

# ICMR

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*at a glance...*



March, 2017

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## *Introduction*

The Indian Council of Medical Research (ICMR) is 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.*
- *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.*

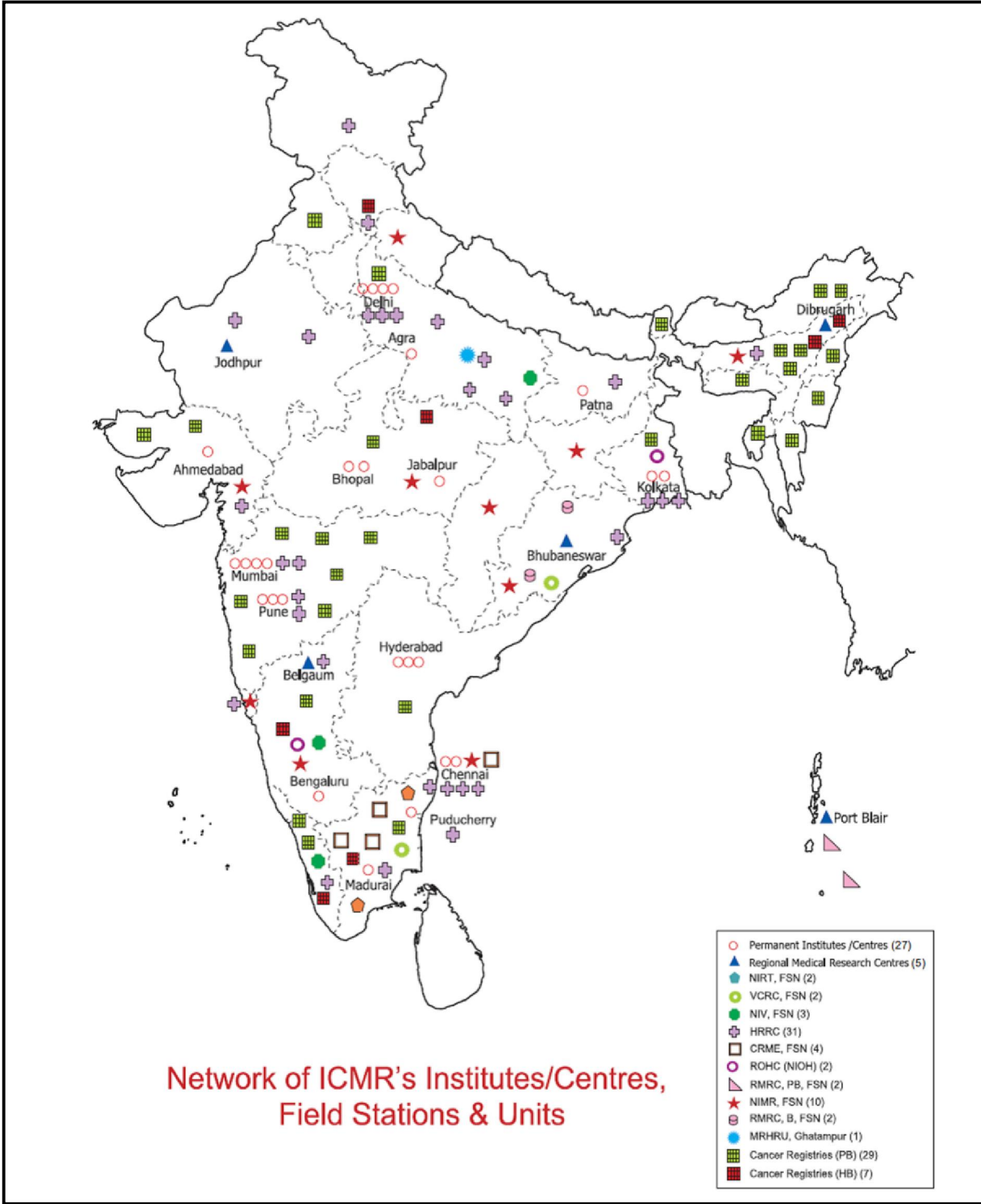
## *Network*

Today ICMR has pan-India presence with 32 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 11 divisions at ICMR Headquarters that deals with different areas of medical research.



