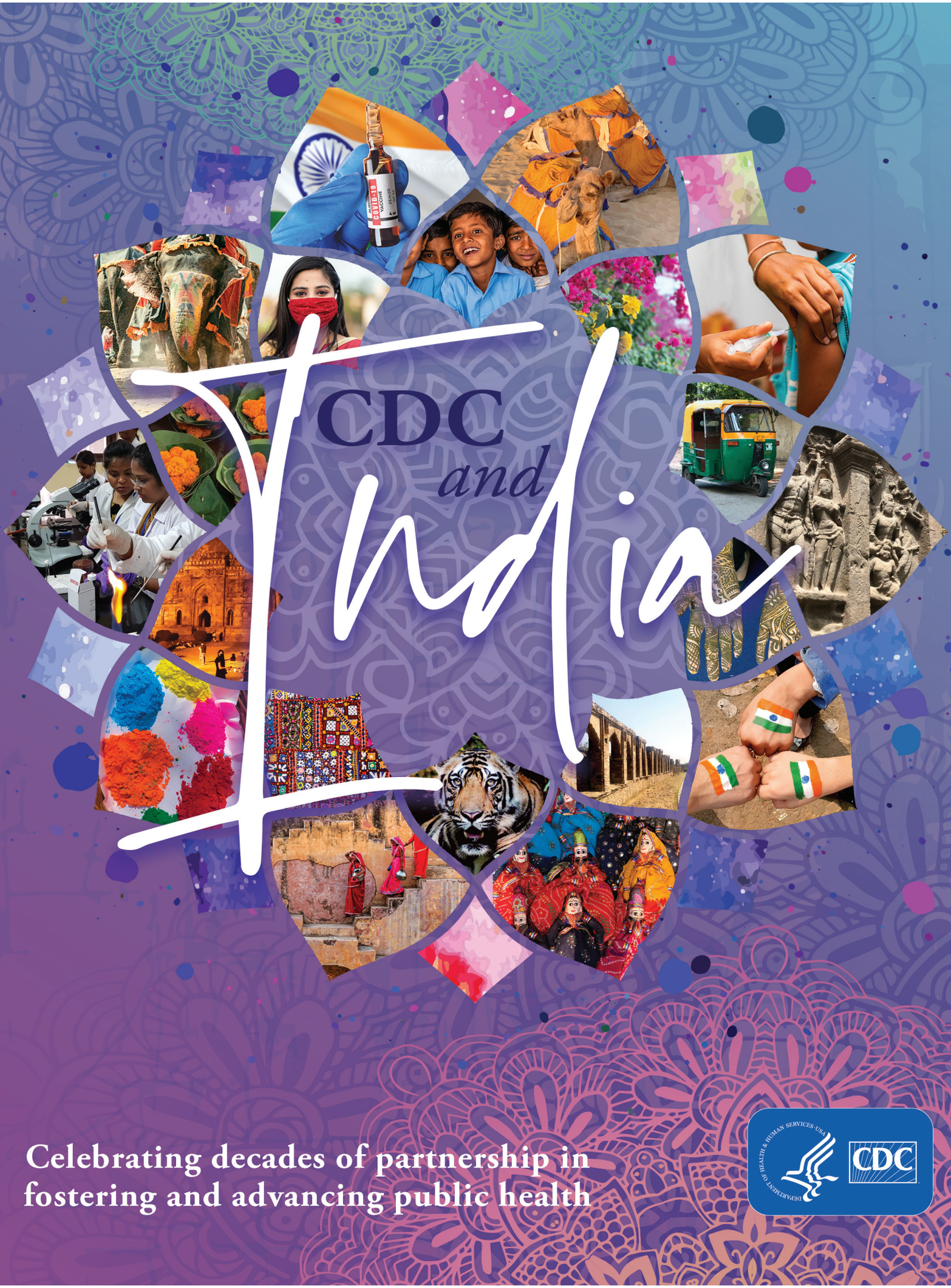
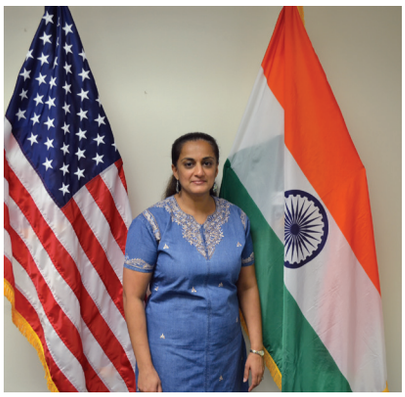

CDC and India
Celebrating decades of partnership in fostering and advancing public health
DEPARTMENT OF HEALTH & HUMAN SERVICES USA
CDC



Message from the Director

Colleagues and Friends,

I am pleased to share this commemorative report showcasing examples of the decades-old, highly productive, and mutually beneficial public health collaboration between the Government of India (GOI) and the U.S. Centers for Disease Control and Prevention (CDC). CDC's partnership with the GOI goes back more than 50 years and has been further strengthened during the COVID-19 pandemic.

Recent commitments from both countries further bolstered the relationship between CDC and India's Ministry of Health and Family Welfare (MOHFW). Together we address some of the most important and challenging public health priorities of our time. In February 2020, the United States and India publicly issued a joint statement calling for stronger coordination to "prevent, detect, and respond to disease outbreaks such as novel COVID-19." And, in February 2021, leaders of both countries pledged that "the U.S. and India will work closely together to win the fight against the COVID-19 pandemic."

While this report does not capture all the many joint accomplishments that CDC has worked on with the GOI for over half of a century, it does highlight some important shared priorities, successes, and current collaborations, including:

- Global polio eradication
- HIV/AIDS epidemic control
- Tuberculosis control
- Influenza pandemic preparedness
- Pandemic preparedness and response
- Global infectious disease surveillance
- Integrated public health laboratories
- Antimicrobial resistance and infection prevention and control

At the time of this publication, the impact and strategic value of CDC's decades-old collaborations with the GOI are increasingly clear, as many are being leveraged now for the GOI's COVID-19 response. CDC-trained Epidemic Intelligence Service officers, emergency management officials, laboratory experts, and other public health experts lead or support various aspects of India's response. CDC also supports GOI's pandemic-related disease surveillance, cluster containment, contact tracing, and infection prevention and control, while expanding collaborations with Indian government partners to train and equip a capable public health work force for the challenges that remain ahead.

