

How ICMR will continue to play a
leadership role in supporting research to
sustain elimination of Visceral
Leishmaniasis

Dr.R.R.Gangakhedkar

Head,

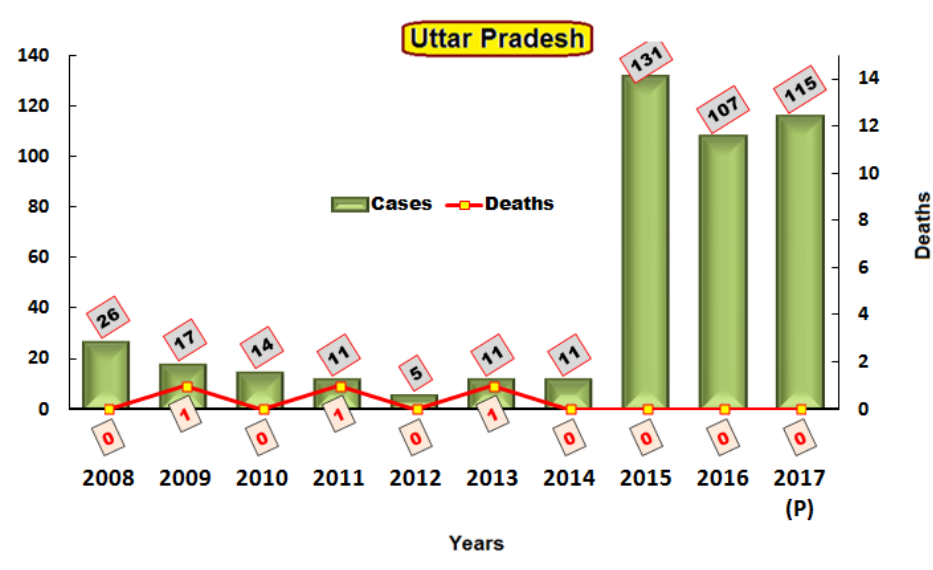
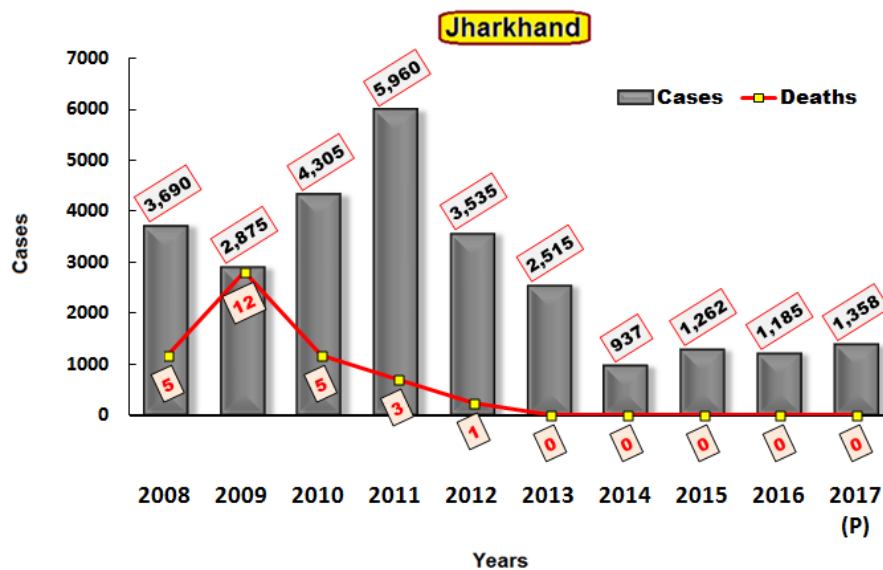
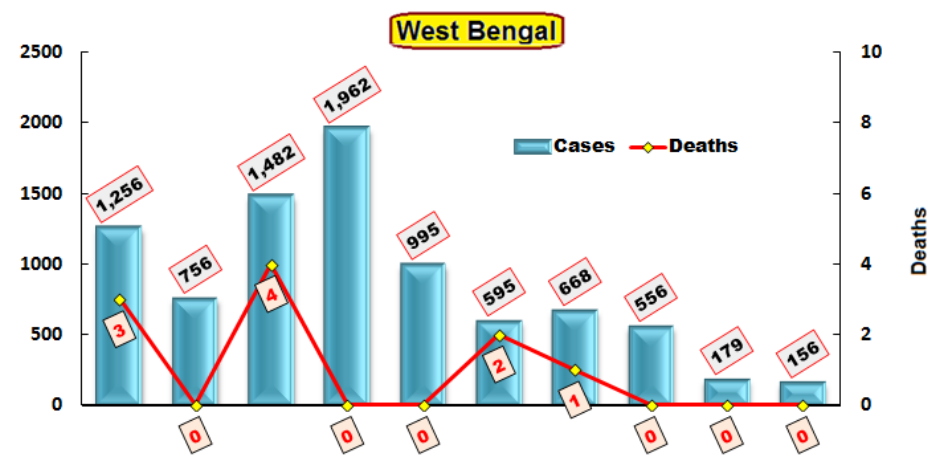
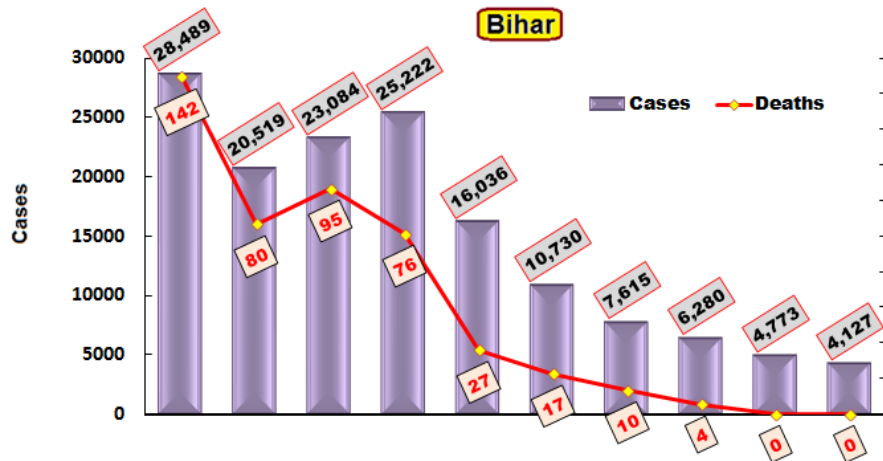
Division of Epidemiology & Communicable Diseases,

