

**BRIEF REPORTS OF 14TH INTERNATIONAL CONFERENCE
ON VECTORS AND VECTOR BORNE DISEASES (ICOV-14)
&
NATIONAL CONCLAVE ON MALARIA IN PREGNANT
WOMEN & CHILDREN**

9-11 January 2019, Bhubaneswar, Odisha, India



Organisers

National Academy of Vector Borne Diseases (NAVBD)

&

ICMR-Regional Medical Research Centre, Bhubaneswar

Co-Organiser(s)

UNICEF, Government of Odisha & Institute of Life Sciences

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ACKNOWLEDGEMENTS

It was a great pleasure and honour to jointly organise the 14th International Conference on Vector & Vector Borne Diseases (ICOV-14) at Bhubaneswar during January 9-11, 2019. In fact, this is the silver jubilee year of the National Academy of Vector Borne Diseases (NAVBD). Moreover, the recently released World Malaria Report 2018 gives credit to India for significantly reducing the malaria case loads mainly due to the remarkable achievements of Odisha. So, organising ICOV-14 at Bhubaneswar is a pleasant co-incidence as since its inception NAVBD has been actively helping the national and state governments to effectively deal with the challenges of different vector-borne diseases.

We are thankful to the UNICEF, Government of Odisha and the Institute of Life Sciences, Bhubaneswar for being the co-organisers of ICOV-14. Of course, NAVBD and ICMR-RMRC could not just organise this great event without the support and help from these esteemed co-organizers. UNICEF's special concern for the children as well as its timely assistance enabled us to organise a national conclave on malaria in pregnant women and children. We would also like to thank the World Health Organisation (WHO) for extending necessary support to ICOV-14.

We are extremely thankful to the delegates for coming in high numbers and making their presentations scientifically visible and socially responsible. Without the support of resource persons and experts we might not be able to make the discussions academically challenging so we would like to thank them a lot for their valuable time and sincere efforts.

The print and electronic media deserve a lot of thanks for playing a very important role for the success of ICOV-14. So, we would like to extend our heartfelt thanks to media and civil society.

May we thank one and all for making it a wonderful conference that was full of learning, sharing, caring as well as reflection of collective wisdom from the scientific-community of three generations at ICOV-14.

We would like to place in record the valuable support of corporate sectors under their corporate social responsibility programs. We are determined to further strengthen the ethical partnership with corporate sector as they play important role to control or eliminate these killer vector-borne diseases.

Last but not the least; we would like to thank the general body members of NAVBD, staff members of all ICMR institutes as well as our colleagues from central and state governments for their help, support and encouragement in organising ICOV-14.

Prof A P Dash
President, NAVBD

Dr Sanghamitra Pati
Director, ICMR-RMRC, Bhubaneswar

INTRODUCTION

Irrespective of epidemiological transitions the threat of vector-borne diseases can't be overlooked at any point of time especially in low and middle income countries (LMICs). National Academy of Vector Borne Diseases (NAVBD) is celebrating its silver jubilee year at present so since 25 years NAVBD has been playing a very active role and contributing significantly to the generation, dissemination and application of scientific knowledge and skills in the field of vector-borne diseases. The 14th International Conference on Vectors and Vector Borne Diseases (ICOV-14) is a coincidence with the silver jubilee of NAVBD which was, in fact, started under the pioneering leadership of Prof A P Dash at Bhubaneswar.

Theme of ICOV-14 was **EVOLUTION TO ELIMINATION**. More than 300 scientific presentations were done in the form of plenary lectures, expert panels, invited lectures, oral and poster presentations.

You can download the detailed program schedule of ICOV-14 through the following link.

<http://www.navbd.org/icov-14/program-icov14.pdf>



It's noteworthy that we are dealing with six vector borne diseases as per the National Vector Borne Disease Control Program (NVBDCP) guidelines in India. The learning of ICOV-14 will not be limited to academics alone which would also be in the forms of applied research, innovative programming including SPVs, developing new tools, establishing centre of excellence, promoting evidence-based medicine and creating new models of equity, ethics, global health values, etc.

These are the two committees, given below, who provided leadership support in planning and organising ICOV-14.

NATIONAL ORGANISING COMMITTEE

President	Prof A P Dash
Vice President	Dr Neena Valecha
Vice President	Dr R S Sharma
Secretary	Dr M R Ranjit
Joint Secretary	Dr B N Nagpal
Treasurer	Dr R K Hazra

LOCAL ORGANISING COMMITTEE

Chairperson	Dr Sanghamitra Pati
Vice chairperson	Dr Namita Mahaptara
Organizing Secretary	Dr Madhusmita Bal
Joint organising Secretary	Dr Debduitta Bhattacharya
Treasurer	Dr Prakash Kumar Sahoo

INAUGURATION OF ICOV-14

The 14th International Conference on Vectors and Vector Borne Diseases (ICOV-14) was inaugurated on 9th January 2019 at Bhubaneswar by Shri Pratap Jena, Hon'ble Minister of Health & Family Welfare, Law and Information & Public Relations of Government of Odisha. Nearly 500 delegates from India and abroad participated in ICOV-14 including eminent scientists, academicians, clinicians, public health experts, epidemiologists, entomologists, molecular biologists, health administrators, research scholars, etc. UNICEF, Government of Odisha and the Institute of Life Sciences were the co-organisers of ICOV-14 which was jointly organised by NAVBD and ICMR-RMRC, Bhubaneswar.



Shri Jena congratulated NAVBD for its silver jubilee and thanked this national academy for its meaningful contributions to control the vector-borne diseases in India. Hon'ble Minister appreciated the work of RMRC, Bhubaneswar and also thanked the staff for working as a team with the Odisha Government. He highlighted Odisha's success in controlling vector-borne diseases and specially mentioned about malaria elimination. It's noteworthy that Odisha government launched its flagship malaria elimination program during 2016-17 that is known as Durgama Anchalare Malaria Nirakarana (DAMaN). Hon'ble Minister mentioned that RMRC has been playing a meaningful role as a co-traveller in state's malaria elimination drives. Shri Jena thanked one and all for making DAMaN successful as a result of which there is more than 80% reduction, in comparison to year 2017, of malaria case loads in Odisha during 2018. Due to DAMaN there is a significant decline in malaria deaths. He, however, mentioned that the state government would further strengthen its efforts with the help of stakeholders and reiterated state government's commitment to make malaria-free Odisha a reality. Impressed with the leadership team Hon'ble Minister appealed to RMRC, Bhubaneswar to establish a research hub on malaria elimination.

Here it's worth mentioning that DAMaN is implemented in 22 malaria endemic districts of Odisha where the field level staff and volunteers, specially the Accredited Social Health Activists (ASHAs), contribute significantly for malaria elimination through innovative community-driven approach. DAMaN gives special emphasis to the health of pregnant women and under-five children, as they are highly vulnerable to malaria.

Dr Sanghamitra Pati, Director, RMRC, Bhubaneswar welcomed all. She too thanked the state government for all kinds of support and motivation while assuring that she and her colleagues will continue to work in team spirit by cooperating with the Government of Odisha in every respect. She also mentioned that Odisha's experience of malaria elimination through DAMaN further confirms that malaria can be eliminated by focusing on pregnant women and under-five children for which convergence is inevitable.