The entire CDC India team is proud of the joint accomplishments and the productive relationship we have had with the Indian Government over many years. On behalf of CDC India, I invite you to read this report to learn more about our collaborative efforts and impact in India.

Thank you for your support.

Meghna Desai, PhD, MPH
CDC India Country Director

India

A Prepared India is a Prepared World

The GOI has successfully addressed challenges over the past decades through major investments in the nation's public health institutions, dedicated resources and platforms to expand one of the largest public health workforces in the world, and a sustained commitment to confront challenging disease control priorities in the country and the region. At the time of this publication, the GOI is reinvigorating its pledge to advance public health with renewed investments in public health institutions across India and plans to significantly expand the public health workforce.

At the invitation of the GOI, CDC remains committed to work with country partners in India on several of the most important public health challenges of our time. From smallpox to SARS-CoV-2, CDC collaborations with India have benefited both our countries, the entire region, and indeed the world.

More than 50 years ago, CDC detailed an epidemiologist to the World Health Organization (WHO) country office in India, who worked alongside the GOI's smallpox eradication program to eradicate one of the world's most dangerous pathogens. Almost three decades later in 2001, CDC formally established a country office in India, with an initial focus on HIV/AIDS prevention. Today, CDC's mutually beneficial collaboration with the GOI has grown to include life-saving efforts on tuberculosis, influenza, antimicrobial resistance, vaccine-preventable diseases, and strengthening of laboratory systems, disease surveillance, public health workforce capacity and emergency management.

Given the population size, burden of infectious and noncommunicable diseases, and location, the overall success of global disease control and elimination efforts requires collaboration in India. CDC and the GOI are well-placed to leverage past and present successful global public health initiatives to better respond to the world's most pressing public health challenges.

The following sections provide a brief background of CDC's collaboration with the GOI in priority areas. The sections highlight key factors and collaborations that helped drive success and offer a brief snapshot of CDC's current partnerships with the GOI.

A nurse at the Lotus Colony Health Post in the Shivaji Nagar slum handles vaccines for babies coming to the center to be vaccinated. This site, in one of the largest slums in Mumbai, vaccinates about 80 kids each week, for DPT and polio primarily. © David Snyder/CDC Foundation

Auxiliary Nurse Midwife Sunanda Raut helps a fellow staff member enter the names of vaccinated youth into a log book at the Lotus Colony Health Post in the sprawling Shivaji Nagar slum in Mumbai. Sunanda has been working at the facility since 2007 and spend about half of her time out in the local community educating people on how to prevent polio and other diseases. © David Snyder/CDC Foundation

Immunization

Program Area | Immunization

CDC and GOI collaboration on vaccine-preventable diseases began more than 50 years ago with a focus on smallpox and expanded with the Global Polio Eradication Initiative, rotavirus vaccine development, measles control, and other shared global immunization priorities. CDC efforts involved many of GOI's leading experts and institutions, as well as multilateral partners such as WHO and the United Nations Children's Fund (UNICEF). CDC immunization partnerships helped to establish critical public health infrastructure, much of which is already being used well beyond their original vaccine- preventable disease targets.

Smallpox Eradication

More than 50 years ago, before he assumed the role of CDC director, Dr. William Foege was assigned from CDC to the South-East Asia Regional Office (SEARO) of the WHO to work on smallpox eradication throughout the Indian subcontinent. Foege worked in partnership with the Indian government and more than a quarter-million workers supporting eradication efforts across the country. India successfully eradicated smallpox in the late 1970s. **To this day, smallpox remains the only vaccine- preventable disease that has been eradicated worldwide.**

Polio Eradication

Polio eradication in India is a testament of GOI leadership, expertise, and collaboration with CDC and multilateral partners working together to reach the "last mile." CDC, UNICEF, Rotary International, and WHO worked with GOI experts to design and implement the National Polio Surveillance Project, currently known as the National Public Health Support Programme (NPSP). Since its inception in 1997, NPSP was led by a series of CDC experts seconded to the WHO country office in India. CDC experts played a key role in eradicating polio in India; providing technical, programmatic, and laboratory support; and supporting the purchase of oral polio vaccine for mass vaccination campaigns. **The last case of wild poliovirus was detected in India on January 13, 2011, and on March 27, 2014, WHO certified India 'Polio Free' along with other countries in WHO's SEARO region.**

Measles and Rubella Elimination

In 2013, the GOI committed to eliminate measles. In 2019, the country committed to eliminate rubella. India launched a campaign to introduce measles-rubella (MR) vaccine into the routine childhood immunization schedule and conducted an MR catch-up mass vaccination campaign targeting 400 million children between the ages of 9 months to 15 years old over a 3-year period. As part of this initiative, epidemiological and laboratory surveillance systems were strengthened, and measles and rubella case-based surveillance was introduced. CDC works with the Indian government, WHO, and other partners to support these efforts through technical assistance in vaccine planning, monitoring and evaluation efforts, comprehensive program reviews, and leveraging the unique capabilities and staffing of the NPSP. **The incidence of measles and rubella in India reached record low levels in 2020.**

To this day, smallpox remains the only vaccine-preventable disease that has been eradicated worldwide.

