ICMR
at a glance....

Activities & Achievements

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Introduction

The Indian Council of Medical Research (ICMR) is today the apex and premier medical research organization in the country which spearheads planning, formulation, coordination, implementation and promotion of biomedical research. It is one of the oldest medical research bodies in the world.

In 1911, Government of India made a historic decision to establish Indian Research Fund Association (IRFA) with the specific objectives of sponsoring and coordinating medical research in the country. After Independence, in 1949, the IRFA was re-designated as the Indian Council of Medical Research (ICMR) with considerably expansion in its functions and activities.

Mandate

- Apex body in India for formulation, coordination and promotion of biomedical research
- Conduct, coordinate and implement medical research for the benefit of the Society
- Translating medical innovations in to products/processes and introducing them in to the public health system

Vision

Translating Research into Action for improving the health of the population

Mission

- Generate, manage and disseminate new knowledge.
- Increase focus on research on the health problems of the vulnerable, the disadvantaged and marginalized section of the society.
- Harness and encourage the use of modern biology tools in addressing health concerns of the country.
- Encourage innovations and translation related to diagnostics, treatment, methods/vaccines for prevention.
ICMR’s Activities & Achievements

- Inculcate a culture of research in academia especially medical colleges and other health research institutions by strengthening infra-structure and human resource.
- Integrate research in different systems of medicine.

Network

Today ICMR has pan-India presence with 26 research institutes mandated to work on national health research needs with the ICMR Headquarter as the nodal point of all ICMR funded extramural and intramural research. There are 14 divisions at ICMR Headquarters that deals with different areas of medical research.
Council's 26 Research Institutes/Centres include:

- National JALMA Institute for Leprosy & Other Mycobacterial Diseases (NJILOMD), Agra
- National Institute of Occupational Health (NIOH), Ahmedabad
- National Institute of Traditional Medicine, Belagavi
- National Centre for Disease Informatics and Research (NCDIR), Bengaluru
- National Institute for Research in Environmental Health (NIREH), Bhopal
- National Institute of Epidemiology (NIE), Chennai
- The National Institute for Research in Tuberculosis (NIRT), Chennai
- National Institute of Malaria Research (NIMR), New Delhi
- National Institute of Pathology (NIP), New Delhi
- National Institute of Medical Statistics (NIMS), New Delhi
- National Institute for Research in Tribal Health (NIRTH), Jabalpur
- National Institute of Cholera and Enteric Diseases (NICED), Kolkata
- National Institute for Research in Reproductive Health (NIRRH), Mumbai
- National Institute of Immunohaematology (NIIH), Mumbai
- National Institute of Cancer Prevention and Research (NICPR), Noida
- Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna
- Vector Control Research Centre (VCRC), Puducherry
- National Institute of Virology (NIV), Pune
- National AIDS Research Institute (NARI), Pune
- National Institute of Nutrition (NIN), Hyderabad
- National Animal Resource Facility for Biomedical Research (NARFBR), Hyderabad
- Regional Medical Research Centre, Bhubaneswar
- Regional Medical Research Centre, Dibrugarh
- Regional Medical Research Centre, Port Blair
- Desert Medicine Research Centre, Jodhpur
- Regional Medical Research Centre, Gorakhpur
**Budget**

The last Five Years’ (2013-2018) ICMR budget allocation at Be and RE stage is as depicted below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Approved Budget Estimate</th>
<th>Revised estimate</th>
<th>Funds received</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-14</td>
<td>531.00</td>
<td>480.00</td>
<td>480.20</td>
</tr>
<tr>
<td>2014-15</td>
<td>531.00</td>
<td>505.00</td>
<td>486.74</td>
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<tr>
<td>2015-16</td>
<td>568.17</td>
<td>556.74</td>
<td>545.66</td>
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<tr>
<td>2016-17</td>
<td>610.00</td>
<td>810.00</td>
<td>793.40</td>
</tr>
<tr>
<td>2017-18</td>
<td>1150.00</td>
<td>1413.60</td>
<td>1395.60*</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>3390.17</strong></td>
<td><strong>3765.34</strong></td>
<td><strong>3701.6</strong></td>
</tr>
</tbody>
</table>

Budget Allocations for 2018-19 (BE) : 1416 Crores

*Rs. 18.00 crores refund to DHR

**Human Resource**

The executive head of the ICMR is the Director-General who is also the Secretary of the Department of Health Research. He is assisted by the Additional Director-General, Senior Deputy Director General (Administration), Senior Financial Advisor and Heads of various scientific and technical Divisions. As shown in the figure below, the staff at ICMR is broadly divided into three categories - Scientific Category, Administrative Category, and Technical Category.
ICMR’s Activities & Achievements

Existing Staff: Scientific, Technical and Administrative - at Hq and Institutes  (as on 10.03.2017)

<table>
<thead>
<tr>
<th>PERMANENT</th>
<th>Institutes</th>
<th>Hqrs</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Scientific</td>
<td>533</td>
<td>57</td>
<td>590</td>
</tr>
<tr>
<td>Technical</td>
<td>1998</td>
<td>41</td>
<td>2039</td>
</tr>
<tr>
<td>Administrative</td>
<td>999</td>
<td>231</td>
<td>1230</td>
</tr>
<tr>
<td>Sub Total</td>
<td>3530</td>
<td>329</td>
<td>3859</td>
</tr>
<tr>
<td>PROJECT/AD HOC STAFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific</td>
<td>408</td>
<td>45</td>
<td>453</td>
</tr>
<tr>
<td>Technical</td>
<td>1174</td>
<td>152</td>
<td>1326</td>
</tr>
<tr>
<td>Administrative</td>
<td>136</td>
<td>54</td>
<td>190</td>
</tr>
<tr>
<td>Sub Total</td>
<td>1718</td>
<td>251</td>
<td>1969</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td></td>
<td>5828</td>
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</tbody>
</table>

