



Office of the Principal
Scientific Adviser to
the Government of India

SCIENCE & TECHNOLOGY CLUSTER



REPORT

G20 Chief Science Advisers Roundtable Side Event On One Health, Disease Surveillance and Pandemic Preparedness

10th July 2023 | 09:00-13:30 hrs IST

Madan Mohan Malviya Hall

1st Floor, HR-4, IISER - Pune

Jointly organized under the aegis of India's G20 Presidency by
Pune Knowledge Cluster (PKC)

The Office of Principal Scientific Adviser to the Government of India (OPSA)

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BACKGROUND

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of humans, animals, plants and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment are closely linked and interdependent. The approach mobilizes multiple sectors and communities to work together to tackle threats to health and ecosystems while addressing the collective need for clean water, energy and air, safe and nutritious food, acting on climate change and contributing to sustainable development.

Acknowledging the importance of the One Health approach, the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC) is setting up a National One Health Mission, which will coordinate, integrate, and support all the existing One Health activities in the country. The Mission aims to achieve overall pandemic preparedness and integrated disease control against priority diseases of both human and animal sectors, with early warning systems built on integrated surveillance systems.

The G20 Chief Science Advisers Roundtable (G20-CSAR) is a flagship initiative under India's G20 Presidency and led by the Office of the Principal Scientific Adviser (O/o PSA) to the Government of India. The first meeting of G20-CSAR was hosted in Uttarakhand in March 2023, which witnessed intense discussions on transboundary S&T issues. The second meeting of G20-CSAR is scheduled to take place in August 2023 in Gujarat.

As a run-up to the second G20-CSAR meeting, Science & Technology (S&T) Clusters are organizing a series of high-profile side events around various themes across the country. Insights emerging from these side events will be documented as a report and shared with relevant stakeholders to enable effective discussions during the G20-CSAR meeting. The Pune Knowledge Cluster (PKC) hosted the G20-CSAR side event on "One Health, Disease Surveillance and Pandemic Preparedness" on Monday, 10th July 2023, in Pune.

The Pune Knowledge Cluster (PKC) is an S&T cluster established by the O/o PSA and works as an enabler to bring industries, R&D, academia and local governments together to work for the betterment of the Pune region and beyond. Under the Health vertical, PKC has built a collaborative framework for the city-wide surveillance of infectious diseases like COVID-19 and Dengue using Waste Water. Data collected at the city level is analysed to understand correlation with outbreaks and design better preventive measures.

AGENDA

Time	Session
08:15 – 09:00	Registration & Tea
09:00 – 09:10	Welcome Address Dr. Parvinder Maini, Scientific Secretary, Office of the Principal Scientific Adviser to the GoI
09:10 – 09:30	Opening Remarks <ul style="list-style-type: none"> Prof. L.S. Shashidhara, Co-Founder-Director, PKC; Director, TIFR-NCBS Bangalore Dr Shekhar Mande, Distinguished Professor, Bioinformatics Centre, SPPU, Former Director General, CSIR
09:30 – 11:00	Inaugural Session Talks <ul style="list-style-type: none"> Dr. Soumya Swaminathan, Chairwoman, MSSRF; Former Chief Scientist, WHO Dr Gagandeep Kang, Director, Global Health, BMGF Dr. Sheela Godbole, Director, ICMR-NARI; Director-in-Charge, ICMR-NIV, Pune Dr. Rakesh Mishra, Director, TIGS Dr. Sindura Ganapathi, PSA Fellow, Office of PSA
11:00 – 12:00	Networking Break and Poster Session
12:00 – 13:15	Panel Discussion: Perspectives on building robust public health strategies for disease surveillance and its potential impact <ul style="list-style-type: none"> Dr. Uma Aysola, Director, Communications, Access Health Dr. Pradeep Awate, Former State Surveillance Officer, IDSP Dr. Raj Shankar Ghosh, Senior Advisor, PHFI, India Dr Akhilesh Mishra, Managing Director, IRSHA Dr. Vidya Mave, Co-Director, CIDI, Johns Hopkins University Dr. Umesh Shaligram, Director, R&D, Serum Institute of India Dr. Rajendra Wabale, Dean, YCM Hospital and PG Institute Ms. Priyanki Shah, Senior Project Manager, PKC (Moderator)
13:15 – 13:30	Felicitations and Vote of Thanks
13:30 – 15:00	Networking Lunch & Poster Session

