



We are pleased to share the latest developments, announcements, and highlights from the past few months. In this third issue of our newsletter, you will read about key modelling updates from different disease groups, events, new publications and other updates.

Key modelling updates

Measles

- Assessed the health impact of immunization activities against measles
- Findings support that biennial SIAs combined with targeted campaigns like IMI can help India achieve measles elimination

Human papillomavirus (HPV)

- Active HPV testing can reduce the prevalence of cervical cancer and overall mortality in the Indian context
- Vaccination of 13–18 year old females results in lower age standardized cervical cancer rates compared with 9–14 year old

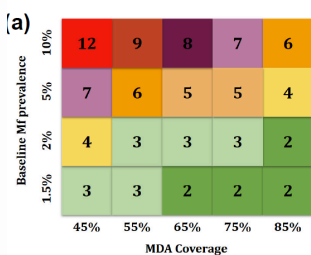
Tuberculosis (TB)

- Assessed the impact of various programmatic interventions on reduction of TB incidence and mortality
- Stabilisation of infection (through nutrition support) and active case finding have the maximum impact.

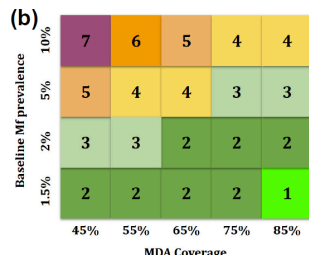
Antimicrobial Resistance (AMR)

- Estimated sex-specific resistance profiles per pathogen
- Estimated Disability- Adjusted Life years (DALY) for *E. coli* and *K. pneumoniae*, *A. baumannii*, *P. aeruginosa*, *S. aureus*

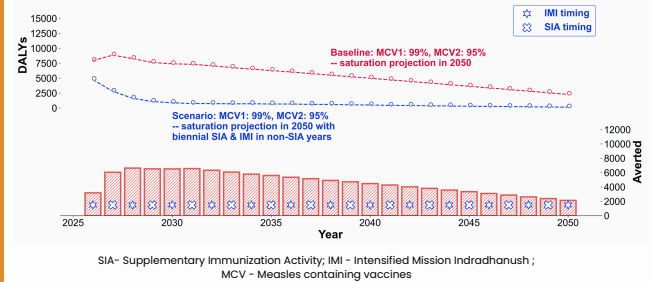
Drug regimen: DA



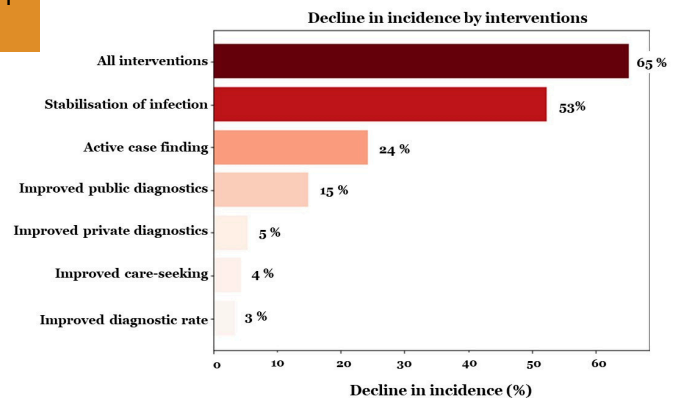
Drug regimen: IDA



Predicted number of MDA rounds required to achieve 99% probability of elimination



Health impact of immunization activities against measles



Decline in TB incidence by interventions

Lymphatic filariasis (LF)

- COMET-LF simulation projected that at 85% coverage with DA, 6 rounds of mass drug administration (MDA) are sufficient to achieve elimination for baseline microfilaria prevalence up to 10%. However, these estimates can be significantly affected by migration and systematic non-compliance to MDA campaigns

Visceral leishmaniasis (VL)

- Low vegetation cover, not having toilet facility, higher occupancy per sleeping room, and higher population density was significantly associated with higher VL cases

Malaria

- Jhum cultivation, precipitation, and forest cover are key environmental factors associated with higher malaria incidence across the blocks in Tripura
- In North Tripura, rainfall is the strongest predictor
- Water availability remains a strong determinant for increased malaria transmission in Indian districts