Council's 32 Research Institutes/Centres include:

- National JALMA Institute for Leprosy & Other Mycobacterial Diseases, Agra
- National Institute of Occupational Health, Ahmedabad
- National Centre for Disease Informatics and Research (NCDIR), Bangalore
- Bhopal Memorial Hospital & Research Centre (BMHRC), Bhopal
- 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
- Centre for Research in Medical Entomology (CRME), Madurai
- National Institute for Research in Reproductive Health (NIRRH), Mumbai
- National Institute of Immunohaematology (NIIH), Mumbai
- Enterovirus Research Centre (ERC), 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 Centre of Laboratory Animal Sciences (NCLAS), Hyderabad
- National Animal Resource Facility for Biomedical Research (NARFBR), Hyderabad
- Food & Drug Toxicology Research Centre, Hyderabad
- ICMR Virus Unit, Kolkata
- Genetic Research Center (GRC), Mumbai
- Regional Medical Research Centre, Bhubaneswar
- Regional Medical Research Centre, Dibrugarh
- Regional Medical Research Centre, Port Blair
- Desert Medicine Research Centre, Jodhpur
- National Institute of Traditional Medicine, Belgaum



## *Stellar role played by ICMR over the last 100 years*

Since its inception, ICMR has continued to play a very important role in the following areas:

1. Providing funding support for biomedical and health research in the country - Many eminent researchers, academicians, policy makers and program managers have received grooming and funding support in early part of their careers.
2. Acting as a science generating agency, evidence was created by ICMR to formulate strategies and policies for prevention and control of various communicable and non-communicable diseases and national health programs. Significant contributions have been made in prevention and control of diseases of public health importance including malaria, Japanese encephalitis, cholera, AIDS, leprosy, poliomyelitis and Kala-azar.
3. Creating and supporting national level surveillance networks for rotaviral diarrhoea, pneumonia, bacterial meningitis, poliomyelitis, acute encephalitis syndrome and HIV/ AIDS. These provided estimates on disease burden and trends. ICMR has been contributing towards strengthening of IDSP (Integrated Disease Surveillance Programme) through its network of institutions.
4. Providing ethical and regulatory framework and guidelines for conduct of biomedical research and public health practice in India.
5. Fostering international, bilateral and multi-lateral collaborations and funding platforms.
6. Developing evidence-based health policies and undertaking research in response to emerging national priorities. ICMR data from some of the major projects like National Nutrition Monitoring Bureau, National Cancer Registry Program, Rotavirus Surveillance Network and Influenza Network have greatly impacted Government policies and programs

ICMR's contribution in the field of tuberculosis, leprosy, diarrhoeal and viral diseases are tabulated below:

