

CENTRE FOR CHRONIC DISEASE CONTROL

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



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SUMMARY REPORT 2021

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. (IND-172)

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

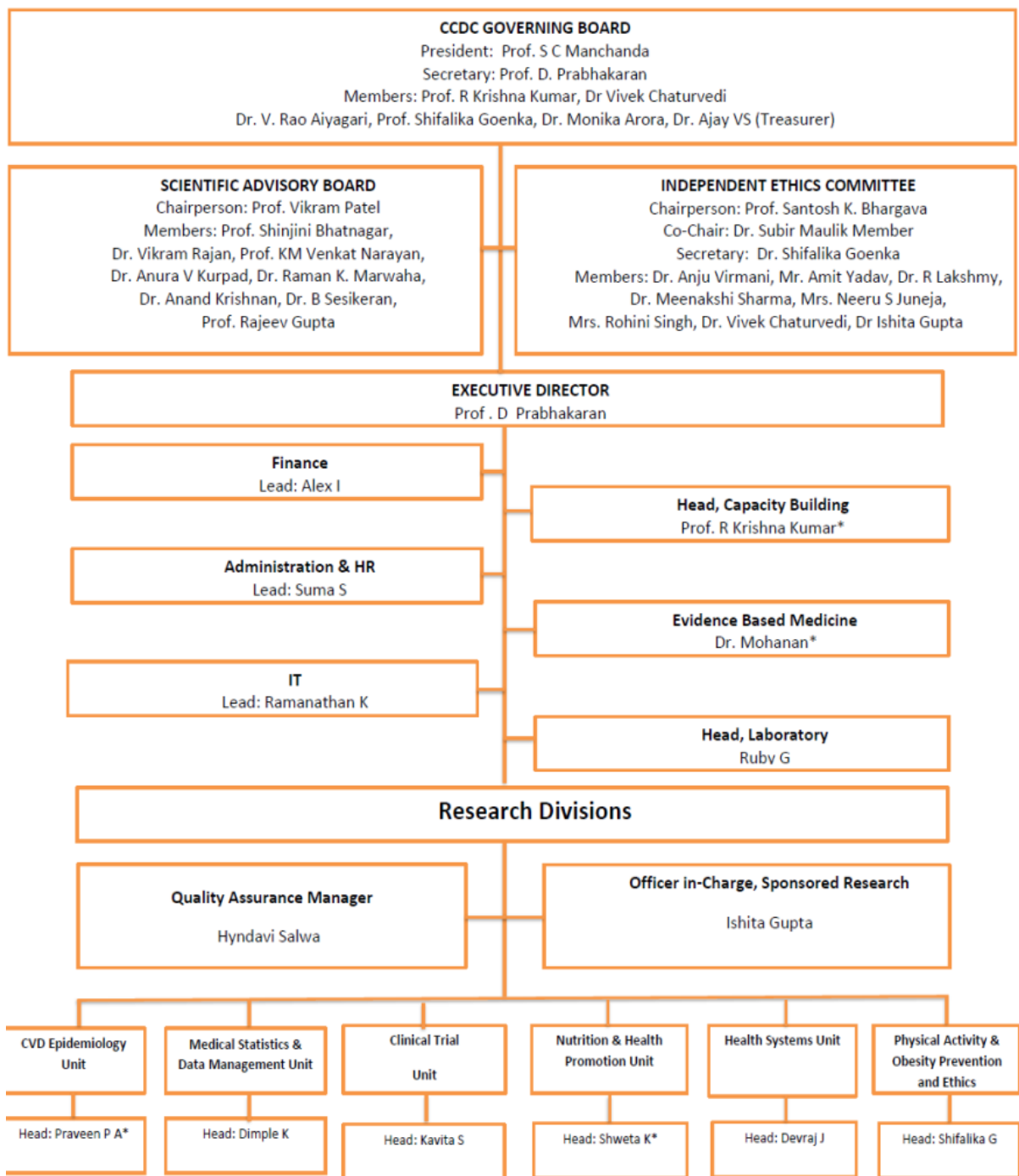
Centre for Chronic Disease Control (CCDC) is an independent, not-profit, biomedical research organization based in New Delhi, India. The **mission** of CCDC is primarily intended to address the growing challenge of chronic diseases, in varied settings of the developing countries through:

- *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.