SPEAKERS/ PANELISTS

SPEAKERS



Dr. Parvinder Maini

Scientific Secretary, Office of the Principal Scientific Adviser to the Govt



Prof. L. S. Shashidhara

Co-Founder-Director, PKC
Director, TIFR-NCBS
Bangalore



Shri. Saurabh Rao

IAS,
Pune Divisional
Commissioner



Dr. Shekhar Mande

Distinguished Professor,
Bioinformatics Center, SPPU
Former Director General, CSIR



Dr. Soumya Swaminathan

Chairwoman, MSSRF
Former Chief Scientist,
WHO



Dr. Gagandeep Kang

Director,
Global Health,
BMGF



Dr. Sheela Godbole

Director, ICMR-NARI, Pune
Director-in-Charge,
ICMR-NIV, Pune



Dr. Rakesh Mishra

Director,
TIGS



Dr. Sindura Ganapathi

PSA Fellow,
Office of PSA

PANELISTS



Dr. Pradeep Awate

Former State Surveillance
Officer, IDSP



Dr. Uma Aysola

Director, Communications,
Access Health



Dr. Raj Shankar Ghosh

Senior Advisor,
PHFI, India



Lt. Gen. Dr. Madhuri Kaniitkar

Vice Chancellor,
MUHS



Dr. Vidya Mave

Co-Director, Center for
Infectious Diseases India,
Johns Hopkins University



Dr. Umesh Shaligram

Director
R&D, Serum Institute of India



Dr. Rajendra Wabale

Dean,
YCM Hospital PG Institute

KEY HIGHLIGHTS

- The event was attended by 94 people from 43 organizations including hospitals, R&D institutions, civic bodies, foundations, start-ups and industries.
- GoI's efforts to build platforms for all stakeholders, such as the funding agencies, ministries of health, animal husbandry, forests, and national disaster management authority for the National One Health Mission were outlined.
- Discussions focused on creation of robust protocols for disease surveillance, importance of inter-disciplinary collaborative efforts to build data driven predictive models and need for policy advocacy to ensure surveillance systems integrate into state surveillance mechanisms.
- The need for a network of practitioners and scientists who will engage with and inform policymakers, city planners, health authorities, NGOs, municipal bodies and citizens to minimize the impact of infectious and zoonotic diseases was emphasized.
- The importance of building Waste Water Surveillance frameworks for variety of diseases was discussed.
- The need for involvement of the private sector in providing surveillance services (water, air, zoonotic) to municipalities was highlighted.
- The importance of detecting new pathogens while not ignoring the ones that are currently causing a significant mortality and morbidity was stated.
- The importance of using metagenomics sequencing to assess unusual diseases in humans and animals was brought to attention.
- A roadmap for responding to unknown pathogens, simple standardised data collection methods, intelligent data sharing, and minimising manual inputs, were also stressed upon.
- The role of Foundations in aiding the government to enable successful implementation of disease surveillance programs by demonstrating proof of concept for new surveillance models, building communication tools for handling crises was discussed.
- Surveillance assessment using tools like RE-AIM are important for evidence-based decision-making and for shaping the surveillance program's future scale-up and sustainability was spoken about.

WELCOME ADDRESS

Dr. Priya Nagaraj, CEO, Pune Knowledge Cluster (PKC) opened the event by detailing PKC's efforts in building disease surveillance frameworks and consortiums. She emphasised the importance and need for sustaining and scaling these efforts in order to build robust public health surveillance systems for the city.