Dr Pramod K Meherda, IAS, Commissioner-cum-Secretary, Health & Family Welfare also graced the inauguration ceremony. He mentioned that government would do everything possible to eliminate malaria from Odisha at the earliest so that India can be declared malaria-free on or before 2030 by the World Health Organisation. He emphasised on the need of collaborations, mutual trust and team work in health sector. Padma Bhusan Prof N K Ganguly, former Director General of ICMR delivered the keynote address and inspired all by sharing his experiences



besides asking the scientific community not to leave any stone unturned in further improving the health status.

Prof A P Dash, President of NAVBD and Vice Chancellor at Central University of Tamil Nadu highlighted the milestones of academy in its silver jubilee year while asking the members and delegates to remain committed and motivated while pursuing their scientific work for the benefit of mankind. Dr Neena Valecha, Director, National Institute of Malaria Research, New Delhi and Vice President of the Academy appreciated Odisha's success in bringing down malaria morbidity and mortality through DAMaN. Dr R S Sharma, Vice President of NAVBD expressed pleasure in the work of local organising committee as there will be more than 300 scientific presentations in the form of plenary sessions, expert panels, invited lectures, orals and posters during these three days at ICOV-14.



Twelve eminent scientists and public health experts were felicitated for their pioneering work in the field of vector-borne diseases. These are National Academy of Vector Borne Diseases Awards, Vestergaard Frandsen Award, Bayer Environmental Science Award, Shri Ravi Singhal Biotechnology Award, Nand Lal Kalra Award and Dr Har Gopal Sharma Award. Dr Madhusmita Bal, Secretary of Local Organising Committee proposed the vote of thanks.

SATELLITE CONFERENCE

A preconference event was organised on 8th January 2019 at the venue of ICOV-14. Drugs for Neglected Diseases initiative (DNDi) organised the event along with ICMR-NIMR, New Delhi. More than one hundred scientists, clinicians, policy makers, health program manager and researchers participated in it that had the title: Research and Development for Diseases of Elimination - Need for New Tools



PLENARY LECTURES

There were nine Plenary Lectures during these days which were delivered by Dr APG Almeida, Dr Poonam Salotra, Dr C R Revankar, Dr Michael Theisen, Dr Sudhansu Vrat, Dr J M Carlton, Dr SC Wassmer, Dr S Mohanty and Prof Y D Sharma. The topics are given below.



Sl. No.	Name of the presenting Author	Topic of Plenary Lecture
1.	Dr A P G Almeida	Vector Borne Diseases: Current trends in arbovirus Bioecology
2.	Dr Poonam Salotra	Genetically modified live attenuated vaccines against visceral leishmaniasis
3.	Dr C R Revankar	Insights into Vector Borne Neglected Tropical Diseases paving way to end game.
4.	Dr. Michael Theisen	Vaccines against malaria: learning and expectations
5.	Dr Sudhansu Vrat	Mosquito-borne viral infections in India: Development of novel vaccine candidates.
6.	Dr J M Carlton	Using genomics to study the hidden burden of Plasmodium vivax in India
7.	Dr S C Wassmer	Evaluation of immuneprofiles associated with malaria infection in populations from high and low endemic areas in India: a pilot study.
8.	Dr S Mohanty	Understanding Pathogenesis of Cerebral Malaria through Neuroradioimaging approaches.
9.	Prof Y D Sharma	A new parasite ligand and host reticulocyte receptor interactions in vivax malaria.

MEMORIAL LECTURE

Dr Altaf Lal delivered the late Dr Neeru Singh memorial lecture. Dr Neeru Singh was a very eminent malariologist of the country and the former Director of ICMR-NIRTH, Jabalpur. Moreover, Dr Singh was a wonderful human being and a true authority of tribal-health. Her absence was very much felt during ICOV-14, however, her good work and scientific contributions for the cause of tribal-health will always be alive.



INVITED LECTURES

More than 50 Invited Lectures, some are given below, were also delivered under different themes like Epidemiology and Disease Burden, Operational and Strategic Research, Clinical Epidemiology and Pathology, Vector Biology and Control, Modern Biology, Insecticide Resistance and Management, Integrated Vector Management as well as Environment and information Technology.



Sl. No.	Name of the presenting Author	Topic of Invited Lecture
1.	Dr Aprup Das	Epidemiology and Evolution of Malaria in India: How about Elimination?
2.	Dr L J Hitchins	Spatial and temporal distribution of knockdown resistance genes in <i>Phelebotomus argentipes</i> and the potential impact on vector control
3.	Dr MM Parida	Aptamers: A promising alternative to antibodies Perspectives in Disease Diagnosis and Therapeutics.
4.	Dr M K Das	Does falciparum malaria depopulate/destroy the isolated tribal populations?
5.	Dr N Somalkar	Lymphatic Filariasis in Odisha: Epidemiology and Disease Burden
6.	Dr K Murugan	Profiling sea fennel essential oil in SiO ₂ encapsulation and nanoemulsions genesis for the treatment dengue virus and its vector, <i>Aedes aegypti</i>
7.	Dr Deepak Gaur	Elucidating the Molecular Basis of Reticulocyte Invasion by <i>Plasmodium vivax</i> .
8.	Dr PK Dash	Broad spectrum medical countermeasures against emerging alphaviruses
9.	Dr PD Yadav	Next-generation sequencing platform involved in the Novel viral discovery and genomic signature identification for Novel vector-borne/zoonotic viral infections and important as high risk group category and its use for future preparedness.
10.	Dr SA Khan	Spotted fever rickettsioses: an emerging zoonotic threat in India with special emphasis to Northeast India.
11.	Dr K Ibrahim	Issues and Challenges of Lymphatic filariasis elimination programme in Malaysia (2001-2018).
12.	Prof D Kochar	<i>Plasmodium vivax</i> malaria definitely not benign.
13.	Prof MK Mohapatra	Multiple Endocrine dysfunction in adult severe falciparum malaria.
14.	Dr DK Panda	Dermato-Lymphangitis Resembles Infected Venous Insufficiency.
15.	Dr S Bhattacharya	Vicious cycle of vector, virus, vertebrate host and victim in <i>Aedes</i> -borne diseases.
16.	Dr Ashish Das	Severe <i>Plasmodium vivax</i> malaria: Unravelling the transcriptome.
17.	Dr R Bellini	Developing an integrated Sterile Insect Technique to suppress <i>Aedes aegypti</i> and <i>Aedes albopictus</i> in urban areas.

Sl. No.	Name of the presenting Author	Topic of Invited Lecture
18.	Dr L. Gupta	Plasmodium alters the composition of microbial community in Anopheles stephensi midgut
19.	Dr R C Dhiman	Vector Borne Diseases in the Context of Climate Change: Preparedness in India.
20.	Dr S K Ghosh	Urban challenges to malaria elimination in India.
21.	Dr DS Dinesh	Transmission dynamics of Kala-azar in context of vector bionomics.
22.	Dr DT Mourya	Arboviruses: Indian Perspectives.
23.	Dr SK Singh	Japanese Encephalitis Virus exploits microRNAs to counteract the host Immune Response.
24.	Dr Arun Nagraj	Malaria Elimination and Eradication – Quest for Transmission Intervention Strategies.
25.	Dr Jagbir Singh	Studies on Culicidae Diversity and Impact of Ecological Changes on its Major Vector Species from Punjab.
26.	Dr Sulochana Shekhar	Mitigating Malaria through Spatial Decision Support System - A Geoinformatics Approach.
27.	Dr P Babbar	Plasmodium falciparum var profiling in adult severe malaria patients reveals the involvement of distinct pfEMP-1 in disease pathogenesis
28.	Dr S Ghosh	Acaricide resistance status in ticks: Chemical control strategies and failures in Indian scenario.
29.	Dr MK Das	Medical Entomology in Medical Education: Need for a paradigm change.
30.	Dr Rajnikant	Re-energised Efforts for Malaria Elimination: Challenges and Opportunities
31.	Dr S S Sahu	Entomological factors in relation to the occurrence of Japanese encephalitis in Malkangiri district, Odisha State.

