



PUBLIC  
HEALTH  
FOUNDATION  
OF INDIA

# Covid-19 Efforts

## PHFI and IIPHs

May 20, 2020



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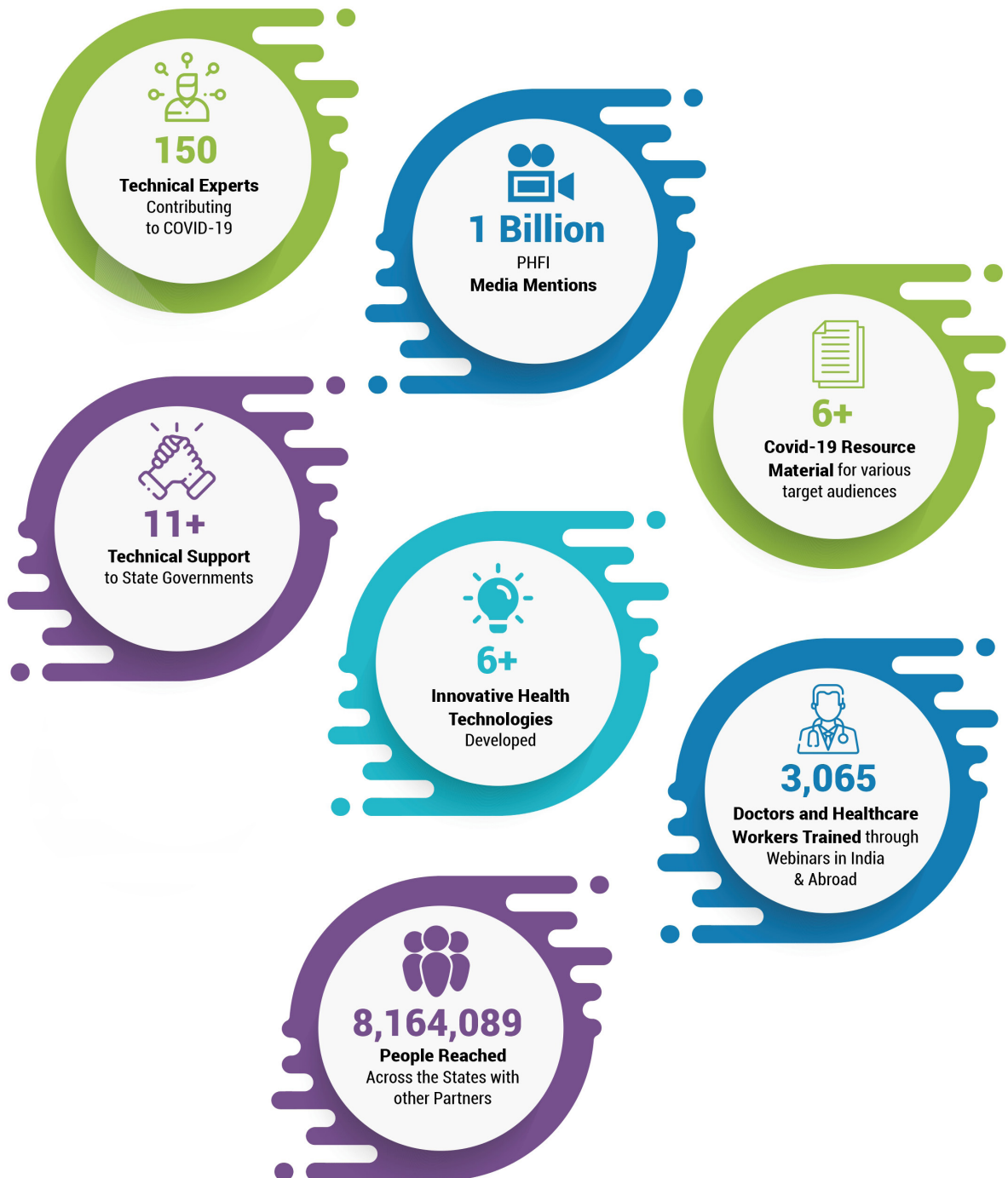
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## Impact at a Glance





## Message from the Chairman



The ongoing Covid 19 pandemic has changed our lives, not only in India but across the world. The scale, scope and speed of the pandemic is unprecedented as it spills over into other dimensions of our lives, no longer confined to health.

As the world is faced with the challenge of battling Covid, we realize how public health is entwined with various aspects of our lives. We must understand that unless we strengthen our public health system, its weaknesses will stymie progress in all other fields.

In these trying times, the Public Health Foundation of India (PHFI) has been in the vanguard. It has risen to the occasion, assisting, advising and guiding governments, corporates and communities. As a unique organisation of its kind in India, its strength and expertise is only surpassed by its desire to serve fellow citizens.

Despite its financial limitations as a non-profit, it has been agile enough to pivot its resources for grappling with Covid crisis: it is conducting online workshops for healthcare professionals across the globe; its faculty and staff are assisting state governments on the frontline; its researchers are busy in developing suitable healthcare technologies.

This compendium highlights the valuable work undertaken by PHFI for containing this public health crisis. I am thankful to the team at PHFI led by its President, Prof. K Srinath Reddy for these accomplishments in spite of several impediments.

Today, PHFI and its body of work stand out as a beacon of hope in these challenging times and it is now, more than ever that we need your support to scale up its activities to help restore a sense of normalcy going forward.

In this spirit of hope and togetherness, I urge you to inform your friends, acquaintances and colleagues to contribute, support and partner with PHFI in whatever manner they can in the broader national interest.

Stay well. Stay safe.

**Mr. S. Ramadorai**  
Former Vice Chairman, TCS





# Message from the President



The COVID 19 pandemic has challenged health systems around the world and in-specific highlighted India's lack of robust primary health care services. The contrast in response and outcomes between Asian countries, which have strong public health systems and have adopted universal health coverage (e.g., Singapore, South Korea and Thailand), and the U.S. with poorly organised primary care and a convoluted health insurance system is evident – inspiring the need to improve the public health systems within India. Despite the UK having a well organised NHS and a good public health system, it reacted late and is now scrambling.

India has neglected its primary health services as well as its public hospitals bar a few centres of excellence. Rural primary healthcare, though prioritised in health system planning and the National Mission, has been enfeebled by poor financial resources, grossly inadequate health workforce and fragmentation by vertical programmes. Though a change to Comprehensive Primary Healthcare (CPHC) has been proposed as a part of Ayushman Bharat, it still suffers from inadequate funding and staff shortages.

Urban primary healthcare has fared worse than its rural counterpart. It was naively assumed that there would be enough doctors and hospitals in urban areas and primary health care was not designed till recently. Even now the urban component of the National Health Mission is still to get off the blocks, with scant funding and attention from the central government. Some state governments have attempted to provide services through municipal dispensaries, Mohalla Clinics or Basti Dawakhana. However, public provision of urban primary healthcare presents a barren landscape. This has become distressingly evident as urban clusters and confined migrant workers demanded Covid19 surveillance and service.