Dr. Parvinder Maini, Scientific Secretary, Office of the PSA to the GoI, delivered the Welcome Address and set a context for the event (pre-recorded). Dr Maini emphasised the critical role of Chief Science Advisers in shaping national level policy decisions by providing evidence-driven science advice with a goal that Science & Technology can benefit all in light of increasing global challenges in climate change, cyber-security and digitization. She explained the globally rising need for science advice in policy making which led the O/o PSA to start the G20 Chief Science Advisers Round Table meetings under the aegis of India's G20 presidency. "The insights emerging from side events like this one, will enable effective discussions during the upcoming G20 CSAR." she said. She lauded PKC for building a robust disease surveillance system for Pune city by managing a consortium of reputed organisations and suggested that it should now involve City officials to ensure that the systems being built are relevant and practical.

OPENING REMARKS

Prof L. S. Shashidhara, Co-Founder-Director, PKC, Director, TIFR-NCBS Bangalore began his address by throwing light on how the Knowledge Clusters were conceptualised by the O/o PSA in 2017-18, realising the importance of organized collaborative efforts and their potential at a local level. He highlighted the importance of early warning systems aligned with national and international efforts for effective epidemic or pandemic preparedness. He emphasised the need for international cooperation for addressing disease management.

Prof. Shashidhara highlighted the importance of private funding in surveillance and disease monitoring. He mentioned the generous funding made available by the Rockefeller Foundation to support disease surveillance in India. He requested participants to use this G20 side event as a platform for creating a preparedness plan for handling future epidemics and pandemics, where Pune can be a model city with its experience and expertise in tackling many disease outbreaks.

Dr Shekhar Mande, Distinguished Professor, Bioinformatics Centre, SPPU, Former DG-CSIR

Being a core member of the Science 20 (S20) engagement group called S20, Dr Mande outlined the three themes that were chosen to discuss in the ambit of G20 in the S20. These are 1) Energy and energy transition, 2) Universal Health and wellness (One Health is a part of this theme) and 3) Science, Society and Culture. Prof. Mande's talk focused on how science connects with society. He recalled how over a period of several 1000 years many scientific advances were made, some eventually converted into technology that could be practiced by common people and became a part of our culture. He emphasised the role of government institutes in pandemic preparedness. He recalled how the CSIR foresaw a potential pandemic, even before WHO declared COVID-19 as a global pandemic and the measures CSIR took to deal with the same. These measures and initiatives include Sero-survey, Genomic Surveillance, and Environmental Surveillance.

INAUGURAL SESSION TALKS - KEY POINTS

Dr Soumya Swaminathan, Chairwoman, M S Swaminathan Research Foundation; Former Chief Scientist, WHO stated that the subject of One Health, pandemic preparedness and surveillance is topical considering we have just come out of a pandemic that hugely impacted the world. "It is important to look back and analyse some of the strengths, weaknesses, challenges and opportunities in the ecosystem to make a plan to further strengthen it. To deal with emerging threats, we must be aware that there are a lot of endemic pathogens. We cannot put our effort into detecting new pathogens while ignoring the ones currently present, causing significant mortality and morbidity. Instead, we need to develop a system to actually address the existing threats to be in a state of readiness and preparedness for any new threat that could emerge." she said.

In her talk, Dr. Swaminathan focused on five focus areas – 1) To address gaps in existing surveillance systems; 2) To focus on the development of counter measures, preparedness to develop the R&D and innovation sides and how these will be deployed; 3) Strengthening of human resources in clinical management & clinical services. This aligns with the expansion and investments that are going into the Ayushman Bharat Program and PMBHIM Program to develop infrastructure. 4) Use of data for development of policy and action, and for communicating to the public transparently and frequently. Communication should be in a manner and language

that the public understands. 5) Coordination, leadership, and governance at a system level. There needs to be a robust coordination mechanism for the national, state, district and sub district level. Having mock runs and drills to train the local community has to be integrated into governance.

Dr Gagandeep Kang, Director, Global Health, Bill & Melinda Gates Foundation spoke about global surveillance programs during which she highlighted innovative methods to detect pathogens for future pandemics. Metagenomics of slaughterhouse wastes that may detect signals of both known and unknown pathogens, molecular characterization of mosquitoes and studying migratory birds as potential carriers of pathogens are some approaches she spoke about. Dr. Kang highlighted the increasing possibility of zoonotic viruses and other pathogens through surveillance of urban sewage and how global programs are developing scalable and low-cost surveillance alternatives to prevent pandemics by studying various viruses and bacteria (eg. typhoid). She concluded by drawing the importance of using metagenomics sequencing to assess unusual diseases in humans and animals alike and using the results as an early warning system.