ORAL PRESENTATIONS

There were 114 oral presentations during ICOV-14. Seriousness of the delegates and their active involvement in discussions boost the learning environment into a great extent. The presentations were done under separate themes or tracks with different parallel sessions.

Almost 30% of the oral presentations were devoted to the cause of malaria in pregnant women and children so ICOV-14 tried its best to have several deliberations before the national conclave and set the agenda for this less-discussed topic of malaria in pregnant women and children.

POSTER PRESENTATIONS

Total 533 abstracts were received and after evaluation by the independent committee we selected some under different categories. The selection was done on the basis of scientific merit and academic value. As far as poster presentation is concerned we selected 172-poster which were then presented during three days of ICOV-14. We were indeed impressed by the seriousness of presenters; especially the younger-generation which is a very good sign for the future.

Given below is the web-link of poster index.

<http://www.navbd.org/icov-14/poster.pdf>

Also, please refer to the attached hard copy of ICOV-14 abstracts for more details.



INDUSTRIAL PRESENTATIONS

There were ten industrial presentations were very useful, as those helped the delegates to understand the new products in the field of vector control.

Given below are some of those industrial presentations, however, there were more than ten presentations in this category.



Sl. No.	Name of the Industry	Topic of the Industrial Presentation
1.	Vestergaard Frandsen Ltd	Vestergaard's commitment to fight malaria with long-lasting insecticidal nets
2.	Bayer CropScience Limited	Bayer's commitment to fight vector-borne diseases through innovative vector control portfolio and strategic partnerships
3.	Clarke International LLC	Natular R, Spinosad Based Larvicides for Mosquito Larval Control in India
4.	Syngenta India Ltd.	ICON ^ R 10CS – Advanced micro-encapsulated insecticide for long lasting indoor residual spraying (IRS)
5.	Goziper Group	New IRS tools to fight effectively against Vector Borne Diseases.
6.	Hindustan Insecticides Limited	Strategies on Insecticides Resistance Management Role of DDT in Malaria Control Programme – National and Global Perspective
7.	SD Biosensor Ltd	Paradigm Shift in Infectious / Vector Borne Diagnostics

SUMMARY OF RECOMMENDATIONS OF ICov – 14

After three days of brainstorming and scientific presentations several recommendations were discussed among the delegates, experts and different stakeholders. However, given below are the ones which must be addressed on priority basis by the government departments, policy makers, UN agencies, donors, CSR units of the private sector as well as the national and international development organisations.



1. India may constitute a national task force for annual programme review for Vector Borne Diseases.
2. Research should continue on transmission biology, vector bionomics and changing pattern of vector behaviour.
3. Integrated Vector Management should be strengthened at national and sub-national levels.
4. New and updated strategies for elimination of Kala-azar and lymphatic filariasis are needed with emphasis on newer foci of Kala-azar and managing hotspots in lymphatic filariasis.
5. A network for monitoring insecticide resistance should be established.
6. Research Institutes and National Programmes should work together and find out research gaps to be addressed.
7. Cutaneous leishmaniasis and Scrub typhus should be given due importance.
8. Prevalence of Plasmodium knowlesi should be studied.
9. Pathogenesis of dengue needs to be understood.
10. There is a need for new diagnostic tools for early detection of dengue.
11. Ecological succession of vector species needs to be studied in each geographic area.
12. Climate change impact on vector borne diseases needs to be studied and mitigation methods developed.
13. The MBBS, Nursing and different health-science curriculums may suitably be modified to address the emerging issues of vector borne diseases in India.
14. Stakeholders may extend necessary support to RMRC, Bhubaneswar to establish a state-of-the-art Research Hub which should focus on malaria and other vector borne diseases.
15. Policy makers and program managers may address the gaps and bring down the sufferings of common people, including women & children, so that the vector borne diseases need not harm the vulnerable communities disproportionately.

AWARDS FOR OUTSTANDING ACHIEVEMENTS

Twelve eminent scientists and public health experts were felicitated during the inauguration ceremony of ICOV-14 for their pioneering work in the field of vector-borne diseases.

There were three categories in NAVBD Award and in clinical category the joint recipients were Prof (Dr) Dhanpat Ku Kochar of SP Medical College, Bikaner and Dr Sanjib Mohanty Ex- Director, Ispat General Hospital, Rourkela. Dr Sunit Ku Singh received it for the molecular biology category who is from the IMS of Banaras Hindu University. Likewise, Dr Rajni Kant and Dr Manju Rahi from the ICMR headquarters shared the NAVBD award under environment science category.



Dr P K Srivastava, former Additional Director of NVBDCP received the Vestergaard Frandsen Award for Vector Control.

Dr Madan Mohan Pradhan, Additional Director (VBD), Odisha and Dr Paban K Dash from DRDE, Gwalior jointly shared the Bayer Environmental Science Award.

Shri Ravi Singhal Biotechnology Award went to Dr S K Ghosh of ICMR-NIMR, Bengaluru field unit.

Nand Lal Kalra Award was jointly received by Dr R K Hazra of ICMR-RMRC, Bhubaneswar and Dr Diwakar Singh Dinesh of ICMR-RMRIMS, Patna.

Last but not the least; Dr Rina Tilak of the Armed Force Medical College (AFMC), Pune was conferred with Dr Har Gopal Sharma Award.

VALEDICTION OF ICOV-14

The conference ended with a great deal of enthusiasm which will benefit both scientific community and policy makers to work with enhanced zeal and dedication so that India and other low & middle income countries (LMICs) can eliminate different vector-borne diseases by facing the current and future challenges. The delegates too reiterated their commitment to help achieve the sustainable development goals (SDG); especially SDG-3. As a result of this international conference the south-south cooperation, in the field of vector borne diseases, will be further strengthened.

Dr V M Katoch, former Secretary Department of Health Research, Government of India and Director General of ICMR graced the valedictory ceremony as Chief Guest. He appealed to the scientists and health professionals to rededicate themselves for ensuring health-for-all as the threat of vector-borne diseases can't just be overlooked irrespective of epidemiological transitions and increase in non-communicable diseases burden. Padma Shree Dr Ajay Kumar Parida, Director, ILS and Dr P L Joshi, former Director, NVBDCP, Govt. of India addressed the august house as Guests of Honour.