Private sector provision of urban primary healthcare is an unorganised and unstandardised mix of qualified and unqualified practitioners. Many urban residents overcrowd tertiary care hospitals, in the absence of primary care or linked secondary care facilities. Hence, private philanthropy is best directed towards strengthening of urban health systems – providing a back bone to expand a growing work-force and its wellbeing.

Going beyond illness care, primary health care services involve several actions for health promotion, disease prevention and community mobilisation for health and over all wellbeing. Especially during an infectious disease outbreak, many primary care functions are critical: surveillance, case identification, notification, contact

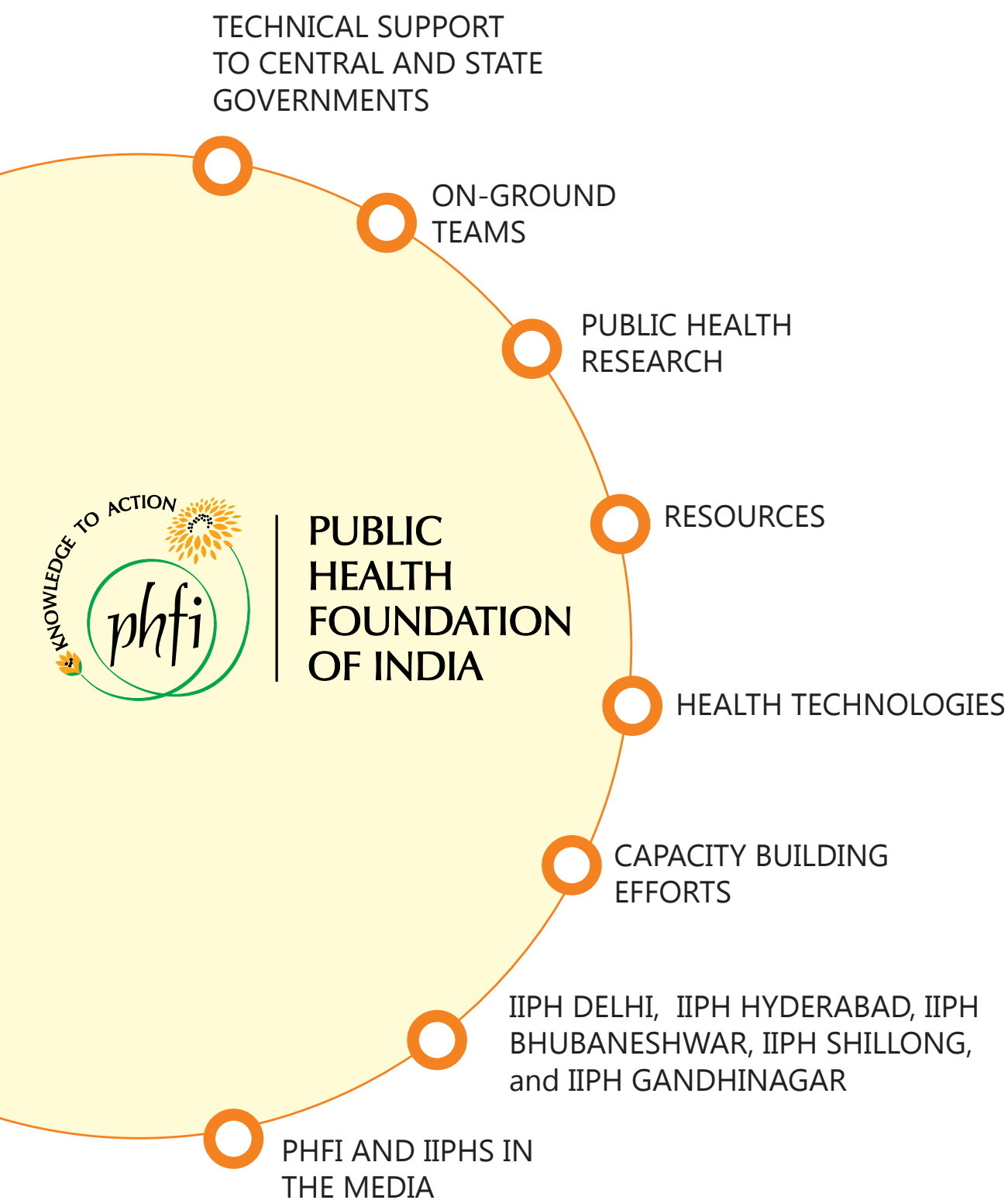
tracing, isolation, home-care, counselling, health education and community mobilisation. Removal of stigma and provision of sympathetic care also requires community engagement and suitably trained frontline healthcare providers. Kerala's controlling the Nipah virus outbreak and response to Covid 19 attests to the fact that community engagement is vital.

Primary health services must also respond to the needs of maternal, neonatal and child health, endemic and episodic infections ranging from malaria and TB to Dengue and Chikungunya, non-communicable diseases encompassing cardiovascular, respiratory, renal, diabetes and other metabolic diseases as well as cancers, mental health and miscellaneous injuries and snakebites. Everyone needs some form of primary care in life, whether it is immunisation after birth or management of multiple co-morbidities in old age. Only a well resourced health system that functions well in the steady state can create the surge capacity swiftly and smartly to meet a public health emergency.

Thus, with changing demographics, urbanisation and shifting burden of diseases, the healthcare services need to be re-envisioned to match the ground realities. Even in the context of Covid-19, the vulnerability of the urban poor and migrants has been poignantly highlighted when their lives are challenged by the need for social distancing in a crowded living space and economic vulnerability due to a sudden loss of livelihood. Public health needs to address these challenges. This report is a detailed perspective into how PHFI has gathered its talent, resources and knowledge to support the country in this difficult time, bringing together many stakeholders.

**K. Srinath Reddy**  
President

## PHFI's work in Covid-19



# Technical Support

PHFI and the five Indian Institutes of Public Health (IIPHs) located across the country continues provides technical support to Central and State Governments on Covid-19. The senior technical leadership, researchers, faculty and students are providing their full support as India fights Corona.

## Prof. K Srinath Reddy President, PHFI

Both PHFI and technical talent under the guidance of Professor. K Srinath Reddy continues to provide technical expertise during Covid-19. Prof. Reddy is a member of the following national and international committees:

- National COVID Technical Taskforce convened by ICMR.
- Honorary Advisor on Health to the Governments of Odisha and Andhra Pradesh with Cabinet Rank in both states.
- Post-COVID strategy paper for the health system, by the National Security Council Secretariat.
- Executive Group of the Steering Committee of WHO's SOLIDARITY Trial
- Member, Group of Experts for COVID-19 Response under the CM of Punjab
- Technical Expert, Government of Haryana

## Dr Subash Salunke

Director – IIPHB and Senior Advisor – PHFI, the Indian Institute of Public Health Bhubaneswar

- Technical COVID Support to Government of Odisha
- Technical support to Government of Maharashtra

The technical team at the Indian Institute of Public Health, Bhubaneswar is assisting efforts of the Government of Odisha

## Prof Sanjay Zodpey Director – IIPH Delhi

- Prof. Sanjay Zodpey, is a part of the National Task Force for COVID-19 at ICMR of the Epidemiology and Surveillance research group.
- He is the Technical Advisor for COVID-19 related activities for Nagpur Division. He is suggesting appropriate measures to be taken to contain the pandemic in the Division.
- He is a member of the working group which is working on execution of specific tasks related to population based studies and prophylaxis studies to generate evidences of AYUSH interventions in dealing with the COVID 19 crisis, which will be initiated by Ministry of AYUSH and will be implemented by RCs, academic institutes and other partners in different parts of the country.