*Honorary

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 500 scientific publications in indexed journals and 20 books/chapters.

Sponsored Research Programs during 2021

Clinical Trials	<ul style="list-style-type: none"> • Yoga-CaRe • Yoga-DP • LIVING • Piloting of a Community Health Workers (CHWs) led Chronic Obstructive Pulmonary Disease (COPD) Management and Control Program in a Rural India • TOPSPIN
Epidemiology	<ul style="list-style-type: none"> • Public Health Initiative on LMIC Air Pollution (PHILAP) • Air Pollution and Health GEOHealth Hub Research and Capacity Building Program • Causal Inference for Compositional Data Structures • A situation analysis of open space gyms in Delhi and case study to document good practices • LIVING Sub study LUPIN • LIVING Sub study USV • WHF COVID-19 and Cardiovascular Disease Survey • Gut Microbiota in diabetic and non-diabetic Indians • Deep Learning for Oral Cancer Screening and Referral: A Feasibility Investigation (DL-CANSCREEN) • Early Life Experiences and Cardiovascular Risk Factors among Adults in Urban India: Survey in the Center For Cardiometabolic Risk Reduction In South Asia Surveillance Study

	<ul style="list-style-type: none"> • Safety and efficacy of vaccination in adults with autoimmune inflammatory rheumatic diseases (AIIRD): Protocol for Systematic Review & Meta Analysis • Nigeria’s Cost-of-Illness from Ambient Air Pollution • A situation analysis of open space gyms in Delhi and case study to document good practices • A qualitative exploration of the perception of members of Ethics committees about Controlled human infection model (CHIM) studies, in India • Hand-in-hand: Developing and piloting an acute trauma-focused intervention with key informants and community health workers
Health Systems	<ul style="list-style-type: none"> • ITREC • Beginning with the end in mind: Assessment of context and factors crucial for scale-up of an innovative strategy to address hypertension and diabetes in India • Sustainable and Healthy Food Systems (SHEFS) Programme • Zero Budget Natural Farming Pesticide Access Study • Developing a Digital Health-enabled Intervention to tackle Multimorbidity in Primary care in India • Clean Air Fund • Green and Climate Resilient Healthcare • Sustainable Health in Procurement Project-SHiPP • Setting up a regional demonstration site for digital innovation that improves care pathway for common NCDs-Digisahayam – WHO SEARO Demonstration project
Capacity Building	<ul style="list-style-type: none"> • COALESCE • CCMH • Optimization of cancer data linkages in India • Capacity Building Program for Cancer Research in India: Population, Clinical and Basic Data Sciences

Clinical Trials

1. *Yoga-CaRe trial: Effects of a Yoga-Based Cardiac Rehabilitation (Yoga-CaRe) Programme of Cardiovascular Health: A Clinical Trial (India) and Mechanistic Study (UK)*

The overall aim of Yoga-CaRe trial was to develop a Yoga-based cardiac rehabilitation programme (Yoga-CaRe), test its effectiveness and cost-effectiveness in patients with acute myocardial infarction in a randomised controlled clinical trial in India, and to explore the mechanisms underlying any beneficial effects of Yoga-CaRe by detailed physiological and

metabolic tests in a parallel study in UK. It is one of the largest cardiac rehabilitation trials assessing the effects of Yoga based Cardiac Rehabilitation Programme on cardiovascular morbidity and mortality in patients following acute myocardial Infarction. The study has been conducted in 24 hospitals across India involving 3959 participants. The primary outcomes of the trial are the cardiovascular events (composite of all-cause mortality, non-fatal myocardial infarction, non-fatal stroke and emergency cardiac hospitalizations) and the patient's quality of life. The first phase of the trial was completed in September 2018. The trial has been extended till 2022 to accrue enough events to assess the effect of the Yoga-CaRe programme in reducing cardiovascular events rate in comparison to the usual care. The study is funded through a prestigious Indo-UK collaborative grant sponsored through Indian Council for Medical Research, New Delhi and Medical Research Council, UK.

