA-India mandate can play a role in the capacity building of young researchers by organizing relevant short training courses in different areas of malaria epidemiology, especially in entomology field research. The present distinguished lecture series are impactful, and in addition, interactive discussion groups can be organized to facilitate support for young researchers from expert malaria scientists. Periodic brainstorming meetings can identify the relevant gaps in knowledge to develop projects by the scientists.

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## An interview with Dr Avdhesh Kumar



**Dr Avdhesh Kumar**  
**Former Additional Director & Head,**  
**Malaria Directorate of National Vector Borne**  
**Diseases Control Programme, (now NCVBDC),**  
**Ministry of Health & Family Welfare,**  
**Government of India**

1. Please share with our readers your journey from being a young science student to date.

After graduating and post-graduating from King George's Medical College (now KG's Medical University), Lucknow; and completing my Senior Residency; I left the Teaching Specialist job and opted for a Public Health Specialist career. During the first stint, worked with the '*National Institute of Communicable Diseases - NICD [now National Centre for Disease Control (NCDC)]*'; Delhi for 14 years focusing on disease surveillance & response, investigation & management of epidemics; rapid health assessments following disasters; avian/ pandemic influenza preparedness; field epidemiology trainings; Public Health legislations; and International Health issues & International Health Regulations.

Then, got an opportunity to work with the '*Directorate of National Vector Borne Diseases Control Programme (NVBDCP)*', Ministry of Health & Family Welfare (MoHFW), Delhi for 9 years and headed the *Malaria Elimination Division* focusing on program planning & management; strengthening M&E systems in the health sector for malaria; and leading the implementation of the *Malaria Elimination Programme* in the country, with the help of State governments, including the Global Fund-supported '*Intensified Malaria Control/ Elimination*

*Projects (IMCP/ IMEP)*' in the North-eastern and other high endemic states of the country, effectively utilizing 95% and 100% GFATM grants in two successive grant cycles, respectively.

2. What If you have to pick one intervention that has played the biggest role in our fight against malaria, which one would that be?

Making the diagnostic (rapid diagnostic test - RDT) and treatment (Artemisinin-based combination therapy - ACT) services available at the village level through ASHAs and saturating all households in all the sub-centres (>1 API) in the country with Long Lasting Insecticidal bed nets (LLINs) thereby interrupting the disease transmission cycle in far-flung, difficult, hard-to-reach malaria high endemic areas was the game changer which gave us the confidence to think that malaria elimination in India is achievable. This coupled with other strategies such as community mobilization, and especially monthly monitoring of state & district programme implementation teams led to a remarkable 85% decline in malaria disease burden in 5 years (2016-2020) in the country - a global success story - well recognized in the '*World Malaria Reports: 2018, 2019, 2020 & 2021*'.

### 3. *What do you see as the biggest challenge for India in achieving malaria elimination?*

Achieving an 85% reduction in malaria in 5 years was something unthinkable in 2014-15 when the disease magnitude was moving northward. However, with support from MoHFW; and active participation of dedicated national, state, district teams, and involvement of other stakeholders; we could successfully implement the *Malaria Elimination Programme* in the country including the Global Fund-supported 'IMCP/ IMEP' in the North-eastern and other high endemic states (Odisha, Madhya Pradesh, Jharkhand, Chhattisgarh, and others) leading to global recognition of India's success story.

The challenge now is to sustain these gains and further move on the road to malaria elimination. We have the required tools, experience, and expertise to achieve targeted elimination of the disease; but the biggest challenge, I feel, is complacency at various levels of programme implementation especially at the state level; as malaria has moved down in the priority list of states following the drastic decline of malaria disease burden in the country. Let's not forget – complacency carries the risk of resurgence, as happened in the late 1960s and 70s. Such historic opportunities, for eliminating a vector-borne disease, are a rarity; and therefore, at any cost, we should not let the guard down.

### 4. *What significance do you see for MERA-India in achieving India's malaria elimination target?*

MERA-India provides an opportune platform for researchers to contribute and fill the gaps for India's *Malaria Elimination Programme* to help achieve the desired target, and then, sustain malaria elimination. The Researchers and the Programme Managers, and various other stakeholders need to work in close proximity as the need of the hour is collaborative operational research in a time & resource-constrained environment. Epidemiology, programme management, entomology, and socio-behavioural aspects are some of the desired fields wherein further inputs would be required for the programme.