Activities

ICMR has made outstanding contribution as a knowledge generating agency and contributed in understanding various diseases of national importance such as malaria, Japanese encephalitis, tuberculosis, AIDS, Kala-azar, Filariasis, Leprosy and Poliomyelitis. Additionally, ICMR has made extensive contributions in the areas of nutrition, reproduction and maternal and child health, occupational and environmental health and research complimenting health systems. ICMR’s regional medical research institutes/ centres have been contributing in tackling regional health problems.

Training and capacity building of young investigators, medical and allied health professionals and providing funding support for research projects to investigators all over the country are other very unique and significant contributions of ICMR.

ICMR continues to provide extramural funding to strengthen research capabilities within the institutes of the council as well as other research institutes, medical
colleges and non-Governmental organizations for various research projects. It promotes extramural research through different schemes such as Centres for Advanced Research in chosen research areas, task force studies with goal-oriented approach and clearly defined targets; and grants-in-aid to stand-alone research applications received from various parts of the country.

Human Resource Development for biomedical research is supported by ICMR through various schemes such as Research Fellowships [Junior and Senior Fellowships and Research Associateships]; Short-term Visiting Fellowships (which allow scientists to learn advanced research techniques from other well-established research institutes in India); Short-term Research Studentships (for undergraduate medical students to encourage them to familiarize themselves with research methodologies and techniques); and various Training Programmes and Workshops conducted by ICMR Institutes and Headquarters. For retired medical scientists and teachers, the Council offers the position of Emeritus Scientists to enable them to continue carrying out research on specific biomedical topics. The Council also awards prizes to Indian scientists (young as well as established ones), in recognition of their significant contributions in biomedical and health research.

The major activities of ICMR are summarized in Table 1:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Activities</th>
<th>Relevance</th>
</tr>
</thead>
</table>
| 1.    | Network of 26 institutes                        | • Involved in evaluation of new drugs, insecticides, vaccines, devices, diagnostic kits & other interventions for all diseases of national health priority along with neglected and regional ones.  
       |                                                 | • Taken health research to every corner of the country  
       |                                                 | No other agency in India has such outreach.                                                     |
| 2.    | Clinical Trial Registry - India (CTRI)          | • Registers all the clinical trials conducted in India in order to improve transparency and accountability, ensure conformation to accepted ethical standards and reporting of all relevant results of the trials.  
<pre><code>   |                                                 | • ICMR also provides ethical guidelines for clinical trials                                    |
</code></pre>
<p>| 3.    | National Cancer Registry                        | • Generate reliable data on the magnitude and pattern of cancer in India                      |</p>
<table>
<thead>
<tr>
<th>Programme</th>
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<tbody>
<tr>
<td><strong>ICMR’s Activities &amp; Achievements</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Programme</strong></td>
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<tr>
<td></td>
<td>• Undertake epidemiological studies based on results of registry data</td>
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<td>• Help in designing, planning, monitoring and evaluation of cancer control activities under the</td>
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<td></td>
<td>National Cancer Control Programme (NCCP)</td>
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<td></td>
<td>• Develop training programmes in cancer registration and epidemiology.</td>
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<td>4. Surveillance networks (IDSP, rotavirus, polio, Antimicrobial resistance</td>
<td><strong>Programme</strong></td>
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<tr>
<td>etc.)</td>
<td>• Generate timely and geographically representative data on the clinical, epidemiological, and</td>
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<td></td>
<td>pathological features of several diseases in Indian population</td>
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<td></td>
<td>• Only Indian agency conducting surveillance of viral diseases</td>
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<td>5. Nutrition</td>
<td><strong>Programme</strong></td>
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<tr>
<td></td>
<td>• Identified the priority areas, conducted research in a multicentre mode and found effective,</td>
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<td></td>
<td>practical, economically viable and sustainable solutions for the plethora of nutrition related</td>
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<td></td>
<td>problems affecting people.</td>
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<td></td>
<td>• Nutritive value of Indian Foods and Food Fortification are landmark achievements of ICMR.</td>
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<td></td>
<td></td>
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<tr>
<td>6. Support in Outbreak/epidemics/pandemics/National Emergencies</td>
<td><strong>Programme</strong></td>
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<tr>
<td></td>
<td>• Surveillance Of Health Impact Due To Indian Ocean Tsunami in 2004 (NIE, NIRT, NICED, CRME,</td>
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<td></td>
<td>VCRC, RMRC-PB)</td>
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<td></td>
<td>• Environment and health impact assessment for Bhopal Gas Tragedy, 1984 (NIOH,NIMS, BHRMC,NIP,</td>
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<td></td>
<td>NICPR)</td>
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<td></td>
<td>• Earthquake in Gujarat, 2001 (NIMR, DMRC),</td>
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<td></td>
<td>• Supercyclone in Odisha, 1999 (NIMR)</td>
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<td></td>
<td>• Epidemic Investigations during SARS/H1N1, and preparedness for ZIKA and Ebola viruses, etc</td>
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<tr>
<td>7. Provides Inputs for Policy Implementation</td>
<td><strong>Programme</strong></td>
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<tr>
<td></td>
<td>• DOTS for Tuberculosis</td>
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<td></td>
<td>• MDT for Leprosy</td>
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<td></td>
<td>• Malaria Drug Policy In North-East</td>
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<td></td>
<td>• ORS implementation in diarrhoea</td>
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<tr>
<td>8. Provides Guidelines/Regulations</td>
<td><strong>Programme</strong></td>
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<tr>
<td></td>
<td>• National Guidelines for Accreditation, Supervision and Regulation of ART Clinics in India</td>
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<td></td>
<td>• Ethical Guidelines for Biomedical Research on Human Participants</td>
</tr>
<tr>
<td></td>
<td>• Guidelines for Good Clinical Laboratory Practices</td>
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<td></td>
<td>• Guidelines for Safety Assessment of Foods Derived</td>
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</table>
ICMR’s Activities & Achievements

