A large population would like to forget the year 2020, but not the medical science community. 2020 was the year when a highly contagious, rapidly mutating coronavirus travelled across international borders to seize the entire world with a deadly disease. However, it was the collective global scientific community’s response to this health emergency that seems to have kept everyone going. The coordination of efforts, the pace of innovation, response of the government and finally the process of vaccine development, has redefined the potential of medical science and biotechnology.

India reported the first officially confirmed case of the coronavirus infection on 30th January 2020. Since then, collaborative efforts bore fruit towards identifying the virus, devising the diagnostics and therapeutics strategy and finally scientific research to develop a safe and immunogenic vaccine. India’s response during initial days of the pandemic was remarkable despite highly contagious nature of the virus and prerequisite of physical distancing as prevention. Now as we near the end of the year with COVID-19 cases steadily declining and at least two vaccines almost ready for roll out, 2021 is all set to be the year of biomedical miracles.

However, we can not let our guard down. India needs to continue with large scale COVID-19 sample testing through an extensive infrastructure of diagnostics laboratories across the country. Recently, India surpassed milestone of 17 crore sample testing and continues to exponentially increase this number every day. This has allowed us to contain the spread of virus to few states. We have effectively responded to a medical crisis and need to be vigilant.

ICMR backed Bharat Biotech Limited’s indigenous vaccine candidate “COVAXIN” and Astra Zeneca/Oxford University’s “COVISHIELD” vaccine, jointly developed by Serum Institute of India and ICMR as second sponsor is in process of getting emergency use approval from the regulator. Given India’s vaccine manufacturing capabilities, India is now uniquely placed not only to serve its own population but also to provide support to others nations. This remarkable development has further strengthened India’s global image as the vaccine capital of the world.

Our Honorable Prime Minister Shri Narendra Modi has also said that 2020 was about health challenges, 2021 will be about health solutions. But we need to remember that even though vaccine is on its way, COVID-19 virus is still active and mutating. We have been able to control the pandemic in the country by following COVID-19 appropriate behavior and we need to continue doing so.
India’s indigenous vaccine candidate ‘COVAXIN’ being developed by Indian Council of Medical Research in collaboration with Bharat Biotech Ltd has attracted global interest. Clinical trial data generated from within India has indicated the impressive safety and immunogenicity profile of ‘COVAXIN’. This has spurred the international peer review publication ‘The Lancet’ to express keen interest in publishing the results.

Encouraging phase I/II clinical trial results have paved the path for Phase-III trials in India. Phase-III trial commenced in mid-November and is targeted to be done on 25,800 participants aged 18 years and above from across 25 sites in the 10 states across the nation. It is the largest efficacy trial ever conducted for any vaccine in India.

Typically, phase-III studies have the primary objective to demonstrate therapeutic benefits. Studies in phase-III are designed to confirm the preliminary evidence accumulated in phase-II that a vaccine is safe and effective for use in the intended indication and recipient population.

Clinical trial data generated of “COVAXIN’ from within India indicate impressive safety and immunogenicity profile. This has spurred the international peer review publication ‘The Lancet’ to express keen interest in publishing the results.

Earlier, phase-I/II trials of ‘COVAXIN’ were successfully conducted to evaluate the safety, reactogenicity, tolerability, and immunogenicity of healthy volunteers, who received doses of vaccine formulations. The trial had a total sample size of 1125 healthy volunteers, with 375 volunteers in the phase-I and 750 volunteers in phase-II study.

‘COVAXIN’ has been categorized as an inactivated vaccine derived from a strain of SARS-CoV-2 virus, isolated at the ICMR-National Institute of Virology (NIV), Pune. It means that the virus pathogen is ‘deactivated’ to disable it from causing infection. However, some parts of the virus can be identified by the immune system, leading to an immune reaction and thus safety from future infections.
17 crore COVID-19 testing: Yet another milestone achieved

- Last 10 crore testing conducted under 100 days.
- India conducted more than 10 Lakhs tests per day in last 30 days.
- India has conducted more than 1,27,984 tests per million populations.

Indian Council of Medical Research has yet again achieved a milestone in conducting record COVID-19 sample testing. India crossed 17 crores testing mark on 29th December 2020, with average testing of more than 10 Lakhs per day in last 30 days. With this India has conducted more than 1,27,984 tests per million populations, which is a remarkable achievement for any nation, which started with minimal testing infrastructure and capabilities.