**Prof GVS Murthy**  
**Director – IIPH Hyderabad**

Technical support to the Government of Telangana

**Dr Jayaram**  
**Registrar – IIPH Hyderabad**  
**Technical Support to Government of Telangana**

The technical team at the Indian Institute of Public Health, Hyderabad is assisting efforts of the Government of Odisha. The students are actively engaged and have been recruited as epidemiologists at the district level.

**Dr Dileep Mavalankar**  
**Director, IIPHG**

The technical team at IIPHG led by Dr Dileep Mavalankar is supporting efforts of the Government of Gujarat.

**Dr Sandra Albert**  
**Director – IIPH Shillong**

Member of the Working group on Epidemiology Survey and Documentation constituted by the Interdisciplinary AYUSH Research and Development Task Force on Covid-19. Notification No. A.17020/1/2020-E.1 of Ministry of AYUSH

Prof Sandra Albert is a member of the State Level Medical Expert Committee constituted by the Government of Meghalaya

Technical team members at IIPH Shillong Dr Rajiv Sarkar, Badondor Shylla and Uniqueky Mawrie are members of the technical support group of the State response team for COVID-19, Government of Meghalaya

**Dr Giridhara Babu**  
**Head -Life Course Epidemiology, PHFI, IIPH – Bengaluru Campus**

- Member of Epidemiology and surveillance, & Research group constituted by ICMR National Task Force for COVID-19
- Member, Karnataka State Government Technical Analysis Committee: COVID19
- Consultation to Andhra Pradesh, UP, Telangana, Punjab and Maharashtra

# Research on Covid 19

## Statistical/ Mathematical Modelling using COVID-19 data:

Two of our senior researchers are working on statistical/mathematical modelling using the COVID-19 data:

1. **Dr. Siddhartha Mandal** is working on modeling the number of deaths in India and its states using statistical modeling techniques using data from multiple countries. Within this, he is looking at the progression of deaths into the future months and how the public health interventions would affect the disease pattern. The modeling results for the country level deaths have already been shared with NITI Aayog and he is currently working on age standardized death rates at the state level.
2. **Dr. Surabhi Pandey** is working on modelling COVID situation at the country level taking in account the disaggregated rural and urban population, migration of labourers from urban to rural areas and impact of lockdown to predict the prevalence of infection for coming months (May and June). So far the data available in public domain and for migration rate the migration data derived using Facebook users (from Harvard team) has been used. Under-reporting is also taken into consideration and will be modelling different scenarios for this. This work will be completed once the data on migration is available. Plan is also to improve the results of aforesaid modelling with the availability of migration data using telecom users (as migrant labourers use mobiles and not FB). For now as Harvard team had FB data thus using it as proxy for migration. Also with the availability of age-segregated data of COVID cases stratified by rural and urban India (awaited from NITI), the modelling results are likely to improve.

## Health Promotion Division at PHFI for Covid-19

[https://scontent-del1-1.xx.fbcdn.net/v/t1.0-9/94644727\\_240904300608874\\_2553485489151672320\\_o.jpg?\\_nc\\_cat=111&\\_nc\\_sid=8bfeb9&\\_nc\\_ohc=DCJ\\_mtc9FMAX\\_wCAvk&\\_nc\\_ht=scontent-del1-1.xx&oh=685d4d0f861ce6debb296bd1f33c6ad7&oe=5EDB2AFC](https://scontent-del1-1.xx.fbcdn.net/v/t1.0-9/94644727_240904300608874_2553485489151672320_o.jpg?_nc_cat=111&_nc_sid=8bfeb9&_nc_ohc=DCJ_mtc9FMAX_wCAvk&_nc_ht=scontent-del1-1.xx&oh=685d4d0f861ce6debb296bd1f33c6ad7&oe=5EDB2AFC) Social media engagement for awareness on COVID-19 disease: The Health Promotion Division of PHFI is undertaking series of social media activities on prevention and management aspect of COVID-19 as part of ongoing 'Project PaTHWay: Promoting Health and Wellbeing', with students and teachers from schools and colleges. This project is being funded by the AXA Business Services as part of their CSR. The project is being undertaken in Bengaluru and Pune in collaboration with National Institute of Mental Health and Neuro-Sciences (NIMHANS) and Janaseva Foundation. The programme is ongoing in 20 schools, 4 colleges and 5 workplaces, in Pune and Bengaluru. Some of these ongoing activities are: selfies sharing by students, teachers/faculty members with interesting message and activities that they have been doing at home during the lockdown (<https://www.facebook.com/362601477116421/posts/3020773554632520/?flike=scwspnss&extid=wT9xrXaMQHhVoNkK>), video making contest, mask making at home, social media activities on World No Tobacco Day, 2020 on 'Tobacco and COVID-19'. We have also developed presentation on

Coronavirus and Covid-19 Disease, collating evidence-based information available on websites such as World Health Organization and the Ministry of Health and Family Welfare, Government of India. The presentation also consisted of some interesting activities which students can perform with their family members, during lockdown. This presentation was sent to our network of schools and colleges in Pune and Bengaluru. Teachers and faculty members are using this presentation and resources during their online academic classes with students.



**Planned Activities as part of Project PaThWay:** Apart from these, we have also planned COVID-19 relief activities in collaboration with Janaseva Foundation and NIMHANS, including free distribution of grocery kits and cooked meals to poor families with no income, in Pune and Pune district; free distribution of masks and sanitizers to the Senior Citizens staying at Old Age Home (OAH) and destitute children, distribution of Personal Protective Equipment (PPEs), masks and Sanitizers to the frontline health workers, engaged in COVID activities with NIMHANS (Bengaluru).

**Study to assess the impact of the national lockdown on tobacco consumption:**

The Health Promotion division in collaboration with HRIDAY and University of Edinburgh is undertaking a study to generate evidence to support policy and practice to address tobacco use during and beyond the COVID-19 pandemic. This study is being funded by University of Edinburgh's Scottish Funding Council Global Challenges Research Fund (GCRF) to enable research partnerships to advance international development focussed research on Covid-19. We will be conducting telephonic survey with 800 tobacco users, both smokers and smokeless users. The survey aims to: understand the levels of knowledge, attitudes and responses to public health advice about preventing the spread of COVID-19; investigate physical, mental, social and economic impact of COVID-19 pandemic on tobacco users and their families and; examine the relationship between Covid-19 and tobacco use.