Other updates

- Prof. Sarika Mehra took over the role of Principal Investigator (PI) from Prof. Siuli Mukhopadhyay, who will continue as Co-PI along with Prof. Ganesh Ramakrishnan and Prof. Mithun Mitra
- NDMC is foraying into emerging domains such as non-communicable diseases and disease burden estimation
- A new grant from Indian Council of Medical Research (ICMR) was initiated in March 2025

Publications

- Estimation of time-varying recovery and death rates from epidemiological data: A new approach (2025) by Ghosh, S., Dhar, S. S., Banerjee, M. Mukhopadhyay, S., Mathematical Biosciences 387 September 2025, 109479
- Ghosh S, Kappara D, Majumder N, Nath-Sain S, Deb Roy A and Mukhopadhyay S. A systematic review and modelling insights of factors impacting measles vaccine effectiveness. Discover Viruses. Accepted. 2025
- Arvinth S., Rashmi Tiwari, S Vishnu Tej, Piyush Sawarkar, Perna Bhalla, Shekar Sivasubramanian, Ajit Rajwade, Ganesh Ramakrishnan, Nirav Bhatt. Modeling the Impact of Active HPV Testing Intervention on Cervical Cancer Burden in India. 2025 Preprint
- Avik Kumar Sam, Neha Keshri, Ipsita Pal Bhowmick, Anup Anvikar, Harish C. Phuleria. Mapping Malaria Risk in India between 2019–2023: A Tool for the Public to Track Malaria. 2025. Preprint
- Ghosh I, Nath-Sain S, Sen Gupta S, Pant Joshi C, Jain T, Subramanian S, Banerjee S, Mitra MK. COMET-LF: A Compartmental Model of Dynamics of Infection, Disease, and Elimination Strategies for Lymphatic Filariasis. 2024. Under revision
- Ghosh S, Ghosh I, Mukhopadhyay S. An age-stratified mathematical model to inform optimal measles vaccination strategies. 2025. Under revision



Dr. Soumya Swaminathan with NDMC team, Apr 2025



Dr. Tanu Jain, Jul 2025



Prof. Bhaswati Ganguli, AMR workshop, May 2025



Dr. Gagandeep Kang delivering institute colloquium, Jul 2025

Events

Visit by Dr. Gagandeep Kang, Director, Global Health, Gates Foundation, July 2025

- NDMC had the privilege of hosting Dr. Kang and presenting modelling updates
- Dr. Kang delivered a institute colloquium on "Global health research from India for the world"

Visit by Dr. Tanu Jain, Director, NCVBDC, July 2025

- VL, LF and malaria working groups of NDMC presented their work to Dr. Jain.

Roundtable discussion on AMR burden estimation, May 2025

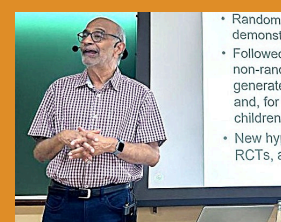
- Discussion with experts regarding AMR burden work at NDMC

Visit by Dr. Soumya Swaminathan, Chairman, MSSRF, April 2025

- Dr. Soumya Swaminathan visited NDMC and interacted with the TB working group

Invited Talk series

- Talk by Prof. Gautam Menon, Dean, Ashoka University, June 2025
- Talk by Dr. Girish Aras, Food and Drug Administration, USA, March 2025



Dr. Girish Aras, Mar 2025



Dr. Gautam Menon, Jun 2025

Talks/Conference presentations

- Dr. Ashvini Gupta, postdoctoral associate working under the guidance of Prof. Banerjee and Prof. Mitra, presented "Risk of visceral leishmaniasis resurgence in India: A compartmental modelling study, 8th Edition of the World Congress on Infectious Diseases, Italy, June 2025"
- Pallab Sinha, a PhD student working under the guidance of Prof. Mukhopadhyay presented "A multi-region discrete time chain binomial model for infectious disease, 8th Edition of the World Congress on Infectious Diseases, Italy, June 2025"
- Prof. Siuli Mukhopadhyay presented "A new age stratified compartmental model on measles, CIDMATH, Emory University, May 2025"

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