Dr Sanghamitra Pati, Director thanked all the dignitaries and participants present in the function. She reiterated that RMRC will remain as the co-traveller of Odisha's health sector. Dr Pati mentioned that all kinds of efforts will be put for establishing a state-of-the-art research hub that should not only benefit India for malaria elimination by 2030 but also to several LMICs. So, RMRC will not leave any stone unturned in this regard and closely work with the state government, research institutes, policy makers, scientists, knowledge brokers, global players, civil society, etc. Dr Pati appealed to the scientific community and all the stakeholders to come forward to assist Odisha in establishing this research hub on malaria elimination.

During its silver jubilee year NAVBD is focusing on the health issues of vulnerable communities and neglected people. Prof A P Dash, President of NAVBD who is also the Vice Chancellor of Central University of Tamil Nadu highlighted the importance of addressing the health problems of poorest of the poor and different disadvantaged groups of the society. So, ICOV-14 is decided to focus on women and children. It's noteworthy that RMRC is headed by a competent scientist when number of women leaders in health-research sector appears to be less in LMICs.

Dr Manoranjan Ranjit, Secretary, NAVBD recalled the process of organising this great event and he specially thanked to Dr Sanghamitra Pati, Chairperson of ICOV-14 and Dr Madhusmita



Bal, Organising Secretary for their hard-work and excellent contributions both academically as well as for the smooth organisation of this international event. Dr Ranjit categorically mentioned that Padma Shree Dr Ajay Kumar Parida, Director, ILS encouraged the organisers in a regular fashion and motivated all towards best performance besides extending all other supports as required from time to time. Dr Ranjit too called upon the young delegates to strive for excellence and lead from the front in coming days. He too wished the ICOV-15 organisers and assured to extend all kinds of support from the ICOV-14 organising team.

Following awards were presented to the winners of Oral and Poster presentations held during three days at ICOV-14.

BEST ORAL PRESENTATION

Dr Shailaja Singh, JNU, New Delhi

Prizes of Poster Presentations: 9th January, 2019

- 1st Prize : Dr S Sharma, NIMR, New Delhi
- 2nd Prize : Dr P D Yadav, NIV, Pune
- 3rd Prize : Mr G Yadagiri, NIPER, Punjab

Prizes of Poster Presentations: 10th January, 2019

- 1st Prize : Dr H V Manjunathachar, NIRTH, Jabalpur
- 2nd Prize : Dr C Chauhan, NIMR, New Delhi
- 3rd Prize : Ms Animesha Rath, RMRC, Bhubaneswar

Prizes of Poster Presentations: 11th January, 2019

- 1st Prize : Dr J Turuk, RMRC, Bhubaneswar
- 2nd Prize : Ms Ipsita Mohanty, RMRC, Bhubaneswar
- 3rd Prize : Dr P Mahale, NIMR, New Delhi

Dr Madhusmita Bal, Organising Secretary thanked the chief guest and guests of honour for their valuable time. She thanked the President and Secretary of NAVBD for extending wholehearted support. Dr Bal thanked the Director, RMRC, Bhubaneswar for providing extraordinarily leadership which has made ICOV-14 a huge success. She thanked all the resource persons and experts for their academic contributions. She sincerely thanked the media for their time and help. She also thanked the corporate sector for their active involvement. As the Organising Secretary of ICOV-14 she thanked all the delegates those had come from India and abroad. Dr Bal wished all a happy journey back home and again thanked one and all.

NATIONAL CONCLAVE ON MALARIA IN PREGNANT WOMEN & CHILDREN

Organised by



आईसीएमआर-क्षेत्रीय आयुर्विज्ञान अनुसंधान केंद्र
ICMR-Regional Medical Research Centre
स्वास्थ्य अनुसंधान विभाग, स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार, भुवनेश्वर-751023
Dept. of Health Research, Ministry of Health & Family Welfare, Govt. of India, Bhubaneswar-751023

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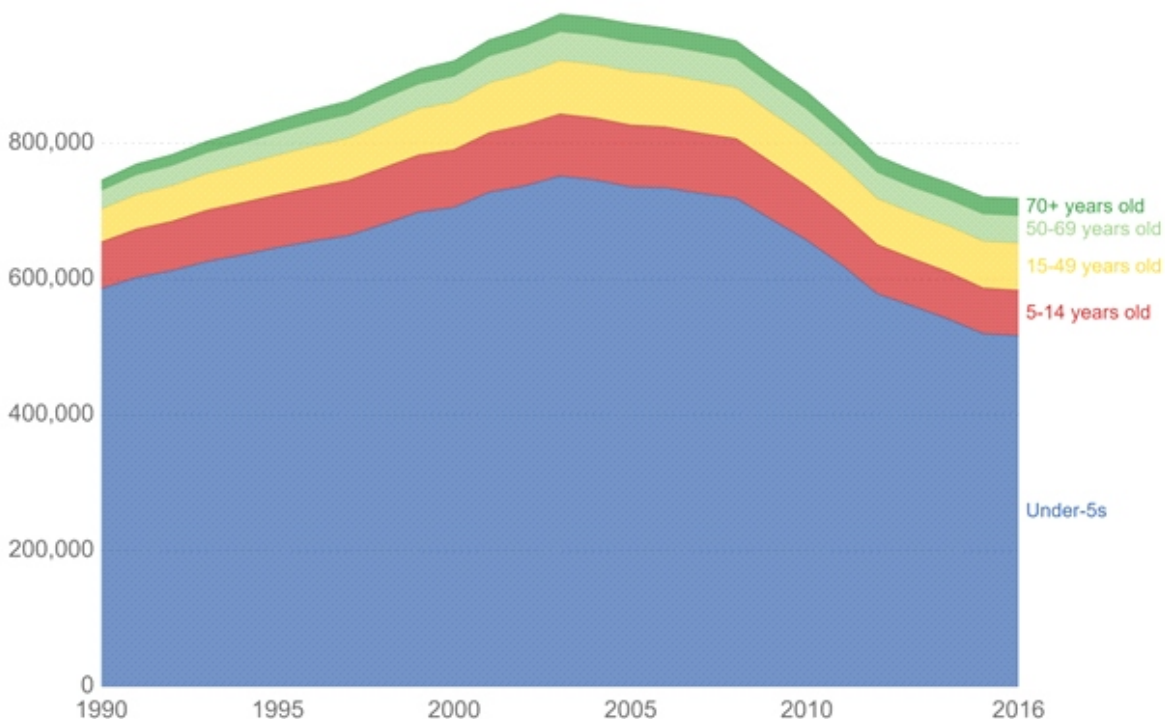


In the sideline of ICOV-14, a special national conclave was organised on 11th January 2019 to discuss the issues of malaria elimination with focus on pregnant women and children. Dr P L Joshi, former Director of National Vector Borne Disease Control Program (NVBDCP) facilitated the discussion that was chaired by Dr V M Katoch, former Secretary, DHR and DG ICMR, Govt. of India.

It's noteworthy that the under-five children are globally more vulnerable and among all the age groups they die most due to malaria. Kindly refer to the ourworldindata.org info through this link <https://ourworldindata.org/malaria>.

Malaria deaths by age group, World

Annual number of deaths from malaria, differentiated by age category.



Source: IHME, Global Burden of Disease (GBD)

OurWorldInData.org/malaria/ • CC BY-SA

In fact, the under-five children and pregnant women are most vulnerable to malaria. Unfortunately, this newspaper report depicts the story of the much discussed death(s) in Nagada at Odisha.