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| 9. | Isolation/characterization of New pathogens | • Asia’s first BSL-4 laboratory developed by ICMR  
• Cholera strain O139  
• Kyasanur forest disease (KFD)  
• Leptospirosis  
• Paragonimiasis |
| 10. | Research Support to Medical Colleges all over country | • Funds majority of research in medical colleges.  
• Short Term Studentship Program - promote interest and aptitude for research among medical undergraduates |
| 11. | Capacity Building | • Generate and nurture human resources for health research activities through various fellowships (JRF, SRF, RA, STS) and trainings/workshops. |

Achievements of ICMR

ICMR is taking substantial actions towards all nationally relevant health research areas. The major activities are provided below:

Tuberculosis/Malaria/ Tribal Health

- **India TB Research Consortium**, an initiative to bring together all major national and international stakeholders to develop new tools (drug, diagnostics, vaccines) for TB.

- **Active case finding pilot project for Tb** has been initiated in five states for bridging gap in last mile delivery of services amongst tribal populations

- **TB Diagnostic Initiative**: TruNAT Rif, an indigenous, cost effective, rapid molecular diagnostic kit for TB/MDR-TB has been developed, validated and has been recommended for roll out under RNTCP at Primary Health Centres (DMCs) in a phased manner.
- **Tribal Health Research Forum** set up at ICMR aims at addressing specific health needs of the tribal population in the country. Studies in the area of nutrition, genetic disorders, malaria have been initiated.

- **Malaria Elimination Project**: ICMR through its institutes is supporting GOI and making efforts in demonstrating the best strategies which could be implemented in the field towards elimination of malaria. ICMR’s National Institute for Research in Tribal Health (NIRTH), Jabalpur and Sun Pharma along with Govt of Madhya Pradesh and Directorate of National Vector Borne Disease Control Program (NVBDCP) have launched a program to demonstrate elimination of malaria from 1233 villages of Mandla district of Madhya Pradesh with the strategy of Track Malaria, Test Malaria and Treat Malaria. Training of field level workers, using mobile based app for better reporting and detection and treatment of cases is also being undertaken.

- Govt. of Punjab and ICMR’s National Institute of Malaria Research (NIMR), Delhi are working together in low endemic districts of Punjab towards elimination of malaria.

**Vector Borne Diseases and Neglected Tropical Diseases**

- **Vector Borne Diseases Science Forum**, set up at ICMR, is a common platform that aims to identify and prioritize gap areas in the control of various vector-borne diseases in the country such as dengue, chikungunya, malaria, filariasis etc.

- **Kala-azar (Visceral Leishmaniasis)**: ICMR has conducted a study in Vaishali district of Bihar (reporting more than 660 cases per 10,000 population) and demonstrated that if the existing strategies are applied intensively it is possible to eliminate VL from an endemic block. The strategies used were using Active Case Detection (ACD) technique by House to house (HH) survey and Index case approach using rk-39 in all 16 PHCs, especially villages reporting > 5 cases for last 3 years, Training of all Physicians and Para Medical staffs for treatment and training of staff of 16 PHC, spray workers about use of stirrup pump and hand compression pump and extensive IEC and BCC. These strategies brought down the
cases to 0.38 per 10,000 population. This Vaishali model is going to be replicated in Saran, a highly endemic district having >700 cases in 2016, as entrusted by GOI.

- **Kala-azar (Visceral Leishmaniasis):** ICMR in partnership with Ministry of Health and Family Welfare (MOH & FW), Directorate of National Vector Borne Disease Control Programme (NVBDCP) has launched, “Setting the Post Elimination Agenda for Kala-Azar in India (SPEAK India) Consortium” with aim to develop a forum for constructive discussion around the transmission dynamics of VL, bringing together the scientific, logistic and practical expertise, and to define the gaps in our understanding that threaten sustained elimination analyze the existing or new findings, develop protocols, methodologies and actions that can rapidly provide the missing information. Under the Consortium, in 2017-18, four studies have been funded on various aspects of kalaazar.

- ICMR has established **Samrat Ashok Tropical Disease Research Centre** at RMRI, Patna which will focus on research on various tropical diseases.

- **Sentinel surveillance for Congenital Rubella Syndrome (CRS) in India:** The study has been initiated at 6 sites. Aim is assess the impact of Measles Rubella vaccination in India.

- **Hospital based sentinel surveillance for Pneumonia and Invasive Bacterial Diseases (IBD):** The study has been initiated at 6 sites. Aim is to assess the impact of Pneumococcal Conjugate Vaccine (PCV).