An infant is immunized against DPT at the Lotus Colony Health Post in the Shivaji Nagar slum in Mumbai. © David Snyder/CDC Foundation

Program Success

Factors that contributed to the program's success in India, include:

- Migrant strategy development: mapping mobility patterns of migrant populations, tracking migrants, partnering with employers of migrant workers, and vaccinating migrant family members
- Vaccine optimization: coordinating field staff, and program monitoring to ensure accountability
- Strategic partnerships model: GOI provided the foundation of the program; WHO provided human resources; and CDC trained and supervised surveillance experts, with clearly defined roles for all
- Strong government commitments at the national, state, and local levels
- Relationships built on trust with the Indian government, local religious leaders, and community influencers
- Innovations and continuous adaptation to ensure success, including:
  - » Marking fingers of vaccinated children and clearly identifying houses of those already visited by vaccination teams
  - » Developing high-quality, updated, and validated micro plans
  - » Vaccinating migrant and hard-to-reach children by implementing the "Transit Strategy"
  - » Targeting efforts in high-risk areas and sub-population groups

Children hold up their pinkie finger marked with indelible purple ink, in order to show they have already received a polio vaccine, 2011, Photo Credit: Alan Janssen, CDC

Program Today

CDC supports efforts to eradicate or control vaccine-preventable diseases in India through the Universal Immunization Program. CDC strengthens epidemiology and laboratory methods, routine immunization services, training methods, data systems, case-based disease surveillance, and outbreak preparedness and response.

CDC provides critical support to NPSP for high-priority initiatives such as Mission Indradhanush, aimed at achieving more than 90 percent immunization coverage in every district in the country. In addition, NPSP supports measles elimination and rubella elimination, Diphtheria, Pertussis & Neonatal Tetanus surveillance, new vaccine introduction, and COVID-19 response and vaccination. In July 2021, CDC again sent a senior epidemiologist to serve in the WHO's India country office to lead NPSP.

CDC worked to improve diagnosis, treatment, and monitoring of patients, while also supporting policy development and training.

Tuberculosis

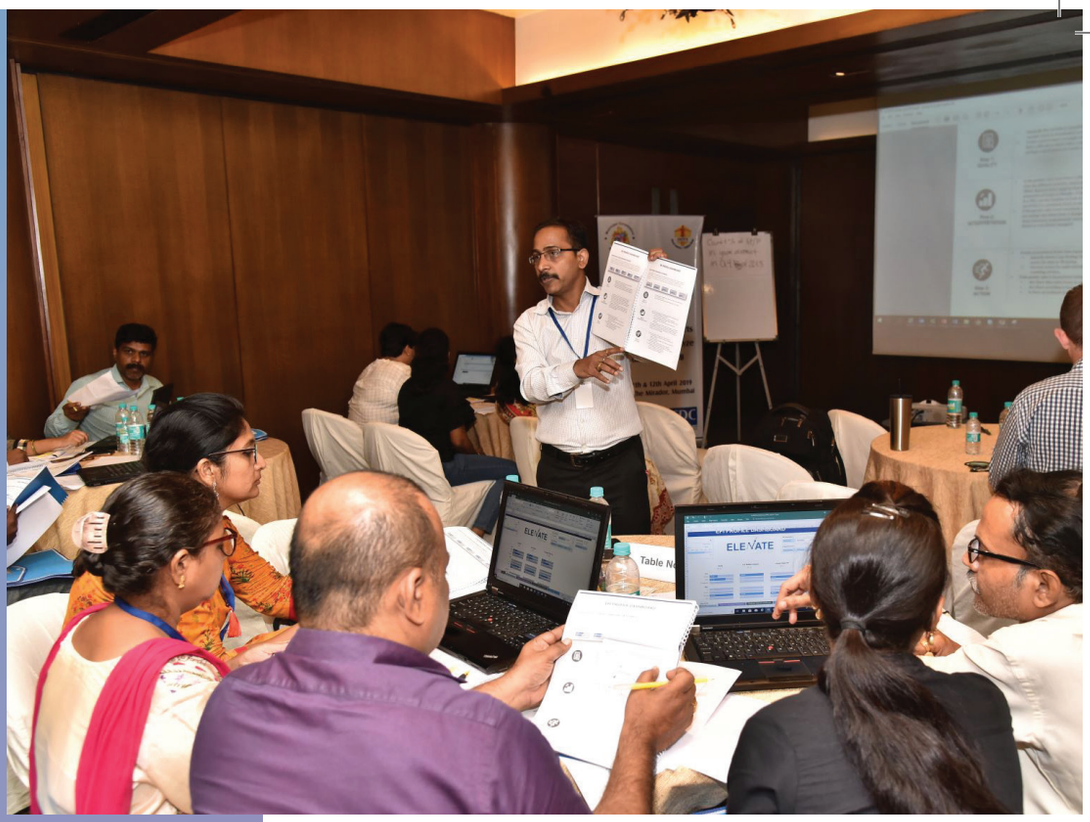
Program Area | Tuberculosis

Before COVID-19, tuberculosis (TB) was the world's leading cause of death due to a single infectious agent. According to WHO's 2019 estimate, 44 percent of the 9.96 million people with TB worldwide live in WHO's SEARO region. India accounts for more than one-quarter of the global burden. It is widely recognized that global TB efforts will only be successful if India's TB control efforts succeed.

In 1996, before becoming CDC director, Dr. Tom Frieden was assigned by CDC to WHO's India country office to support GOI's Revised National TB Control Program (RNTCP). Through WHO and in collaboration with India's Ministry of Health and Family Welfare and the Indian Council of Medical Research, CDC worked to improve diagnosis, treatment, and monitoring of patients, while also supporting policy development and training. The multiagency team implemented a national laboratory network, enhanced transparent reporting of performance from every district in the country, and conducted research on a broad range of TB control issues. By 2002, RNTCP covered half of the country, with GOI commitments and plans to expand throughout India, address private sector involvement, and support prevention and control of multidrug-resistant TB (MDR-TB).