2. *Yoga programme for type-2 diabetes prevention (YOGA-DP) among high-risk people in India: intervention development and feasibility study.*

The overarching aim of YOGA-DP study is to explore whether a yoga programme is effective in preventing T2DM among high-risk people in India as compared to enhanced standard care. The objectives of this formative study are: to develop the yoga programme for T2DM prevention among high-risk people in India (phase 1) and to determine the feasibility of undertaking the future RCT (phase 2). The study has been conducted at two sites in India- one in north India (Bapu Nature Cure Hospital and Yogashram, New Delhi) and one in south India (Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA), Bengaluru). A total of 64 participants (32/group) were recruited for this study. This study is complete and the team is in the process of launching a mobile application to disseminate intervention tools developed for this study. It has been supported by DFID/MRC/NIHR/Wellcome Trust under the Joint Global Health Trial Scheme (UK).

3. *A lifestyle intervention program for the prevention of type 2 diabetes mellitus among South Asian women with gestational diabetes mellitus (LIVING Trial).*

The overall aim of the LIVING trial was to determine whether a resource- and culturally appropriate lifestyle intervention program in South Asian countries, provided to women with gestational diabetes (GDM) after delivery, will reduce the incidence of type 2 diabetes, in a manner that is affordable, acceptable and scalable. develop a lifestyle modification program that is feasible, acceptable and cost-effective in the South Asian context for women with prior GDM. This was an open-label parallel-group pragmatic individual randomised controlled trial with blinded primary endpoint adjudication. Participants from hospitals in Bangladesh, India and Sri Lanka were randomised to either the intervention or control arm and be followed up for three years. The intervention comprised of a low-intensity lifestyle modification program delivered as four face-to-face group sessions combined with remote on-going support, and an intensification offering when needed. The Primary outcomes were Proportion of women with a change of glycaemic category, at or prior to final visit: Normal glucose tolerance to impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) or Type 2 Diabetes

Mellitus; and IFG or IGT to Type 2 Diabetes Mellitus. The study is complete and results have been published. From a total of 1612 (427 N India) randomised participants, 808 (215 N India) participants were allocated to the intervention arm and among them 90 (32 N India) did not participate in the intervention program. All randomised participants were approached every six-months for a follow up examination and blood sample collection. End of study visits have been conducted for 81% (84% N India) participants from July 2020 to January 2021. The study was funded by the National Health and Medical Research Council of Australia (NHMRC) Global Alliance for Chronic Diseases (GACD) Grant (APP1093171) and Indian Council of Medical Research (ICMR) GACD Grant.

4. *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 is to develop and test various tools required for the implementation of CHWs led integrated home-based COPD management and control program comprising. 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 ≥ 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 underway and it has received funding from Fogarty International Centre, NIH.

5. 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. The following activities have been completed: protocol development, preparation of study documents including participant information sheet and consent forms, case report forms, investigator meeting and site identification and selection activities. The study has been funded by Imperial College London, UK and is expected to be completed in December, 2023.

Epidemiology

6. *Strengthening evidence-based advocacy for influenza prevention and control in India.*

The overall goal of the project is to support evidence-based public health decisions for the prevention and control of respiratory infections (influenza and RSV) in India through domiciliary and hospital-based surveillance. It has both community-based and hospital-based components. A community-based surveillance platform has been set up at four sites in India: All India Institute of Medical Sciences (AIIMS) in New Delhi at Ballabgarh (north), National Institute of Virology in Pune (west), National Institute in Chennai (south) and National Institute of Cholera and Enteric Diseases in Kolkata (east). CCDC, Delhi is a partner providing epidemiological support and logistic support to field office and field lab and for AIIMS' Ballabgarh site. The surveillance platform established by these cohorts has the acronym INSPIRE: Indian Network of population-based Surveillance Platforms for Influenza and other Respiratory viruses among Elderly. The project will be completed in 2022 and is being funded by Centre for Disease Control and Prevention, Atlanta, USA.

