

# CENTRE FOR CHRONIC DISEASE CONTROL

A New Delhi Based Not-for-Profit Organization engaged in Chronic Disease Research and Prevention



Registered under Society Registration Act XXI of 1860 [Reg. #: 38383 of 2000]  
on Dec 21, 2000

Compliant with Foreign Contribution (regulation) Act (FCRA), 2010 with  
Registration Number: 231660448

## SUMMARY REPORT 2022

### Recognitions

- A Scientific & Industrial Research Organization (SIRO), recognized by Department of Scientific & Industrial Research (DSIR), Ministry of Science and Technology, Government of India.
- A WHO Collaborating Centre for Surveillance, Capacity building and Translational Research in Cardio-Metabolic Diseases.

### Independent Ethic Committee Details

Reg # with Central Drugs Standard Control Organization: ECR/16/Indt/DL/2013

IORG # : IORG0005264

IRB # : IRB00006330

FWA # : FWA00012746

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## Introduction

Centre for Chronic Disease Control (CCDC) is an independent, not-profit, biomedical research organization based in New Delhi, India. The mission of CCDC is primarily intended to address the growing challenge of chronic diseases, in varied settings of the developing countries through:

- *Knowledge generation, which can inform policies and empower programmes for the prevention and control of chronic diseases; and*
- *Knowledge translation intended to operationalize research results by bridging the critical gaps between relevant research and effective implementation, through analytic work, capacity building, advocacy, and development of educational resources for enhancing the empowerment of people and professionals.*

## Governance

An eight member fully empowered, independent, Governing Board that has representatives from multiple scientific constituencies is responsible for setting strategic direction and establishing broad policies of CCDC. The Board comprises of the President (Prof. Subhash Chander Manchanda), the Secretary (Prof. D Prabhakaran) and six other eminent scientific luminaries. It is advised by the Scientific Advisory Board, comprising of (inter)nationally renowned academicians, and is chaired by Prof. Vikram Patel.

In addition, an Independent Ethics Committee, oversees the ethical conduct of research at CCDC. The organogram of CCDC is depicted in Figure -1. CCDC adheres to the highest standards of transparency and financial responsibility and has been audited by Duke Clinical Research Institute, Price Waterhouse Coopers (PWC)/ KPMG etc.