Concentrated efforts towards augmenting and diversifying affordable testing with focus on reducing turnaround time made it possible to conduct the last 10 crore sample testing in only 93 days. As on 7th September, 2020 India had tested 5 crore COVID-19 samples, which reached 17 crores mark in less than 100 days. ICMR has been enhancing COVID-19 testing capability across the country by leveraging technology and facilitating innovation in affordable diagnostic kits.

Prof. (Dr.) Balram Bhargava, Director General, ICMR said, “Testing alone has enabled early identification, prompt isolation & effective treatment of COVID-19 cases. This has eventually led to restricting spread of coronavirus across the country. ICMR’s efforts in employing indigenous testing kits have been recognized globally. We need to adhere to implementation of 5T approach ‘Test, Track, Trace, Treat and use of Technology’ efficiently.”

The scaling up of testing laboratories started with a network of 106 ICMR - funded Viral Research and Diagnostic Laboratories (VRDLs) which already had the capacity to conduct testing for viruses similar to SARS-CoV-2. Subsequently, the testing was initiated in partnership with multiple governmental and private laboratories.

ICMR ensured that different testing platforms were made available like general testing (RT-PCR), high-throughput testing (COBAS), testing at remotest places and PHCs (TrueNAT, CBNAAT), containment areas testing (Rapid Antigen Testing) and mobile testing labs. Total number of COVID-19 testing laboratories across India has crossed 2200, of which more than 50% are RT-PCR specific laboratories.

Increase in testing capability by leveraging technology and innovation in affordable diagnostic kits enabled 10 crore tests in less than 100 days.
ICMR’s study finds cause for surge in HIV cases in Unnao district of Uttar Pradesh

- Study establishes unsafe injection practices as the cause of the HIV outbreak.
- Research study published in international journal PLOS ONE Research.
- Study was done in three locations of the Unnao districts.

Indian Council of Medical Research released its findings from a case-control study conducted on the sudden increase in the detection of HIV among attendees of Integrated Counseling and Testing Center (ICTC) located in a district hospital, Unnao, UP in 2017. Through the study it was established that unsafe injection exposure during treatment-seeking and receipt of intramuscular injection in the last five years were independently associated with HIV sero-reactive (presence of antibodies) status. The research paper was published in journal PLOS ONE and can be accessed at - https://journals.plos.org/plosone/article/comments?id=10.1371/journal.pone.0243534

The study was done on individuals detected HIV sero-reactive during November 2017-April 2018 from three locations namely Premganj, Karimuddinpur and Chakmeerapur in the Bangarmau block of the Unnao district. The participants were interviewed based on various risk practices and invasive treatment procedures. They were also tested for HIV and other bio-markers reflecting unsafe injecting and sexual exposures. Along with this, secondary data analysis on three time points was performed which revealed a rising trend of HIV among attendees of specific ICTCs in the district.

Dr. Samiran Panda, Director, ICMR National AIDS Research Institute, Pune and the corresponding author, said, “The study has been critical in understanding the outbreak and the challenges associated with unsafe injection practices. A comprehensive approach to tackle the problem should be adopted with interventions like increasing access of auto-disabled syringes and needles, empowering the local communities and implementing effective regulatory practices across healthcare settings.”

The study not only established unsafe injection practices as the cause of the HIV outbreak, it also concluded that the infection arising from blood transfusion, undergoing invasive surgical procedures, tattooing, tonsuring of head or skin piercing was not related to the surge in the HIV cases in the study area.
ICMR study documented the trends in health loss due to air pollution and its economic impact in every state of India

- The disease burden due to household air pollution is reducing in India.
- Over 300 leading scientists and experts from 100 institutions were engaged in this study.