**Project iPROMISE (PROMoting Health Literacy in School)** is an ongoing school-based initiative with aim to promote an enabling and supportive environment among children and adolescent to adopt healthy living practices. The project is being implemented by PHFI in collaboration with World India Diabetes Foundation (WIDF). Under the project, a comprehensive module comprising of interactive activities and short films (Audio-Visual module) focusing on importance of healthy diet and being physically active were developed following Health Belief Model (HBM). Given the current COVID crisis and extended period of virtual teaching in schools, we are planning to translate interventions for virtual platforms (including online sessions, competitions and development of mobile based application)

for disseminating the preventive messages to influence both home and school environment. Links of audio-visual short films developed as part of project i-PROMise has also been shared with schools. Additional reinforcing audio-visual messages are being developed for dissemination through social media platform.

## Centre for Environmental Health (CEH), PHFI

### Activities co-ordinated by CEH for COVID:

1. Responding to COVID-19 by strengthening the health infrastructure and systems in low-resource settings – Webinar, co-hosted by PHFI, CCDC, Health Care Without Harm and SELCO Foundation on Saturday 11th April, 2020, 3pm-6pm to facilitate cross-learning to healthcare practitioners across the country. Well-attended with about 250 attendees. Attached concept note and detail of speakers. Prof. Srinath Reddy and Prof. D. Prabhakaran participated as panellists providing key insights.
2. We have developed a pictorial guide based on the revised Biomedical Waste Management Rules, now updated with the CoVID waste management guidelines that can be used as stand-alone visual aids to facilitate healthcare waste management at healthcare facilities, quarantine centres and laboratories. This is awaiting endorsement from MoEFCC and release in a few days.
3. Ms. Samayita Ghosh, on behalf of CEH, PHFI facilitated the transfer and delivery of 75 N-95 masks that were donated by a philanthropist to us, to the Officer-in-Charge, Medical Store and Medical Superintendent of the Safdarjung Hospital and V.M.M.C in response to their urgent request and call for PPEs for their doctors and nurses.
4. Developing research proposals in relation to COVID-19 and air pollution for immediate conduct of studies, subject to funding.
5. A webinar series for Urban Local bodies for COVID response and resurgence strategies in collaboration with National Institute of Urban Affairs and Ministry of Housing and Urban affairs is under discussion.



# Implementation Research Teams

## Support to UNICEF (Lucknow)

In Feb 2020, PHFI had received second grant from UNICEF-Lucknow for improving nutrition outcomes through SHG platform. However, due to COVID, the focus of state team has now shifted to supporting UNICEF team in their response to COVID emergency as well as shifting the gear from of SHG project from infant young child feeding (IYCF) to COVID prevention activities. In last three weeks following activities were/are being undertaken:

1. Our frontline facilitators, WADA sakhis (410 facilitators, 6 districts and, 24 blocks & 425 villages) have initiated phone based counseling with SHG members on COVID themes. The plan is to reach about 50,000+ SHG households every week on varied COVID themes. We have identified 5 themes for counseling which will be delivered in a modular form over a one-week period. The themes are (a) Corona prevention and promotion of social distancing in public places ( hand pumps, ICDS center, shops and PDS shops etc.) (b) Boosting immunity to fight Corona (C) Mental health during COVID (d) Infant Feeding during COVID (e) Feeding during pregnancy. By April 13, about 20,000+ phone calls have been initiated by WADA Sakhis.
2. PHFI Lucknow team is supporting the UNICEF team in leveraging student's National Service Scheme (NSS) to reach student's network. By April 13, 421 professors from different universities in the state haven being oriented on Zoom. Each professor ( NSS coordinator of their respective colleges) in turn contact 1000 NSS students under them with COVID messages. By April 12, more than 3 lakhs college students have been reached by NSS coordinators.
3. About 15 social and institutional platforms have been identified for promotion of COVID prevention activities and messages. A team of UNICEF consultants are engaging with these platforms to increase reach of COVID messages. The PHFI team daily prepares brief COVID communication activity for wider dissemination.

Public Health Foundation of India (PHFI) is supporting National AIDS Control Organization (NACO)

Public Health Foundation of India (PHFI) is supporting National AIDS Control Organization (NACO) in five states of the country i.e. Jharkhand, Gujarat, Rajasthan, Uttarakhand and Uttar Pradesh by implementing Technical Support Unit (TSU) (Time Period of 2018 to 2021). TSU provides technical assistance with regard to the HIV/AIDS programme in these five states and makes sure that the entire national programme attains its deliverables as per the commitment. Currently, the country is moving on track mode as per the National Strategic Plan 2017-24 where the country aims to end HIV/AIDS by 2030. Monitoring and supervision of the national HIV/AIDS programme being implemented in the State is the major objective of PHFI. All the divisions of State AIDS Control Organization – Basic Services & Sexually Transmitted Infection, Care Support & Treatment, Advocacy & Partnership, Strategic Planning and Research, Lab Services & Blood Transfusion are being liaised by PHFI with different posts and positions such as Technical Experts and Program

officers who ensures the program being implemented in the field and reaching to the beneficiaries at the utmost priority. Reaching the key population is the target of this programme and reaching the difficult areas for penetrating the reach is the objective of the organization.

The Targeted Intervention (TI) programme of TSU addresses the high risk group (HRG) which comprises Female Sex Workers (FSW), Men having sex with Men (MSM), Transgenders (TG), Injecting Drug Users (IDU) and Bridge Population (Truckers & Migrants) along with People living with HIV (PLHIV). In this current pandemic due to COVID-19, TSUs are involved in addressing the HRG through virtual platform. Knowing how susceptible the HRGs are, are conducting routine awareness sessions for TI NGO staff and the registered HRG population. Many TI NGOs are involved in making masks and distributing it to the population along with free ration and essential commodities. Regular calls and information provided by the Programme Officers (PO) of TSU has been informative and is appreciated by the population as a gesture of good will and care towards them.

### Communication for COVID-2019 - Progress Overview May 19, 2020

- 132 IEC Materials being utilized statewide; **8,105,391 persons** under reach through WhatsApp groups of various departments, networks, CSOs
- Capacity Building of partners has reached **35000+**.
- Reach through NSS platform has increased to **2,758,942 till May 19**, increasing by 88,694 the previous day.
- Phone calls messaging by WADA Sakhis to Self-Help Group (SHGs) members reached **164,724** women till now.