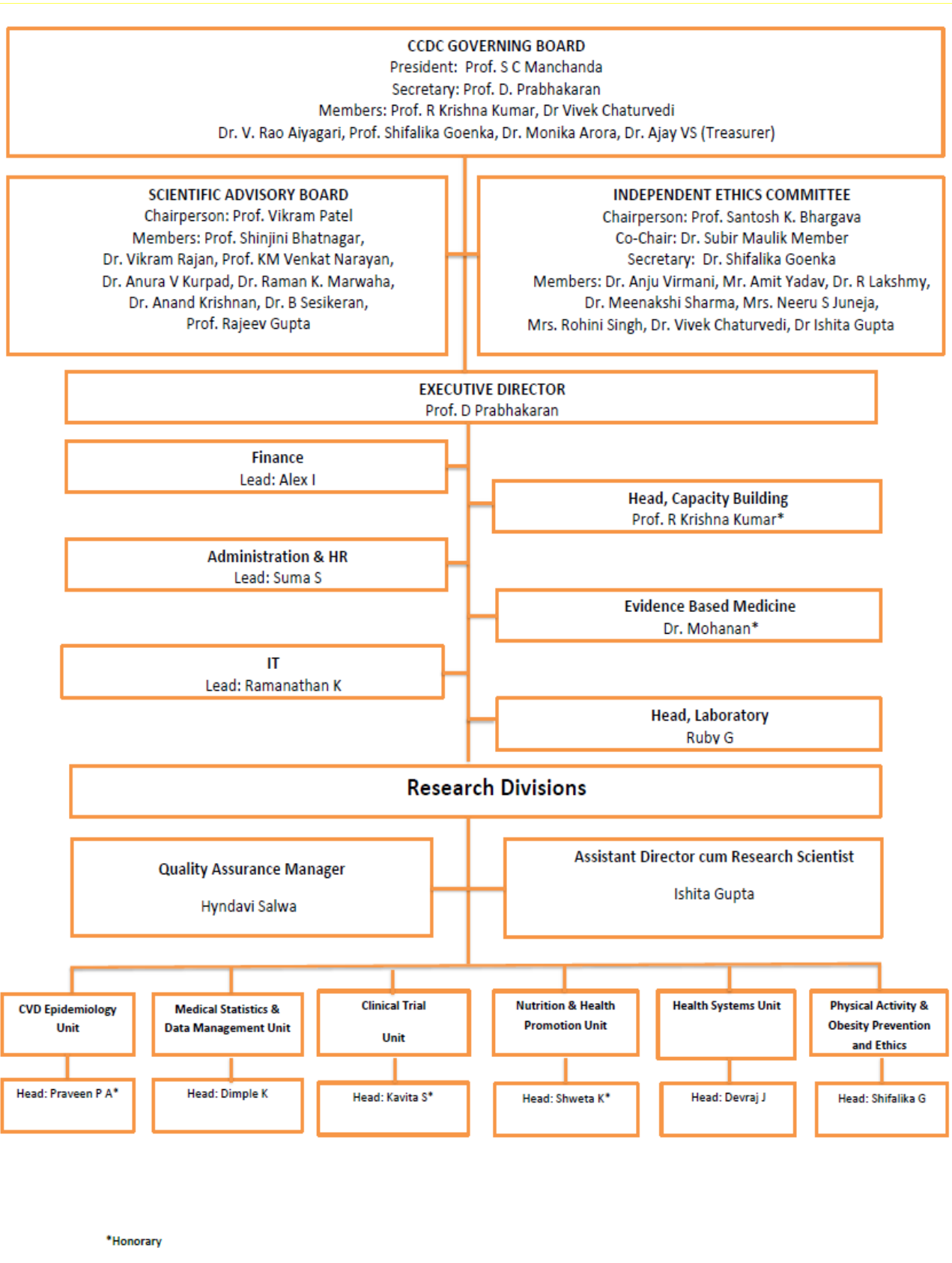


Figure -1: Organogram

## Research Excellence

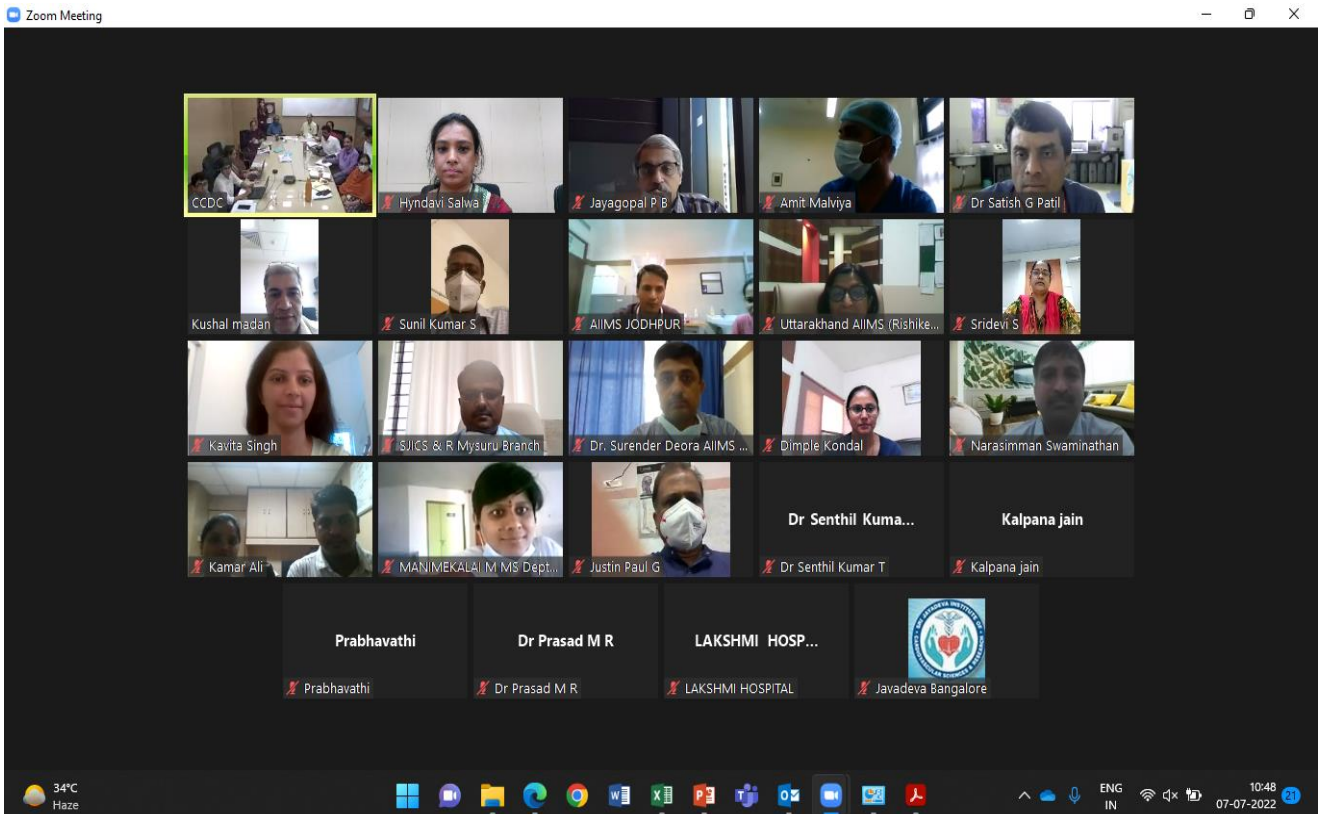
CCDC undertakes clinical research with special emphasis on chronic non-communicable diseases (NCD). Within the spectrum of chronic diseases, our main focus areas are: cardiology, diabetes and metabolic disease, vascular diseases, cancers, mental and oral and environmental health. In addition, basic science research in diet/nutrition and cardiac biochemistry are also carried out. The research work at CCDC has produced major insights into the epidemiology, developmental origin, and biomarkers of CVD and diabetes in India; practice patterns on Acute Coronary Syndrome; translation research in CVDs; and development of low-cost combination drugs for primary and secondary prevention of CVDs in South Asia. Our research output since 2000 has been more than 600 scientific publications in indexed journals and 20 books/chapters.

## Sponsored Research Programs during 2022

Clinical Trials	<ul style="list-style-type: none"><li>• Effectiveness of Yoga based Cardiac Rehabilitation (Yoga-CaRe) in Heart Failure: A Randomized Controlled Clinical Trial</li><li>• Piloting of a Community Health Workers (CHWs) led Chronic Obstructive Pulmonary Disease (COPD) Management and Control Program in a Rural India</li><li>• Treatment Optimisation for blood Pressure with Single-Pill combinations in India (TOPSPIN) Trial</li><li>• Head &amp; Neck Cancer Clinical Study</li></ul>
Epidemiology	<ul style="list-style-type: none"><li>• Precision Cardiovascular Disease Phenotyping and Pathophysiological Pathways in the CARRS cohort (Precision-CARRS)</li><li>• WHF COVID-19 and Cardiovascular Disease Survey</li><li>• COVID-19 and Oral Health Study</li><li>• Deep Learning for Oral Cancer Screening and Referral: A Feasibility Investigation (DL-CANSCREEN)</li><li>• Safety and efficacy of vaccination in adults with autoimmune inflammatory rheumatic diseases (AIIRD): Protocol for Systematic Review &amp; Meta Analysis</li><li>• Joint assessment of non-Invasive FFR, ICA, and CTCA in predicting the clinical evaluation for revascularization of hemodynamically significant stenosis (JENIFFER)</li></ul>

	<ul style="list-style-type: none"> <li>• Association between exposure to ambient PM2.5 and blood pressure within participants of the May Measurement Month</li> <li>• Epidemiology of multimorbidity in Indian population</li> <li>• GEOHealth Health Effects of Selected Environmental Exposomes Across the Life Course (HEALS)</li> <li>• Hand-in-hand: Developing and piloting an acute trauma-focused intervention with key informants and community health workers</li> <li>• Understanding role of social norms in NCD prevention: Exploratory research</li> </ul>
Health Systems	<ul style="list-style-type: none"> <li>• Integrated Tracking, Referral, and Electronic Decision Support, and Care Coordination Study (I-TREC)</li> <li>• Sustainable and Healthy Food Systems (SHEFS) Programme</li> <li>• Developing a Digital Health-enabled Intervention to tackle Multimorbidity in Primary care in India</li> <li>• Climate and Health Air Monitoring Program (CHAMP)</li> <li>• Green and Climate Resilient Healthcare (IKEA foundation)</li> <li>• Sustainable Health in Procurement Project-SHiPP</li> <li>• Setting up a regional demonstration site for digital innovation that improves care pathway for common NCDs-Digisahayam – WHO SEARO Demonstration project</li> <li>• Clinical Decision Support System (CDSS) for Acute Coronary Syndrome</li> <li>• Good Energies Project</li> </ul>
Capacity Building	<ul style="list-style-type: none"> <li>• Collaborative research, implementation, And Leadership training to address chronic Conditions across the lifecycle (COALESCE)</li> <li>• Capacity Building Program for Cancer Research in India: Population, Clinical and Basic Data Sciences</li> </ul>

# Clinical Trials



1. *Effectiveness of Yoga based Cardiac Rehabilitation (Yoga-CaRe) in Heart Failure: A Randomized Controlled Clinical Trial*

The overall aim of the project is to develop a Yoga-based Cardiac rehabilitation programme (Yoga-CaRe HF) for patients with heart failure and test its effectiveness in reducing cardiovascular events and improving quality of life in a multicentre randomized controlled trial of 3500 patients. Also, we aim to elucidate the mechanisms of action behind the beneficial effects of yoga in a mechanistic study. The YogaCare program has been developed and data collection has begun. The study will continue till 2025 and is funded by the Indian Council for Medical Research, New Delhi.