Dr Sheela Godbole, Director, Indian Council of Medical Research-National AIDS Research Institute; Director-in-Charge, Indian Council of Medical Research-National Institute of Virology began by highlighting how the ICMR and ICMR-NIV played an important role during the COVID-19 pandemic in virus isolation & vaccine testing and ICMR-NARI's role in clinical work on therapeutics and vaccine development. Mentioning that there was a change in the patterns of causality of syndromes, she called for constant alertness for new, different and unusual patterns among humans, animals and birds. She emphasised the need to prepare a research and development blueprint and comprehensive roadmap for responding to unknown pathogens, the need for simple robust data collection methods, intelligent data sharing, and minimising manual inputs. She mentioned that a state-of-the-art Biosafety Level-4 (BSL-4) facility is being planned at ICMR-NARI for high risk pathogen handling.

Prof. Rakesh Mishra, Director, Tata Institute of Genetics and Society spoke about APSI (Alliance for Pathogen Surveillance Innovations), which is a 4 city consortium (Bangalore, Hyderabad, Pune and Delhi), supported by The Rockefeller Foundation. Focus areas of APSI are Environmental Surveillance for disease monitoring, COVID-19 and Antimicrobial Resistance with particular emphasis on Skilling, Indigenization, Knowledge dissemination and Outreach. Prof. Mishra stressed on how the data generated through APSI has been shared with the government on a regular basis.

He then outlined the ongoing efforts towards setting up of Bengaluru's One Health Model as a role model that can be implemented in other cities. The main objectives, he said, were to build a network of practitioners and scientists who will engage with and inform policy makers, city planners, health authorities, NGOs, municipal bodies and citizens to minimize infectious and zoonotic disease to people. They are particularly working on a strategy for effective *Clostridium botulinum* surveillance. Lastly, he urged the private sector to get involved and provide (water, air, zoonotic) surveillance services to the municipalities.

Dr. Sindura Ganapathi, PSA Fellow, Chief PSA revealed that the concept of One Health is not new, but has caught the attention of policy makers worldwide, post COVID-19. He spoke about the Govt's efforts to create a National One Health Mission which will serve as a platform for all stakeholders such as the funding agencies, ministries of health, animal husbandry, forests, national disaster management authorities to collaborate. He also explained the initiatives taken by the O/o PSA to build a national network of institutes with BSL3 labs under a single governing body like the National Institute of One Health to link labs, research and data from across the country which will be critical for integrated surveillance and pandemic preparedness. With this backdrop, the CSAR Side Event would feed key inputs from the speakers and panellists to the upcoming G20 Round Table meeting to be held at Gandhinagar, where topics of common interest like better environmental surveillance strategies, data standards, building national networks will be discussed.

PANEL DISCUSSION – KEY POINTS

In the second half of the event, a panel discussion was held with the aim to collate insights on Pandemic Preparedness, from an esteemed set of panellists. The session was moderated by Ms. Priyanka Shah, who leads PKC's Health initiatives.

Dr. Rajendra Wabale, Dean, YCM Hospital and PG Institute, stressed on the importance of having systems within the government that can enable the first response to disease outbreak. He highlighted the practical challenges for hospitals to act in a timely manner during a crisis situation eg. hospitals are already burdened with rising co-morbidities like diabetes and hypertension. He said that these non-communicable diseases have risen out of improper nutrition and urged the government to incentivise production of higher nutrient food grains.

Dr Uma Aysola, Director, Communications, Access Health, shared her views on the role of health and disease communication in pandemic management and how that led to the development of the Global Learning Collaborative – the flagship program of Access Health. GLC4HSR is a global community of health systems experts who co-develop and share knowledge and best practices about building resilience and preparedness of health systems against pandemics and other health and social crises. Dr. Aysola observed that civil societies, community-based organisations and influential individuals shaped crisis communication during COVID-19 pandemic. She noted how strategies for communication got developed organically - like myth busting, acknowledging uncertainty of safety protocols and influencing people's behaviour. She said “we brought together the learnings from different areas and pooled it to have an overarching effect on communications, information and relationships.”