- The JE diagnostic kits (MAC-ELISA) manufactured by ICMR-NIV is used by the National Vector Borne Disease Control Programme (NVBDCP) as one of the most sensitive serological test for JE. The availability of this kit was stepped up in 2017 to ensure that there is no shortfall in the testing laboratories.

- Substantial reduction in Filariasis prevalence was seen among the Nicobarese of Nancowry group of islands as part of the project on
elimination of sub-periodic Filariasis from Nancowry group of islands through mass distribution of DEC fortified salt

- PCR-based diagnosis procedure for visceral leishmaniasis from Urine samples- (Non- invasive method) was developed.

- Novel non-invasive method for diagnosis of visceral leishmaniasis by rK39 testing of sputum samples has been developed.

**Non-Communicable Diseases**

- ICMR is conducting a nationwide survey to monitor majority of the indicators requested under the Global Monitoring Framework for NCDs. This activity will give a very comprehensive information for SDG goal 3.4 (*By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being*).

- To strengthen the implementation of SDG goal 3a (*Strengthen the implementation of the WHO Framework Convention on Tobacco Control in all countries, as appropriate*), ICMR conducted the following workshops:
  - Workshop on Tobacco Control and Health Informatics for Health Professionals was held on 29th & 30th March, 2017 at WHO FCTC Global Knowledge Hub on Smokeless Tobacco, ICMR-National Institute of Cancer Prevention and Research, Noida
  - Workshop on “Priorities in Smokeless Tobacco Control – Research & Training Needs was held on 27-28 November, 2017 at WHO FCTC Global Knowledge Hub on Smokeless Tobacco, ICMR-National Institute of Cancer Prevention and Research, Noida

- **ICMR-INDIAB**, an epidemiological study on diabetes: The study is a landmark study providing authentic epidemiological data on diabetes, prediabetes, hypertension, dyslipidemia and obesity from the various States of India. The study has been completed in 14 states and one UT and the data obtained has been shared with the State health departments.

- Roll out of **India Hypertension Management** Initiative has been done for better control of hypertensive patients in the Public health system.
Hypertension is the second most important risk factor for NCDs after Tobacco.

- ICMR provided Resource persons for **National Civil Society Consultation** on Non-Communicable Diseases, held at India Habitat Centre, New Delhi from 8th-10th August 2017.

**Reproductive Biology, Maternal & Child Health**

- Development of Male Contraceptive - RISUG: An intravasal, non hormonal once injectable male contraceptive called Reversible Inhibition of Sperm Under Guidance (RISUG) has been developed and evaluated and was found to be safe, effective and acceptable by male of all religions.

- Development of Female Contraceptive:
  1. A subdermal contraceptive implant - ImplanonR was evaluated as a spacing method and was found to be safe, efficacious and acceptable in Indian women.
  2. Development of Recombinant β-hCG-LTB vaccine for prevention of pregnancy: A recombinant β-hCG-LTB vaccine against Human Chorionic Gonadotropin (hCG) with high immunogenicity has been developed and found safe under pre-clinical toxicity studies. ICMR is going to start the Phase-I Clinical Trial with recombinant β-hCG-LTB vaccine for preventing pregnancy.

- Rare Diseases Registry: ICMR is in process of establishing a web based registry and a software has already being developed.

- An innovative intervention based on mobile-phone technology to improve coverage of proven community-based MNCH interventions to be delivered by ASHAs and PHC staff in tribal and rural communities of Gujarat.

- **Role of probiotics VSL#3 (10 billion cfu)** in prevention of suspected sepsis in LBW infants was studied and found that Daily supplementation of LBW infants with probiotics VSL#3 (10 billion cfu) for 30 days led to a non-significant 21% reduction in risk of
neonatal sepsis. A larger study with sufficient power and a more specific primary end point is proposed to confirm the preventive effect of VSL#3 on neonatal sepsis in LBW

- ICMR is conducting a study on impact evaluation of a “Screen Test and Treat” approach for reducing prevalence of anaemia in vulnerable groups from rural population.

- To estimate the burden and profile of unintentional injuries among children age 6 to 18 months both from rural and urban areas ICMR is conducting a study entitled Epidemiology of Childhood Injuries in India.

**Climate Change & Health**

- To address the impact of climate change on human health and promote use of space technology tools ICMR has developed an early warning system of JE for Upper Assam, initiated studies on mapping of malaria and mosquito-genic conditions, developed models for predicting filariasis.

- A Memorandum of Understanding (MoU) has been signed on 2nd January, 2018 between ICMR-NIMR (National Institute of Malaria Research), Delhi and ISRO-IIRS (Indian Institute of Remote Sensing), Dehradun for development of geospatial solution for disease surveillance particularly vector-borne diseases and work in the area of Health and GIS for disease modeling.

**Anti-Microbial Resistance**

- Antimicrobial Resistance Surveillance Research Network (AMRSN) is a comprehensive portal for collecting, validating and analyzing antimicrobial resistance data from collaborating Centres in Hospitals across India. AMRSN would continue to collect national AMR data. Studies to correlate prescription practices with drug resistance pattern in the community are being conducted. Four workshops on AMSP capacity building across the country has been conducted. Studies would be initiated for the understanding of underlying mechanisms of resistance and genetic.
molecular studies under AMR. Antimicrobial data would be collected from veterinary labs including training programmes in consultation with ICAR. The AMRSN currently includes six regional centres and six nodal centers (NCs) which collect data from ten tertiary care hospitals across the country. Ten more hospitals would be added in the network from this year onwards.