2. *Piloting of a Community Health Workers (CHWs) led Chronic Obstructive Pulmonary Disease (COPD) Management and Control Program in a Rural India.*

The overall goal of this project (2019-2022) is design and pilot a CHW led community-based COPD management and control program in rural India using an implementation science research approach. It also aims to quantify changes in clinical indicators associated with the program and to understand the facilitators and barriers to program participation. It is an "effectiveness-implementation" type II hybrid design, to be implemented in the villages of rural sub-site in Sonipat district. All individuals aged  $\geq 40$  years diagnosed with COPD according to GOLD criteria and those taking treatment for COPD in the selected area will be eligible to take part in the study. Those in intervention arm will be identified and invited to take part in the CHWs led home based program for the management of COPD for 8 weeks through home visits. People in control arm will be referred to the nearest health facilities for the routine care. Data collection of the project is complete and data analysis is under progress and it has received funding from Fogarty International Centre, NIH.

3. *Treatment Optimisation for blood Pressure with Single-Pill combinations in India (TOPSPIN) Trial*

Hypertension is a leading cause of death and disability in India. Only a minority of treated hypertensive patients get their blood pressures (BPs) controlled to even conservative targets. In India these rates are low at 11% and 20% among rural and urban patients respectively. There are no clinical trials comparing optimal BP targets or therapies among Indian population. Hence the current guidelines on drug choices for hypertension are based on international guidelines which may or may not be applicable to Indian patients. TOPSPIN is a multi-centre, individual randomized single-blind, parallel group, three-armed superiority trial comparing the efficacy of three single pill combinations (SPCs) of two anti-hypertensive agents on 24-hour

ambulatory systolic blood pressure (ASBP) among individuals with hypertension in India. Data collection for the trial is in progress at 14 sites after receiving Ethics and HMSC approval. The study has been funded by Imperial College London, UK and is expected to be completed in December 2023.

#### 4. *Head & Neck Cancer Clinical Study*

The overall goal of the trial is to explore a potential treatment modality for patients with recurrent metastatic head and neck tumors by studying the safety and preliminary efficacy of a novel combination metronomic therapy as palliative chemotherapy. CCDC provided support for development of protocol for a Phase-II randomized controlled trial testing medical intervention strategies for recurrent metastatic squamous cell carcinoma of head and neck. The study has been funded by Indegene Private Limited.

## Epidemiology



#### 5. *Precision Cardiovascular Disease Phenotyping and Pathophysiological Pathways in the CARRS cohort (Precision-CARRS)*

This study aims to transform the current cardiovascular disease (CVD) risk prediction paradigm that is based on conventional, imprecise atherosclerotic cardiovascular disease (ASCVD) risk factors to personalized and precise disease prediction and early-

stage detection to promote cardiovascular health. After receiving regulatory approvals, the study tools have been developed and piloted. The study will continue till 2026 and has been funded by National Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health (NIH), USA.

6. *WHF COVID-19 and Cardiovascular Disease Survey*

This study aims to describe cardiovascular outcomes and identify cardiovascular risk factors associated with poor in-hospital prognosis among patients with COVID-19. Participants will be recruited in any hospital where COVID-19 patients are hospitalized. Nearly 5,313 participants have been recruited from 23 countries. This global cohort study will provide insights into the cardiovascular outcomes and cardiovascular risk factors among hospitalized patients with confirmed COVID-19. By providing comparable data from countries around the globe, the study will inform the delivery of care for patients with COVID-19, with underlying cardiovascular conditions or with cardiovascular complications. The study has been funded by the World Heart Federation.

Further, The World Health Organization (WHO) has commissioned the WHF COVID-19 study team to continue recruitment of the COVID-19 patients hospitalized in the selected high-income, middle-income, and low-income countries up to 3000 patients, to better understand the temporal trends in the clinical characteristics of COVID-19 infection, and clinical outcomes. Additionally, the study team have received funding from WHO and Sanofi to conduct long-term follow-up of a sample of 2000 patients from the WHF COVID-19 extension study that aims to determine the short- (3 month), medium- (6 month) and long-term (9-12 month) sequelae to COVID-19 including ongoing symptomatology, re-hospitalizations, mortality, impact on physical function and psycho-social consequences. This study will provide invaluable information about the intermediate to long-term effects of COVID-19 and the disease burden and economic impact of COVID-19 on patients with long term sequelae. The study will be complete in 2023.

7. *COVID-19 infection outcomes and ORal health in a longitudinal urban Indian population: COVOR STUDY.*

It is a prospective observational study nested within the CARRS-study in Delhi to understand the role of oral hygiene, gingival and periodontal disease at baseline (pre-COVID) in determining the later occurrence & severity of COVID-19 infection. The study also assessed the knowledge, attitude and perception of oral health practices in this population pre- and post-COVID times. Results from the study may further

help incorporate oral health care as a crucial component among other guidelines in prevention and management of COVID-19 to avert severity, complications, and hospitalisations in future. Data collection was done during Oct 2021 to March 2022 and analysis is complete.

8. *Deep Learning for Oral Cancer Screening and Referral: A Feasibility Investigation (DL-CANSCREEN)*

Overall aim of this project is to investigate the feasibility of different DL multiclass digital image classifiers to classify digital photographic pictures of the oral cavity into oral cancer (CLASS-3) and precancer lesions (CLASS-2) by differentiating them from healthy mucosal variants and common benign lesions (CLASS-1). Its objectives are to identify the best fitting model with several systematic experiments, to classify individuals in the 'healthy-to-diseased' spectrum that may further help in referral pathways and may serve as an automated care linkage tool, in future, for patient care continuum (e.g., with management algorithm and/or a health system navigation tool). The project completed in December 2022. It has received funding from Google – AI for Social Good (Google-AISG).

9. *Safety and efficacy of vaccination in adults with autoimmune inflammatory rheumatic diseases (AIIRD): Protocol for Systematic Review & Meta Analysis*

This study is the first study for a low-middle income countries (LMICs) context. Its objective

are to present evidence on the efficacy and safety of vaccinations in adults with AIIRD. Secondary objectives include: Cost-effectiveness of vaccinating adults with AIIRD, Efficacy and safety of vaccinations in adults with AIIRD exposed to a household contact, or travel to an endemic area, or to an area during an outbreak or epidemic, Efficacy and safety of vaccinations in pregnant women with AIIRD, Efficacy and safety of vaccinations in children born to mothers with AIIRD (with or without immunosuppression), Probability of an adult with AIIRD developing infection from a vaccine strain when exposed to a household contact that has received a live vaccine, Efficacy, safety, and cost of vaccinating contacts of AIIRD patients on immunosuppressive drugs. This review is commissioned by the Indian Rheumatology Association (IRA) and has been completed in March 2022.

10. *Joint assessment of non-Invasive FFR, ICA, and CTCA in predicting the clinical evaluation for revascularization of hemodynamically significant stenosis (JENIFFER)*

It is a multicenter, Observational Study in retrospective (patient undergone treatment before study commencement) and prospective (treatment after study commencement) patients to evaluate the difference in Non-invasive fractional flow reserve derived using CTCA and standard practice of evaluation by invasive FFR for a clinical decision on revascularization of diseased arteries for patients with stable angina in patients across 5 sites. CCDC will offer data management support for conduct of the study. The study was initiated in October 2022 and expected to complete by April 2023. It has been funded by Indegene Pvt. Ltd.