### IEC Materials for COVID-19

IEC Material Utilization		
S. No.	Categories	No. of materials available
1	COVID-19 educational materials for multiple audiences	23
2	COVID-19 educational materials for children, youth, family	9
3	Training & capacity building materials for health/ other functionaries	16
4	Materials to support lock down & social distancing for the targeted audiences	8
5	Materials for advocacy	27
6	Materials for faith-based organizations	23
7	Materials for mass media: TV, radio, mobile Telephony, IVR	8
8	Materials for social media	17
9	Any other (SOP, Guideline)	1

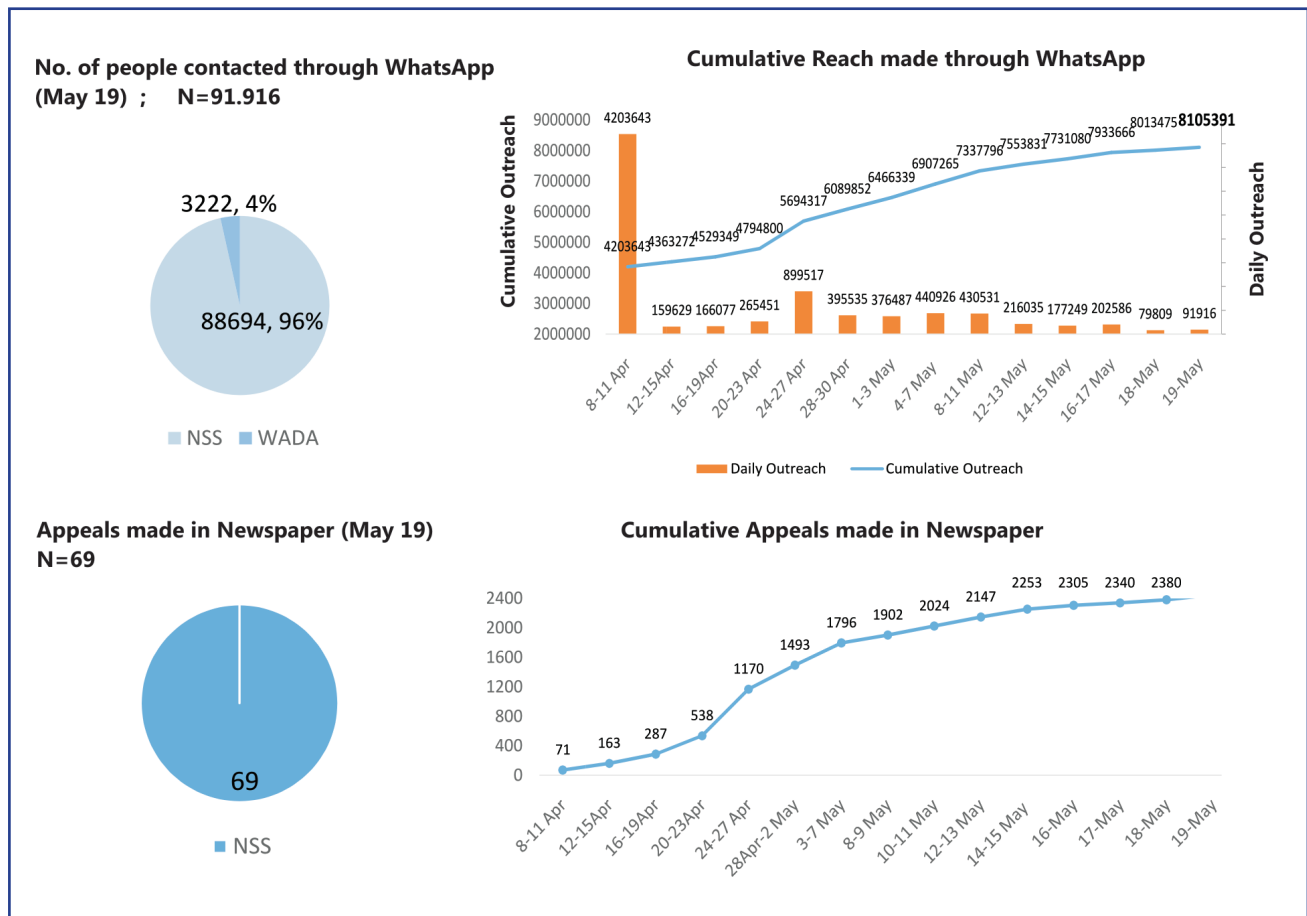
\* 132 IEC materials available

\*\* Reach up-to 8,105,391 people across the state through 3031 WhatsApp groups of 19 departments/ networks

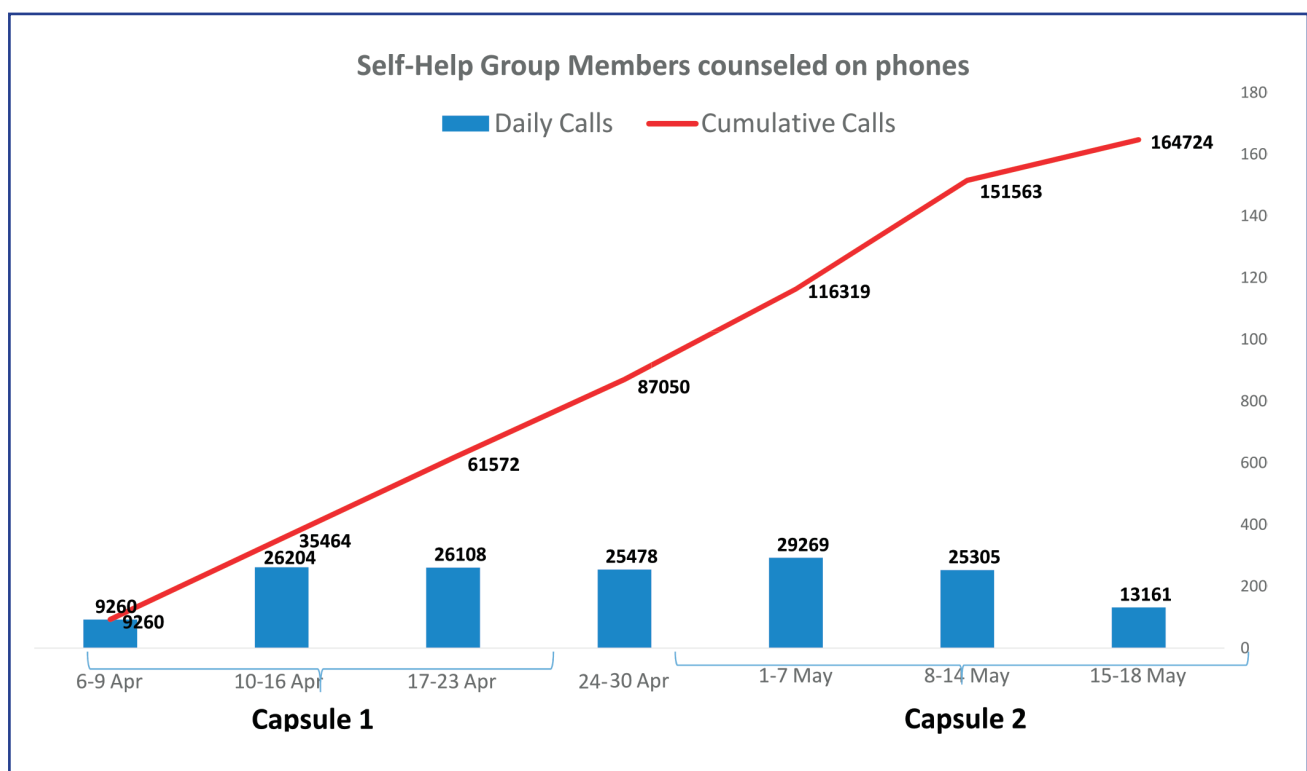
## Capacity Building of Partners on COVID