7. *Public Health Initiative on LMIC Air Pollution (PHILAP).*

The overall aim of the PHILAP study is to understand the differences in air pollution exposure among high and low-income neighborhoods in Delhi among Asthmatic adolescents, their coping mechanisms and to develop effective visual and animated narratives of research findings to different stakeholders to address the burden of asthma in Delhi adolescent population. The specific objectives of the PHILAP study are: to estimate the exposure-response relationship between ambient concentration levels of particulates (PM₁₀, PM_{2.5}), and respiratory parameters such as breathing rate/flow, by collecting contemporaneously personal exposure and respiratory data using novel bodyworn sensors; to examine the social and cultural factors that impact on mitigation measures at different levels to confront asthma; and to construct visual narratives and animated MEMEs to effectively communicate the exposure and health data to different stakeholders. This project is being done in collaboration with Institute for Economic Growth; Indian Institute of Technology, Bombay; University of Edinburgh-Informatics; Chacha Nehru Bal Chikitsalaya; and Sitaram Bhartia Research Institute. Nearly 48 adolescent participants aged 10-18 years, stratified by socio-economic status were recruited for the study. Personal PM_{2.5} and PM₁₀ exposures and respiratory parameters such as breathing rate of participants were measured in real-time for two seasons (summer and winter) using a wearable sensor technology. The study was completed in April 2021. The Medical Research Council (MRC) and Arts and Humanities Research Council (AHRC) have provided the funding support for this project.

8. *Air Pollution and Health GEOHealth Hub Research and Capacity Building Program.*

The overall goal of GEOHealth was to accelerate scientific infrastructure development, enhance research training, and support the research needed to fully characterize the

relationship between air pollution and health outcomes in India. The specific objectives were: Developing a model to estimate ambient exposure to air pollution (AP) levels in Chennai and Delhi; Estimate association between exposure to AP, temperature, CM risk factors & diseases and built environment; Examine DNA methylation patterns associated with AP and bio markers; and Examine the association between AP & vitamin D levels. A multidisciplinary group of researchers from the Centre for Chronic Disease Control (CCDC), Public Health Foundation of India (PHFI) and from the Harvard School of Public Health (HSPH) have collaborated for implementation of this project. By training Indian scientists on how to assess indoor and outdoor air pollution exposures, conduct complex epidemiological studies of air pollution, epigenetic and mediation analysis, this project will enhance their capacity to conduct research that will help inform policies to mitigate the impact of air pollution on susceptible populations effectively. The project was completed in July 2021. Several short term and long-term training activities have been conducted with more than 300 beneficiaries trained from several National institutions including medical colleges, universities, research organizations, government institutions, and think tanks. Several publications have received media coverage from leading networks. This project is funded by Fogarty International Centre (FIC), National Institutes of Health.

9. *Causal Inference for Compositional Data Structures.*

The overall goal of the project is to develop causal inferential frameworks for scenarios with compositional data as an outcome or predictor. A counterfactual framework will be defined for compositional data and existing quasi-experimental techniques will be implemented to such scenarios. For this project, publicly available datasets will be used on the following themes: microbial communities, environmental pollutants, physical activity and dietary intake. The project is expected to complete in 2022 and has been funded by the Science and Engineering Research Board, Government of India.