11. *Association between exposure to ambient PM<sub>2.5</sub> and blood pressure within participants of the May Measurement Month*

The project aims to assess the association between exposure to ambient PM<sub>2.5</sub> at the screening sites and blood pressure within participants of the May Measurement Month 2018-2022. The analysis is complete, and report is under progress. The project is expected to complete in January 2023 and is funded by the Centre for Disease Control, US.

12. *Epidemiology of multimorbidity in Indian population*

The overall aim of this study is to determine incidence and predictors of multimorbidity, the longitudinal trends of the common clusters of conditions and the health and economic impact of multimorbidity among adults aged  $\geq 40$  years in India. The study is based in the CARRS Cohort 2 participants aged 40 years and above from Delhi and Chennai. The study also aims to determine the impact of the common clusters of conditions in terms of DALYs lost, quality of life, and healthcare costs and to identify the main behavioural (tobacco use, alcohol use, physical activity, diet), sociodemographic, and biological factors (body mass index, and blood pressure) associated with the common clusters of conditions. Data collection is underway and the study is expected to complete in 2026. It has been funded by DBT-Wellcome Trust Indian Alliance.

13. *GEOHealth Health Effects of Selected Environmental Exposomes Across the Life Course (HEALS)*

The aim of the research component of the project is to extend exposure assessments to include a range of air pollutants: particulate matter with aerodynamic diameter  $< 2.5\mu\text{m}$  (PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>), and extremes of temperature to assess the exposomes at fine spatiotemporal resolutions across different locations in India (Delhi, Chennai, Sonapat, Vizag, Pune, Hyderabad, and Bikaner). Additionally, the project will evaluate the composition of

PM2.5 in these locations and measure real time exposures in a subset of the participants. These exposomes will be related to a range of chronic noncommunicable diseases across the life course using inter-digitating cohorts. This will be achieved by leveraging existing pregnancy, children, adult, and older adult cohorts across India. The research training component of the project aims to bring together multidisciplinary group of researchers, mentors, and program faculty from the Harvard T.H. Chan School of Public Health (HSPH) and the Centre for Chronic Disease Control (CCDC) to build the capacity of public health professionals in India to generate data needed to address the unique characteristics of exposures in India. This will advance capacity by providing a robust platform of training programs for postdoctoral, early career and short-term researchers, Doctor of Public Health training at HSPH, curricula that benefit current researchers and support the development of a Master's of Science in Environmental Health program in Indian Institutes of Public Health, and support for CCDC faculty to complete mentored research activity at HSPH. Five potential DrPH candidates have been selected. The project will continue till 2027 and is supported by Fogarty International Centre, National Institute of Health.

14. *Hand-in-hand: Developing and piloting an acute trauma-focused intervention with key informants and community health workers*

The specific aims of this study are to distil elements of traditional trauma-focused interventions and examine their acceptability and feasibility for Indian women from low-income communities, modify existing acute trauma interventions with the relevant elements from Aim 1 and key informant feedback, and pilot-test this intervention to examine its acceptability, feasibility, and clinical outcomes. Data collection from 32 stakeholders is complete with most of the systematic review work and pilot testing of an existing intervention at a partner site. The study will be complete in June 2023 and is supported by Fogarty international and NIMH (through HBNU Fellowship).

15. *Understanding role of social norms in NCD prevention: An exploratory research*

Social norms substantially influence people's choices and behaviours towards their own health. Understanding social norms related to diet, lifestyle related behaviour and compliance to treatment regimen could be a strategy for developing evidence-based strategies for health promotion related to hypertension and diabetes in LMICs. Study's objective is to understand the prevalent social norms in a district in Punjab State, India. Study endeavours to explore the perceptions of patients and community members about social norms through in-depth interviews (n=30) and

focus group discussions (n= 6). The results will inform the evolving Health and Wellness Centre (HWCs) tasked for health promotion and prevention of NCDs under National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS). The data collection will begin soon and is expected to be completed in April 2023. It is funded by the Vanderbilt-Emory-Cornell-Duke Consortium for Global Health Fellows (VECDor).

## Health systems



*16. Integrated Tracking, Referral, and Electronic Decision Support, and Care Coordination Study (I-TREC)*

The overall goal of I-TREC is to adapt, implement, and evaluate an IT-enabled platform for integrated tracking, referral, electronic decision support, and care coordination (ITREC) to treat hypertension and diabetes in rural communities that rely on the public healthcare system using mixed methods approach. This implementation research is intended to provide evidence of workable interventions to manage chronic diseases in India. This would inform the evolving National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS) in India. The project will be conducted in three phases: intervention development, implementation, and evaluation. The I-TREC is an implementation research project based on the RE-AIM framework (Reach Effectiveness Adoption Implementation Maintenance) for its design, implementation, and evaluation using mixed methods approach. This project is being implemented in Mukandpur (intervention block) and Sujjon (control block) blocks of Shaheed Bhagat Singh Nagar district of Punjab state. The primary outcome of I-TREC is the mean reduction in systolic blood pressure among those with a prior physician's diagnosis of hypertension from baseline after three years of intervention. Data collection for endline survey has begun and the Project is expected to complete in May 2023. This project has been funded by National Heart, Lung and Blood Institute, National Institutes of Health (NIH), USA.

*17. Sustainable and Healthy Food Systems (SHEFS) Programme.*

The overall aim of SHEFS program is to provide policymakers with a novel, interdisciplinary research evidence to define future food systems policies that deliver nutritious and healthy foods sustainably and equitably. The SHEFS is embedded within a diabetes and hypertension prevention management program already being implemented in Visakhapatnam and Sonipat. This transdisciplinary project will involve variety of qualitative and quantitative data collection methods that includes photovoice, stakeholder interviews, T-Labs, sustainable diet surveys, and analysis of secondary data sources on food production, food retailing, purchase, and consumption through an innovative programme of research that seeks to connect environment, food system and health research. Comprehensive food systems assessment survey and farmer/trader survey has been completed. Water and soil samples were collected from plots of farmers for analysis. Data analysis is in progress. The project will be completed in October 2023. Wellcome Trust is funding the SHEFS programme through the London School of Hygiene & Tropical Medicine.

18. *Developing a Digital Health-enabled Intervention to tackle Multimorbidity in Primary care in India.*

The goals of the initiative are to Identify major multimorbidity patterns relevant for NPCDCS in primary care in Tripura and develop a digital health-enabled intervention, targeting major multimorbidity patterns relevant for NPCDCS. The multicomponent project will be conducted at 2 health facilities in Tripura for 18 months. Existing clinical dataset has been analysed for identifying multimorbidity patterns, Focus Group Discussions and In-depth interviews with have been conducted with key stakeholders, including programme managers, physicians, nurses, pharmacists and patients to develop a digital health-enabled intervention for multimorbidity management in primary care in Tripura. The request for pilot testing has been submitted to the state Government. The project is being conducted with funds from Medical Research Council, UK and is expected to be completed by February 2023.