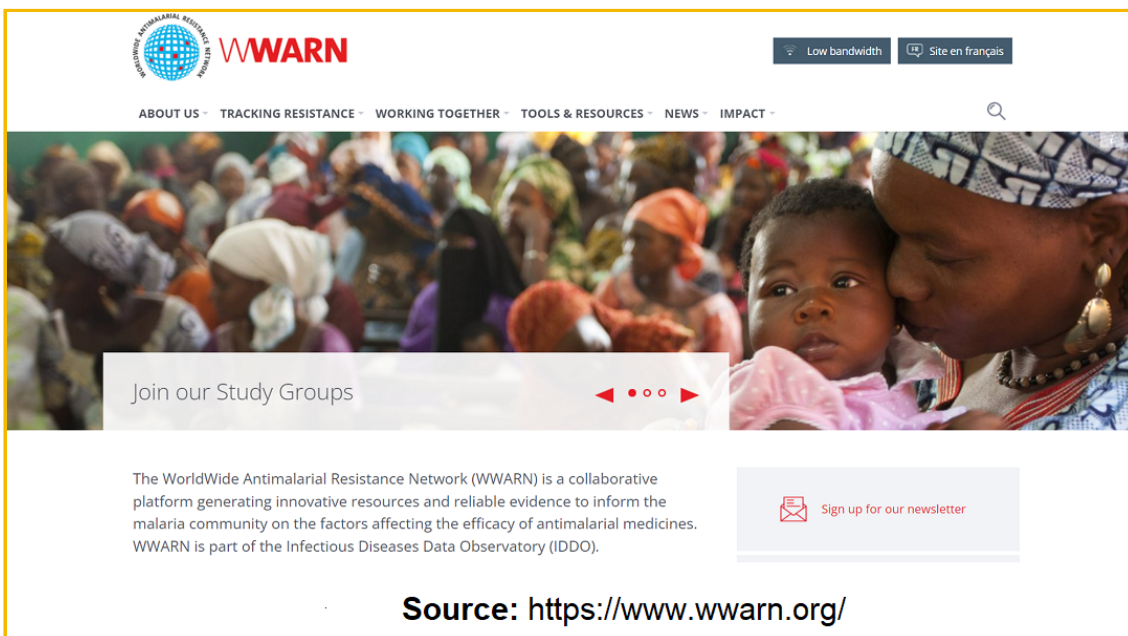
### 5. *What is one piece of advice that you would like to give to young students and early-stage*

My request to young students and early-stage researchers would be to identify the gaps in the knowledge, be focussed, think strategically, keep innovating and experimenting, use technology for betterment, strive for excellence, and try to fill those gaps to broaden the knowledge base so as to alleviate the human sufferings. If, somehow, initially not succeeding - stay motivated, be perseverant - solutions would follow.

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## Resource for Malaria Researchers