Indian Council of Medical Research

New Delhi

Kala-azar cases reported in the 4-endemic states of India(2008 - 2017).

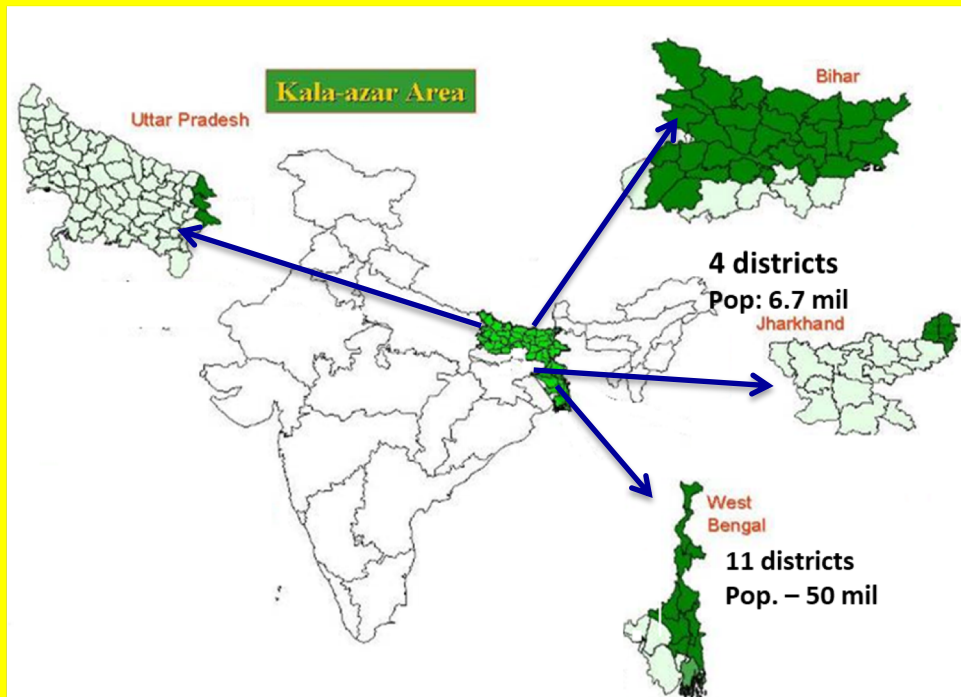
NVBDCP



Vulnerability map for VL in India. *NVBDCP*

6 districts
Pop. – 11.0 mil

34 districts,
Pop. – 62.3 mil



States : 4
Districts : 55
Population : 130 million

ICMR's salient research contributions

■ Case Detection and Surveillance

- Camp approach for active surveillance tool for VL
- Involvement of trained ASHAs in early diagnosis through prompt referral

■ Case management

- Miltefosine as the first ever oral drug for VL and PKDL
- Single dose AmBisome, Paromomycin, & combination therapy for VL treatment

■ Vector Control

- Development of Monitoring & Evaluation toolkit for IRS monitoring