<http://www.newindianexpress.com/states/odisha/2017/jul/22/odishas-face-of-malnutrition-manasi-pradhan-dies-of-malaria-in-nagada-1632059.html>

THE NEW

INDIAN EXPRESS

Android Apple RSS YouTubeSaturday, January, 26, 2019 02:56:37 PMFacebook Google+ Twitter Instagram

Home > States > OdishaURGENTMy baba is dying we urgently need Rs 18 lakh to save his life. Help us DONATE NOW

Odisha's face of malnutrition Manasi Pradhan dies of malaria in Nagada

Barely hours after CM Naveen Patnaik discussed the scenario in Odisha with Union Minister for Women and Child Development Maneka Gandhi in New Delhi, the two-year-old died.

Published: 22nd July 2017 10:10 AM | Last Updated: 22nd July 2017 10:54 AM



Manasi became the face of malnutrition in the Nagada village but didn't survive long as she is said to have died of malaria.

By Express News Service

JAJPUR: Barely hours after Chief Minister Naveen Patnaik discussed malnutrition scenario in Odisha with Union Minister for Women and Child Development Maneka Gandhi in New Delhi, two-year-old Manasi Pradhan, the face of malnutrition in Nagada village under Sukinda block in the district, died reportedly of malaria on Friday. Nagada village had hogged the headlines over death of 20 children due to malnutrition in three months last year.

Latest

- Donald Trump says will sign bill to reopen government until February 15
- Entry, exit at four Delhi metro stations to be closed for few hours on Republic Day
- Odisha government disburses Rs 622 crore to farmers under KALIA scheme
- 500-meters area around Somnath, Ambaji temples declared 'veg zones'
- Here's the complete list of Padma awardees 2019
- Pakistan announces introduction of new visa policy to promote tourism, investment



SPOT NEROLAC ARO

Although the underlying cause of death in above case is malaria but it could be prevented if that child would be getting good nutrition and other supports under different schemes of the Health and other departments. It happened in an area which is highly industrialised in Odisha, near Kalinga Nagar, so the situations of children in other district could be worse. Hence, malaria elimination can't be successful in isolation unless we address the issues of social determinants of health in areas where there are more vulnerable groups and economically backward communities. If you look at the latest fact sheets of Odisha in health and nutrition, links given below, you would find the situation bit alarming.

http://odishavikash.org/wp-content/uploads/2016/11/OVC_Factsheet_Health.pdf

http://odishavikash.org/wp-content/uploads/2016/11/OVC_Factsheet_Food-Nutrition-Security.pdf

Thus, by realising the urgency the ICMR-RMRC organised this national conclave in association with the UNICEF. Moreover, ICOV-14 was the best platform where this subject was discussed seriously among the policy makers, researchers, scientific communities, program managers, clinicians, public health experts, UN agencies as well as different national and international organisations.

Opening the conclave Dr Sanghamitra Pati, Director, RMRC mentioned that during 2016-17 RMRC, Bhubaneswar initiated both formal and informal brainstorming with Odisha government colleagues. After different efforts Durgama Anchalare Malaria Nirakarana (DAMaN) was launched with innovate approach. DAMaN is a cost effective community-driven scheme that is operational in 22 districts of Odisha to supplement the regular anti-malaria drives.



Pregnant women and under-5 children are the prime focus of DAMaN, as they are highly vulnerable. DAMaN is conducted in camp approach and two to three camps are held annually. Also, more than 11-million Long Lasting Insecticidal Nets (LLIN) were provided as LLIN is very helpful in preventing mosquito bites. Indoor Residual Spray (IRS) activities were done regularly for effective vector control. Dr Pati, however, mentioned that now the issue is how to maintain the momentum gained so far. How to further strengthen the involvement of government departments and other organisations those are doing excellent work especially in women & child health?

Also, how to help ensure India is declared malaria-free by the WHO on or before 2030. Director, RMRC too emphasised on the need of team work and inter-departmental coordination.

There was an expert panel on barriers in response for Malaria among pregnant women & children and potential obstacles. Mr Martin Edlund and Dr. Kaushik Sarkar highlighted the international experiences of Malaria No More (MNM) and how MNM will help Odisha state in coming years in its malaria elimination drives.

CHILDREN: NOT JUST SURVIVE BUT THRIVE



Articulating the correlations between Malaria in Pregnant Women and Children Dr. Vivek V. Singh of UNICEF mentioned that it's not just helping the children to survive but it's more about children to thrive and grow to their best potential possible. Referring to the World Malaria Report 2018 (WMR18) <https://goo.gl/dQ6RPY> Dr. Singh mentioned that 61% of the malaria deaths globally are among the U-5 children so there can't be more compelling reason to focus on them which is a prerequisite for malaria elimination. He, however, appreciated the latest efforts of Odisha through DAMaN which has not only brought down the malaria case loads significantly but proved its mettle by focusing on pregnant women and U-5 children.

Dr Singh cited the study done by NIMR which finds that child's birth weight could be less by 350-gram, if the pregnant woman is malaria-positive. So, malaria during pregnancy is a major contributor to low-birth-weight (LBW) babies. Dr. Singh reiterated that children should thrive once no or less LBW babies are born. Likewise, he mentioned how WMR18 explains the risk of anaemia in pregnancy, nearly 18% difference, among the malaria infected and non-infected pregnant women. Hence, convergence of malaria elimination drives with different schemes of health and other departments will produce win-win situations and further the cause of health-for-all.

MNM'S DETAILED VIEWS

The negative impact of malaria on the health of pregnant women and under five children is disproportionately higher, as it (malaria) results in anaemia and under-nutrition in this population group. In the high endemic states of country, malaria features among the top ten causes of morbidity and years of life lost in the paediatric age group. Therefore, whilst ending malaria in this population group is essential for malaria elimination in India by 2030, preventing and ultimately ending the disease will also ensure the country achieve other targets of Sustainable Development Goals, especially related to maternal and child health.

Malaria No More is working globally with the vision that no child dies from mosquito bite. In 2018, we conducted the piloting of The Global Fund's Malaria Matchbox Toolkit to assess community, rights and gender barriers in malaria response in India. We found that malaria initiates a vicious cycle of malaria-anaemia-under nutrition-poverty, affecting the pregnant women and young children. We also found that community health workers, e.g. ASHAs, could devote only about 60 minutes of day's time for malaria related service delivery in a NE state in which we piloted the toolkit. The ASHA workforce, which is the pillar of India's National Health Mission, devotes major part of their day's time in maternal and child health related services. RMNCH+A programmatic focus on malaria in the highest endemic areas/ states and strengthened interdepartmental and inter-programme collaboration can therefore result in effective utilization of ASHAs time and high impact on the overall health and nutrition of women and children.

India's highest malaria endemic state, Odisha has demonstrated astounding success through reduction of malaria burden by more than 80% in 2018. A key factor behind the success is its Durgama Anchalare Malaria Nirakaran (DAMaN) Strategy. The DAMaN strategy not only focuses on meeting the coverage gap in the most remote and hard to reach areas, but also provides the

opportunity to identify anaemia and under-nutrition along with malaria, through mass screening. Odisha's flagship programme to improve maternal and child health, "SAMPURNA" is also demonstrating success through reduction of infant and maternal mortality and improving nutrition. The geographical co-existence of malaria and



anaemia & under-nutrition as well as the greater vulnerability of pregnant women and children for malaria creates the opportunity to achieve synergistic effect through an integrated approach.