Dr. Vidya Mave, Co-Director, Center for Infectious Diseases India, Johns Hopkins University, shared her views on capacity building and its importance in surveillance and the RE-AIM tool for surveillance assessment. She spoke about the importance of assessing a surveillance program to achieve a large, equitable, and replicable public health impact. She explained the framework tool RE-AIM that does the assessment, based on five important measures – Reach, Effectiveness, Adoptability & acceptability, Implementation and Maintenance. This tool would aid evidence-based decision-making for shaping the surveillance program's future scale-up and sustainability. She talked about the assessment study 'TB Aftermath' (which she is currently leading), which aims to develop, implement and measure feasible case finding strategies among recently treated TB patients in India.

Dr. Pradeep Awate, Former State Surveillance Officer, Integrated Disease Surveillance Programme, responded to the question on how the Centre and State manage disease surveillance programs. He outlined three main ground-level challenges for disease surveillance programs – 1) bridging the gap between academia and field-service 2) inability to measure the problem 3) fast pace of urbanization. “We need to develop a uniform urban model of public health that can be implemented at one go across all cities in India” he said. He also felt that a state-level policy on AMR is the need of the hour and urged for a surveillance on the sale of antibiotics.

Dr. Akhilesh Mishra, Managing Director, Interactive Research School for Health Affairs; Former Director, Indian Council of Medical Research-National Institute of Virology, was asked on how Public Health organisations can use data they collect for decision making. He started by recounting his experience in handling outbreaks like JEV,

plague, H1N1, Chikungunya etc. He lamented that the data collected during each episode was unusable for the next outbreak due to unsystematic data collection methods. “The need of the hour is to systematize and standardize data collection methods”, he said. Also, he felt that the stakeholder of a dataset should be roped in prior to data collection to optimize the cost and efficiency of the data collection efforts.

Dr. Raj Shankar Ghosh, Senior Advisor, Public Health Foundation of India, talked about how Foundations can aid the government in enabling successful implementation of a disease surveillance program. He noted that Foundations can demonstrate models that the government can scale up. They could ensure monitoring and evaluation of surveillance programs. They can also help build communication tools for handling crises. “Gaps in surveillance can only be encountered by GAP (Government-Accountability-Partnerships)” he said.

Dr. Umesh Shaligram, Director, R&D, Serum Institute of India was asked about the vaccine development strategies for pandemics. In response, he outlined the extraordinary response of the Serum Institute to COVID-19 and future pandemics preparedness. He highlighted that the manufacturing infrastructure for Covishield was built and scaled in record time and earlier how Ebola in Sudan was ring-fenced and controlled within 60 days. “Serum Institute has built the capacity to produce vaccines for any of the 28 possible future pandemics. In addition, we have also developed DTP (Detect-Treat-Prevent) tools for the Government to eradicate TB.”, he said. He concluded by emphasizing that AMR is a running pandemic and Serum Institute’s commitment to work towards a solution.