CDC staff with TB unit staff at the Pachpouli urban health centre developing a TB recording and reporting system in Nagpur, Maharashtra, 2019 Photo credit: CDC India office

CDC staff explaining primary health center and community health workers about the role of health workers in CDC supported HAaLT-TB in Raipur, Chattisgarh, 2019. Photo credit: CDC India office



CDC staff trains the Mumbai district TB officers and data entry operators on ELEVATE (Engaging Local Experts in Validating and Analyzing TB-data to End TB) in Mumbai, Maharashtra, 2019 Photo credit: CDC India office

Program Success

Factors that contributed to the success of CDC-supported TB programs in India, include:

- Strengthened focus on TB infection prevention and control (IPC) and airborne infection control (AIC) practices in healthcare facilities
- Supported a multi-disciplinary AIC unit established by Municipal Corporation of Greater Mumbai that improved IPC/AIC in 10 Mumbai wards; the model was also piloted in Chennai
- Launched a program to improve accuracy in TB testing and reporting
- Organized workshops to improve TB program performance
- Launched a MDR-TB ECHO clinic to support tele-mentoring by national experts, which was delivered to TB clinicians covering diagnosis, treatment, and management of MDR-TB, including the use of new oral drugs such as bedaquiline
- Expanded ECHO clinics for HIV/TB and medical colleges
- The National AIDS Control Organization (NACO) expanded the HIV/TB ECHO clinic to include ART staff from West Bengal and 8 states in Northeast India
- CDC supports NACO and the National TB Elimination Program in rolling out single-window services through ART centers to manage TB in PLHIV, including training of staff, intensive HIV/TB case finding, early diagnosis, testing, and HIV and TB treatment
- CDC supports TB prevention through increasing treatment of latent TB infection for PLHIV

Program Today

CDC partners with the GOI through RNTCP. In Maharashtra, India's second most populous state, CDC piloted prevention activities in IPC/AIC, diagnosing and treating latent TB infection, and improving diagnosis of pediatric TB. These activities are expanding beyond Maharashtra, in coordination with India's National Tuberculosis Elimination Program (NTEP). IPC/AIC activities will be implemented in selected Antiretroviral therapy (ART) centers in the states of Maharashtra and Andhra Pradesh and will cascade in general health facilities and drug-resistant TB centers in districts from 10 states selected by NTEP.

CDC works with NTEP to accelerate treatment of latent TB infection in household contacts, healthcare workers, and other contacts using shorter, easier to complete treatment regimens. In the slum at Dharavi, considered one of Asia's largest slums and located in Mumbai, CDC collaborates on early MDR-TB diagnosis, safe MDR-TB treatment and cure, and ensuring migrants receive uninterrupted MDR-TB treatment. CDC also works with NTEP to strengthen district-level capacity to harness use of local data for local strategies to fight TB in 11 states across India's five regions. CDC develops methods to ensure accuracy for TRUNAT, a new rapid molecular TB test that will replace almost 2,000 sputum microscopy facilities across the country.

Since 2005, CDC has worked to support GOI influenza surveillance and research projects that generate evidence on the burden of influenza.

Program Area | Influenza

In India, influenza virus circulation usually peaks during monsoon season (June-September) with secondary peaks during winter (November-February). However, the actual timing of the influenza season varies across the country due to different climatic regions. GOI currently recommends annual influenza vaccination for high-risk groups, including healthcare workers, pregnant women, and people with chronic health conditions. Influenza vaccine is not currently available as part of routine public health services offered by the government.

Since 2005, CDC has worked to support GOI influenza surveillance and research projects that generate evidence on the burden of influenza. CDC-supported Indian Council of Medical Research (ICMR) surveillance network expanded from 5 to 10 sites across India and started using Reverse Transcription – Polymerase Chain Reaction (RT-PCR) tests to detect influenza virus.

CDC team and All India Institute of Medical Sciences investigators watch as a project nurse collects a nasal specimen from a study participant with respiratory symptoms in Ballabgarh, Haryana, 2017 Photo credit: CDC India office

Program Success

Accomplishments of CDC's collaborative efforts include:

- The CDC-supported ICMR surveillance network was instrumental in the detection of H5N1 virus during the 2006-2008 outbreaks and the H1N1 pandemic virus in 2009
- Several CDC-supported epidemiological research projects with the All-India Institute of Medical Sciences and ICMR culminated with the publication of research articles in high-impact, peer-reviewed journals, adding to the evidence base for influenza prevention and control in India and globally
- Improved laboratory capacity for detection and characterization of influenza and respiratory viruses
- Characterized influenza seasonality across various geographies of India to inform vaccination timing
- Estimated burden of influenza among children, pregnant women, and older adults
- Demonstrated effectiveness of influenza vaccines among Indian children
- Partnered with the National Institute of Virology and WHO to support GOI's current active role in the Global Influenza Surveillance and Response System
- Conducted multiple trainings for pandemic preparedness in partnership with ICMR and NCDC
- Built capacity for RT-PCR testing for influenza surveillance in 10 ICMR laboratories, many of which were the first to start RT-PCR for SARS-CoV-2 testing in India
- Distributed standardized multiplex diagnostic kits and standard operating procedures for SARS-CoV-2
- Collaborative research with GOI partners on influenza burden and seasonality that helps inform global efforts to prevent and control influenza
- Collaborated with WHO and other partners to strengthen indigenous manufacturing capacity for influenza vaccines at the Serum Institute of India, augmenting global supply and availability of vaccines

Project staff taking respiratory specimen for influenza testing from a participant of influenza vaccine study Ballabgarh Haryana 2013. Photo credit: CDC India office

Program Today

The Influenza program focuses on three main areas: strengthening the influenza surveillance network, public health research, and pandemic preparedness. CDC collaborations with GOI partners aim to increase capacity of influenza sentinel surveillance sites and laboratory services for the timely detection and characterization of respiratory viruses with pandemic potential. The public health research helps assess influenza burden (e.g., hospitalizations, mortality, and estimated cost) and informs critical preventive and control measures through improved understanding of the epidemiology of respiratory pathogens.