### The WorldWide Antimalarial Resistance Network (WWARN)



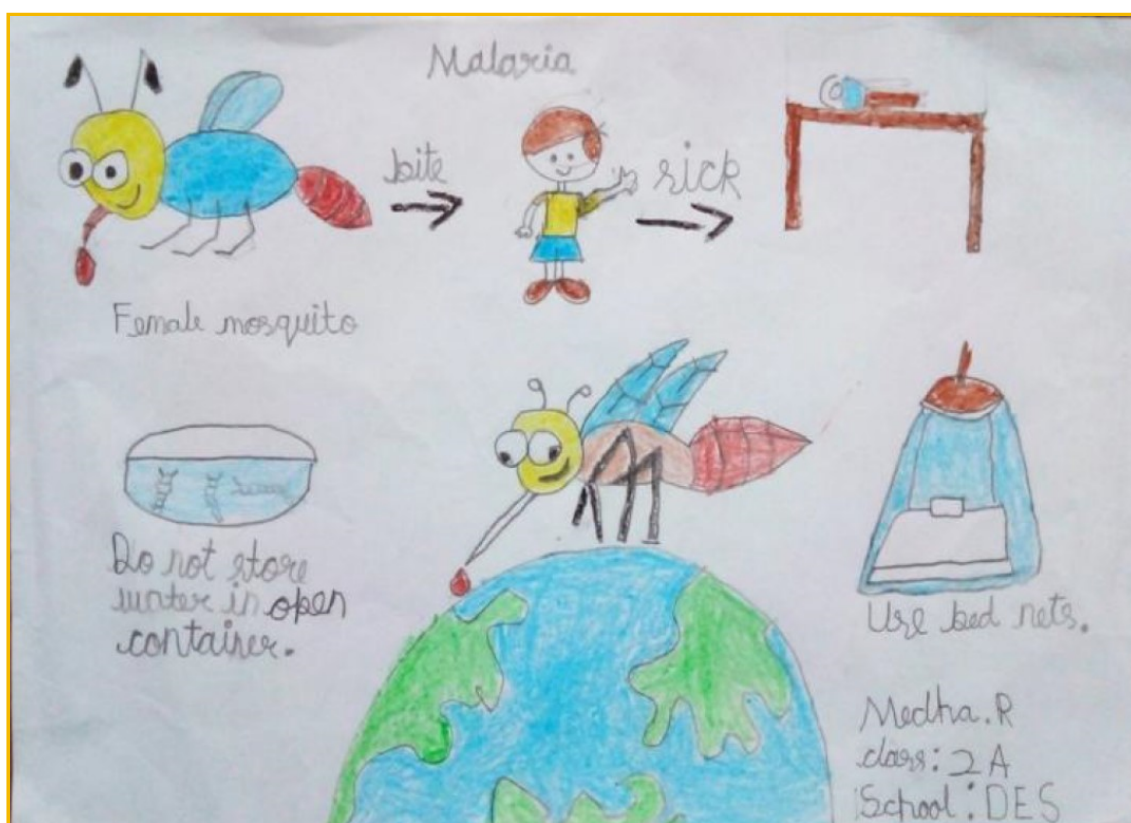
Source: <https://www.wwarn.org/>

The WorldWide Antimalarial Resistance Network (WWARN), a part of the Infectious Diseases Data Observatory (IDDO was highlighted in the December issue of our newsletter), and supported by the Bill and Melinda Gates Foundation, was launched in 2009. WWARN supports the global malaria elimination efforts by providing a collaborative data platform to generate innovative resources and reliable evidence to inform the malaria research community, policymakers and drug developers on the factors affecting the efficacy of antimalarials. By using individual patient data gathered by researchers, NGOs, and pharmaceutical companies, WWARN generates freely accessible tools and evidence for tracking antimalarial drug resistance. Apart from the malaria research community, WWARN also engages with the research communities working on other tropical and neglected diseases.

To know and explore more about WWARN, visit <https://www.wwarn.org/>

## A Child's Perception of Malaria

In this issue, we are showcasing the sketch from 7-years old, Miss Medha. Through the sketch, the key messages related to malaria, like malaria transmission by the bite of a female mosquito, protection against mosquito bites using bed nets, and prevention of mosquito breeding by not storing water in open containers, have been expressed.



**Sketch by:** Miss Medha (daughter of Dr Renuka S, RA Fellow, ICMR-NIMR - Field Unit Bengaluru, Karnataka); **Age:** 07 years; **Class:** Second

## Upcoming Event

### Lecture Series on Infectious Diseases: Lecture 10 by Professor Anuradha Chowdhary


**NIMR**  
NATIONAL INSTITUTE OF  
MALARIA RESEARCH

**icmr**  
INDIAN COUNCIL OF  
MEDICAL RESEARCH  
Serving the nation since 1951

**MERA India**  
Malaria Elimination Research Alliance India  
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NIMR & MERA-India present  
Lecture Series on Infectious Diseases

Lecture: 10

 Prof. Anuradha Chowdhary  
Vallabhbhai Patel Chest Institute,  
University of Delhi, India

*“Candida auris: Understanding  
the recent emergence and spread of  
MDR fungal pathogen.”*

Lecture link: <https://bit.ly/Lecture10Mar>  
Tuesday, 29<sup>th</sup> March, 1500 IST



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Professor Anuradha Chowdhary would be our next speaker in the “Lecture Series on Infectious Diseases”. Professor Chowdhary is the Director, Medical Mycology & In-charge of the National Reference Laboratory of Antimicrobial Resistance in Fungal Pathogens, Department of Microbiology at the Vallabhbhai Patel Chest Institute, University of Delhi, India.

She will be delivering the lecture entitled "Candida auris: Understanding the recent emergence and spread of MDR fungal pathogen", on 29<sup>th</sup> March 2022 at 1500 IST.

To join this lecture, please click on this link: <https://bit.ly/Lecture10Mar>

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