Nutrition

- ICMR has taken up a project involving Nutrition Interventions in adolescent girls. 18 Navodaya Schools have been identified
- ICMR in collaboration with DBT and ICAR is working on, “Establishment of nutri-smart villages and backyard nutrigardens”. 3 nutrition deficient districts have been identified.
- ICMR also brought out the “Indian Food Composition Tables- 2017”, comprising of data of 526 varieties of Indian foods and their nutritive values.
- National Urban Nutrition Data report was released by ICMR-(National Institute of nutrition) NIN. It was prepared after a study of 171,928 individuals across 16 states.

Outbreak/epidemics/pandemics/ Disease Burden

- **Preparedness of ICMR to handle Zika virus outbreak:** NIV, Pune has strengthen its capacity to test the samples for Zikavirus received during the acute phase of the disease by RT-PCR. A training of DHR/ICMR VRDLs and concerned ICMR Institutes for Zika virus testing has been organized. ICMR also issued an alert to several paediatricians as well as the Viral Research & Diagnostic Laboratories to refer suspected samples for Zika testing at NIV, Pune. ICMR surveillance and capabilities has led to detection
of Zika virus infection in India. Till now, 4 cases of Zika virus infection have been detected from India.

- **National Hospital Based Rotavirus Surveillance Network:** The study has been carried out at 4 Major referral labs, 7 ICMR’s Regional labs and 23 hospital sites to observe the trend in burden of rotavirus diarrhoea as well as impact of Rotavirus vaccine under Universal Immunization Program (UIP).

- **The India State-Level Disease Burden Initiative:** The study was conducted by ICMR in partnership with Public Health Foundation of India (PHFI) & Institute for Health Metrics and Evaluation (IHME) and the report was released recently. The estimates of disease burden and risk factors from 1990 to 2016 for every state of India have been reported which would ensure a more nuanced health policy and system development in each state.

**Achievements: Institute-wise**

All the research institutes of ICMR have played an important role in their assigned area of research. The major recent achievements are listed below:

**ICMR-National JALMA Institute for Leprosy & Other Mycobacterial Diseases (NJILOMD), Agra**

- Tested adjunct role of MIP in treatment of TB with standard regimen: in pipeline for acceptance by the respective National programme.
- Extensively researched the Immunotherapeutic and immunoprophylactic role of MIP in leprosy: The MIP vaccine is now being taken up by NLEP under IR mode.
- TIE-TB project: A unique Active Case Finding Model comprising of Mobile TB diagnostic van for diagnosis of TB was initiated in 17 districts in 5 states.
- National level mycobacterial reference laboratory for providing clinical samples to various researchers at national level.
- Contributed in understanding the transmission of leprosy by using combination of molecular methods and traditional epidemiology on transmission aspects of leprosy.
• Contributed to Revised National Tuberculosis Control Programme (RNTCP) and National Leprosy Eradication programme (NLEP).

ICMR-National Institute of Occupational Health (NIOH), Ahmedabad

• Health Status of Coal Mines workers: Study suggest measures like using protective appliances (e.g. PPEs), pre-placement- and periodic medical examination.
• Indoor air pollution from biomass combustion and health hazards: 12 PAHs were identified which are reportedly hazardous for human health.
• Environmental cum epidemiological study on arsenic toxicity from surface and underground water
• Occupational health assessment survey among asphalt associated job workers in India: Suggests that road paving associated job workers are under risk of development of adverse health effects
• Efficacy of Personal Colling Garment (PCG): Developed to protect workers who are exposed to hot environment.

ICMR-National Institute of Traditional Medicine, Belagavi

• Validation of traditional medicinal practices for Arthritis and Dengue: Results of arthritis is expected to be translated soon through IPR registration, etc. Similarly, an AYUSH formulation for Dengue is under clinical evaluation with modern parameters for evaluation.
• Herbal remedies for improving quality of life of critically/terminally ill patients: Studies have been taken up to find the beneficial role of cocoa powder on cancer cell lines and cancer induced models.
• Established ‘School of Traditional Medicine’ with an ‘Integrated clinic’ to validate the traditional medicine practices and generate human resource in the area.
• Outbreak investigations, referral services and support to State Health Services: Reported rising number of diphtheria cases in the State of Karnataka. A
policy brief has been submitted to the Govt of Karnataka by ICMR on ways to reduce mortality.

- Model Rural Health Research Unit at Sirwar, Raichur is being set up:
  Baseline study conducted this year identified Pregnancy Induced Hypertension as a major problem in the region. A study conducted in this area found anaemia and malnutrition to be high.