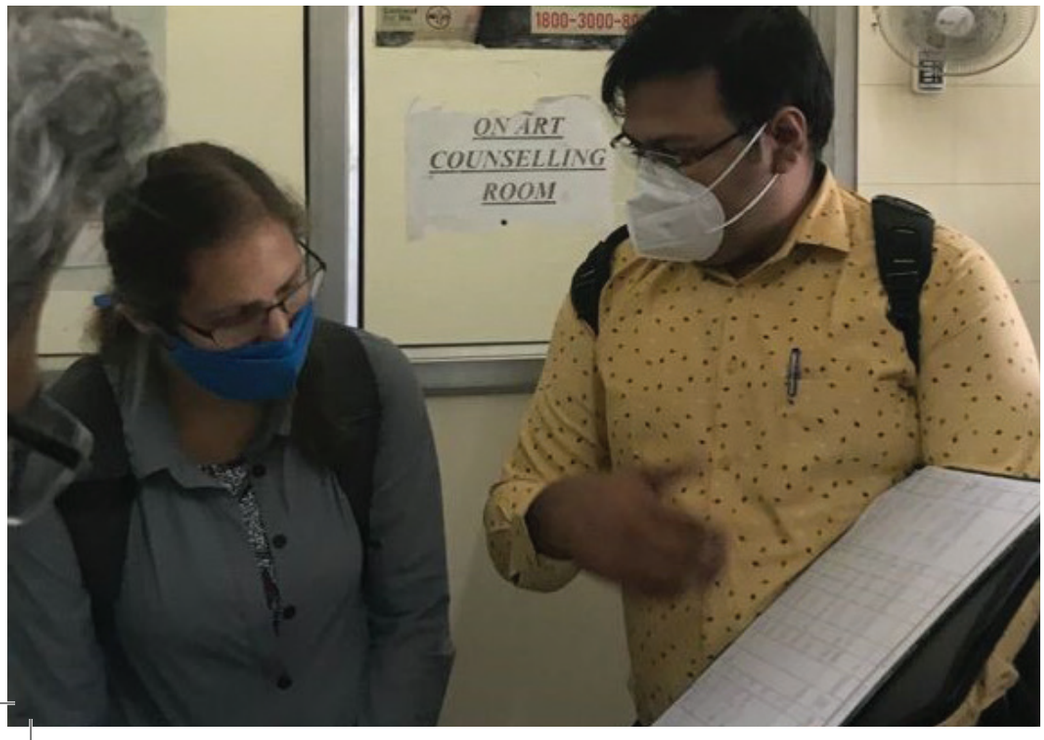
CDC is working with the Indian government to leverage partnerships and initiatives that help reach HIV epidemic control in India.

Program Area | HIV/AIDS

CDC has worked with the National AIDS Control Program (NACP) for over two decades. CDC and partners have worked with the GOI to implement evidence-based, high impact, and sustainable interventions in HIV/AIDS prevention, diagnostics, treatment, retention, and viral load suppression to reach people at risk of HIV and people living with HIV/AIDS (PLHIV), including key populations.

In 2001, CDC India launched the Global AIDS Program in the Government Hospital for Thoracic Medicine (GHTM) in Chennai, the capital of Tamil Nadu state. The launch of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) expanded CDC India efforts, and CDC opened a satellite office in Chennai focused on innovative models for service delivery and education campaigns. In 2006, CDC and the Directorate of Medical Education, Tamil Nadu, launched the HIV Medicine and Leadership Fellowship, a one-year, hands-on training at the GHTM for HIV clinicians. Approximately 80 fellows completed the program and have contributed to many NACP successes nationwide. GHTM has become a nationally respected training and learning center.

CDC helped establish an information system at GHTM that turned paper records into an electronic medical system, allowing for better documentation, and improved patient care. After data showed that many patients were coming from the neighboring state, CDC expanded its footprint in Andhra Pradesh with support of the unified state government, which helped to pave the way for additional HIV/AIDS collaborations at the national level.



Launch of the first community based organisation in the country to lead anti-retroviral service delivery for female sex workers, East Godavari, Andhra Pradesh, 2019
Photo credit: CDC India office

Dr. Melissa Nyendak, Program Director, CDC Division of Global HIV/TB, visits HIV clinic in Mumbai, Maharashtra, 2021

Program Success

"Treat All"

This 2015 WHO policy recommends antiretroviral therapy (ART) for all PLHIV immediately after HIV diagnosis. CDC India's technical support for patient care and center infrastructure have informed national guidelines. CDC helped design a systematic approach to track and trace clients with HIV with treatment interruption, who needed to be brought back to care. In 2017, the GOI launched the Mission Sampark strategy to bring PLHIV back to treatment.

Multi-month Dispensation (MMD) and Community-based Service Delivery

To help PLHIV stay in treatment, CDC supported GOI efforts to initiate and expand two innovative models to reach clients. The MMD model allows clients to receive three months of ART therapy during a medical care visit. The community-based delivery system model allows patients to receive HIV and TB medication closer to home, decreasing travel time as a barrier to care. During COVID-19, groundwork on these two innovative models were critical to avoid treatment interruption.

Client-centered Care

In 2016, CDC partnered with the National AIDS Control Organization (NACO) and State AIDS Control Societies (SACS) to launch "Project Sunrise" in the northeastern states of Mizoram, Manipur and Nagaland, where the incidence and prevalence of HIV are highest in India. Over the next five years, the project improved access to prevention and harm reduction for people who use intravenous drugs and expanded HIV testing and treatment in remote areas. The accomplishments were identified as a best practice for national adoption. In coordination with NACO, work continues under "Project Sunshine" to ensure clients at risk or living with HIV have access to community-based, client-centered prevention, testing, and treatment services.

Strengthening Laboratory Networks

In 2009, CDC started to provide technical assistance to 130 HIV national and state level laboratories towards international accreditation. The program scaled up to over 5,000 HIV testing sites, leading to a marked improvement in quality and timely diagnosis of HIV. CDC provided technical assistance to establish a tiered network of Blood Banks under NACO, leading to the development of national guidelines to harmonize transfusion practices across the country. Since the launch of routine HIV viral load testing in 2018, CDC provided technical assistance to improve routine viral load testing for an estimated 2.3 million PLHIV. This was possible through the optimization of 64 public sector molecular laboratories, strategic engagement of private laboratories, and support for capacity building efforts, quality assurance, and an accreditation program. To increase laboratory access for key populations in remote locations, CDC also worked with the national and local governments on innovative approaches for diagnostic network optimization and community-based laboratory service delivery.