10. *A situation analysis of open space gyms in Delhi and case study to document good practices.*

The overall aim of the project is to document the healthiness of parks and situational assessment of Open gyms and a case study in Delhi. Delhi has an estimated 17,335 number of parks for public usage which range from tot lots to large neighbourhood parks which are monitored by CPWD, NDMC, DDA, MCD and ASI. Through stratified random sampling 512 parks have been selected. Presently, 234 parks have been covered. The project is being conducted with funds from WHO-SEARO.

11. *To develop a strategy for postpartum follow up of women with history of gestational diabetes mellitus (GDM) by using the right test and frequency of testing and developing patient centric approach after incorporating their views.*

The overall goal of the project was to evaluate the right test and frequency of testing for developing a strategy for postpartum follow up of women with history of GDM. This was a cross-sectional study embedded within the main LIVING Trial. This sub study has been conducted at six sites based in India with all randomised women at their first annual follow up. A total of 207 women randomised for the LIVING Study were administered the questionnaire for the right test and its frequency at their first annual follow-up. The study has been completed and was funded by LUPIN Pharmaceuticals.

12. *Effect of intervention for lifestyle modification on improvement in sleep quality, depression score and optimal breastfeeding duration in women with history of gestational diabetes mellitus (GDM): Sub study of LIVING.*

The overall goal of the project was to study the effect of intervention for lifestyle modification on improvement in sleep quality, depression score and optimal breastfeeding duration in women with history of GDM. This study was embedded within the main LIVING Trial and has been conducted at six sites based in India. The study questionnaire was administered by the trained study staff to all randomised women at three time point: randomisation (N=252), first annual follow up (N=175) and end of study visit (N=365). The study is complete and was funded by USV Pharmaceuticals.

13. *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 COVID19 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.

14. *Gut Microbiota in diabetic and non-diabetic Indians*

This pilot sub-study was nested within the UDAY study, a comprehensive diabetes and hypertension prevention and management program in Sonipat and Visakhapatnam, India.

The aim of this study was to characterize the gut microbiota of Indian adults by their diabetes status. This will serve as a feasibility as well as pilot study that will help in designing larger studies in the future, aiming at studying the association of gut microbiota with cardio-metabolic health outcomes. The data collection is complete and being prepared for analysis. The study has been funded by Columbia University.

15. *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). Data acquisition and collation including data capture at collaborative clinical sites of CCDC, and data annotation is complete. The project is expected to be completed by December 2022. It has received funding from Google – AI for Social Good (Google-AISG).

16. *Early Life Experiences and Cardiovascular Risk Factors among Adults in Urban India: Survey in the Center For Cardiometabolic Risk Reduction In South Asia Surveillance Study*

The aims of this project are to collect information on early life experiences among adults aged 40 years and older in urban India to understand the relationship between early life experiences and heart disease risk factors and assess differences in this relationship, in men and women. This sub-study will select men and women aged over 40 years from households enrolled in the CARRS I cohort. Over the course of the study, a survey questionnaire will be administered to consenting participants who meet the eligibility criteria. We will also take some anthropometric measurements and measure blood homocysteine levels. This project has the potential to provide vital information on the development of cardiovascular disease over the life course, addressing a gap in knowledge in the Indian context and with the prospect of applicability in other similar low to middle income settings. It will also help tease out differences in early life experiences and their effects, in men and women. Funding support for the project comes from Fogarty International Center and the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (D43 TW009337).

17. *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 objectives 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 is expected to complete by March 2022.

18. *Nigeria's Cost-of-Illness from Ambient Air Pollution*

The study aims to estimate the health and economic burden of diseases which is attributable to ambient air pollution exposure in Nigeria. The cost of illness model estimates the current excess one-year health and economic burden of AAP-attributable mortality and morbidity for five diseases—acute lower respiratory infections (ALRI), chronic pulmonary obstructive disorder (COPD), ischemic heart disease (IHD), lung cancer, and stroke—and assesses the downstream economic impact of ill-health from those conditions—including healthcare expenditures, premature mortality, and productivity losses. The excess burden describes the estimated health and economic losses that occur because of a country's elevated AAP levels compared to the World Health Organization's 2005 AAP exposure standard guidelines (10µg/m³). The project has been funded by RTI International.