Disease	ICMR's Contribution
<b>Tuberculosis</b>	<ul style="list-style-type: none"> <li>• Efficacy of Short Course Chemotherapy (SCC) in pulmonary, extra-pulmonary and MDR-TB</li> <li>• Efficacy of DOTS was tested and evaluated</li> <li>• Domiciliary treatment of TB</li> <li>• Conducted largest BCG clinical trial demonstrating the inefficacy of BCG to provide protection in adults</li> </ul>
<b>Leprosy</b>	<ul style="list-style-type: none"> <li>• Concept of MDT was tested and evaluated</li> <li>• UMDT (MDT + Minocycline + Ofloxacin , clofazimine) regimen development</li> <li>• MIP vaccine trial</li> <li>• Immuno-diagnostic tests (FLA-ABS, SACTELISA, PGL-ELISA, etc.) for multi bacillary leprosy</li> </ul>
<b>Diarrhoeal Disease</b>	<ul style="list-style-type: none"> <li>• Demonstration of Oral rehydration therapy to prevent mortality in diarrhoeal disease</li> <li>• Efficacy of HAF (Home available Fluids) in combating dehydration</li> <li>• Demonstration of 3-tier approach to manage diarrhea.</li> <li>• Detection and characterization of V. cholera 0139 strain and its epidemiology</li> </ul>
<b>Malaria</b>	<ul style="list-style-type: none"> <li>• Development POC detection kit for <i>Plasmodium falciparum</i></li> <li>• Bioenvironmental approaches for malaria control (eg. Larvivorous fishes, bio-larvicides etc.)</li> <li>• Development of new anti-malarials</li> </ul>
<b>Filariasis</b>	<ul style="list-style-type: none"> <li>• Demonstration of a successful community based integrated vector management programme Cherthala, Kerala.</li> <li>• Community based Drug studies demonstrating effectiveness of DEC and Ivermectin.</li> </ul>
<b>Viral Diseases</b>	<ul style="list-style-type: none"> <li>• Demonstration of HIV infection in India and initiated country wide sero-surveillance.</li> <li>• Development of Vaccine against <i>Japanese encephalitis</i> (JE)</li> <li>• Development of commercial diagnostic kits against JE, West Nile (WN), Dengue (DEN) and Chikungunya (CHIK)</li> <li>• Development of indigenous ELISA kits for diagnosis of Hepatitis A&amp;B.</li> </ul>
<b>Regional Diseases</b>	<ul style="list-style-type: none"> <li>• Development of vaccine against Kyasanur forest disease (KFD) in Karnataka</li> <li>• Developed a highly sensitive and specific diagnostic kit for detection of IgG antibodies against paragonimiasis (north-east India)</li> </ul>

The major activities of ICMR are summarized below:

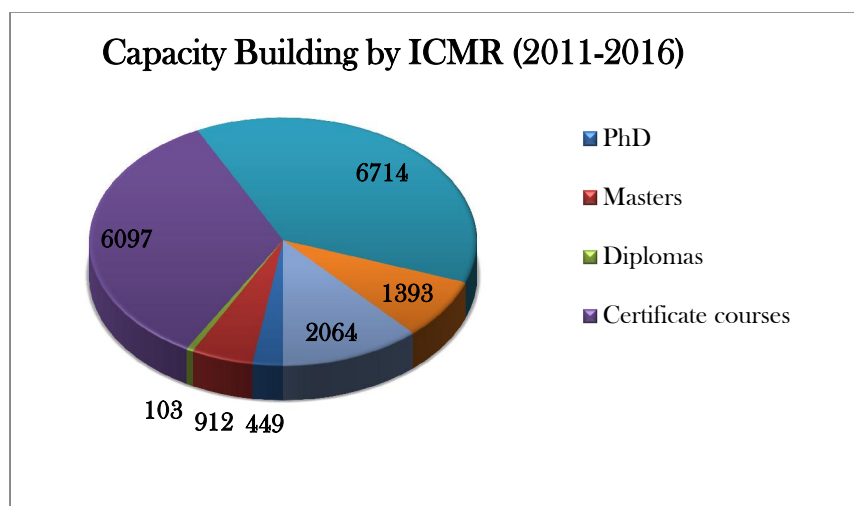
S.No.	Activities	Relevance
1.	Network of 32 institutes	<ul style="list-style-type: none"> <li>Involved in evaluation of new drugs, insecticides, vaccines, devices, diagnostic kits &amp; other interventions for all diseases of national health priority along with neglected and regional ones.</li> <li>Taken health research to every corner of the country No other agency in India has such outreach.</li> </ul>
2.	Clinical Trial Registry - India (CTRI)	<ul style="list-style-type: none"> <li>Registers all the clinical trials conducted in India inorder to improve transparency and accountability, ensure conformation to accepted ethical standards and reporting of all relevant results of the trials.</li> <li>ICMR also provides ethical guidelines for clinical trials</li> </ul>
3.	National Cancer Registry Programme	<ul style="list-style-type: none"> <li>Generate reliable data on the magnitude and pattern of cancer in India</li> <li>Undertake epidemiological studies based on results of registry data</li> <li>Help in designing, planning, monitoring and evaluation of cancer control activities under the National Cancer Control Programme (NCCP)</li> <li>Develop training programmes in cancer registration and epidemiology.</li> </ul>
4.	Surveillance networks (IDSP, rotavirus, polio, Antimicrobial resistance etc.)	<ul style="list-style-type: none"> <li>Generate timely and geographically representative data on the clinical, epidemiological, and pathological features of several diseases in Indian population</li> <li>Only Indian agency conducting surveillance of viral diseases.</li> </ul>
5.	Nutrition	<ul style="list-style-type: none"> <li>Identified the priority areas, conducted research in a multicentre mode and found effective, practical, economically viable and sustainable solutions for the plethora of nutrition related problems affecting people.</li> <li>Nutritive value of Indian Foods and Food Fortification are landmark achievements of ICMR.</li> </ul>
6.	Support in Outbreak/ epidemics/pandemics/	<ul style="list-style-type: none"> <li>Surveillance Of Health Impact Due To Indian Ocean Tsunami in 2004 (NIE, NIRT, NICED, CRME,</li> </ul>