Dr. Melissa Nyendak, Program Director, CDC Division of Global HIV/TB, presenting at the National Consultation on Revamping of Targeted Intervention Under the National AIDS Control Program (NACP)

Surveillance Population Size Estimates

CDC partnered with UNAIDS to support GOI in generating HIV estimates (e.g., adult HIV prevalence, number of PLHIV, annual new HIV infections and annual AIDS-related deaths) for tracking progress against the sustainable development goal indicators established by WHO. CDC supported sentinel surveillance and integrated biological and behavioral surveillance among key populations through WHO and other partners. CDC helped develop the strategy and guidelines for mapping and size estimation of key populations for the entire country to allow for more targeted programming of resources. CDC partnerships with NACO and Indian states on program impact and quality improvement contributed to the national strategic information management system known as Strengthening Overall Care for HIV beneficiaries.

Program Today

CDC collaborates with NACO and other partners to support HIV prevention, care, and treatment efforts across the country. CDC supports the GOI's use of real-time data for decision-making, including at the state and district levels to achieve program objectives. CDC is working with GOI to leverage partnerships and initiatives that help reach HIV epidemic control in India. CDC works with NACO to implement evidence-based, high impact, sustainable interventions in prevention, testing, linkage to treatment, retention, and viral load suppression to reach people at risk of HIV and PLHIV.

CDC India Director Meghna Desai, second from left, and Dr. Roderico Ofrin (WHO Representative) for India, far left, Dr. SK Jain, Dr. Anil Patil, and Dr. Ashok Kumar Sharma from NCDC gather to celebrate the institution's 112th Annual Day, 2021. Photo credit: NCDC

Program Area | Global Health Security

In today's globally connected world, disease threats can spread faster and more unpredictably than ever before. The GOI is building strong and sustainable foundations to respond to current and future threats. As part of Global Health Security Agenda (GHSA) efforts, CDC India works with a range of GOI partners focused on targets for WHO's International Health Regulations and GHSA. CDC's global health security collaborations leverage decades of cooperation with GOI, with a focus on core public health capabilities across disease surveillance, laboratory systems, public health workforce, and emergency response.

Surveillance

Over the past decades, CDC worked with GOI to increase disease surveillance capabilities at the national and state levels. This work focused both on disease-specific surveillance programs, and integrated disease surveillance initiatives. In recent years, CDC provided technical support to GOI for enhanced diagnostic testing and real-time reporting of results through India's National Center for Disease Control (NCDC)/ Integrated Disease Surveillance Programme and National Vector Borne Disease Control Programme. CDC also worked with GOI to strengthen Acute Febrile Illness (AFI) and Acute Encephalitis Syndrome (AES) surveillance systems.

Laboratory

CDC has long supported GOI efforts to improve laboratory-based surveillance of infectious diseases by increasing public health laboratory capabilities. This is a critical aspect of global health security efforts in India at the national and state levels. In the past few years, CDC, NCDC and the National Laboratory Task Force worked together to bolster the diagnostic capacities of district public health laboratories in several states, through mapping and comprehensive assessments, hands-on microbiology and biosafety trainings, and a web-based mentoring and monitoring system. These efforts led to the GOI's nationwide commitment to prioritize and set aside funding to establish Integrated Public Health Laboratories (IPHL) in every district across the country, as part of the GOI's National Health Mission. The GOI invited CDC to be a part of its national-level expert group focused on public health lab strengthening efforts across the country. This will help implement quality-assured diagnostic testing, streamline specimen transport systems, and improve supply chains.

Public Health Workforce

CDC has collaborated with the Indian government for decades to expand and equip its public health workforce with the skills needed to confront the country's most critical public health challenges today and in the future. In collaboration with the GOI/ICMR's National Institute of Epidemiology, CDC launched the first Field Epidemiology Training Program (FETP) in India in 2001. In 2012, CDC and NCDC established the two-year applied epidemiology India Epidemic Intelligence Service (India EIS) program. The program develops critical skills for outbreak investigations, surveillance evaluations, coverage surveys, and applied public health research through a competency-based, mentored, and on-the-job training and service program. The India EIS training program was expanded in 2016 to include WHO NPSP officers, initially through the advanced India EIS program, and later through an 18-month intermediate training program. FETP efforts expanded again in 2018 with the establishment of a two-year ICMR-NIE in-service training program, which also includes a Noncommunicable Disease (NCD) FETP Fellowship. In the last nine years, 73 officers have completed the two-year India EIS program, including two officers from the more recently established NCD-focused FETP program. CDC India is supporting a third level of FETP in India, through a three-month frontline training program focused on basic epidemiological and outbreak response skills.

Emergency Response

For over a decade, CDC has worked with GOI to enhance emergency response capabilities that are critical for the country's response to infectious disease and other public health threats. In partnership with the National Centres for Disease Control under the MOHFW and the National Disaster Management Authority, CDC emergency response activities are focused on strengthening emergency operations centers (EOC) at the national and state level, development of emergency response plans and standard operating procedures, in-depth and rapid response team training programs, emergency management certification programs for accreditation and credentialing of EOC staff and emergency responders, and real-time support for multiple activations of the national and state-level EOCs and outbreak response systems.