Date	Training mode	Target audiences	No of participants	Reach	Supporting agency
31.03.2020	Zoom	DCPM,DPM, IDSP , SMO (NPSP) DMC,RTC,RCs	590	State	Smnet, NHM, Directorate
01.04.2020	Zoom	BCPM, HEOs,CDPOs, FVs etc	3462	State	Smnet, NHM, Directorate
02.04.2020	Zoom	NSS coordinators, NSS districts nodal	66	State	C4D ,Health and NSS directorate
03.04.2020	Zoom	Bharat Scout Guides	23	Divisional officials	C4D ,Health and BS&G directorate
08.04.2020	Zoom	NSS nodal	64	Varanasi and near by districts	C4D ,Health,NSS directorate and BHU
11.04.2020	Zoom	NSS nodal	66	Bareilly and near by districts	C4D ,Health, NSS directorate and Ruhelkhand University
12.04.2020	Zoom	University and Degree College Professors	112	Across State	C4D Health, Child Protection, NSS Directorate
13.04.2020	Zoom	Three Universities in Allahabad	90	Allahabad and nearby Districts	C4D, Health, NSS Directorate
14.04.2020	Zoom	NSS nodal Counsellor ToT/ Orientation program on COVID-19 TRIFED	200 85	State State and Other States	C4D, CP, NSS Directorate C4D and TRIFED
15.04.2020	Zoom	ToT/ Orientation program on COVID-19 TRIFED	102	State and Other States	C4D and TRIFED
16.04.2020	Zoom	NSS Nodal Officers in Uttarakhand	136	Uttarakhand	C4D, Health and Regional Directorate NSS
17.04.2020	Zoom	NSS Nodal and Coordinators	208	Shamli, Muzaffarnagar, Saharnpur, and Bagpat	C4D, health and NSS directorate
19.04.2020	Zoom	University (Meerut),NSS Nodal and Coordinators	731	Meerut Division	C4D, Health, NSS directorate
21.04.2020	Zoom	NSS nodal, coordinators and volunteers	530	Agra Region	C4D, Health, CDN, NSS directorate
24.04.2020	Zoom	NSS nodal, coordinators and volunteers	1622	Lucknow region	C4D, health , CDN, WASH and NSS directorate
25.04.2020	Zoom	NSS nodal, coordinators and Nodal across the state	4202	State level	C4D, health , CDN, WASH and NSS directorate
26.04.2020	Zoom	NSS nodal, coordinators and Volunteers	1003	Moradabad and Bareilly regions	C4D, health , CDN, WASH and NSS directorate
28.04.2020	Zoom	NSS nodal, coordinators and Volunteers	183	Purvanchal University Jaunpur	C4D, health , CDN, WASH and NSS directorate
2.05.2020	Zoom/ Youtube	NSS nodal, coordinators and Volunteers Chaired by Dy CM	21000	Bundelkhand University and state	C4D, health , CDN, WASH and NSS directorate
12.05.2020	Zoom	Counselors appointed by NSS	221	State	C4D, health , CDN, WASH and NSS directorate
17.05.2020	Zoom/ YouTube	NSS nodal, coordinators and Volunteers	317	Allahabad Agriculture University	C4D, health , CDN, WASH and NSS directorate
		<b>Total</b>	<b>35013</b>		

## Activity Status ( May 19, 2020)



## Activity Status ( May 19, 2020)





# Research and Policy Briefs on Covid19

## VIEW ARTICLE

### Unfolding trends of COVID-19 transmission in India: Critical review of available Mathematical models

Komal Shah, Ashish Awasthi, Bhavesh Modi, Rashmi Kundapur, Deepak B Saxena

<sup>1</sup>Assistant Professor, Indian Institute of Public Health Gandhinagar, Gandhinagar; <sup>2</sup>Assistant Professor, Public Health Foundation of India, Gurgaon; <sup>3</sup>Associate Professor, Department of Community Medicine, GMERS Medical College, Gandhinagar, Gujarat; <sup>4</sup>Professor of Community Medicine, Department of Community Medicine, K.S. Hegde Medical Academy, Nitte University, Mangalore: 576018; <sup>5</sup>Professor, Indian Institute of Public Health Gandhinagar, Gandhinagar

[Abstract](#) | [Introduction](#) | [Methodology](#) | [Results](#) | [Conclusion](#) | [References](#) | [Citation](#) | [Tables / Figures](#)

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#### Article Cycle

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#### Abstract

**Background:** There is a surge in epidemiological modeling research due to sudden onset of COVID-19 pandemic across the globe. In the absence of any pharmaceutical interventions to control the epidemic, nonpharmaceutical interventions like containment, mitigation and suppression are tried and tested partners in epidemiological theories. But policy and planning needs estimates of disease burden in various scenarios in absence of real data and epidemiological models helps to fill this gap. **Aims and Objectives:** To review the models of COVID-19 prediction in Indian scenario, critically evaluate the range, concepts, strength and limitations of these prediction models and its potential policy implications. **Results:** Though we conducted data search for last three months, it was found that the predictive models reporting from Indian context have started publishing very recently. Majority of the Indian models predicted COVID-19 spread, projected best-, worst case scenario and forecasted effect of various preventive measurements such as lockdown and social distancing. Though the models provided some of the critical information regarding spread of the disease and fatality rate associated with COVID-19, it should be used with caution due to severe data gaps, distinct socio-demographic profiling of the population and diverse statistics of co-morbid condition. **Conclusion:** Although the models were designed to predict COVID spread, and claimed to be accurate, significant data gaps and need for adjusting confounding variables such as effect of lockdown, risk factors and adherence to social distancing should be considered before generalizing the findings. Results of epidemiological models should be considered as guiding beacon instead of final destination.

#### Keywords

COVID-19; Transmission; Mathematical Models

In the recent past, the term modelling, prediction models and the probable number of cases is in everyone's thoughts as the entire globe is in mid of

pandemic of new coronavirus, COVID-19. While country specific efforts are underway to control and

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## Policy Brief 19

## NCDS



### Malaria Control in India against the backdrop of COVID-19 Pandemic<sup>1</sup>

Madan Mohan Pradhan, Ambarish Dutta and Srijit Mishra<sup>2</sup>

15 May 2020

**Abstract:** This policy brief points out that global, national and local interventions to address COVID-19 has also led to attention-shifting and resource-shifting from other diseases. It is important that the overall progress towards a malaria-free tomorrow continues. In particular, surveillance systems need to be reinvigorated from the sub-district to national level, malaria protection measures like insecticidal nets and indoor sprays need to be augmented through the COVID-19 supply-chain management, awareness measures for prevention and control assume importance as we have no information on malaria as a co-morbid condition for COVID-19, the gram panchayats may ensure community participation, and that there is a need to converge the vector borne disease control and integrated disease surveillance programmes.