	National Emergencies	<p>VCRC, RMRC-PB)</p> <ul style="list-style-type: none"> <li>• Environment and health impact assessment for Bhopal Gas Tragedy, 1984 (NIOH,NIMS, BHRMC,NIP, NICPR)</li> <li>• Earthquake in Gujarat, 2001 (NIMR, DMRC),</li> <li>• Supercyclone in Odisha, 1999 (NIMR)</li> <li>• Epidemic Investigations during SARS/H1N1, and preparedness for ZIKA and Ebola viruses, etc</li> </ul>
7.	Provides Inputs for Policy Implementation	<ul style="list-style-type: none"> <li>• DOTS for Tuberculosis</li> <li>• MDT for Leprosy</li> <li>• Malaria Drug Policy In North-East</li> <li>• ORS implementation in diarrhoea</li> </ul>
8.	Provides Guidelines/Regulations	<ul style="list-style-type: none"> <li>• National Guidelines for Accreditation, Supervision and Regulation of ART Clinics in India</li> <li>• Ethical Guidelines for Biomedical Research on Human Participants</li> <li>• Guidelines for Good Clinical Laboratory Practices</li> <li>• Guidelines for Safety Assessment of Foods Derived from Genetically Engineered Plants</li> <li>• Intellectual Property Rights Policy</li> <li>• Guidelines for Stem Cell Research (2013)</li> <li>• Dietary Guidelines for Indians</li> </ul>
9.	Isolation/characterization of New pathogens	<ul style="list-style-type: none"> <li>• Asia's first BSL-4 laboratory developed by ICMR</li> <li>• Cholera strain O139</li> <li>• Kyasanur forest disease (KFD)</li> <li>• Leptospirosis</li> <li>• Paragonimiasis</li> </ul>
10.	Research Support to Medical Colleges all over country	<ul style="list-style-type: none"> <li>• Funds majority of research in medical colleges.</li> <li>• Short Term Studentship Program - promote interest and aptitude for research among medical undergraduates</li> </ul>
11.	Capacity Building	<ul style="list-style-type: none"> <li>• Generate and nurture human resources for health research activities through various fellowships (JRF, SRF, RA, STS) and trainings/workshops.</li> </ul>