Program Success

- Integrated disease surveillance activities in 53 public hospitals in 34 districts of 13 high AFI/AES burden states across India
- Actionable research findings demonstrated that over 85 percent of AFI/AES cases with a diagnosable etiology are due to seven pathogens. These results influenced change in national policy to adopt testing for AFI/AES cases for early diagnosis and better treatment outcomes
- Mapping of more than 350 public and private laboratories, and the launch of the first biosafety cabinet certification program in the country
- Training of more than 10,000 healthcare workers in the lab and field
- Piloting a web-based mentoring and monitoring system for public health district labs across seven states, potentially serving up to 900 million people
- Support for the establishment of India's first district-level Integrated Public Health Laboratory, developed in the State of Chhattisgarh; the model was adopted by GOI's National Health Mission for district and subdistrict level healthcare facilities across India
- Played a key technical role in developing the operational guidelines for implementation of Integrated Public Health Laboratories across the country, as a member of the National Level Expert Group on IPHL
- India EIS Program graduated 73 officers through the comprehensive two-year training curriculum, with an additional 51 officers in training
- FETP-trained alumni are serving in key leadership roles within GOI at the national and state-government level, embedded within WHO, and serving in prominent academic institutions and non-governmental organizations throughout India
- Most of the India EIS alumni, current officers and other FETP trainees are engaged in COVID-19 response activities across 22 states in India
- CDC supported the national-level strategic health operation center (SHOC) at NCDC in New Delhi, and the development of state-level EOCs in Tamil Nadu and Chattisgarh
- CDC is supporting GOI plans to expand development of EOCs at the district, state, and regional level through direct participation in the GOI's Emergency Management Technical Advisory Group
- Thirty staff from SHOC completed basic Public Health Emergency Management training
- CDC supported SHOC activation for multiple infectious disease outbreak events, including the Nipah outbreak in Kerala, the Maharashtra flood, Kumbh Mela Response, multi-state Zika outbreak, and COVID-19

CDC developed the first sustainable integrated model for District Public Health Labs, Raipur, Chattisgarh, 2020, Photo credit: CDC India office

CDC staff helping to set up a field Public Health Emergency Operations Centre with common minimal resources following WHO's standards, Haridwar, 2021, Photo credit: CDC India office

CDC India Director and Program Director for Division of Global Health Protection, Dr, Meghna Desai, addresses the WHO's South East Asia Regional Office ministerial roundtable on emergency preparedness in Sep 2019, New Delhi. Photo credit: CDC India office

Program Today

CDC partners with GOI to strengthen core public health capabilities and systems that prevent, detect, and respond to emerging infectious diseases. There is a focus on real time disease surveillance, laboratory systems and diagnostics, workforce development, and emergency management.

CDC India works to scale up AMR/HAI surveillance and to build and institutionalize IPC capacity across the country.

Antimicrobial Resistance

Program Area | Antimicrobial Resistance

Antimicrobial resistance (AMR) is a serious problem in the United States, India, and around the world. AMR is a particular challenge in India due to the high burden of communicable diseases, an overburdened public health system, limited laboratory capacity for etiology-based diagnosis and appropriately targeted treatment, inexpensive and widely available antibiotics without prescriptions, inconsistent infection prevention control (IPC) practices, and the lack of standardized effective surveillance platforms that monitor healthcare-associated infections (HAI).

CDC staff trains lab scientists across India on antibiotic susceptibility testing for colistin using broth microdilution, Chandigarh, Punjab, 2018.
Photo credit: CDC India office

AIIMS staff preparing alcohol based rub to address increased demand during the COVID-19 surge, 2020

Program Success

Partnered with the Indian Council of Medical Research (ICMR) and the All India Institute of Medical Sciences (AIIMS) to develop and implement a network for surveillance and prevention of HAIs, helping to grow the network from 5 hospitals in 2016, to 36 sites in 24 states in 2021

Supported GOI's National Center for Disease Control (NCDC) in the establishment of National Antimicrobial Surveillance Network (NARS-Net), increasing the initial network of 10 labs in 2013, to 35 labs located across 26 states and union territories today

AMR accomplishments with GOI partners include:

- AMR surveillance in human health through sentinel surveillance approach compatible with WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS); GOI is actively contributing AMR data to GLASS
- Standardized surveillance for healthcare associated bloodstream and urinary tract infections
- Detected HAI outbreaks caused by multidrug-resistant bacterial and fungal pathogens
- Supported quarterly HAI data reporting to the MOHFW that is used for prevention efforts
- Assessment of baseline AMR surveillance readiness using standard CDC tools
- Developed standard operating protocols for AMR surveillance
- Developed national standards for quality assured antimicrobial susceptibility data
- Supported publication of national AMR estimate reports for human health.
- Initiated an AMR ECHO training program to promote use of standardarized laboratory testing practices

CDC supported training for lab scientists across India on antibiotic susceptibility testing for colistin using broth microdilution, Chandigarh, Punjab, 2018. Photo credit: CDC India office

Program Today

As part of the larger GHSA efforts, CDC India works to scale-up AMR/HAI surveillance and to build and institutionalize IPC capacity across the country. During the COVID-19 pandemic, GOI used various networks, including the HAI surveillance network and NCDC's NARS-Net, to quickly disseminate IPC guidance and information. In coordination with CDC India, CDC's International Infection Control Program works with partners at the national and state level to support and expand surveillance and prevention of HAIs, IPC programs, detection and reporting of AMR pathogens, COVID-19 response, and antimicrobial stewardship programs.

CDC India's role as a technical advisory group member to support the National Action Plan for AMR control also continues. These efforts lay the foundation for sustainable data-driven programs that will inform policy, guidelines, and activities to limit the spread of AMR.

CDC supported EIS officers at COVID first-line treatment centre at Poonthura, Kerala, 2020. This site used to be a school before it was converted into a treatment centre during COVID-19 outbreak investigation, 2020. Photo credit: CDC India office

COVID-19 Special Focus

Program Area | COVID-19 Special Focus

At the time of this publication, although many challenges remain for the ongoing COVID-19 response in the United States and in India, both countries are supporting and learning from each other at a critical time. CDC's decades of collaborations with GOI on global health security and other shared priorities have helped to build strong foundations for GOI's ongoing response to the COVID-19 pandemic. Data, lessons learned, and innovative approaches developed in India are helping to inform CDC's response in the United States and around the world.

India reported its first case of COVID-19 on January 30, 2020, the same day the WHO declared the novel virus outbreak a Public Health Emergency of International Concern. CDC India activated its incident management system soon thereafter to support both the U.S. Mission and the GOI with COVID-19 response efforts, helping to ensure effective management and timely deployment of CDC India staff. CDC India was reconfigured, and teams were formed to align with the most important areas of the response, including epidemiology and surveillance, emergency management, infection prevention and control, laboratory, clinical management, risk communication, and community mitigation.