#### COVID-19

Coronavirus disease, which originated from Wuhan, a city in the Hubei Province of China in December 2019, is named as COVID-19 by the World Health Organization (WHO) and is caused by a virus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case of this viral disease was reported to WHO country office in China on 31 December 2019. WHO's timeline for the disease indicates that the disease was declared as a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and as a pandemic on 11 March 2020. As per Situation Report 111 of WHO of 10 May 2020, there were more than 39 lakh confirmed COVID-19 cases and more than 274 thousand deaths spread across all regions of the world. In India, the first case of COVID-19 was reported in Kerala, a southern state, on 30 January 2020 and by 11 May 2020 there were 67,152 confirmed cases and 2,206 deaths.

#### Malaria

Malaria is a life-threatening disease caused by the parasite plasmodium and transmitted by female anopheline mosquito vectors. It is an age-old public health scourge which infects and kills human population in large numbers, mainly in the low-and-middle-income countries (LMICs) of the tropics. As per the World Malaria Report 2019, 86 countries are under the risk of malaria and 22.8 crore cases of malaria occurred worldwide along with an estimated 4 lakh deaths in 2018, of which two-thirds were children under the age of five. Further, nineteen Sub-Saharan countries and India accounted for 85 per cent of the malarial burden. The

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COVID-19

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### Biomass use and COVID-19: A novel concern

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#### ABSTRACT

Evidence supports the link between air pollution and COVID-19 and thus it is likely that exposure to biomass smoke is associated with COVID-19. The poor, including refugees and migrant workers staying in fragile conditions, are most vulnerable. An outbreak of COVID-19 in a place where the concept of physical distancing is next to impossible could easily overwhelm the public health system. It is thus essential to understand the consequences of being exposed to smoke in relation to COVID-19 infection.

The recent worldwide coronavirus disease-2019 (COVID-19) outbreak leading to a pandemic is a shock for many. It is devastating for many people living in high-income as well as in low- and middle-income countries, making no difference between the background and socio-economic differences of those who are infected. However, people living in the most deprived areas in the world face significant adversities compared to the rest of the population. People living in slums live in proximity to each other and are not able to maintain physical distancing. This will lead to a rapid spread in slums, disproportionately infecting more vulnerable people.

Moreover, most of them are unaware of how to lower their chance of being infected. Even if informed, most of them have no access to either running water or soap. A total lockdown, ordered by governments such as in India and many other countries with large slum communities, imposes greater adversities for slum-dwellers as they have a daily dependence on income in order to keep themselves and their family alive.

An essential but often not so well known issue which might facilitate a considerable outbreak in slum communities is the exposure to indoor smoke. Almost all slum dwellers are exposed to extreme indoor air pollution caused by cooking inside their tiny shacks. Routinely, most women and their young infants are exposed to indoor pollutants during cooking. However, with a total lockdown, the entire family is forced to stay indoors, also during cooking and while men smoke cigarettes inside. It is essential to understand the consequences of being exposed to smoke in relation to COVID-19 infection.

Pollution impairs the first line of defence of upper airways, namely cilia. A person living in an area with high levels of pollutants is thus more prone to develop chronic respiratory conditions and susceptible to any infective agent (Conticini et al., 2020). One of the potential

mechanisms suggested for the association of air pollution and respiratory infections is oxidative stress induced in response to air pollutants (Cieniewicz and Jaguszka, 2007). It can affect the susceptibility and response to viral infections. Research has shown that exposure to air pollutants can reduce the ability of macrophages to phagocytose or inactivate viruses (Cieniewicz and Jaguszka, 2007). Another explanation is that exposure to air pollutants can alter the function of surfactant proteins SP-A and SP-D, which are associated with enhanced susceptibility to respiratory virus infections (Cieniewicz and Jaguszka, 2007). Scientists also suggest suppression of innate immune response and an increased permeability of the pulmonary epithelium in response to exposure to air pollutants (Cieniewicz and Jaguszka, 2007).

Attempts have been made to study the associations between exposure to air pollution or smoking and Severe Acute Respiratory Syndrome coronavirus 1 (SARS-CoV-1), Middle East Respiratory Syndrome coronavirus (MERS-CoV), and Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2). Analysis of the SARS-CoV-1 outbreak revealed that infected people who were living in more polluted regions in China were twice as likely to die as those in less polluted areas (Cui et al., 2003). A recent study by Conticini and colleagues indicated that a higher prevalence and mortality of COVID-19 in Northern Italy could be partly explained by exposure to a higher level of air pollution (Conticini et al., 2020). Researchers from the United States found significant association between air pollution and COVID-19 deaths (Wu et al., 2020). Interestingly, smoking was found to be significantly associated with MERS-CoV illness (Alotaibi et al., 2014). A recent study among hospitalised patients of COVID-19 from China reported that smokers were fourteen times more likely to die as compared to non-smokers (Liu et al., 2020).

Because COVID-19 has been linked to air pollution and smoking, it

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## Health Technologies at PHFI

### Reusable Low Cost Half face mask Respirator

PHFI – Hi Rapid Lab, have designed and developed a Re usable, low-cost, half face mask, respirator that has several unique features. Two design patents and one utility patents have been applied for. Link to the description video <https://www.youtube.com/watch?v=WWy4eXCuy60&t=29s>

At this point, two large Indian business houses have shown firm interest to mass manufacture the masks in the magnitude of tens of thousands along with several smaller firms. Going forward we are hoping to manufacture 100000 or more masks providing the equivalent service of over 5-10 millions disposable masks.



### DREAM-H Digital Real Time Advanced Medical Modular logistics system

India lacks an effective mass scale reliable last mile temperature-controlled logistics platform to distribute medicines, provide vaccination, collect blood at/ from home. PHFI - Hi Rapid Lab has designed and developed - DREAM-H (Digital Real-time Advanced Medical Modular logistics system—for Home Care) as a portable, modular, multi temperature controlled ruggedized, stackable box to be fitted on to a two-wheeler to carry medicines, vaccines, blood/ swab samples, digital hand-held devices and other consumables needed for health care to the point of need – the home.

Link to the description video <https://www.youtube.com/watch?v=sU8YqwYfKLY&t=33s>



## MITH. AI (H) enabled COVID 19 Rapid Home screening hand held device

COVID 19 containment activities are facing two challenges:

1. People with positive signs and symptoms do not undergo voluntary testing
2. In adequate skill levels of health care personnel to screen/ triage at the point of need - @ home

@ Home testing with a fully automated device, with no text/ language icon only interface, that can be used even by people with no or limited literacy could be a possible solution. Also, rigorous and regular home-based screening would be a necessity for the next two years as several experts predict mini episodes of the epidemic after the present containment effort.

MITH.AI H ( Mass Integrated Transformational Health care with Artificial Intelligence – [www.mith.ai](http://www.mith.ai)) is a comprehensive hand held device with thermal sensor for identifying fever; pressure sensor for measuring heart rate, respiratory rate, recording lung sounds; lidar sensor for quantifying WASH (water, sanitation and hygiene) status; regular camera with flash for facial/ home recognition, telemedicine module; icon based user interface and edge AI engine for rapid @ home testing. The device is built ruggedly and can be cleaned with diluted solvents. Automated cluster detection, location optimization, supply chain routing features are available with a user friendly and a map view dashboard.