- Synthetic pyrethroid – an alternative to DDT for IRS
- Replacement of stirrup pump with compressor pump

Research on Vector Control

- Changeover from DDT to Synthetic pyrethroids – studies by RMRIMS showed resistance to DDT.
- Under environmental management, *P. argentipes* was controlled by plastering indoor walls with brick chimney fly ash (BCFA) & lime (95:5).
- This is cost effective, eco-friendly, easily accessible and highly acceptable.

Validation of Insecticide Quantification Kits (IQKs) in India for the improvement of IRS against VL vectors. *(RMRIMS & LSHTM-BMGF)*



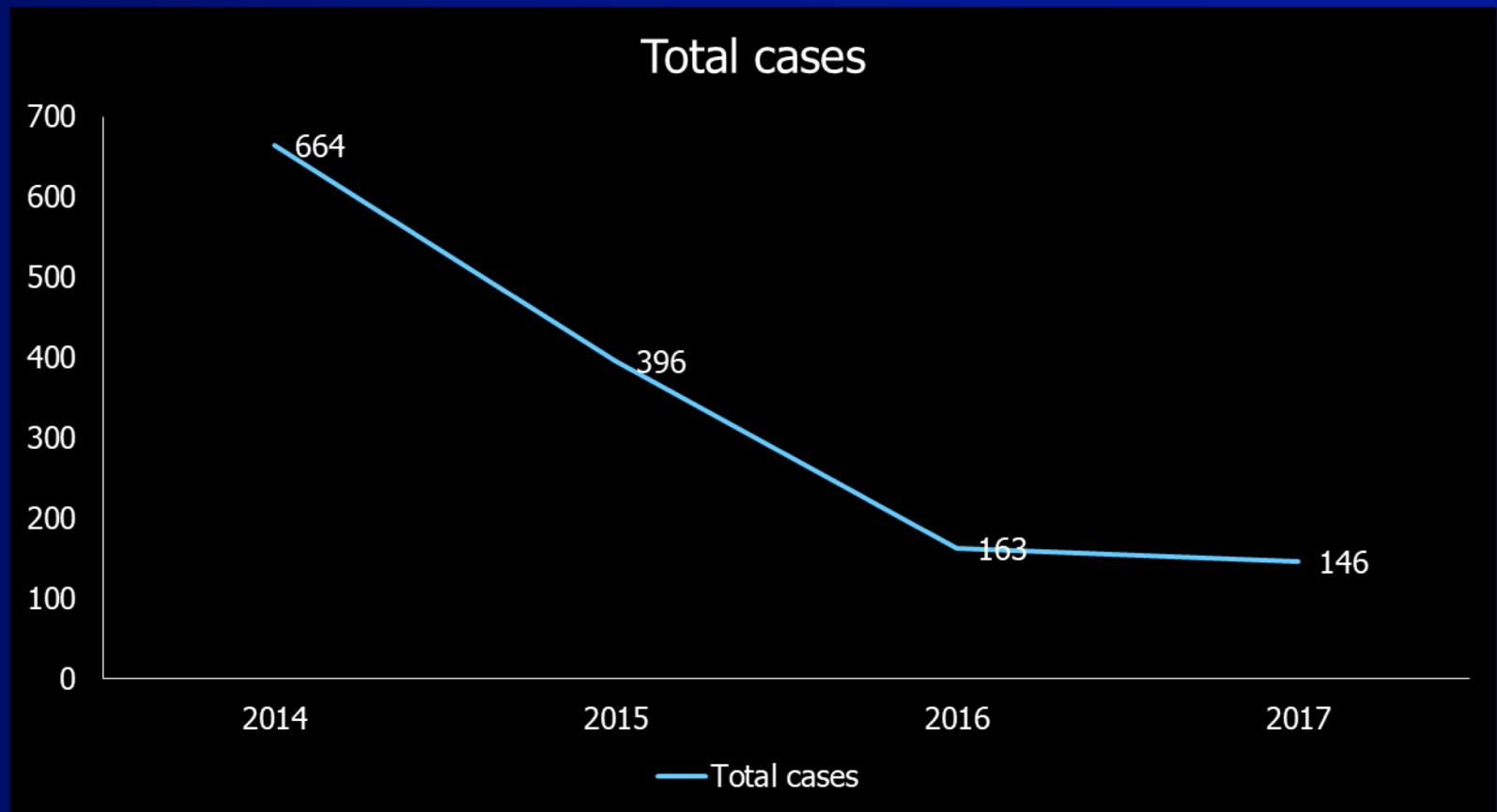
- Post-IRS quality assurance tool
- User and field friendly kit – rapid results
- Similar quality results to high performance liquid chromatography
- DDT IQK and PYR IQK