Indian Council of Medical Research has published the findings of India State-Level Disease Burden Initiative (ISLDBI), a scientific paper on the health and economic impact of air pollution in ‘The Lancet Planetary Health’. Study documents the trends in health loss due to air pollution and its economic impact in every state of India using the latest improved methods and data. The paper published in The Lancet Planetary Health can be accessed at [http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30298-9/fulltext](http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30298-9/fulltext)

The findings of the paper highlight that the disease burden due to household air pollution is reducing in India but that due to ambient outdoor air pollution has increased. But the lost output from deaths and disease due to air pollution is leading to a loss of 1.4% of the GDP of the country. The findings for each state in India show wide variations in the impact of air pollution, with the percentage of per capita GDP loss among the highest in the relatively less developed states of the country. Study stresses that India has a good economic and development trajectory, which can improve further with the reduction of air pollution.

Prof Balram Bhargava, Secretary, DHR and Director General, ICMR said “Various government schemes such as the Pradhan Mantri Ujjwala Yojana and the UnnatChulha Abhiyan have aided in reducing household air pollution in India, the benefits of which are suggested in the reducing death rate from it as seen in this paper. Such success encourages us to enhance efforts to reduce outdoor air pollution as well.”

The India State-level Disease Burden Initiative (ISLDBI) was launched in 2015 as a collaborative effort between the ICMR, Public Health Foundation of India, Institute for Health Metrics and Evaluation, and a number of other stakeholders in India, including academic experts and institutions, government agencies under the aegis of the Union Ministry of Health and Family Welfare. The analytical methods of this study have been refined over a quarter century of scientific work, which has been reported in over 16,000 peer-reviewed publications, making it the most widely used approach globally for disease burden estimation.

Study documented the trends in health loss due to air pollution and its economic impact in every state of India. The findings highlighted that the disease burden due to household air pollution is reducing in India but that related to the ambient outdoor air pollution has increased.
Indian Council of Medical Research successfully organised Health Research Conclave 2020 on 23rd-24th December 2020, under the ambit of India International Science Festival (IISF-2020). Health Research Conclave is an important event of India International Science Festival (IISF). The theme of this year’s Health Research Conclave (HRC) was “Health Research for a Happy, Healthy and Self-reliant India”. HRC-2020 showcased the milestone achievements along with current activities and future prospects in the area of health research. The aim was to provide a platform for interaction between the policy makers, students, early researchers and the eminent experts in the field.

IISF–HRC 2020 was virtually inaugurated by Union Minister of Health & Family Welfare Dr. Harsh Vardhan on 23rd December 2020. Welcome address was delivered by Dr. Samiran Panda, Head, ECD, ICMR and Director, NARI, Pune. Shri. Ashwini Kumar Choubey, Minister of State for Health & Family Welfare gave valedictory address and concluded the conclave on 24th December, 2020.

Dr Harsh Vardhan, Hon’ble Union Minister of Health and Family Welfare in his opening remarks highlighted the need of health research for the benefit of the population and said that it has paid dividend during the COVID-19 pandemic. Hon’ble Minister of State for Health & Family Welfare, Sh. Ashwini Kumar Choubey said, “Health research’s role has gained prominence in confronting the health challenges that the country is currently facing and will provide an effective way to encounter future challenges. I congratulate ICMR in successfully conducting health research conclave 2020, wherein young scientists and students gained insights from health research experts.” He suggested that there is a need to create awareness among the masses the importance of science and during pandemic ICMR has become a household name because of its extraordinary efforts.

During two day conclave experts discussed and gave their insights on emerging & remerging infections, Atmanirbhar Bharat- race for COVID-19 vaccine, holistic health, healthy India-fit India, universal health coverage & the eliminable diseases. The concept of Atmanirbhar Bharat, inclusion of new age technologies like AI and machine learning was emphasized in each of these areas.
platform to disseminate research findings to the masses

On day one of the conclave, Dr. Nivedita Gupta, Head, Virology, ICMR, briefed about the laboratory network and its expansion from one lab to more than 2000 labs in a short span of time that helped in tackling various outbreaks and epidemics in the last few years. Dr. D. T. Mourya, ICMR Chair, One Health, stressed the need for research on one health to understand the relationship between human, animal and environment that is essential to understand the epidemiology of various emerging infections in today’s fast changing times.

There was also a panel discussion on “Race for COVID-19 vaccine under Atmanirbhar Bharat”, where panelists like Dr. Gagandeep Kang, Dr. Priya Abraham, Dr. Sanjay Rai, and Dr. Sanjay Mehendale discussed various issues related to vaccine development and praised India’s efforts in developing the indigenous vaccine for COVID-19.

