

Summary of International Collaborative Research under Projects Approved by Health Ministry's Screening Committee (HMSC) during January, 2008 to December, 2012

We have made an attempt to analyze the trends observed in international collaborative research undertaken during the past few years. We hope that the current analysis will help in identifying those areas which need further attention and would help policy makers to formulate a better informed strategy in decision making.

The Health Ministry's Screening Committee (HMSC) granted approval to 559 out of 718 proposals considered for international collaboration during its nineteen meetings held during January, 2008 to December, 2012. The year-wise approval rate of projects varied between 75 - 85% and the overall approval rate was 78%.

The Indian partners in the collaborative projects included those from Government research institutes (funded by ICMR, CSIR, DBT etc.), Autonomous R & D institutes, Universities/Medical Colleges and Indian NGOs working for a particular cause.

All India Institute of Medical Sciences (AIIMS), New Delhi undertook the maximum number of international collaborative projects (92) among the Indian research institutions during the said period followed by Christian Medical College (CMC), Vellore (30 projects); National Institute of Malaria Research (NIMR) & its various field stations (29 projects), and National AIDS Research Institute (NARI), Pune (23 projects) and so on.

In the reporting period from January, 2008 to December, 2012; 134 international collaborative projects were undertaken by various ICMR institutions and the maximum number i.e. 29 projects were carried out at National Institute of Malaria Research (NIMR) and its various field stations.

Out of 559 approved collaborative research projects, 92 projects are committed to be co-funded by ICMR under various MoUs and Joint Statements.

Area wise breakup of 559 projects is as follows:

Communicable Diseases

In the area of **Infectious Diseases**, maximum number of projects were approved i.e 263 out of 559 projects (47%).

In the area of **HIV/AIDS/STD** 130 projects were approved, of which 108 projects were on diverse areas related to HIV/AIDS and STDs, whereas 22 projects focused exclusively on HIV/AIDS - Tuberculosis co-infection. These projects broadly focused on social and behavioural aspects, development and monitoring of Anti-Retroviral Therapy (ART), ART resistance, the strategic timing to start therapy, vaccine development, vaccine trials and use of mobile technology for

promoting prevention and treatment adherence. The studies on HIV/AIDS/STD diseases were also undertaken at the molecular and cellular levels along with research on chemo-therapeutic and pathogenetic aspects of HIV co-infection with other diseases like tuberculosis and diabetes. Studies pertaining to systemic delivery of antiretroviral drugs were also undertaken.

However in the context of Government programmes on Anti-Retroviral Therapy (ART) as well as research studies on ART therapy, the development of low-cost viral load testing methods and resistance testing needs to be addressed further. Studies related to HIV prevention/ intervention through communication technologies also need to be stressed upon further for determining if and how they can influence better medication adherence. The studies on the impact of reinforcing behavioural and other factors e.g., increased patient involvement, social support, reducing risk behaviors and promoting better healthcare etc. are some of the other areas which need to be promoted for collaborative research.

In the area of **Malaria**, 37 research projects were approved with main focus on areas like newer drugs and insecticide resistance, networking and linkages with international laboratories /agencies. Recently the focus has been on impact of climate change on vectors and transmission of malaria.

In the area of **Tuberculosis**, 20 collaborative research projects were approved for developing newer diagnostic tools, epidemiology, immunology, drug resistance and development of novel anti-bacterial drugs. The results of these collaborative projects may help researchers and policy-makers to translate the findings of research into policies and programmes in order to control tuberculosis more effectively and efficiently.

In the area of **Diarrhoeal diseases**, 17 collaborative projects were approved during the period under report. The study trials were performed in the areas such as vaccine and prevention / intervention research. Through international collaboration, it is evident that research capacity has been enhanced in Indian institutions in the area of enteric infectious diseases. In the areas of **Leishmaniasis** (14 projects), **Filarasis** (9 projects), **Japanese Encephalitis** (4 projects) and **Dengue** (3 projects), various Indian institutes have worked progressively in collaboration with foreign agencies/institutes for development of newer diagnostics and vector control.

Eleven collaborative projects pertaining to capacity building, disease surveillance in emerging and re-emerging infections were consolidated under **Other Infectious Diseases**. Several projects related to vaccine research were conducted under the subject area of **Bacteriology** (8 projects) and **Influenza** (6 projects). The area such as impact of climate variability and risk predictions on control of **Vector Borne Diseases** (2 projects) was also undertaken. Under **Leprosy** with emphasis on clinical neuropathy and genetic susceptibility was studied in 2 projects.