Malaria No More (MNM) is committed to support to the Government of India and Government of Odisha to end malaria. We are establishing a Strategic Support Unit and Malaria Action Coalition in Odisha. Currently, Malaria No More is conducting a large-scale mixed method knowledge attitude practices survey in Odisha to inform the barriers in malaria response in the state and the study is expected to produce critical evidence on malaria response among the pregnant women and young children. We are also excited to collaborate with Regional Medical Research Centre, Odisha and UNICEF to improve knowledge on effective strategies to fight malaria with focus on the pregnant women and young children; facilitate the process of translating knowledge into policy and data driven decision making; and jointly provide an evidence-based sustainable strategy to eliminate malaria in pregnancy and childhood in Odisha. Moreover, CEO's suggestion on human capital index was highly appreciated.

Dr Prameela Baral, Additional Director, VBDCP reiterated Odisha's commitment to eliminate malaria. She mentioned that prevalence of malaria should be zero among the under-five children which is nearly 14% in Odisha. Dr Devanand Moonasar of South Africa appreciated the innovative measures under DAMaN and collaborations among the stakeholders which would help mitigate the barriers while serving the vulnerable populations like pregnant women and U-5 children. He too shared his experiences from South Africa's neighbouring countries and suggested that there is a need to focus on data, prevention and diagnosis. Dr K K Das highlighted Odisha government's achievements under SAMPURNA scheme and how it helps in bringing down malaria case loads in hard-to-reach areas by facilitating emergency alternative transportations for institutional delivery.



Dr Madan Mohan Pradhan explained how DAMaN was started under his technical leadership as well as the journey so far. As a result of special attention to the expected mothers and under-5s DAMaN has delivered meticulously and the malaria case loads are down by more than 84%. Odisha's success has indeed made India proud which earned lot of appreciations after the release of latest World Malaria Report (WMR) on November 19, 2018. The first DAMaN camp is conducted before the onset of monsoons where the entire population of the village or hamlet are screened for malaria by using bivalent RDT. It's noteworthy that DAMaN addresses both symptomatic and asymptomatic malaria cases so no one is left out

during the first round screening. Some high endemic areas also conduct second camps and screen all. However, the final round camps are conducted after the monsoon season which exclusively screens the pregnant women and under-5 children.



Dr Pradhan added that anthropometric measurements are carried out among the under-5 children to detect malnutrition. Few basic health tests are also conducted in DAMaN camps like blood pressure, anaemia, etc. IFA is supplemented to the anaemic women whereas the malnourished children get special attention by the ICDS staff or Anganwadi workers. Thus, DAMaN is a perfect approach both in theory and practice.

Among the audience we were lucky to have many senior officials and professionals with outstanding academic achievements. So, they put several questions which the panel answered. They also came up with several suggestions while sharing their own work experience in different settings. After detailed discussions the house came up with different recommendations.



MAJOR RECOMMENDATIONS OF NATIONAL CONCLAVE

- I. As a co-traveller of Odisha Govt. RMRC must not leave any stone unturned and help the state to eliminate malaria.
- II. Partnerships may be built with other like-minded organisations, UN agencies, international agencies, research organisations, medical colleges specially with departments like OG & paediatrics, nursing associations, universities, government departments and civil society to further the cause of malaria elimination with special emphasis to pregnant women and children.
- III. A mechanising or platform may be created for data sharing so that the information available under different schemes, departments and organisations can be optimally used to eliminate malaria.
- IV. The proposed Research Hub at RMRC must focus on malaria in pregnant women & children and conduct more studies in this less-researched area.
- V. More efforts should be put to bridge the gap between research and implementation.
- VI. Studies may be conducted to verify the efficacy of used-LLINs and IRS to any vector-species.
- VII. RMRC may conduct workshops by involving the program mangers of HFW, WCD, Panchayati Raj, Social Welfare, Tribal Development, Forests & Environment, RDM, Public Health Engineering, etc. to boost convergence. In addition to it; RMRC may also facilitate international exchange programmes, short educational tours to projects across the globe, for the officials of Odisha Govt.
- VIII. RMRC may help create holistic environment to further strengthen convergence with special emphasis to malaria in pregnant women & children.
- IX. Advanced Disease Elimination Laboratories, Entomological & Parasitological, may be established in Bhubaneswar campus and in RMRC's field units.
- X. Momentum gained through this national conclave and ICOV-14 must be maintained besides ensuring that impacts of both the events benefit the vulnerable groups, which shall also pave the way for achieving sustainable development goals.
- XI. RMRC may explore the possibilities of adding technologies into current malaria elimination drives by studying the implementation gaps and feasibility; i.e. Android App, Community Radio, low-cost Drones, etc.
- XII. Futuristic research programmes need to be conducted in Odisha on malaria by adding emerging dimensions which need not be limited to the existing epidemiological, clinical and operational issues.
- XIII. RMRC may improve its research capacity by adding both quantity & quality into its multi-disciplinary team.
- XIV. A Chair on EBM may kindly be established in RMRC to promote world-class research on malaria in pregnant women & children which would eventually generate high quality and trust worthy evidence.
- XV. RMRC may analyse the DAMaN data, at least the 1st camps of each year that covers all people in a community, and suggest whether there is any need for malaria screening in the Blood Banks of high endemic areas.

A joint working group was then formed to take these forward.

Then, the joint working group look at the recommendations and suggested to start the work of setting the Research Hub. It's expected that the hub, appropriate name can be decided, would be fully functional in two months time which would give due priority to malaria in pregnant women and children.

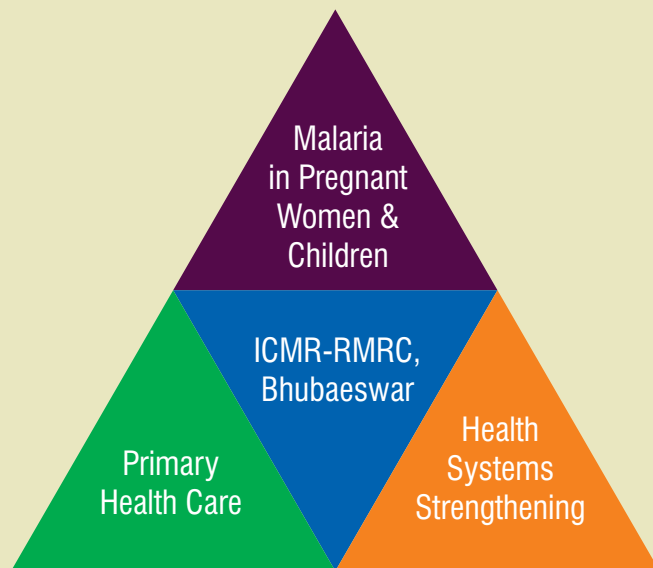
However, at the same time the hub will focus on bridging the research and implementation gap especially in primary health care through health systems strengthening.



PRIORITY

We are committed to work on malaria and other VBDs; however, given below is the pyramid that defines our immediate priority.

Without contributing to the cause of primary health care and health systems strengthening it's difficult to prevent and control malaria. Moreover, for malaria elimination the under-five children and pregnant women deserve maximum attention which Odisha has already demonstrated under DAMaN. Hence, the hub would adopt a holistic approach to defeat malaria as it's a very complex task which cannot be done in isolation.