19. *Climate and Health Air Monitoring Program (CHAMP)*

Through the CHAMP program we are showcasing Air Quality information in hospitals and encouraging doctors and hospital staff to step up as both educators for patients on the health impacts of air pollution and as advocates for the transition to clean, renewable energy. Hospitals are facilitating this awareness building program by displaying air quality data and information on health impacts using televisions in waiting halls and other strategic locations in their facility. The project spans between 2019 to 2022 and a total of 15 hospitals showcase CHAMP program, series of online trainings have been conducted for nursing professionals. Data collection is complete for two studies, Perception of farmers based in Punjab, on stubble burning, its impact on health, and policies associated with it and Air Pollution and Health Effects IEC evaluation study. The study has been funded by Clean Air Fund/SED.

20. *IKEA Foundation – Green and Climate Resilient Healthcare*

The project aims to work with health systems in India – public and private – for promoting green and climate resilient healthcare in India. It has ten focus areas of work – Leadership, Chemicals, Waste, Energy, Water, Transportation, Food, Pharmaceuticals, Buildings and Purchasing. Activities under the project include: National Hospital Energy Survey, Global decarbonisation roadmap, Healthcare Climate Challenge, Race to zero campaign, Climate Smart Healthcare Webinar Series and several others. The project has been funded by the IKEA Foundation through Health Care Without Harm (HCWH) and is expected to be completed in 2024. Data collection is complete for National Hospital Energy Survey and Facility level health-

energy assessments is planned in two states) Andhra Pradesh and Odisha) along with the state health departments.

21. *Sustainable Health in Procurement Project-SHiPP.*

Aligned with the Sustainable Development Goals (SDGs), SHiPP is a four-year (2018-2022) partnership project between United Nations Development Programme (UNDP) and Health Care Without Harm (HCWH) led by CCDC for India. The project aims to promote sustainability in the health sector, address the intersection between health, human rights and the environment, aggregate demand for sustainable manufacturing and waste management and impact positively on the environment and human health. In India, the program aims to work with multiple stakeholders of the Indian health sector including manufacturers and suppliers of pharmaceutical products and medical devices to reduce the harm to people and the environment caused by the delivery of healthcare services and manufacture, procurement, use and disposal of medical products. Specific objectives of this project are: to develop universally applicable criteria and standards for sustainable manufacturing, distribution and content of products procured by the health sector; to strengthen capacity for sustainable procurement in the health sector in ten project countries: Brazil, China, India, South Africa, Guatemala, Moldova, Tanzania, Ukraine, Vietnam, Zambia; to strengthen capacity for sustainable production, supply and disposal of health care products in at least 10 project countries; and to strengthen the understanding and application of appropriate indicators and monitoring and evaluation processes that help promote accountability for sustainable procurement in the health sector. Several webinars have been conducted alongwith trainings on Sustainable Procurement Index for Health (SPIH), a globally established, recognized and adaptable measurement tool for policy makers, manufacturers, suppliers, procurers and health care facilities end users. This project is funded by the Swedish International Development Agency (SIDA).

22. *Setting up a regional demonstration site for digital innovation that improves care pathway for common NCDs- Digisahayam – WHO SEARO Demonstration project*

Digisahayam is an assisted telemedicine solution that was conceptualized to improve access to healthcare for the poor and vulnerable populations living in remote locations and to provide uninterrupted services during the pandemic. In this model, trained health personnel help bridge current gaps in telemedicine by acting as a link between patients and physicians to facilitates effective doctor-patient interactions. The trained healthcare worker collects history, performs physical examination and carries out lab investigations before initiating tele-consultation, thereby saving time

and improving quality of care. The Centre of Chronic Disease Control (CCDC) has collaborated with the WHO- SEAR to establish a demonstration project of this existing model to enhancing NCD services through digital innovations. The project aims to serve as a model that can be adopted and scaled-up to other parts of the Southeast Asian region. In the purview of this project needs assessment visit has been conducted at two existing primary healthcare centers of the state government (Haryana) to provide assisted telemedicine services for secondary and tertiary care in collaboration with the State Government human resource and infrastructure. The project has been extended till August 2023 and has been funded by WHO SEARO.

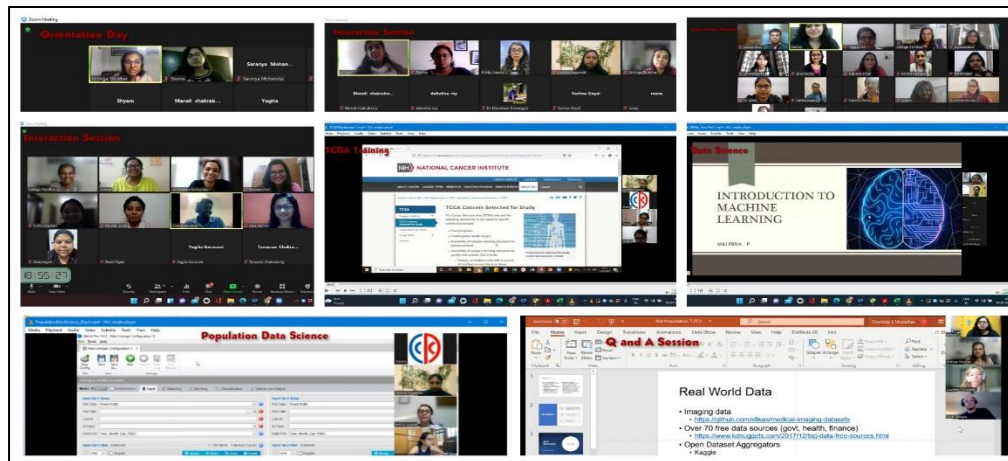
### *23. Clinical Decision Support System (CDSS) for Acute Coronary Syndrome*

CCDC and CPHS private limited are jointly working on developing the CDSS for ACS. The project will be completed in two phases. Phase 1 includes formation of the expert committee to finalize the clinical management guidelines, which can be translated into CDSS for aiding clinical management of ACS and development of intelligent algorithms from the clinical management guidelines. Phase 2 is the development of CDSS using the intelligent algorithms and integrating it with the ClinAlly™ CDSS. Members for the expert committee and advisory committee have been identified for finalizing the clinical management guidelines for ACS. The project is expected to complete in August 2023 and has been funded by iMedrix Systems Private Limited.

### *24. Good Energies Project*

This project aims to facilitate the transition to climate –smart healthcare in India by addressing the component of sustainable procurement in Indian healthcare facilities. Specifically, focusing on energy efficient equipment in healthcare facilities. Previous work by the Sustainable Health in Procurement Project (SHiPP) with Health Care Without Harm and UNDP focused on the development of universally criteria and standards for sustainable manufacturing, distribution, and content of products procured by the health sector. The Centre for Chronic Disease Control is working in collaboration with technical experts to contribute to the achievement of the project objectives. Desk Based research of the current policies and landscape for the procurement of lighting and medical equipment in India is completed and other activities are expected to complete in December 2023. The project has been funded by Good Energies.

## Capacity Building



### 25. Collaborative research, implementation, And Leadership training to address chronic Conditions across the lifecourse (COALESCE).