19. *A situation analysis of open space gyms in Delhi and case study to document good practices*

The latest science from all over the world state that Green parks within walking distance (0.5 km radius) from home, help people to be physically active, plus they are known to have other benefits, like mental health, preventing depression, preventing cancer and lowering of deaths from all causes. WHO has recommended merging of health and urban planning. Delhi is one of the few cities which has green parks/urban forests in their master plan. The study evaluated the green spaces, parks and open gyms and their role in enhancing mental and physical health, healthy ageing and sustaining gender and socioeconomic equity. The study was completed in July 2021 and received funding from WHO SEARO.

20. *A qualitative exploration of the perception of members of Ethics committees about Controlled human infection model (CHIM) studies, in India*

Controlled Human Infection Model (CHIM) studies provide a unique platform for studying the pathophysiology of infectious diseases and accelerated testing of vaccines and drugs in controlled settings. However, ethical issues shroud them as the disease-causing pathogen is intentionally inoculated into healthy consenting volunteers. Ethical issues get further accentuated when there is no effective treatment. The objective of the study was to explore

the perceptions of Member of Ethics committee of CCDC on CHIM studies. The study is complete and received funding from Christian Medical College, Vellore.

21. *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 distill elements of traditional trauma-focused interventions and examine their acceptability and feasibility for Indian women from low-income communities, to 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. The study will be completed in July 2022 and has been funded by Fogarty international and NIMH (through HBNU Fellowship).

Health systems

22. *ITREC.*

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. The Project is expected to complete in May 2022. This project has been funded by National Heart, Lung and Blood Institute, National Institutes of Health (NIH), USA.

23. *Beginning with the end in mind: Assessment of context and factors crucial for scale-up of an innovative strategy to address hypertension and diabetes in India.*

The overall goal of the project is to understand the context under which I-TREC is being implemented and to explore the factors which may enable or hinder the efforts to scale-up the intervention. Existing health policy and program documents will be reviewed which aim to address the growing burden of non-communicable disease in general and hypertension and diabetes in particular. It will be followed by thematic analysis of qualitative data collected during the formative research phase of I-TREC and map against the domains of Context and

Implementation of Complex Interventions framework. To assess the scale-up, doctors, nurses, ANMs and ASHAs will be interviewed regarding I-TREC and use the WHO/ExpandNet Framework and Nine Steps of scaling up strategy domains to organize the findings. The project was completed in June 2021 and has been funded by Fogarty International Centre, NIH, HBNU Fogarty Global Health Consortium and Northwestern University.

24. 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. The project will be completed in September 2022. Wellcome Trust is funding the SHEFS programme through the London School of Hygiene & Tropical Medicine.

25. Zero Budget Natural Farming Pesticide Access Study.

The overall goal of the project is to quantify the use and sales of pesticides and natural pest management products (e.g., neem oil, insect traps, nets, etc.) in Andhra Pradesh, where a government order known as, 'Zero-Budget Natural Farming' (ZBNF). It is a cross-sectional survey of 800 farmers and 40 pesticide retailers in Kurnool district of Andhra Pradesh. The findings will be presented to stakeholders in Andhra Pradesh during a 1-day dissemination workshop. The project was completed in February, 2021. The funding agency is Scottish Funding Council's Global Challenges Research Fund.

26. 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. The project involves use of existing clinical dataset for identifying multimorbidity patterns, conducting Focus Group Discussions and In-depth interviews with key stakeholders, including programme managers, physicians, nurses, pharmacists and patients and development of a digital health-enabled intervention for multimorbidity management in primary care in Tripura, for piloting for a future trial. The

project is being conducted with funds from Medical Research Council, UK and is expected to be completed by February 2023.