**ICMR-National Centre for Disease Informatics and Research, Bengaluru**

- Developed “Cancer Samiksha”: a web based tool on assessment and analysis of cancer (http://ncdirindia.org/cancersamiksha/)
- 10 States - Assam, Arunachal Pradesh, Gujarat, Haryana, Karnataka, Manipur, Mizoram, Punjab, Tripura and West Bengal have notified cancer as a notifiable disease.
- Developed NCDIR e-Mor: an electronic mortality software. The software is being deployed in various hospitals and public health systems.
- Prepared Report on Cancer Burden in North Eastern States (2012-2014) revealed that high burden of exposures such as tobacco consumption, alcohol, indoor air pollution are contributing to high incidence of cancers in north eastern states.
- Released National Ethical Guidelines for Biomedical & Health Research Involving Human participants and National Ethical Guidelines for Research Involving Children

**ICMR-National Institute for Research in Environmental Health (NIREH), Bhopal**

- Follow up of about 30,000 toxic gas exposed survivors for their health problems
- Services to Respiratory Diseases OPD of Kamla Nehru Gas Rahat Hospital by the Pulmonologist of NIREH. About 2,000 respiratory disease patients were examined and advised treatment
ICMR-National Institute for Research in Tuberculosis (NIRT), Chennai

- Clinical trials aiming to shorten TB treatment to 4 months using fluoroquinolones in pulmonary and extra pulmonary TB: The results would go a long way in deciding future TB therapy in India.
- Clinical trial testing the dosing schedule of treatment in HIV-TB coinfection indicates daily regimen to be more efficacious.
- Multi-centric cohort study of relapse in pulmonary TB treated under RNTCP was completed and detailed analysis is underway.
- Pharmacokinetic study of Rifabutin: showed that 300mg thrice weekly and 150 mg daily were similar suggesting to the programme that either doses may be used.
- Characterized the prevalence and pattern of drug resistance mutations in ART-naive and ART-exposed HIV-1-infected children from south India.

ICMR-National Institute of Epidemiology (NIE), Chennai

- In-country data verification for Elimination of Mother-to-Child Transmission of HIV and Syphilis in 6 States in India, 2017
- HIV sentinel Surveillance among ANCs and HRGs
- Strengthening Tuberculosis and HIV detection and management through intensified case finding in Central Jail, Aizawl, Mizoram
- Process Evaluation of Integrated Management of Neonatal and Childhood Illness (IMNCI) Program
- Prevalence of Leptospiral infection among fever-case-patients seeking referral public health facilities in the peri-urban areas of Chennai and distribution of leptospiral genotypes and serovars
- Integrated Road Traffic Injury Surveillance system (IRIS) Chennai, Tamil Nadu
- Hospital Based Sentinel Surveillance of *S. pneumoniae* and other Invasive Bacterial diseases
- Health-needs assessment (HNA) of selected hill tribes (Palliyar and Muthuvan) in Western Ghats of Tamil Nadu and, to estimate the disease burden amongst them
- NIE-ICMR-WHO Ethics Course For Indian Ethics Committees
ICMR’s Activities & Achievements

- Status of labelling, drug information and branding in marketed anti-diabetic Siddha formulations: Cross-sectional study: Chennai, Tamil Nadu
- Health systems preparedness for interventions for diabetes, hypertension, chronic respiratory diseases, cardiovascular disease and cancers and deaths due to non-communicable diseases among the tribal population in India
- Coverage Evaluation Survey: Measles Rubella Vaccination Campaign Phase 1 (India CES-MRVC-P1, 2017)
- A multi-centric study to estimate the sero-prevalence of dengue virus infection in India
- Risk factors of scrub typhus among children and progression to AES in Gorakhpur division, Uttar Pradesh

ICMR-National Institute of Malaria Research (NIMR), Delhi

- Monitoring of vector susceptibility to the insecticides being used in the programme in different ecotypes -input to DDT Mandate committee.
- Monitoring therapeutic efficacy of antimalarials: Switch over from chloroquine to Artemisinin based Combination Therapy (ACT; AS+ SP) to ArteetherLumefantrine (ACT; AL).
- Ban on Artesunate oral monotherapy.
- Evaluation of LLIN- Introduction in the programme
- Three Biolarvicides – *Bacillus thuringiensis*israelensis(Bt)*, Bacillus sphaericus (BS)* and Bt*Aqueous Suspension.
- Diflubenzuron and {Insect Growth Regulator (IGR)} Larvicides .
- Pirimiphos Methyl (Chemical Larvicide)
- Chemical LarvicideFenthion withdrawn from the programme based on evaluations.
- Biological control agents- larvivorousfish .
- Phase III clinical trials of antimalarials led to registration with regulatory authority: Alpha beta Arteether, Bulaquine, Arterolanepiperaquine, Artesunateamodiaquine, artesunatemefloquine, DihydroartemisininPiperaquine.
- Evaluation of malaria rapid diagnostic tests (paracheck and parahit) leading to introduction in the programme.
National Institute of Pathology (NIP), New Delhi

- Molecular diagnostics for Chlamydiasis, Leishmaniasis and Tuberculosis
- Cultured epithelial graft for treatment of burns patients
- Live attenuated Leishmania parasite as vaccine candidate for visceral leishmaniasis/kala-azar (Collaborators US-FDA) US and Indian patent granted
- Breast Cancer Cell lines of Indian Origin
- Pathological studies in autopsies of Bhopal gas victims to analyse the effect of Methyl isocyanate

National Institute of Medical Statistics (NIMS), New Delhi

- Collaboration with CBHI and ECTA and Development of Health Policy Reforms Options Data (HSPROD) base and collected large number of health reforms in India as on the website of MOHFW.
- Establishment of Clinical Trials Registry – India (CTRI), in collaboration with DST and WHO.
- Established the NIMS as the nodal Institute for:
- NACO’s programme on HIV Sentinel Surveillance, Modelling Estimation and Projection of HIV/AIDS in India.
- Implementation of IDSP-NCD risk factor survey.
- Conduct of integrated behavioural and biological assessment along national highways (IBBA-NH) among truckers for HIV epidemic in India.