The overall goal of the project is to establish a Collaborative Research, Implementation, And Leadership Training to Address Chronic Conditions across the Life Course (COALESCE) program. This program was co-designed by collaborators at Emory University (USA), the Center for Chronic Disease Control (India), and Addis Ababa University (Ethiopia) to enhance capacity for research and action for chronic diseases in India and Ethiopia. This project aims to provide mentor training to a total of 58 mentors, post-doctoral scholars, and practitioners in areas of research, prevention, and control for chronic conditions in India. Prior D43 program alumni will

be participants of the mentor training and serve as research mentors for COALESCE trainees. An annual short-course on implementation science and leadership will be delivered to cultivate organizational management skills. This leadership course will be open to 80 participants from public health, government, and clinical practitioners who are on the frontline of prevention and control program and policy implementation. Jointly engaging researchers and practitioners will directly connect these usually siloed stakeholders and promote collaboration. The program spans from 2020 to 2024. First cohort of 3 research scholars completed their in-country mentored research training and two-month intensive research training program at Emory University. Second and third cohort of 3 research scholars each completed their four-month intensive research training program for research scholars at Emory University in December 2022 and returned to India for their in-country mentored research training. This training program is in line with the National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) under the National Health Mission which focusses on strengthening of infrastructure including human resources, early diagnosis and management and integration with the primary health care system through NCD cells at different levels for optimal operational synergies. The project has received funding from EMORY University, NIH Fogarty International Centre (prime agency).

26. *Capacity Building Program for Cancer Research in India: Population, Clinical and Basic Data Sciences*

The overall goal was to provide skill-based training opportunities related to collection and management of population, clinical and basic science data for cancer research in India. The core-curriculum included recorded online content which was made available between December 2021 and March 2022. The aim of the core curriculum was to present an integrated overview of the current concepts and issues central to the discipline of cancer epidemiology. It was divided into 3 modules - Course Introduction and Research Ethics, Cancer Epidemiology: An Overview of Research Aspects and An Overview of Data Sciences. Each subsection had recorded video lectures, PDF of slides and reading materials with periodic interactive sessions with faculty members. A total of 73 participants registered for the course including early-career and middle-level researchers and faculty members at host institutes and master-level students.

## Advocacy & Dissemination Activities



1. Dr Poornima Prabhakaran was invited to be part of the workshop on Climate Change and Health in LMICs: Toward Equitable, Transdisciplinary Research in Environmental Epidemiology at 34<sup>th</sup> Annual Conference of the International Society for Environmental Epidemiology (ISEE) 2022, Athens, Greece.
2. Dr Suganthi Jaganathan presented a poster on "An examination of vitamin D levels as a mediator in the association of ambient air pollution and incident type 2 diabetes mellitus in India"
3. A short film on the CHAMP program and the role of hospitals and healthcare professionals in building awareness around air pollution health effects released on the occasion of international day of clean air for blue skies and widely disseminated.
4. The Environmental Health team provided technical inputs for the National Program for Climate Change and Human Health for air pollution and green and climate resilient health systems.
5. Dr Poornima Prabhakaran participated as a panellist on 24th November in the session titled: Key achievements and opportunities in the last decade in terms of sustainable procurement in healthcare and the SHiPP project. She spoke about bringing in the dialogue of sustainable procurement in the healthcare sector, capacity building of healthcare professionals and procurement officers. Also highlighted the importance of awareness and policy level interventions in terms of sustainable healthcare procurement.

6. Health & Environment Leadership Platform launched the website on 7<sup>th</sup> September 2022 <https://greenhospitalsindia.com/> It includes the different program areas including Climate Change and Human Health, Air Pollution and Human Health, Sustainable Procurement in Health Care, Health Care Waste Management and Sustainable Food in Healthcare.
7. Health and Environment Leadership Platform organized the Leadership Conclave on Healthcare Sustainability and Climate Action at Radisson Blu Plaza, New Delhi on 7<sup>th</sup> December, 2022. The objective of the conclave was to bring the health sector leadership in India up to speed with the recent development in healthcare sustainability & Climate Action and to deliberate on new and effective strategies to engage the members of the Health and Environment Leadership Platform.
8. The team of ITREC project has proposed uptake and roll out of the Clinical Decision Support System enabled CPHS-NCD system with the Central Govt. and state Govt of Odisha.

## Meetings and Workshops

	Topic	Date and venue
1.	52 <sup>nd</sup> Ten Day International Teaching Seminar on Cardiovascular Disease Epidemiology and Prevention	12 <sup>th</sup> to 22 <sup>nd</sup> December 2022, Kochi, Kerala
2.	Understanding Public Health Nutrition: Towards Policy and Action	12 <sup>th</sup> to 15 <sup>th</sup> December 2022, New Delhi
3.	Environmental Epidemiology and Cardiovascular Health	25 <sup>th</sup> , 26 <sup>th</sup> , 28 <sup>th</sup> and –29 <sup>th</sup> November 2022, New Delhi
4.	Precision- CARRS Investigator meeting	10 <sup>th</sup> to 13 <sup>th</sup> October 2022, New Delhi
5.	TOPSPIN – First Investigator meeting	2 <sup>nd</sup> & 3 <sup>rd</sup> April 2022, Hotel Andaz, Hyatt, Aerocity, New Delhi
6.	The First Tandon Memorial Conclave on Cardiology Training' Postgraduate Cardiology Training in India: A Status Appraisal and Roadmap for the future	22 <sup>nd</sup> March 2022 India International Centre, New Delhi

## Awards and Recognitions

1. Prof D Prabhakaran was conferred the Doctor of Science (Honoris Causa) by the University of Glasgow in July 2022.
2. Prof D Prabhakaran was conferred the National Award for Excellence in Clinical Research by the Indian Society for Clinical Research in March 2022
3. Dr Priti Gupta and Dr Nikhil SV received the Wellcome Trust DBT India Early Career Clinical and Public Health Fellowships.
4. Dr Siddhartha Mandal had received LMIC best abstract for his abstract titled "Assessing daily PM2.5 at every square kilometer of India over 2008-2020 using a machine learning framework" as part of the ISEE Asia & Western Pacific Chapter at the ISEE 2022 Athens, Greece
5. Ms Kritika Anand received an award from the Students and New Researchers' Network (SNRN) Abstract Competition for her work at the ISEE 2022 Athens, Greece

## Publications in Scientific Journals Jan-Dec. 2022

1. Gupta P, Prabhakaran D, Mohan S. Multimorbidity or multiple long-term conditions: need for bridging the evidence & care gaps to address an emerging priority public health issue in India. *Indian J Med Res* 2022
2. Gupta P, Patel SA, Sharma H, Jarhyan P, Sharma R, Prabhakaran D, Tandon N, Mohan S. Burden, patterns, and impact of multimorbidity in North India: findings from a rural population-based study. *BMC Public Health*. 2022 Jun 2;22(1):1101. doi: 10.1186/s12889-022-13495-0.
3. Jindal D, Sharma H, Gupta Y, Ajay VS, Roy A, Sharma R, Ali M, Jarhyan P, Gupta P, Srinivasapura Venkateshmurthy N, Ali MK, Narayan K MV, Prabhakaran D, Weber MB, Mohan S, Patel SA, Tandon N. Improving care for hypertension and diabetes in India by addition of clinical decision support system and task shifting in the national NCD program: I-TREC model of care. *BMC Health Serv Res*. 2022 May 23;22(1):688. doi: 10.1186/s12913-022-08025-y.
4. Brown KA, Venkateshmurthy NS, Potubariki G, et al. The role of dairy in healthy and sustainable food systems: community voices from India. *BMC public health*. Apr 22 2022;22(1):806. doi:10.1186/s12889-022-13194-w
5. Kuriakose S, Krishnamurthy A, Vinutha RS, Ramshankar V, Sekhar S, Walia GK, Gupta R, Aggarwal A, Rajan S, Kondal D, Grover S, D. Prabhakaran, Dhillon PK,

Shridhar K\*, Goodman M. Time intervals and patient-level factors in oral cancer diagnostic pathways: An application of the WHO framework in India.