CDC India has supported various aspects of COVID-19 outbreak response at the U.S. Embassy. CDC India efforts included infection prevention and control training, contact tracing for internal cases, and active participation in town halls with Embassy staff and the extended community across other consulates in India. In addition, CDC India supported development of return-to-work guidance, provided support for the American Embassy School, developed guidance for repatriation efforts involving over 7,000 American citizens across the country, and regularly provided situational reports to U.S. leadership and other sections. CDC India also provided critical support as part of an interagency team at the U.S. Embassy to provide U.S. Government monetary assistance in response to India's second wave in the first half of 2021.

Home delivery of anti-retroviral drugs by outreach worker in Rajahmundry, East Godavari district, Andhra Pradesh, 2020. Photo credit: CDC India office

CDC team distributes critical COVID-19 supplies to a Mizoram state official, 2021. Photo credit: CDC India office

Collaboration with GOI:

CDC India worked to support various aspects of the GOI's response to COVID-19 in collaboration with the MOHFW, Ministry of Home Affairs, National Institute for Transforming India (NITI) Aayog, and various agencies of GOI. Some examples of CDC collaborations with GOI and other partners include:

Infection Prevention and Control (IPC):

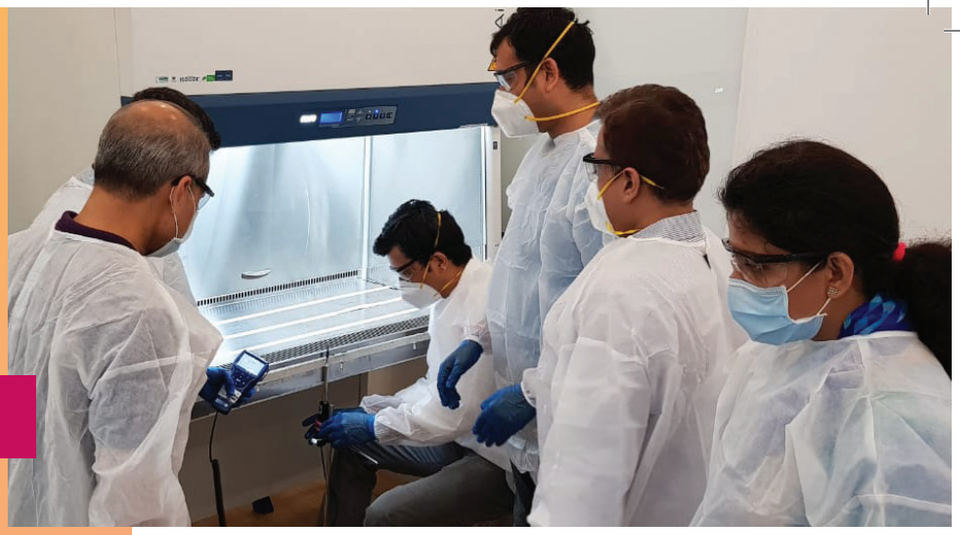
CDC supported the development of COVID-19 IPC documents and related training activities used by GOI, academic partners, implementing partners, professional societies, and state health departments. Between March and August 2020, CDC supported COVID-19 hospital preparedness and IPC trainings that reached almost 14,000 people across 1,500 institutions in India and neighboring countries. The trainings were available in five languages: English, Telugu, Tamil, Hindi, and Malayalam.

Workforce Development:

CDC-supported Field Epidemiology Training Program (FETP) officers were deployed to assist local and state authorities in COVID-19 response activities, including 50 FETP officers and 73 alumni working in 22 states. FETP officers have supported local/state public health authorities with the COVID-19 response in activities including data analysis and surveillance system strengthening; COVID-19 cluster outbreak investigations in community, residential, marketplace, assisted living, healthcare settings, university, and school settings; epidemiological studies; development of infection control assessment tools for healthcare facility and school settings; and infection mitigation surveys in a mass gathering event.

Laboratory Systems:

CDC India provided technical guidance and training on safe COVID-19 sample collection, testing, and transport to over 10,000 healthcare workers across 210 districts in the country. These efforts included frontline workers of the National Disaster Response Force and research scientists involved with COVID-19 biorepositories in GOI's Department of Biotechnology.



CDC laboratory team in collaboration with US Biothreat reduction program and NSF International, USA organized the second biosafety certification training in Gurugram, 2021. Photo credit: CDC India office

Emergency Management:

CDC India trained thousands of postgraduate medical students and first-line responders on public health emergency management. CDC also supported training of Public Health Emergency Management fellows at CDC Headquarters in Atlanta. Currently, alumni of these programs are either leading or supporting GOI COVID-19 response efforts in various capacities.

CDC participates in the GOI Emergency Operations Center (EOC) Expert Committee, which was established to oversee development of the country's Public Health Emergency Operations Centers (PHEOC). The technical assistance includes expansion of PHEOC capacity (national and subnational) through development of plans, guidelines, and processes, and through provision of a training package for EOC staff. CDC India is working at the subnational level to support GOI's Community Emergency Response Teams on COVID-19 response efforts and recently worked with GOI to develop a self-learning training package for Rapid Response Teams available on GOI and WHO websites.

Research Studies:

CDC experts worked with Indian scientists to use existing research platforms for COVID-19 and developed protocols to conduct studies to inform evidence-based public health decision-making. Current research collaborations focus on transmission and burden of COVID-19 in India.

Regional Support:

CDC India provides regional support to countries in south and southeast Asia through direct bilateral engagements with partner countries in the region and through WHO's South-East Asia Regional Office. CDC India's support for countries in the region ranges from sharing updated public health guidance, to providing technical assistance on surveillance, clinical management, infection prevention and control, and laboratory testing. CDC India supports targeted training through bilateral and regional virtual meetings and webinars. CDC India has also provided laboratory equipment to Bhutan and has facilitated shipment of testing kits from CDC's International Reagent Resource to Bhutan, Nepal, Sri Lanka and Maldives.

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