Holistic Health was also an important area of interest under the Health Research Conclave and experts like Prof. V. K. Paul, Dr. V. M. Katoch, Dr. Anurag Agrawal, and Dr. Y. K. Gupta emphasized the need for integration of various pathways while understanding their strengths and weaknesses and highlighted that research can provide the evidence and bridge the gap.

On day two, an interesting panel discussion on Healthy India-Fit India was conducted. In this discussion, celebrity Chef Shri Sanjeev Kapoor highlighted the importance of local, fresh, and seasonal food while Madan Lal, the former Cricketer, emphasized the need for physical fitness and added that it is a mind game and one needs to make it a habit to remain physically fit.

Under the session on Disease Elimination, Dr. Soumya Swaminathan, Chief Scientist, WHO, elaborated on the global efforts being made to end TB by 2025 and how progress was affected during COVID-19 pandemic. Dr. Neena Valecha, Advisor, WHO, SEARO, explained in detail about malaria elimination efforts and highlighted the challenges and opportunities on road to achieving elimination targets by 2030.

Ph.D. Students, Post-Doctoral Researchers, and early career researchers enthusiastically participated in various programs organized during the Health Research Conclave 2020. Two-day event was coordinated by Dr. Rajni Kant, Director, ICMR-RMRC, Gorakhpur, and Scientist G & Head, Research Management, Policy, Planning, and Coordination, he also highlighted the success stories in the areas of health including ICMR efforts.
“We need health research for the benefit of the population and which has paid dividend during the COVID-19 pandemic”

**Dr. Harsh Vardhan**
*Honorable Union Minister of Health and Family Welfare*

“Health research has gained prominence in confronting the health challenges that the country is currently facing and will provide an effective way to encounter future challenges. During the pandemic, ICMR became a household name because of its extraordinary efforts in combating coronavirus pandemic.

**Shri. Ashwini Kumar Choubey**, *Union Minister of State for Health and Family Welfare*

“We must appreciate that wisdom which emanates from traditional systems and other approaches has a certain in-depth understanding of health and disease dynamics. Useful interventions and approaches from traditional systems open up the possibility to work together and to embrace the positives across the spectrum of health systems. We must respect each other’s domains, thoughts and find common ground to meet and work”.

**Dr. V. K. Paul**, *Member, NITI Aayog*

“TB incidence rate is falling, but not fast enough to reach the 2020 milestone of a 20% reduction during 2015-2020. She mentioned that our Prime Minister has made a call to make India TB free by 2025 ahead of global target of 2030 and work needs to be accelerated in order to achieve that”

**Dr. Soumya Swaminathan**, *Chief Scientist, WHO*

“ICMR-NIV, Pune has worked closely with Bharat Biotech Ltd and Serum Institute of India to help with immunogenicity studies. Indian vaccine companies are working round the clock to develop an indigenous vaccine, in line with our Atmanirbhar Bharat sentiments”.

**Dr. Priya Abraham**, *Director, ICMR-NIV, Pune*

“Vaccine development in India is happening without any external support, which is remarkable. India as a country will be helping and supporting other countries in health research, support and development following the philosophy of “Vasudhaiva Kutumbakam”.

**Dr. Samiran Panda**
*Head - Epidemiology & Communicable Diseases Division, ICMR and Scientist - G & Director, NARI, Pune.*
“India’s vaccine manufacturers have stepped outside their comfort zone to manufacture a COVID-19 vaccine. We need to keep in mind that utmost safety measures have been taken in the development of a new vaccine. Our safety systems have been really stepped up”

Dr. Gagandeep Kang, Professor, CMC, Vellore

“‘Infodemic’ is a word coined from two words information and pandemic, which talks about massive overabundance of information; sometimes accurate and much of it is not accurate which has led to people finding it hard to find trustworthy information. People need to moderate their information intake lest it might lead to information obesity.”

Dr. SubbaRao M. Gavaravarapu, Senior Scientist, ICMR-NIN

“One needs to give time to their body and analyze their body to decide what suits them and what doesn’t”.