\*Corresponding author Cancer Epidemiol. 2022 Nov 3; 81:102283. doi:

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6. Sekar P, Ghosh S, Dhillon PK, Shridhar K. The Dynamics of Breast Cancer Screening Approaches in Urban India: An Ethnographic Study from Delhi. *SSM - Qualitative Research in Health* 2 (2022) 100135
7. Kaushik A, Kuriakose S, Aggarwal A, Mehrotra R, D Prabhakaran, Shridhar K. Research Correspondence: Health Care Providers' Perspective of COVID-19 Pandemic on Cancer Treatment, Screening and Early Detection Services in India *Indian J Med Res.* 2022 Aug 17. Online ahead of print
8. Shridhar K, Subramanya V, Prabhakaran P. Emerging and Neglected Risk factors for CVDs: Barker's Hypothesis, Early Life Influences, Environmental Factors Editors: D Prabhakaran and Suchi Anand
9. Shridhar K, Mehrotra R, Dhillon PK. Health promotion for cancer prevention and control in low- and middle-income countries in monograph titled *Public Health Approaches to Health Promotion*. Editor: Srinath K Reddy
10. Jagannathan R, Anand S, Hogan J, Mandal S, Kondal D, Gupta R, Patel SA, Anjana RM, Deepa M, Ali MK, Mohan V, Tandon N, Narayan K MV and Dorairaj P. Estimated glomerular filtration rate trajectories in south Asians: Findings from the cardiometabolic risk reduction in south Asia study. *The Lancet Regional Health - Southeast Asia.* 2022; 6:100062.
11. Ali MK, Kadir MM, Gujral UP, et al. Obesity-associated metabolites in relation to type 2 diabetes risk: A prospective nested case-control study of the CARRS cohort. *Diabetes Obes Metab.* 2022;24(10):2008-2016. doi:10.1111/dom.14788
12. Prabhakaran D, Singh K, Kondal D, Raspail L, Mohan B, Kato T, Sarrafzadegan N, Talukder SH, Akter S, Amin MR, Goma F, Gomez-Mesa J, Ntusi N, Inofomoh F, Deora S, Philippov E, Svarovskaya A, Konradi A, Puentes A, Ogah OS, Stanetic B, Issa A, Thienemann F, Juzar D, Zaidel E, Sheikh S, Ojji D, Lam CSP, Ge J, Banerjee A, Newby LK, Ribeiro ALP, Gidding S, Pinto F, Perel P and Sliwa K. Cardiovascular Risk Factors and Clinical Outcomes among Patients Hospitalized with COVID-19: Findings from the World Heart Federation COVID-19 Study. *Global Heart.* 2022; 17(1): 40. DOI: <https://doi.org/10.5334/gh.1128>
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## Facilities and other resources at CCDC

Centre for Chronic Disease Control (CCDC) is a New Delhi based not-for-profit organization, established in December 2000. The mission of CCDC is primarily intended to address the growing challenge of chronic diseases, in varied settings of the developing countries through: Knowledge generation, which can inform policies and empower programmes for the prevention and control of chronic diseases; and Knowledge translation intended to operationalize research results by bridging the critical gaps between relevant research and effective implementation, through analytic work, capacity building, advocacy and development of educational resources for enhancing the empowerment of people and professionals.

### Laboratory and Bio-Repository Facilities at CCDC

The laboratory at CCDC is equipped to deal with all aspects of clinical biochemistry and basic genetics research. The lab is equipped with: Chemistry analyzers c311, immunochemistry analyzer e411 from ROCHE, D-10 from Bio-Rad, Electrolyte analyser from Caretium, microplate reader from Bio-Rad, Spectrophotometer from Thermo, Gas chromatography from Agilent. For performing molecular biology experiments, the lab is equipped with: Thermal cycler from ABI, NanoDrop from Thermo, Gel documentation system from Alpha Imager, agarose electrophoresis setup from Bio-Rad and Refrigerated macrocentrifuges from Eppendorf. To support the research work, the lab has additional equipment such as: Sonicator, Milli-Q water purification system from Millipore, table-top centrifuges from Remi, water baths, incubator-shaker, electronic weighing balance, autoclave, UV crosslinker, single and multi-channel micropipettes etc. All the equipment are regularly maintained and calibrated.

The biochemistry component of the laboratory was established to study the cardiometabolic risk markers in various studies; however, it is now expanding its horizons to various other aspects of research such as nutritional biochemistry. The biochemistry laboratory since its inception has performed more than 750,000 tests in approximately 60,000 samples. The laboratory is a part of external quality control program by RIQAS for Lipids, Clinical Chemistry, Glycosylated hemoglobin, urinary microalbumin and UKNEQAS for Insulin assays. It is also part of EQUIP program from CDC, Atlanta for Iodine assay. The genetic component of the laboratory was established to build a low cost and high-

quality resource for basic molecular genetics work at CCDC. Various bio-specimens such as capillary and venous whole blood, buffy coats, dried blood spots, saliva from various studies are processed here for DNA extraction using various manual methods and commercial kits; quantified and processed for downstream applications. So far DNA has been extracted from approximately 15000 samples. The laboratory also has the capacity to perform .

The bio-repository at CCDC has 27 ultra-low deep freezers (-800C) and 4 deep freezers (-200C) for storage of samples collected for various epidemiological studies. There are around 6,50,000 aliquots of blood components and urine samples from more than 60,000 participants from different studies stored in the deep freezers. The freezer area has a power back-up support for 24x7 supply of electricity, and the area is always maintained at ambient temperature.

All the work is performed by science graduates and postgraduates with training in Medical Laboratory Technology and Biotechnology with many years of experience. There are Standard Operating Protocols (SOPs) for various laboratory processes which are diligently followed along with Good Laboratory Practices.