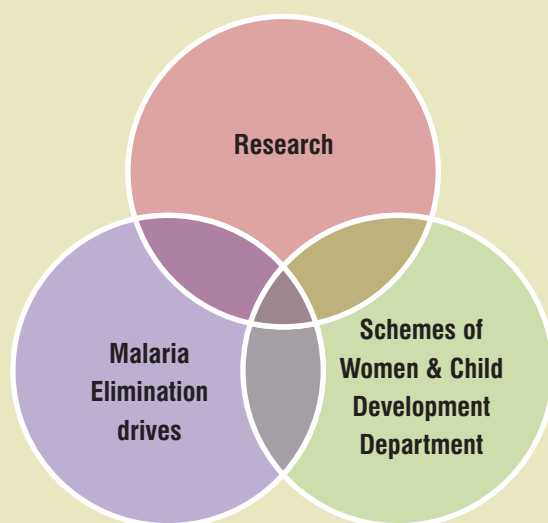


It's noteworthy that the morbidity and mortality of malaria is quite high among the non-urban people those live in villages and hamlets. Some also live in hard-to-reach areas. In all these cases the victims of malaria largely depend upon the primary health care thus we can't just ignore it.

DAMaN has also proved the necessity of stronger health systems. The political commitment and the decision to take risk by deviating from the national guidelines are few examples which facilitated the birth of DAMaN. Moreover, health systems strengthening are not a one-time solution rather it's a continuous process and dynamic in nature so we can't afford to overlook its importance until 2030.

BRIDGING THE GAP BETWEEN RESEARCH AND IMPLEMENTATION

Knowledge unless utilised is equivalent to waste of resource. Knowledge and technical knowhow must benefit the people those need them. It's not only limited to clinically important ones but also to public health, vector control, implementation science, etc. In the other hand it's not ethical for the practitioners to sit on what they know so knowledge must be translated into action. Hence, we would look at both and act like a catalyst to ensure the implementation of research findings through service delivery while eliminating malaria and other VBDs. Of course, we shall network with the researchers, knowledge brokers, scientific organisations, publishers, donors, etc. for getting the up-to-date and credible information. At the same time we would work with the government agencies for adopting the ones which are feasible and economically viable. In case of any apathy during implementation phase, we may monitor the progress at micro level and get it done without fault-finding. We shall certainly nurture stronger bond and work in team spirit.



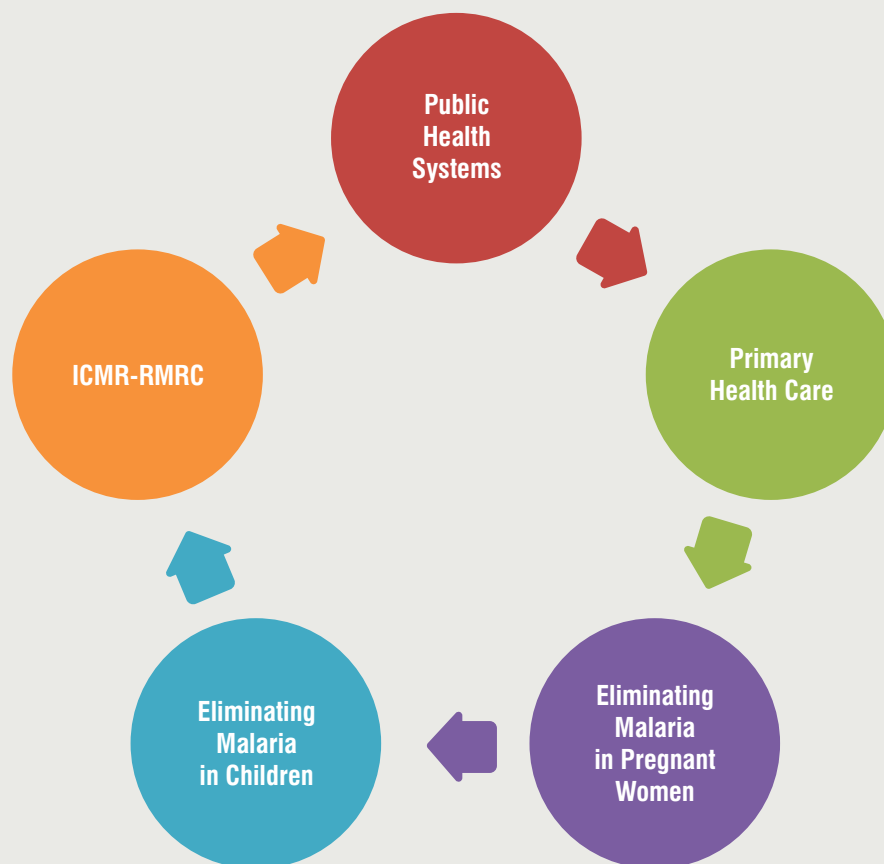
We will also generate evidence by conducting studies and different research activities, which are required to boost implementation from time to time. These too include the piloting of innovating ideas.

Bridging the gap between research and implementation can improve program outputs, outcomes as well as impact. It would also make implementation more cost-effective as evaluation of implementation strategies can minimise waste besides improving efficiency.

Last but not the least; the practitioners can become a major stakeholder in the field of health research and vice versa which would create a win-win situation for both. So, a time may come when the so called community level workers or volunteers like ASHA can be in the forefront of giving new conceptual directions to the global health leaders. It appears bit philosophical at this stage; however, we are committed to both art and science of implementation. Moreover, without a holistic approach we can't just bridge this gap by being mechanically or scientifically correct.

HEALTH SYSTEMS STRENGTHENING

Stronger health systems would make things better. It will be impossible for us to ignore the health systems although there is no ready-made solution available for it. Moreover, the health systems strengthening cannot be done in a piecemeal manner. Our leadership team and advisors also understand that health systems strengthening is a time taking process. So, it requires lot of patience as the health systems appear to be weak in hard-to-reach areas. That's why we will certainly focus on primary health care. The public health systems, primary health care and our efforts need to function in harmony or move together.



Since this is a very dynamic and delicate process so implementing changes from capital to village level is challenging. So, we shall get it done with lot of care while being sensitive to the political, social, economical, cultural as well as behavioural dimensions. Hence, we can neither limit ourselves to certain things nor become a frog inside the well. Our approach here must be comprehensive but result-oriented.

We are also aware about several good initiatives so we shall work with the enthusiastic people and units of public health systems than blaming the cynics. As a co-traveller we would like to be with the systems during its good and bad times thus we shall eventually be more reliable. Further strengthening mutual-trust shall be one of our key methodologies that we will do gracefully by respecting the existing and new players of health systems.

DRAFT OBJECTIVES OF PROPOSED RESEARCH HUB

Then the working group suggested the following sets of objectives, draft, which the Research Hub would consider, discuss and finalise in due course after internal barnstorming among the experts.

1. Immediate Objectives

- 1.1. To establish Entomological & Parasitological Laboratories which can perform high quality diagnosis, advanced tests and support the scientists as well as clinicians with its state-of-the-art technology
- 1.2. To extend technical support to the states and cater to their evidence requirements from time to time.
- 1.3. To proactively promote and support the efforts for eliminating malaria among high risk groups; especially the pregnant women and under-five children.