ICMR-National Institute of Nutrition (NIN), Hyderabad

- Mapped B12 deficiency in 9 states.
- Established Nutrition Surveillance System in 6 states
- Carried out NCD Monitoring activities in Telangana and Andhra Pradesh.
- The results of a study on fatty acids reinforce the current recommendations of restricting the intake of trans fats, moderate the intake of n-6 PUFA and
increase the intake of n-3 PUFA for the prevention of diet related chronic
diseases including NAFLD.
• Dissemination workshop on “Health and Nutrition awareness” was conducted
for ICDS and Health functionaries working with Chencus.
• Determined Nutritive Value of Indian Foods
• Developed Double Fortification of Salt (DFS)
• Studied efficacy of Iron folate supplementation in pregnancy
• Exploded the protein myth and highlighted the calorie gap as a major bottle
neck in Protein Energy Malnutrition (PEM)
• Established Recommended Dietary Allowances (RDA) for Indians
• Formulated dietary guidelines for Indians

ICMR-National Institute for Research in Tribal Health (NIRTH) , Jabalpur
• Malaria Elimination Demonstration Project (MEDP) in Mandla district of
Madhya Pradesh initiate The goal of Malaria Elimination Demonstration
Project (MEDP) is to demonstrate elimination of malaria and prevention of
re-establishment of malaria is feasible in a high-endemic region of India.
• Outbreak of cholera in tribal district Katni was investigated and appropriate
suggestions regarding mitigations were given.
• An outbreak of Chronic Kidney diseases (CKD) failure was investigated
SupebedaPanchayat of Deobhog Block of District Gariaband, Chhattisgarh.

ICMR-National Institute of Cholera and Enteric Diseases (NICED) , Kolkata
• Establishing community-based enteric fever surveillance for estimating typhoid
fever burden as a prerequisite for implementation of TCV at the national
level.
• Continuing hospital-based diarrhoeal disease surveillance with mapping of
enteric pathogens and their antimicrobial resistance to facilitate deployment of
evidence-based responses undertaken by the state health authorities.
• Establishing efficacy of pentavalent rotavirus vaccine in a multi-centric RCT,
which aided its introduction in the national immunization program.
• Developing candidate vaccines against shigellosis and typhoid.
ICMR’s Activities & Achievements

• Identification of antimicrobial resistance in bacteria belonging to Enterobacteriaceae causing neonatal sepsis, mechanism of resistance and resistance gene transmission mechanisms, developing cationic antimicrobial peptide-based therapy for sepsis caused by Gram Negative Bacteria.
• Continuing active participation in the multi-state surveys for Soil Transmitted Helminth (STH) infection under the joint program of Ministry of Health, GOI and respective state health authorities for school aged children.

ICMR-National Institute for Research in Reproductive Health (NIRRH), Mumbai

• Conducted baseline survey in two tribal blocks in Palghar district of Maharashtra: to improve health and nutritional status of vulnerable segment of population by implementing multi-component health and nutrition education intervention as a sustainable model of intervention.
• Prepared Standard Operating procedures for Linking HIV with Family Planning services in public health settings: Outcome- Many unintended pregnancies are prevented by use of dual contraception by PLHIV.
• Demonstrated Estrogen, the female hormone, to be involved in regulating spermatogenesis and male fertility.
• Developed PBIT, an online webserver for identification of drug targets for infectious diseases (www.pbit.bicnirrh.res.in.)
• Initiated a multidisciplinary model of care for women with PCOS : with a team of IVF specialist, endocrinologist, dermatologist, dietician and yoga expert. This is a unique platform wherein research and services meet and is first of its kind in the government research Institute in India.

ICMR-National Institute of Immunohaemotology (NIIH), Mumbai

• Established Advanced Centre for Diagnosis and Management of Primary Immunodeficiency Disorders (PID)
• Developed a nanoparticle based point of care technique for the diagnosis of von willebrand disease (VWD): No commercial rapid test kit is available for diagnosis of any of the common bleeding disorders
• Discovered a novel molecular mechanism predominantly responsible for weak D variant in Indian population
• Demonstrated siRNA silencing of protein C gene to improve the clinical phenotype of hemophilia A
• Demonstrated Interplay of miRNA expression and the epigenetic factors in sickle cell anemia patients following hydroxyurea treatment

ICMR-National Institute of Cancer Prevention and Research (NICPR), Noida

• Developed a hand-held device, “Magnivisualizer” with digitized image capture options for detection of precancerous cervical lesions
• Developed “India Against Cancer” website, a bilingual (English & Hindi) web portal that provides information on the leading cancers in India and promotes cancer awareness
• Developed “OrCanome”, a comprehensive database with genomic, transcriptomic and proteomic information of genes dysregulated in oral cancer
• Developed natural product “Plant based anticancer activity database” for facilitating traditional drug discovery. Natural antioxidative agent curcumin has been demonstrated to be an anti-HPV molecule.
• Developed first ever “Global database for cervical cancer genes (CCDB)” involved in disease progression

ICMR-Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna

• Conducted In-depth review of kala-azar programme to find out gaps and strengthening of elimination strategies
• Established Slow release emulsified suspension (malathion) as an alternative to DDT in vector control.
• Miltefosine, the first ever oral drug, for treatment of Kala-azar and PKDL; Paromomycin and amphomule registered by DCGI for Kala-azar treatment; and Single dose ambisome and combination therapy of miltefosine and Paromomycin introduced in programme.
• Established insectorium for sandfly rearing, regeneration and colony maintenance; and Leishmania Parasite repository & Sera bank.
• Developed Monitoring and evaluation toolkit for IRS in consonance with WHO-TDR for vector control