## IT Infrastructure

CCDC offices' IT Infrastructure are enabled with latest technologies. The In-house IT support team work around the clock to ensure the same is up and running. Each office has an independent Internet Leased Line (1:1) with adequate Internet bandwidth being distributed to each computing device. Local Area Networks (LANs) are secured by UTM (Unified Threat Management) to prevent the various network threats such as spyware, virus etc. CCDC provides Laptop or Desktop (based on the need) to its all employees. Users can access internet and other network resources from office allotted machine by plugging in to the LAN point or by connecting to WI-FI. Guest are also given limited internet access via WI-FI. All the offices are interconnected VPN Connectivity. Some of the technology platform/Services in use are:

- Microsoft Office 365 for email service:
- A Windows 2016 server OS on IBM Xserver x3650 M5, with 3.5 TB Storage for data on RAID 5 & 16 GB RAM serves as our Domain Server
- Database: An IBM X3400 SERVER (7976i3s) TOWER with 12GB RAM and 600 GB HDD storage with RAID 5: IBM X3400 SERVER with 146 GB single volume and 600GB in RAID 5.
- Backup Server: IBM X3650 M3 Rack Server with 8 GB RAM, 300 GB Raid 1 for OS, 1.8 TB on RAID 5
- Licensed version of Microsoft Windows, Microsoft Office, SPSS, STATA for data

management and analysis, Endnote, Adobe Dreamweaver, Acrobat Writer and Adobe Photoshop

- Druva Insync is used to take backup of client machine.
- F-Secure Corporate Edition Software is used to protect the server and systems from Virus, Malware etc.

## DSIR Approval



TELEGRAM : SCINDRECH  
दूरभाष/TEL : 26962819, 26567373  
(EPBAX) : 26565694, 26562133  
: 26565687, 26562144  
: 26562134, 26562122  
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Website : <http://www.dsir.gov.in>



भारत सरकार  
विज्ञान और प्रौद्योगिकी मंत्रालय  
वैज्ञानिक और औद्योगिक अनुसंधान विभाग  
टेक्नोलॉजी भवन, नया महरौली मार्ग,  
नई दिल्ली - 110 016  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE AND TECHNOLOGY  
Department of Scientific and Industrial Research  
Technology Bhavan, New Mehrauli Road,  
New Delhi - 110 016



F.No. 14/483/2008-TU-V

Date: 26<sup>th</sup> May, 2020

The Executive Director  
Centre for Chronic Disease Control (CCDC)  
4th Floor, Plot No. 47,  
Sector-44,  
Gurgaon - 122 002  
Haryana

**Subject: Renewal of Recognition of Scientific and Industrial Research Organisations (SIROs).**

Dear Sir,

This has reference to your application for renewal of recognition of Centre for Chronic Disease Control (CCDC), Gurgaon, Haryana as a Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research under the Scheme on Recognition of Scientific and Industrial Research Organisations (SIROs), 1988.

2. This is to inform you that it has been decided to accord renewal of recognition to **Centre for Chronic Disease Control (CCDC), Gurgaon, Haryana from 01.04.2020 to 31.03.2023**. The recognition is subject to terms and conditions mentioned overleaf.

3. Receipt of this letter may kindly be acknowledged.

Yours faithfully,

(Dr. S.K. Deshpande)  
Scientist - 'G'

## FCRA Approval

No. 0300025502021  
Government of India  
Ministry of Home Affairs  
Foreigners Division  
(FCRA Wing)

1st Floor, Hall No. 1, Open Gallery Major Dhyan Chand  
National Stadium  
India Gate Circle  
Dated: 20-10-2022

To,  
The Chief Functionary,  
Centre for Chronic Disease Control  
Flat No 70 Pocket -1 Sector - 2 Dwarka 110070

**Subject: Renewal of Registration under Foreign Contribution (Regulation) Act.**

Sir/Madam

With reference to your application dated **04-05-2021** seeking renewal of registration under the Foreign Contribution (Regulation) Act, 2010, I am directed to convey the approval of competent authority for renewal of registration of your Association in terms of the provisions contained in Section 16 of Foreign Contribution (Regulation) Act, 2010 read with Rule 12 of Foreign Contribution (Regulation) Rules, 2011 as amended from time to time, as follows:-

Registration Number **231660448**

Nature : **Educational, Social**

2. The association shall receive foreign contribution only in its designated/exclusive bank account **40019185368** in **STATE BANK OF INDIA, 11 Sansad Marg, New Delhi 110 001, SANSAD MARG, Delhi, Delhi, 110001** as mentioned in its application for online application for grant of renewal of registration.
3. In terms of section 18 of the Foreign Contribution (Regulation) Act, 2010 read with Rules 17 of the Foreign Contribution (Regulation) Rules, 2011, as amended from time to time, you are advised to furnish intimations online within the prescribed time to the Central Government of the amounts of each foreign contribution received by you, the source and the manner in which the foreign contribution was utilised, as per the provisions of the Act and the Rules. An association is required to furnish the return even when the particulars are 'NIL'. The FC-4 form is required to be submitted online on this Ministry's website <https://fcraonline.nic>. The Bank Account mentioned in your application should be used for receiving foreign contribution and no other amount should be credited to this account. The Association should immediately intimate online, within 15 days, in Form FC-6 to this Ministry regarding any change in the name of the Association, aims and objects, its address and Bank/Bank Account.
4. The association cannot bring out any publication (registered under PRB Act, 1867) or act as correspondent, columnist, editor, printer or publisher of a registered newspaper or engage in the production or broadcast of audio news or audio visual news or current affairs programmes through electronic mode or any other electronic form or any other mode of mass communication at a later stage thereby attracting provisions of the Section 3(1) (g) and (h) of the FC(R) Act, 2010. In addition to this, the association is forbidden from getting involved in any activity of political nature.
5. Transfer of foreign contribution has been made completely prohibited under amended section 7 of the Foreign Contribution (Regulation) Act, 2010.
6. Physical inspection of the activities done by the Association may be carried out at any time by this Ministry.

7. You are requested to familiarize yourself with the provisions of Foreign Contribution (Regulation) Act, 2010 and Foreign Contribution (Regulation) Rules, 2011, as amended from time to time, available at this Ministry's website <https://fcrainline.nic.in/> to ensure strict compliance of the Act/ Rules. Failure to comply with any of the provisions of said Act/ Rules will make you liable for action under the relevant provisions of the Foreign Contribution (Regulation) Act, 2010.
8. This renewed certificate is valid for a period of five years with effect from **01-04-2023**.
9. The email containing the renewed registration certificate may be sent immediately to the Bank mentioned above.
10. The renewal of registration is subject to compliance of the provisions of Foreign Contribution (Regulation) Act, 2010/ Foreign Contribution (Regulation) Rules, 2011, as amended from time to time, by the association and also to the final outcome of enquiry/ case, if any, pending against the association.
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11. This is a digitally signed certificate to be validated digitally using the signature panel using Adobe Acrobat Reader (Ver 5.0 or above). The digital intimation is authenticated by a digital signature obtained from a certifying authority under the Information Technology Act 2000.
12. Banks are requested to verify online the validity of the certificate using [fcrainline.nic.in](https://fcrainline.nic.in).

Yours faithfully

**Gopesh Kumar**  
**Section Officer**  
**Tel. 01123438245**

Digitally signed by GOPESH KUMAR  
Reason: Online FCRA Services  
Location: Ministry of Home Affairs, New Delhi  
Date: 2022.10.20 05:11:52 +05'30