2. Intermediate Objectives

- 2.1. To help ensure convergence and inter-sectoral coordination among government departments, both inter and intra, as well as different agencies working for malaria and other VBDs elimination.
- 2.2. To collaborate with the reputed Public Health institutions, universities, consortiums, researchers, policy makers, clinicians, medical colleges, media house and other health service providers for evidence generation, dissemination, timely application, evaluation, etc.
- 2.3. To conduct studies, reviews, critical analysis, evaluations, etc. by following best research-methodology for evidence generation on malaria and other VBDs.
- 2.4. To promote evidence-based application of indigenous practices, low-cost technology and IT for help eliminating malaria and other VBDs.
- 2.5. To undertake all other activities which the Odisha Govt. and ICMR decide from time to time.

3. Long-term Objectives

- 3.1. To further the political willingness for malaria elimination and effectively contribute towards evidence-informed policy making.
- 3.2. To further strengthen the capacity of public health systems and primary healthcare in Odisha and neighbouring states which would eventually help India in earning the malaria free certificate of WHO on or before 2030.
- 3.3. To establish a WHO collaborating centre on malaria elimination.
- 3.4. To document different experiences of malaria elimination drives in Odisha and meticulously store these for the greater use of future generations.
- 3.5. To establish a Chair on malaria elimination.

APPENDIX



**Links of different reports
in Print & Electronic Media
on ICOV-14.**

Intl conference on vector-borne diseases from January 9

<http://www.newindianexpress.com/states/odisha/2019/jan/07/intl-conference-on-vector-borne-diseases-from-january-9-1921607.html>

ICOV 14 In Odisha

<http://tathya.in/2016/story.aspx?args=2A927ECAD131151A756188945095088D3EC41F163982EA3F5B28E5E0E2D201A06B43078376F841AA>

International conference on Vector Borne Diseases in Bhubaneswar from Jan 9

<https://www.newswave.in/international-conference-on-vector-borne-diseases-in-bhubaneswar-from-jan-9/>

Min pleads for malaria research hub in BBSR

<https://www.dailypioneer.com/2019/state-editions/min-pleads-for-malaria-research-hub-in-bbsr.html>

State plea to RMRC for research hub

<http://www.newindianexpress.com/states/odisha/2019/jan/10/state-plea-to-rmrc-for-research-hub-1923122.html>

Jena Urges For Research Hub

<http://tathya.in/news/31502/0/Jena-Urges-For-Research-Hub>

14th International Conference on Vectors and Vector-borne diseases organised | Kalinga TV

<https://www.youtube.com/watch?v=I2rYPp8zHf8>

International conference on vector borne disease inaugurated in Bhubaneswar - OTV

<https://www.youtube.com/watch?v=JgGnOQvJJWQ>

ICOV 14 Concludes

<http://www.tathya.in/news/31526/0/ICOV-14-Concludes>

14th International Conference on Vectors and Vector Borne Diseases

<https://m.dailyhunt.in/news/india/english/odisha+samachar-epaper-odishasa/14th+international+conference+on+vectors+and+vector+borne+diseases-newsid-106149883>

ICOV 14 Concludes

2019-Jan-12 | Bhubaneswar



The 14th International Conference on Vectors and Vector Borne Diseases (ICOV-14) held here in Bhubaneswar organised by the National Academy of Vector Borne Diseases (NAVBD) and Regional Medical Research Centre (RMRC), Bhubaneswar concluded on 11 January.

The conference ended with a great deal of enthusiasm which will benefit both scientific community and policy makers to work with enhanced zeal and dedication so that India and other low & middle income countries (LMICs) can eliminate different vector-borne diseases by facing the current and future challenges.

The delegates too reiterated their commitment to help achieve the sustainable development goals (SDG); especially SDG-3.

ICOV-14 was inaugurated by Pratap Jena, Minister of Health & Family Welfare, Law and Information & Public Relations, Government of Odisha.

Secretary Health & Family Welfare Dr.Pramod Kumar Meherda graced the occasion.

Minister Mr.Jena appreciated the work of RMRC for excellent cooperation with the state government. Impressed by the leadership team of Bhubaneswar centre; Minister urged to RMRC for establishing a Research Hub on Elimination of Malaria & other vector borne diseases.



Dr Sanghamitra Pati, Director, ICMR-Regional Medical Research Centre, Bhubaneswar thanked the Hon'ble Minister and assured that the staff members of RMRC will continue to work in team spirit with the state government colleagues. She reiterated that RMRC will remain as the co-traveller of Odisha's health sector.

Dr Pati mentioned that all kinds of efforts will be put for establishing a state-of-the-art research hub that should not only benefit India for malaria elimination by 2030 but also to several LMICs. So, RMRC will not leave any stone unturned in this regard and closely work with the state government, research institutes, policy makers, scientists, knowledge brokers, global players, civil society, etc.

Dr Pati appealed to the scientific community, different government departments, research institutes, donors, international organisations, civil society and all the stakeholders to come forward to assist Odisha in establishing this research hub on malaria elimination.

During its silver jubilee year NAVBD is focusing on the health issues of vulnerable communities and neglected people. Prof. A P Dash, President of NAVBD who is also the Vice Chancellor of Central University of Tamil Nadu highlighted the importance of addressing the health problems of poorest of the poor and different disadvantaged groups of the society. So, ICOV-14 is decided to focus on women and children. It's noteworthy that RMRC is headed by a competent scientist when number of women leaders in health-research sector appears to be less in LMICs. In the sideline of ICOV-14, a special national conclave was organised on 11th January 2019 to discuss the issues of malaria elimination with focus on pregnant women and children.

As a part of the national conclave a special session was organised to address the health needs of pregnant women and children for malaria elimination. Dr V M Katoch, former Secretary of Health Research, Government of India and Director General of ICMR chaired the session. Dr P L Joshi, former Director of National Vector Borne Disease Control Program (NVBDCP) co-chaired the session. Dr Devanand Moonasar, Dr. Madan Mohan Pradhan, Mr Martin Edlund and Dr. Kaushik Sarkar articulated the need of focusing on pregnant women and under-five children. Several expert panels were followed by the special session where the speakers emphasised on innovation, out-of-box-thinking and collaboration.

Theme of ICOV-14 was evolution to elimination. More than 300 scientific presentations were done in the form of plenary lectures, expert panels, invited lectures, orals and posters.

There were nine Plenary Lectures during these days which were delivered by Dr APG Almeida, Dr. Poonam Salotra, Dr. C. R. Revankar, Dr Michael Theisen, Dr. Sudhansu Vрати, Dr JM Carlton, Dr SC Wassmer, Dr S Mohanty and Dr YD Sharma. Moreover, Dr Altaf Lal delivered the late Dr. Neeru Singh memorial lecture.

49 Invited Lectures were also delivered under different themes like Epidemiology & Disease Burden, Operational & Strategic Research, Clinical Epidemiology & Pathology, Vector Biology & Control, Modern Biology, Insecticide Resistance & Management, Integrated Vector Management as well as Environment & information Technology. It's noteworthy that nearly 500 delegates from India and abroad participated in this conference.

Twelve eminent scientists and public health experts were felicitated during the inauguration ceremony of ICOV-14 for their pioneering work in the field of vector-borne diseases.