**ICMR Vector Control Research Centre (VCRC), Puducherry**

• Safety study on triple drug administration for LF elimination
• Xenomonitoring protocol to evaluate the impact of MDA for LF elimination
• ZIKAV surveillance through networking in the country
• Implementation study to minimize risk of transmission of JE through vector control intervention measures in Gorakpur, UP
• Mapping of insecticide resistance among malaria vectors in Southern Odisha

**ICMR-National Institute of Virology (NIV), Pune**

• Reporting of First Zika Virus case in India-
• Establishing Zika Surveillance network in India
• Training & supply of Zika Diagnostic reagents to 30 laboratories.
• Discovery of 03 new viruses
• Surveillance of fever, influenza like illness and dengue like illness has helped to know the base line incidence of viral diseases syndromes and seasonal variation of various viral bacterial diseases in community.
• Measles diagnostic IgM kit technology transferred to M/Cadila, Ahmedabad

**ICMR-National AIDS Research Institute (NARI), Pune**

• Supports National AIDS Control Program (NACP) through data validation for elimination of mother to child transmission and providing recommendations for documentation of elimination planned for 2020 by GOI
• Preparation of modules based on evidence generated for prevention of intimate partner violence.
• World Health Organizations (WHO) has recognized NARI as a center for pre-qualification of diagnostic test kits.
• In the non-HIV area, generation of causal evidence for Acute Encephalitis Syndrome (AES) as caused by scrub typhus and community engagement to implement control of JE.

ICMR-Regional Medical Research Centre Bhubaneswar

• Study on Mid-Day Meal Programme in Odisha: Various e-study tools have been developed at the levels school, school monitoring committee, parents, cluster, block are tested on pilot basis. The study is planned to implement in various districts in 3 zones in the state.
• A study on the Effectiveness of Food supplementation on Treatment Outcomes and Nutritional status of Adults with Pulmonary Tuberculosis in Odisha: Difficult to reach areas, lack of pre-treatment counselling are few of the reasons quoted for lack of follow-up, high default rates and hence low cure rate in this region.
• Enhancing bio risk mitigation awareness in public health community and creating laboratory networks for enhanced diagnostic capabilities to deal with surveillance and outbreaks of high-risk group viral pathogens causing viral haemorrhagic fevers and respiratory infections.
• Anthrax in Odisha (Koraput, Rayagada, Malkangiri, Sundargarh )-Cutaneous Anthrax was found to be high, attributing to slaughtering, butchering and deskinning of animals by male respondents.
• Asymptomatic malaria infection below 5 years and mode of transmission in Kandhamal district

ICMR-Regional Medical Research Centre Dibrugarh

• Developed the capacity to provide diagnosis for 41 different viral infections within 48 hours. A total of ~3000 samples have been tested for ~9,000 different viral pathogens in last 1 year.
• Developed “Malaria Epidemiology Database and Retrieval system of North East, India” and identified lead molecules against Malaria, Hepatitis and Cholera through virtual screening.
• Evaluated the effectiveness of single dose of SA-14- 14-2 (JE) vaccine administered in adults (2012-16): Found to be effective.
• Established evidence of major rickettsial infections viz., spotted fever group rickettsiae (SFGR) and typhus group rickettsiae (TGR) beside scrub typhus (ST) as important vector borne disease in NE India.
• Community Survey of malaria showed a significant gradual decrease in malaria positive cases from 153 positive cases (1st survey) to 7 positive cases (5th Survey).
• Drug sensitivity testing of MTBC isolates collected from Sikkim has revealed significantly high number of multi drug resistance (MDR) TB cases.
• Providing early warning for occurrence of Japanese encephalitis at village level in three districts of Upper Assam for 2017 (viz., Dibrugarh, Tinsukia and Sivasagar) in a GIS format.
• Demonstrated the Group B streptococci (GBS) colonization among pregnant women at 35-37 weeks, also established GBS as an invasive isolate from neonatal sepsis cases. Hence routine antenatal screening could be of public health importance
• Development of a community based IEC intervention module for dietary salt restriction and reduction of blood pressure
• Association of promoter hypermethylation of TP53, BRCA1 and BRCA2 genes with increased risk of breast cancer in females from NE region of India has been identified.
• Identification of the association of pro-inflammatory and anti-inflammatory cytokine genes with the risk of gastric cancer in Tripura and Nagaland.

ICMR-Regional Medical Research Centre Port Blair

• Substantial reduction in filariasis prevalence among the Nicobarese of Nancowry group of islands through mass distribution of DEC fortified salt
• Health profile and burden due to infectious and non-infectious diseases among the particularly vulnerable tribal groups viz., Onges, Shompen and Andamanese
ICMR-Desert Medicine Research Centre (DMRC), Jodhpur

- Promotion of protective devices for the prevention of hypertension in brine (salt) workers.
- Diagnosis, phylogenetic analysis and molecular characterization of H1N1 virus.
- Screened and established the Sickle Cell Disease in the tribal population of Rajasthan.
- Established the Trans Ovarian Transmission in Aedesaegypti vector.
- Mapping of insecticide resistance in malaria and dengue vector of the state.
- Improving Health and nutritional status of vulnerable segment of population by implementing multi-component health and nutrition education intervention