Non-Communicable Diseases

In the area of **Non-Communicable Diseases (NCDs)** 165 out of 559 approved projects (30%) were conducted in different areas of NCDs during this period.

Among NCDs, the area of **Oncology** topped the list with 40 projects, mainly focusing on clinical trials. Other topics included genomics and evaluation of novel techniques for diagnosis and therapeutic treatment of cancer.

Under NCDs, **Cardiovascular Diseases (CVDs)** emerged as the major health burden in India. In the area of Cardiovascular Diseases, 36 international collaborative projects were undertaken during the period which mainly focused on prevention, nature of genetic contribution and gene-environment interactions of the disease. The studies were predominantly clinical trials and also covered the genomics and molecular biology approach of research in this area. The initiative for establishment of registries has also been undertaken which can serve as a national resource for further research studies and management of disease.

In the area of **Neurosciences**, 25 international collaborative projects were approved. These projects were on varied aspects of Neuroscience research like diagnostics, genetics, neurological developments, clinical trials on newer technologies / therapies, improving current neurological treatment and therapies.

In the area of **Mental Health**, 22 approved projects mainly focused on depression, schizophrenia, drug addiction and clinical psychology with an aim to improve health and socio- economic outcome related to this area. The outcome of these collaborative projects could assist in developing a culturally appropriate treatment for Indian patients.

In the area of **Environment and/or Occupational Health**, 14 international collaborative projects were approved. Most of the projects were on indoor air pollution and respiratory health problems. These studies would help in designing appropriate interventions/measures and policies to control problems related to Environment and Occupational Health. The effect of pesticides and arsenic toxicity at cellular level was also studied.

The research in some of the areas like **Life style Diseases** (13 projects), **Ophthalmology** (7 projects), **Gastroenterology** (5 projects), **Pulmonary Diseases** (1 project), **Rehabilitation** (1 project) and **Epidemiology of NCDs** (1 project) was also undertaken focusing on basic research, clinical trial, molecular biology and genetics of the related diseases.

Reproductive and Child Health

In the area of **Reproductive and Child Health**, 77 projects were approved representing 14%. These projects were mainly on development of affordable health care and health systems research and studies on treatment modalities in low resource settings to reduce infant and maternal mortality. Out of these, 39 collaborative research projects in **Reproductive Health** were largely on testing of new and existing drugs, devices and vaccine development as well as studies for improving reproductive health. In the area of **Child Health**, 38 international collaborative projects included clinical trials and focused on epidemiological surveillance, micronutrient requirements, improvement of diagnostics for pediatric infections, and pediatric growth hormones.

Nutrition

In the area of **Nutrition**, 14 projects were approved wherein an important thrust area was on bioavailability/supplementation of micronutrients for malnutrition. The collaborative research data generated could be of help for development of nutrition policies and intervention programmes as well as it can serve as an excellent population-based epidemiological resource for conducting future work on nutrition and genetics in India.

Other areas

In the area of **Diabetes Mellitus** (12 projects) international collaboration was to study determinants of Type 2 diabetes risk, epigenetic and nutritional aspects of the disease.

There were a few projects in basic research areas such as **Genomics** (10 projects), **Haematology** (7 projects) and **Immunology** (2 projects) which were focused on molecular genetics, development of diagnostics and biomarker studies. In addition, a project was also approved in the area of **Bioinformatics**.

There were a few international projects in the areas of **Health Systems Research** (5 projects) and **Social Behavioural Research** (2 projects other than HIV/AIDS) aiming to improve the Indian health system to tackle the health needs of the people. One project was on training in **Bioethics** with an aim of capacity building.

As we all know the NCDs are on a rise due to epidemiological transition and represents a major health burden in India, hence the collaboration on different areas of NCDs may require specific focus on developing prevention strategies by determining the risk factors.

There is also a need to focus on the training of scientists in the fields of Bioethics and Bioinformatics. The use of newer tools like Information and Communication Technologies (ICTs) in the form of electronic health (e-health) and mobile health (m-health) as technology platforms for healthcare delivery need to be taken up with international institutes/agencies for joint collaboration.

It is observed that the international collaboration has assisted in advancing health research in almost every aspect of human health particularly for addressing the global health challenges and possibilities towards enhancing training in cross-cutting areas of health research and it needs to be strengthened and supported further.