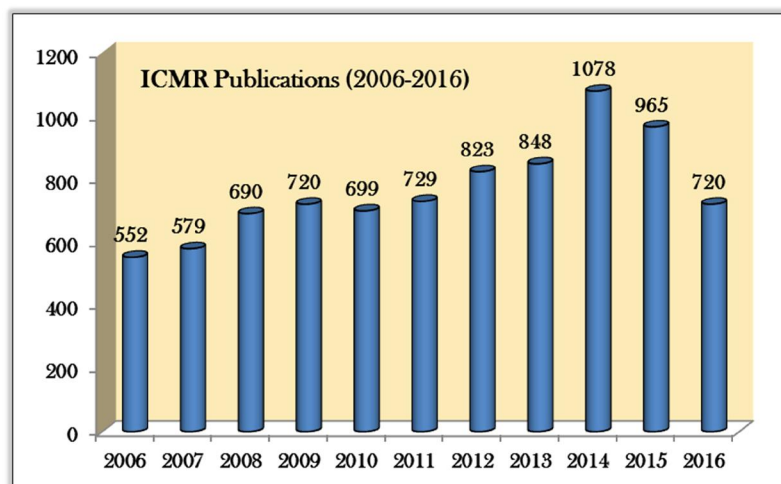
## Capacity building / training

ICMR continued its focus to enhance capacity building in the strengthening of human resources. Training to develop existing skills and expertise has been the mainstay of the Institute's race towards achieving excellence for staff in scientific, technical and administrative sections. ICMR has conducted more than 1000 training programs where 6714 personnels were trained.



## Papers published

Original articles published in peer-reviewed journals constitute one of the primary measures of ICMR's output. During the last 10 years, ICMR has published over 8000 publications in various national and international journals.



## Patents and IPR

In total, 121 patent families were filed by ICMR and its affiliated institutes since 2004.

1. Diagnostic methods received the most patents with 32 inventions
2. The antibiotics and vaccine category had higher strength patents followed by recombinant DNA technology and diagnostics.
3. Patent family expansion of ICMR patent publications was spread over USA, EPO, Australia, China, Mexico and Brazil.

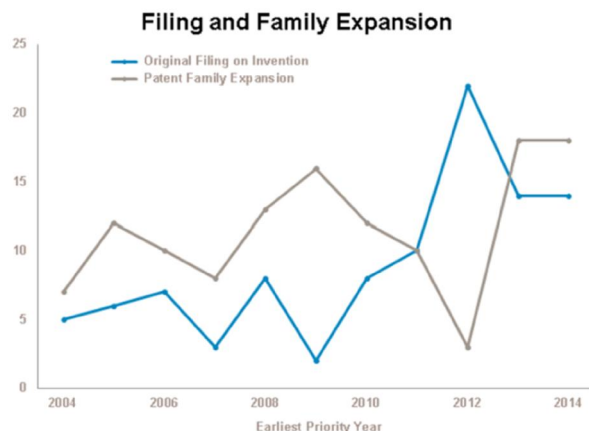


Figure 9.1 Yearly patent filing trend between 2004 and 2014

Technical Categories	Inventions
Traditional and Herbal Medicine	14
Antibiotics and Vaccines	13
Biocides and Insecticides	15
Pharmaceutical Compositions	19
Cultural Systems	5
Medical Devices	16
Recombinant DNA Technology	12
Diagnostic Methods	32
Immunology	8
Enzymology	12

## Technologies developed

ICMR has contributed immensely in developing affordable and life-impacting indigenous technologies. Some of them from recent past are provided below:

- Vaccine for Japanese Encephalitis
- Test for molecular diagnosis of beta thalassaemia
- Magnifying device (Magnivisualizer) for cervical cancer screening
- Strips and detection system(s) for diabetes mellitus
- Test for detection of pathogenic bacteria in food
- Technologies for Vitamin A and Ferritin estimations
- Non-invasive procedure for diagnosis of visceral leishmaniasis from urine or saliva
- Engineering control device for silica flour milling units at Beawar
- Nylon gloves for tobacco harvesters
- Engineering control device for Agate units
- Personal Protective Equipment for salt workers
- Redesigned cycle rickshaw
- Personal Cooling Garment



**Existing Staff: Scientific, Technical and Administrative - at Hq and Institutes**

<b>Permanent Staff</b>	<b>Institutes</b>	<b>Hqrs</b>	<b>Total</b>
Scientific	533	57	590
Technical	1998	41	2039
Administrative	999	231	1230
<b>Sub Total</b>	<b>3530</b>	<b>329</b>	<b>3859</b>