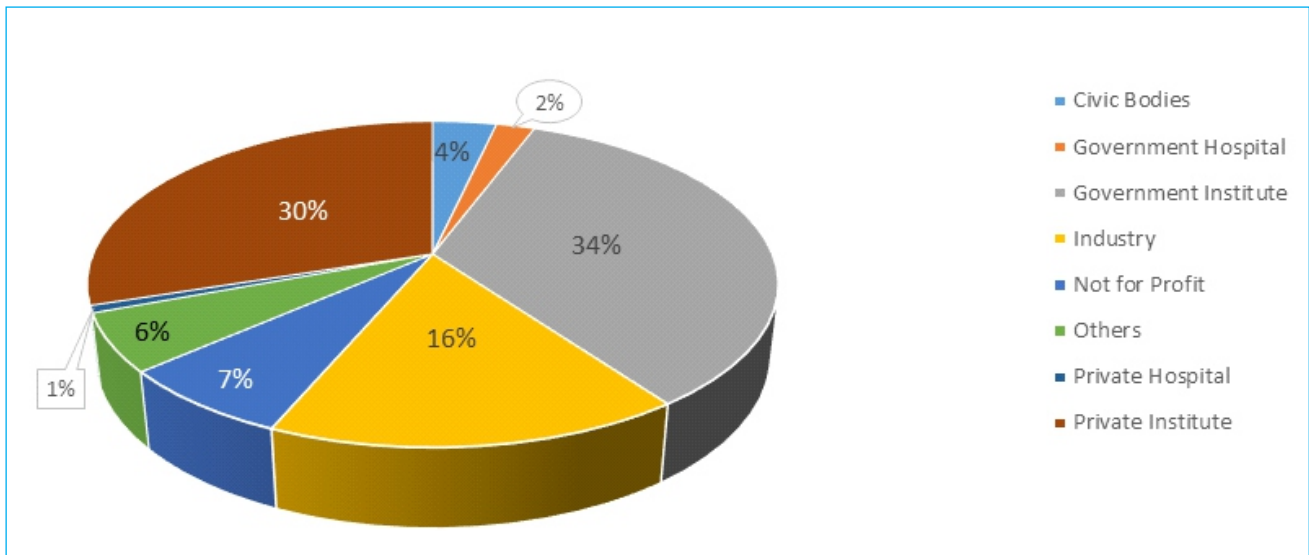
POSTERS PRESENTATIONS

No.	Title of the Poster	Organisation
1	Rapid and accurate detection of bacterial pathogens causing Bovine Mastitis	CSIR-NCL
2	Human glycosylation gene variants as possible contenders to explain differences in SARS-CoV-2 disease severity in Indian sub populations.	NCCS
3	Using cost-effective approaches to complement conventional pandemic surveillance and impact assessment	JPF
4	Pioneering Indigenous Diagnostics: GenePath's Innovative Solutions for Developing Markets	GENEPATH
5	Study on Water as a Carrier of Zoonotic Diseases: Food System Approach	BAIF
6	One Health & BJGMC, Pune- Then, now and the way ahead.....	BJGMC
7	SARS-CoV2 Genomic Surveillance at BJGMC, Pune: Insights and Future Directions	BJGMC
8	Enhancing One Health Initiative: Unleashing the Power of Digital Transformation	GIBots
9	Genomic surveillance of SARS-CoV-2 in Pune city	IISER, Pune
10	INFLUENCE OF COVID-19 ON AMR – AN EXPLORATORY ANALYSIS OF CLINICAL DATA	Ashoka University
11	KEM Hospital Research Centre's, Pune Community Based Research Units-Vadu Rural Health Program (VRHP) and community health research unit	KEMHRC
12	Wastewater-based epidemiology of SARS-CoV-2 and Antimicrobial Resistance (AMR)	CSIR-NCL
13	Supporting data-driven public health response to climate-aggravated diseases: Dengue Use Case	ARTPARK
14	Climate Information based Disease Surveillance and Outbreak Preparedness: An Emerging Area in Climate Service	IMD Pune
15	Association between Climate and Dengue Mortality over Pune, India	IITM

POSTERS PRESENTATIONS

16	Genomic Epidemiology of Indian isolates of Plasmodium falciparum	IISER, Pune
17	Early Detection and Prevention of Viral Outbreaks through One Health-based Wastewater Pathogen Surveillance"	SSBS
18	Detection of buparvaquone drug resistance in Theileria species infecting dairy cows in India.	CSIR-NCL
19	Detection of Lumpy Skin Disease Virus (LSDV) in dairy cows and characterising their genetic diversity.	CSIR-NCL
20	Connecting the Dots: Unlocking the Power of Integrative Outbreak Data Analysis with Constraint-based Models for a Resilient Future	CSIR-NCL
21	The role of SARS-CoV-2 genomic surveillance and innovative analytical platforms for informing public health preparedness in Bengaluru, India	Strand Life Sciences