27. Clean Air Fund

The project is working towards building capacities of healthcare facilities and professionals on the ecological and health impacts of air pollution with an objective to put human health at the centre of all discussions on the issues and policies around air pollution/air quality etc. Some of the activities include: release of the report titled "Stubble burning in Punjab: Assessing the gaps between policy and implementation", poster development on Clean Air for Blue Skies, CHAMP TV monitors displaying air quality modelling data were installed in 8 hospitals generating local air quality data. The project has been funded by Health Care Without Harm.

28. 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).

29. 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 and four trainings

were conducted 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).

30. *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 South East Asian region. In the purview of this project two existing primary healthcare centres of the state government were proposed to be upgraded to provide assisted telemedicine services for secondary and tertiary care in collaboration with the State Government human resource and infrastructure. The project is complete however, the team continues to collaborate with other states to expand the activities. The project has been funded by WHO SEARO.

Capacity Building



31. **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 scholars each research scholars 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).

32. *Certificate Course in Management of Hypertension (CCMH).*

The primary objective of the project is to enhance knowledge skills and core competencies of primary care physicians to prevent and manage hypertension and its complications. This Certificate Course in Management of Hypertension (CCMH) is a joint certification program designed and implemented by the Public Health Foundation of India (PHFI) in collaboration with the British & Irish Hypertension Society (BIHS), the International Society of Hypertension (ISH) and the Centre for Chronic Disease Control (CCDC). CCMH is an eight-month course with once- a- month contact session, being conducted on a designated weekend at regional training centres across India. It is a nation-wide program with a focus on evidence-based learning and provides opportunities of career advancement, networking and on the job training. The initiative has been widely successful with over 2000 primary care physicians trained/enrolled till date across three cycles. Presently the fourth cycle of the program has

been launched in which over 175 physicians are expected to be trained in 11 centres across India. In the year 2021, the fourth cycle of the program was conducted with over 200 participants enrolled in 10 centres across the country. The program has been adopted by several state governments to train government medical officers and will be launched in 50 African countries in collaboration with Pan-African Society of Cardiology (PASCAR).

33. *Optimization of cancer data linkages in India.*

The overall goal of the current project is to build on the RCRE activities of the linkage demonstration project to inform future cancer research efforts in India. A series of workshops will be organized to provide hands-on training MatchPro software along with a survey of existing cancer registries in India to determine the current and future availability of data on Aadhaar card numbers. The survey has been completed and analysis is currently underway. Three online training workshops have been conducted and twenty participants from different backgrounds have been trained in data linkages and use of the open access software, Match*Pro. The project was completed in October 2021 and received funding from CRDF Global.

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

The overall goal of the program is to provide skill-based training opportunities related to collection and management of population, clinical and basic science data for cancer research in India. The program aims to train fellows in fundamental understanding of population data related to cancer epidemiology, surveillance, cancer registries, and data linkages and provide foundation training in data linkages and clinical electronic data records and to build increased capacity in big data omics for basic sciences using genomic and epigenomic data. The course was made available to participants from December 2021 onwards in an online mode. The program has been funded by CRDF CRI_NCD and CRDF-Global-NCI-USA.

Awards and Recognitions

1. Dr.Priti Gupta and Dr.Nikhil SV received the Wellcome Trust DBT India Early Career Clinical and Public Health Fellowships.

List of Publications in Scientific Journals Jan-Dec. 2021

1. Hamilton SA, Jarhyan P, Fecht D, Venkateshmurthy NS, Pearce N, Venkat Narayan KM, Ali MK, Mohan V, Tandon N, Prabhakaran D, Mohan S. Environmental risk factors for reduced kidney function due to undetermined cause in India: an environmental epidemiologic

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 3. Gupta R, Dhatwalia S, Chaudhry M, Kondal D, Stein AD, Prabhakaran D, Tandon N, Ramakrishnan L, Khandelwal S. Standardization and validation of assay of selected omega-3 and omega-6 fatty acids from phospholipid fraction of red cell membrane using gas chromatography with flame ionization detector. *J Anal Sci Technol.* 2021;12(1):33. doi: 10.1186/s40543-021-00287-1. Epub 2021 Aug 6. PMID: 34721932; PMCID: PMC8549946.
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[https://greenhospitalsindia.com/wp-content/uploads/2022/05/R.6-Stubble- Burning-in-Punjab.pdf](https://greenhospitalsindia.com/wp-content/uploads/2022/05/R.6-Stubble-Burning-in-Punjab.pdf)

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.