Vaishali Model: A Field Model

- Mapping done up to village level
- Active Case Detection with rk-39 test in villages reporting > 5 cases for last 3 years
- Trained doctors & paramedics for treatment with single dose Ambisome at PHC level
- Training of PHC staffs, spray members on stirrup & hand compression pumps
- Training of ASHAs about KA, PKDL cases & IRS activity
- Preparation of Micro Action Plan (including houses within 500 meters of last year case) for IRS
- Monthly pre- & post evaluation of sand fly density (CDC Light Trap)
- IEC & BCC
- Use of IQK for DDT quality assessment on wall

And the impact in Vaishali district..

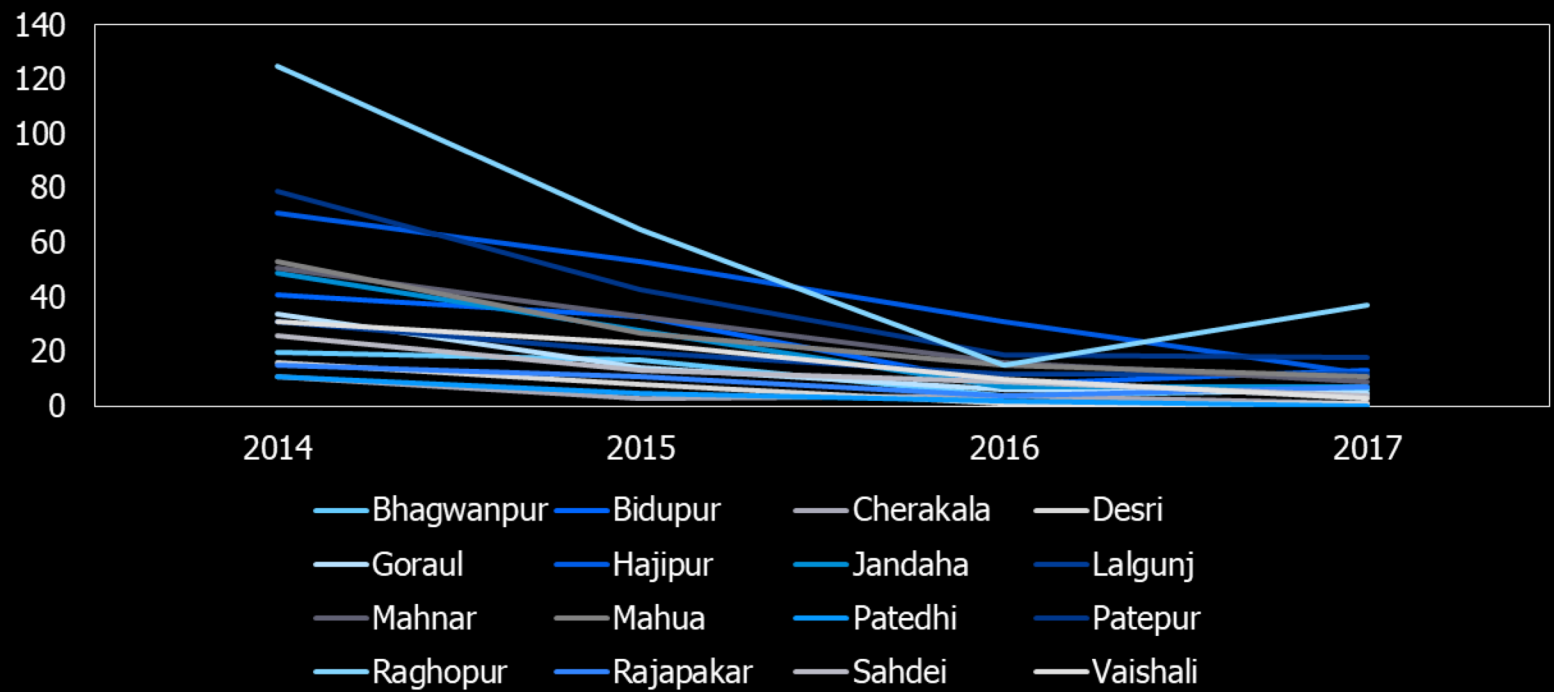


PHCs with higher disease burden also showed major decline..

Name of PHCs	Total Cases			
	2014	2015	2016	2017
BHAGWANPUR	20	17	4	6
BIDUPR	41	33	8	13
CHERAKALA	11	3	4	1
DESRI	16	8	1	1
GORAUL	34	14	6	5
HAJIPUR	71	53	31	12
JANDAHA	49	28	7	7
LALGANJ	31	20	12	12
MAHNAR	51	33	16	9
MAHUA	53	27	15	11
PATEDHI BELSAR	11	5	2	0
PATEPUR	79	43	19	18
RAGHOPUR	125	65	15	37
RAJAPAKAR	15	11	4	7
SAHDEI BUJURG	26	13	9	4
VAISHALI	31	23	10	3
Overall	664	396	163	146

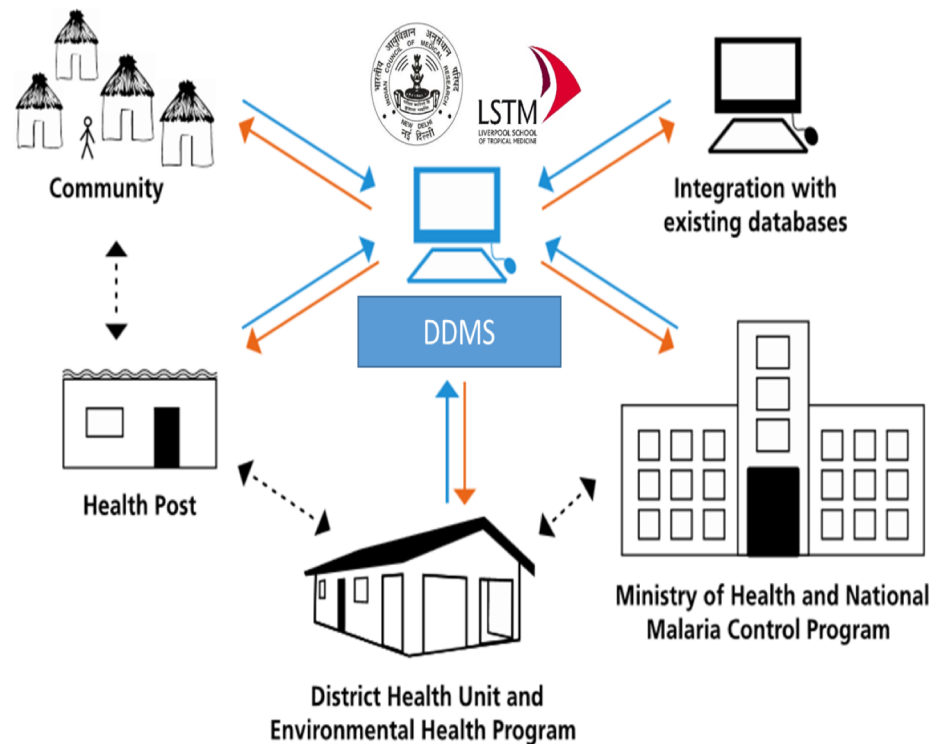
Excepting Raghopur PHC, all showed sustained decline..