Madan Lal, Former Cricketer

“Unignorable aspect of holistic health is rest of the mind and rest of the body. If we are happy with the food we eat, it will make us mentally, physically and spiritually better”

Shri Sanjeev Kapoor, Celebrity Chef

“Reinforcing global strategy, R&D for new tools including vaccine, access to high quality, affordable health care, adequate and sustained financing, galvanizing political will and engaging communities will be key towards malaria elimination.”

Dr. Neena Valecha, Regional Advisor (Malaria), WHO-SEARO

“The testing capacity improved in India through a network of laboratories established by ICMR called Viral Research Diagnostics Laboratories (VRDLs). The VRDL network has tested more than 20 lakh non-covid samples till date and has conducted more than 2 crores samples of COVID-19”

Dr. Nivedita Gupta, Head, Virology Unit, ICMR
2020- *a memorable journey in photos*

JULY, 2020: Inauguration of high capacity state of the art labs at Mumbai's National Institute of Research in Reproductive Health (NIRRH), Kolkata's National Institute of Cholera and Enteric Disease (NICED) and Noida's National Institute of Cancer Prevention and Research (NICPR) on 27th July, 2020 by Hon'ble Prime Minister Shri Narendra Modi.

NOVEMBER 2020: Mobile RT-PCR testing laboratory developed by ICMR in collaboration with Spice Healthcare inaugurated by Hon’ble Minister of Home Affairs Shri Amit Shah on 23rd November, 2020.

ICMR’s COVID-19 RT-PCR Mobile App conferred “Digital India Award 2020”

- RT-PCR Mobile App awarded Digital India Award 2020 under the ‘Innovation in Pandemic’ category.
- App developed jointly by ICMR, DHR and NIC recognized among most effective digital Apps of 2020.
- RT-PCR App used by sample collectors to enter details of RT-PCR tests.

The COVID-19 RT-PCR Mobile App developed jointly by Indian Council of Medical Research, Department of Health Research and National Informatics Centre has been recognized as one of the best and most effective Digital App of 2020. The app has been conferred “Digital India Award 2020” under the category “Innovation in Pandemic”. Honorable President Ram Nath Kovind virtually conferred the Digital India Award 2020 to the winners.

The RT-PCR Mobile App which was awarded under the “Innovation in pandemic” category is a hand held tool for the medical staff at sample collection centres spread across the country. The app is used by sample collectors authorised by collection centers to enter details of RT-PCR test samples. This dedicated RT-PCR mobile based application was launched to minimize error in reporting real time data to the government authorities and to avoid duplication of entries being sent to separate authorities.

The President congratulated the winners, and said that the coronavirus pandemic had changed the world adversely however information and communication technology ensured that life did not come to a standstill. He added that while normally technical advancements are cause of disruption, this time they had helped mitigate the adverse impact of the pandemic.

The NIC, under the Ministry of Electronics and IT, has been conducting the biennial Digital India Awards to promote innovation in eGovernance and digital transformation of government service delivery mechanism. The Digital India Award 2020 was given under six categories including “Innovation in Pandemic” which was introduced this year.
ICMR is available on Facebook, Twitter and Instagram. For latest update about COVID-19 and other medical research breakthrough, you can follow ICMR’s Official handles.

Indian vaccine against COVID-19 draws global attention. The results of the #COVAXIN Phase-2 human clinical trials can be accessed at medivir.org/content/10.110...

Indian Journal of Medical Research (UMR) ijmr.org.in/preprintarti...
Patron
Prof. (Dr.) Balram Bhargava
Secretary DHR and Director-General, ICMR

Communication Team
Dr. Rajni Kant
Director, ICMR-RMRC, Gorakhpur and Scientist G & Head, Research Management, Policy, Planning and Coordination

Dr. Lokesh Sharma
Scientist E, Social Media & Media Coordinator, Communications Unit
Biomedical Informatics Division

Dr. Enna Dogra Gupta
Scientist C, Content Coordinator, Communications Unit
Research Management, Policy, Planning and Coordination

Supported by:
Aakhya India (Media Consultant to ICMR)

Contact Us
Indian Council of Medical Research
V. Ramalingaswami Bhawan, P.O. Box No. 4911
Ansari Nagar, New Delhi - 110029, India
Ph: 91-11-26588895 / 91-11-26588980, 91-11-26589794 / 91-11-26589336,
91-11-26588707
Fax: 91-11-26588662