Gallery





Regional Training of Network of Institutions to Deliver People-centred Integrated NCD Care




Reaching the Unreached: A Tele-medicine Solution in Progress

Public Health Foundation of India
Breakfast Seminar (Virtual)

📅 6th October 2021 ⌚ 8:30 AM - 9:15 AM IST





Prof. D Prabhakaran
Vice President (Research Policy),
Public Health Foundation of India &
Executive Director, Centre for
Chronic Disease Control
New Delhi, India



Dr. Arun P Jose
Deputy Director,
Centre for Digital Health,
Public Health Foundation of India

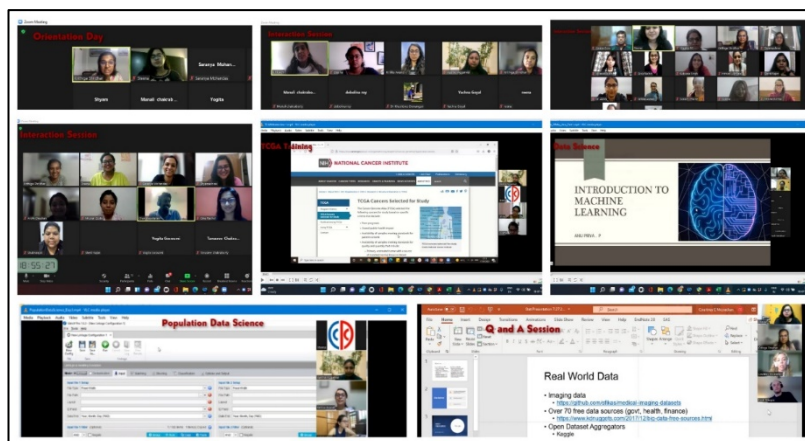


Dr. Anshika Sharma
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Mr. Nikki Pandey
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Centre for Digital Health,
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DSIR Approval



सूचना
का अधिकार

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भारत सरकार
विज्ञान और प्रौद्योगिकी मंत्रालय
वैज्ञानिक और औद्योगिक अनुसंधान विभाग
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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: 26th 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. 0300091392016
Government of India
Ministry of Home Affairs
Foreigners Division
(FCRA Wing)

NDCC-II Building, Jai Singh Road,
New Delhi-110001

Dated: 04-08-2016

To,
The Chief Functionary,
Centre for Chronic Disease Control
Flat No. 70, Pocket 1, Sector 2 Dwarka, New Delhi 110070, NEW DELHI, Delhi, Delhi, 110070

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

Sir/Madam

With reference to your application dated **08-03-2016** 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 **52810062352** in **Standard Chartered Bank, M 1, South Extension., Part-II, New Delhi, PIN 110049**, **NEW DELHI, Delhi, Delhi, 110049** 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. You are requested to note the provisions of Section 7 of FC(R) Act, 2010 and Rule 24 of FC(R) Rules, 2011 and ensure that before any funds are passed on to any person/association in India that the recipient is (i) eligible to accept foreign contribution under the Act, i.e., recipient association is registered under the Act, or has obtained Prior Permission of the Government under Section 11 of the Act, and (ii) the person/association is not prohibited

under the Act.

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://fcronline.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 **01-11-2016**.
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.
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 fcronline.nic.in.

Yours faithfully

Digitally signed by IPSITA SAHA PAUL
Date: 2016.08.04 15:40:23 IST
Reason: Online FCRA Services
Location: Ministry of Home Affairs, New Delhi

Ipsita S Paul
Under Secretary
Tel. 01123438245