Number of cases detected annually by PHCs in Vaishali District: A trend



Disease Data Management System (DDMS)

- Created for malaria, dengue and kala-azar
- Implemented in India for kala-azar elimination in Bihar
- Integrated platform to capture all programme related data – planning, implementation and impact
- Single database to support NVBDCP track progress and make informed decisions
- Automated reports available at a click of a button, providing up to date information



Current Strategies for Prevention & Control of VL

- Early case detection through active search
- Complete treatment at district hospitals & block level
- Use of Liposomal Amphotericin B for VL and Miltefosine for PKDL
- Provision for wage loss Patient incentive
- Two rounds of IRS with DDT/Synthetic Pyrethroid.
- Environmental management by maintenance of sanitation and construction of Pucca (concrete) houses
- IEC activities and Behavior Change Communication
- Inter-sectorial convergence, Capacity building by training and monitoring and evaluation

ICMR & NVBDCP

- ICMR-RMRIMS is the lead research institute on VL in India.
- ICMR-VCRC is a premier institute in Vector research
- ICMR works in close co-ordination with the National Vector borne Disease Control Program (NVBDCP) to generate evidence addressing programmatic needs
- It will continue to provide comprehensive technical support until elimination of VL

What we don't know well..

- How do we handle asymptomatic patients and household contacts of VL cases
- How do we handle PKDL cases and would they become important in post-elimination scenario?
- Biomarker that can predict progression to disease, transmission, 'cure', relapse & probability of development of PKDL

Additional research agenda

- To develop simpler test to monitor VL disease particularly parasitic load
- Though HIV incidence is declining, we need to work on development POC diagnostic test for early detection.
- Simpler tests to replace Skin Slit Smear Microscopy
- Management of drug resistance, especially Miltefosine resistance
- Vaccine to prevent infection

Research in Vector control

- Studies on biology and bionomics of sandflies in different endemic areas.
- Impact of LLIN/ITN, IRS and environmental management in reduction of disease transmission.
- emergence of resistance and mechanism of resistance in sandflies to DDT and other insecticides and to identify alternative strategies to curtail the resistance.
- Xeno-monitoring tools (immuno-diagnostic and PCR) for vector surveillance

Socio-behavioural Research

- Studies on drug adherence and acceptability of drugs.
- Acceptability of IRS
- Newer methods of plastering walls with fly ash and lime, and educating community do it themselves.
- Involving community to sustain VL elimination and early detection of PKDL

Smaller geographic area of vulnerability in India but surrounded by neighbours who can also pose challenge for elimination.....



India, Nepal and Bangladesh harbour an estimated 67% of the global VL disease burden

Endemic districts

India :	55
Bangladesh :	45
Nepal :	12

SPEAK India Initiative

- Consortium of National & International Researchers to develop post-elimination agenda
- ICMR (Secretariat) in partnership with LSHTM, NVBDCP, WHO, DNDi & BMGF
- To identify gaps, develop research agenda & proposals

Proposals being implemented through SPEAK India with support from BMGF

- Transmission: direct measurement of sandfly infection. *ICMR-RMRIMS, Patna*
- Health systems: timely detection & management of VL cases in the post-elimination phase. *Institute of Public Health, Bangalore*
- Innovative approaches to improve epidemiological surveillance of VL and PKDL & accelerate elimination. *Banaras Hindu University*
- Mathematical modeling: understanding and controlling the patterns of VL and transmission. *ICMR-VCRC, Puducherry*

Disease elimination agenda

- With intensified focus and well defined and mapped four states for implementation, elimination can be a reality with effective implementation of program.
- However, sustaining elimination can be threatened by PKDL, implementation & travel from neighbouring countries and asymptomatic cases.
- Zero transmission needs to be a research goal post-elimination which will be deliberated in the Conference.
- The lead ICMR institutes will undertake studies recommended during deliberations in future.