REPRESENTATION OF PARTICIPANT GROUPS



ORGANISATION/ INSTITUTE / COMPANY NAME

CIVIC BODIES
Pune Municipal Corporation
Pimpri Chinchwad Municipal Corporation
Urban Development Maharashtra
Director, Health Services
Integrated Disease Surveillance Program
GOVERNMENT HOSPITALS
Shimoga Institute of Medical Sciences, Shivamogga
Yashwantrao Chavan Memorial Hospital & PG Institute, Pune
B J Government Medical College and Sassoon General Hospitals, Pune
GOVERNMENT R&D
Council of Scientific & Industrial Research - National Chemical Laboratory, Pune
National Centre for Cell Sciences, Pune
Indian Institute of Science Education and Research, Pune
Indian Council of Medical Research - National Institute of Virology, Pune
Indian Institute of Tropical Meteorology, Pune
National Centre for Cell Science - National Centre for Microbial Resource, Pune
Savitribai Phule Pune University, Pune
India Meteorological Department, Pune
Indian Institute of Technology, Roorkee



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GOVERNMENT R&D
Indian Council of Medical Research - National Animal Resource Facility for Biomedical Research, Telangana
Indian Council of Agricultural Research –Indian Institute of Pulses Research, Kanpur
Indian Institute of Technology, Bombay
Govt. SMS Model Science College, Gwalior
Indian Council of Medical Research - National Institute of Traditional Medicine, Belagavi
Centre for DNA Fingerprinting and Diagnostics, Hyderabad
All India Institute of Medical Sciences , Gorakhpur
Tata Institute of Fundamental Research - National Centre for Biological Sciences, Bengaluru
Centre for Bioinformatics, SPPU, Pune
Indian Council of Medical Research - National Aids Research Institute, Pune
INDUSTRY
GIBots, Pune
GenePath Diagnostics India Private limited, Pune
Epic Health Information Management, Pune
BioNovus Innovations LLC
Persistent Systems, Pune
Jehangir Clinical Development Centre, Pune
Enforce Vedas Pvt Ltd, Hyderabad
CPC Analytics, Pune

ORGANISATION/ INSTITUTE / COMPANY NAME

INDUSTRY
Proxi Farma Pvt Ltd, Amravati
Global Health Intelligence
Premas Life Sciences Pvt Ltd, New Delhi
Strand Life Sciences, Bengaluru
Oriearth Nature Foundation, Pune
Access Health International, Hyderabad
Serum Institute of India, Pune
NGOs AND NOT-FOR-PROFIT ENTITIES
Jhpiego-India, New Delhi
Jnana Prabodhini Foundation, Pune
BAIF Development Research Foundation, Pune
BAIF Institute for Sustainable Livelihoods and Development, Pabal
ARTPARK (AI and Robotics Technology Park) at Indian Institute of Science, Bengaluru
Foundation for People Centric Health Systems, New Delhi
Public Health Foundation of India, New Delhi
OTHERS
ICICI Knowledge Park, Telangana
World Economic Forum
Central Health Service, Ministry of Health and Family Welfare, New Delhi



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OTHERS

University of Southampton, Hampshire

The Rockefeller Foundation

Atal Bihari Vajpayee Institute of Medical Sciences & Dr Ram Manohar Lohia Hospital, New Delhi

Centre for Infectious Diseases India, Johns Hopkins University, Pune

PRIVATE HOSPITAL

Noble Hospital and Research Centre, Pune

King Edward Memorial Hospital Research Centre, Pune

Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pune

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EVENT PHOTOGRAPHS





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GROUP PHOTOGRAPH



MEDIA COVERAGE

11 th July 2023	https://timesofindia.indiatimes.com/city/pune/better-surveillance-needed-to-avert-pandemics-experts/articleshow/101653465.cms?from=mdr
11 th July 2023	https://indianexpress.com/article/cities/pune/pandemic-preparedness-novel-partnerships-needed-in-one-health-approach-say-top-experts-8825109/
11 th July 2023	http://epaper.lokmat.com/articlepage.php?articleid=LOK_HPUN_20230711_3_10
11 th July 2023	https://www.punekarnews.in/pune-knowledge-cluster-plays-host-to-g20-csar-side-event-on-pandemic-preparedness/

RECORDED VIDEO OF THE EVENT

YOUTUBE LINK