## Three dimensional Mass disinfection with UV LED light + hot air + disinfectant spray on a backpack

Regular disinfection of all locations where humans are in contact is the need of the hour. Even after the lockdown, this would be a continuous need. Unfortunately it is a time consuming process, and dependent on the human element of responsibly



and carefully disinfecting. AppleMed- a PHFI/ IIPHH student led startup has developed a unique, patent pending device that disinfects rapidly with three methods – UV LED light, hot air, alcohol based liquid spray. They are electronically controlled and can be applied simultaneously or sequentially . UV LED light

based disinfection is being used extensively and successfully in China and South Korea – who have taken the lead in containing COVID 19. Compared to any existing mass disinfection methods the proposed device has several advantages: (1) triple effectiveness combining three known and validated methods; (2) mobile battery operated back for extensive reach; (3) hand held probe for reaching even hard to reach areas for comprehensive disinfection; (4) modular architecture – with swappable battery packs, long lasting LED's (more than 20,000 hours) and swappable alcohol solution tanks.

Link to presentations on News TV Channel

[https://www.youtube.com/watch?v=ws\\_eBH\\_vu24&feature=youtu.be](https://www.youtube.com/watch?v=ws_eBH_vu24&feature=youtu.be)

**Dr. Suresh Munuswamy** - Head, Technology Innovations and Health Informatics, is member of the Telangana Government digital interventions task force; World Economic Forum working group "Drones for COVID19" and "Chatbots for Health care"; Punjab expert committee for Post COVID 19 management and innovation.

## Covid-19 Contact Tracing App

A significant proportion of Indian and Global population is expected to be affected by Covid-19 infection either directly or indirectly. Current focus of the Government to identify a suspect Covid-19 patients are those who have travelled abroad and their direct contacts. However, there is a significant proportion of the population who are returning from urban and metro areas to their villages. This carries a significant risk for transmission of infection to rural populations. It is essential that we reach out to this population especially in rural areas using technology for early identification of population at risk. Towards this PHFI has developed a contact tracing application for use by Health volunteers. This will provide details of the population who have migrated, if they have any symptoms and most importantly if there are family members who are at high risk for the disease in the family.

## Swasthya Sahayak Covid-19 test

PHFI has also indigenously developed Swasthya Sahayak, a point of Care technology which is operated using an Android tablet and provides several upstream and downstream benefits. It integrates multiple diagnostic tests and enables preventive, curative, and behavioural interventions. It helps screen citizens at population level for ailments, Non-Communicable, Infectious diseases and antenatal care. The services can be delivered either as 'door to door' or as a Static service. This allows for on the spot digitization of the patient record and enables GIS mapping of patients and service providers. The system allows conducting several diagnostic tests that can be scaled up to include more tests. The device comes with a bluetooth printer to provide receipt/ report and referral to the beneficiary. It has already been deployed with more than 1000 users and more than 100,000 beneficiaries have benefited from it.

We have developed an application for use by frontline workers, using which they can track the movements of migrants from high risk spots, grade their risk based on their symptoms, identify other family members who may be at risk and share this information with GIS coordinated to the district health authorities for preparedness planning.

We are in the process of integrating IgG antibody test for Covid-19 as an additional diagnostic test and could be available over next 3-4 weeks.

## Training Division at PHFI

### "Know COVID- NO COVID"

In the need for credible technical information about Covid-19, the Training Division at the Public Health Foundation of India conducts a series of e-workshops "Know COVID- NO COVID" to provide credible information on the pandemic- COVID-19 to various target audiences. The network of more than 28500 Primary Care Physicians enrolled under different PHFI training courses were offered technical guidance through webinars along with the healthcare professionals from other national level organizations and state governments.

#### These e-workshops were conducted for the following groups:

- e-workshop for PHFI network of Primary Care physicians (PCPs), PSUs, Medical Associations conducted in the month of April (2 series of 6 webinars each)
- e-workshops for Healthcare workers comprising Physicians, Dentists, Allied Health Personnel and Nurses conducted in the month of April (1 series of 4 webinars)
- e-workshop for Community conducted in the month of April (1 webinar)
- In collaboration with Global Development Centre (GDC) at Research and Information System for Developing Countries (RIS), PHFI also conducted 3-series of webinars on COVID 19 including one on Occupational Health and Safety in times of COVID during the month of April-May for international participants from Asian & African Countries with different topics and themes during each webinar.

	Name of Webinar	Dates	Numbers trained
W1	E-workshop for PHFI network of Primary Care physicians (PCPs)	6th to 11th April 6 webinars	186
W2	E-workshop for PCPs from PSUs & medical associations	10th to 15th April 6 webinars	386
W3	E-workshop for International participants	15th to 18th April 4 webinars	234
W4	E-workshops for Healthcare workers	19th to 22nd April 4 webinars	261
W5	E-workshop for Community	14th April 1 webinar	206
W6	E-workshop for International participants in collaboration with GDC and RIS	25th to 28th April 4 webinars	338
W7	E-workshop for International participants in collaboration with GDC and RIS on "Occupational health & safety in the context of COVID 19"	9th May to 13th May 5 webinars	217
W8	E-workshop on COVID-19 for NTPC Health care personnel	18th May to 21st May 4 webinars	237

*Topics of the webinars: provided in Annexure-1*



## Other COVID-19 related activities

Community Mobilization and Social Messaging (a series of simplified messages/ infographics based on authentic national and international technical guidelines in the context of COVID-19 is being regularly circulated to the 28,000 PCPs trained till now and put up on the PHFI App and our course websites

Association of Healthcare Providers (India) & the Training Division of Public Health Foundation of India (PHFI) has extensively worked on and prepared a document titled – **“Post Lockdown Lifting – Resumption of Hospital Services.”** This document provides a comprehensive set of action plans and key guidelines to be followed in the context of continuous hospital preparedness. It specifically addresses the action plan for resuming of services, in the safest and most effective manner to safeguard both patients and healthcare workers. Link to the [document. https://phfi.org/wp-content/uploads/2020/05/Post\\_Lockdown\\_Lifting-Resumption-of-Hospital-Services-compressed.pdf](https://phfi.org/wp-content/uploads/2020/05/Post_Lockdown_Lifting-Resumption-of-Hospital-Services-compressed.pdf)

This document has been disseminated to various hospitals, Medical Associations and Primary Care Physicians both Private and Government across the country. Even International Society for Quality in Health Care (ISQua) has added this document on their COVID resource page at <https://www.isqua.org/covid19-research-page.html>

The live webinar series have Q&A rounds and the queries of the participants are answered by the Experts. A total of 1039 Healthcare professionals have been trained from across the country. Participants from National Health Mission, Government of Gujarat, Manipur, Madhya Pradesh, Odisha, Kolkata Municipal Corporation (KMC), National Thermal Power Corporation (NTPC), Gas Authority of India Limited (GAIL), Meghalaya Diabetes association, Clinical Cardio Diabetic Society of India (CCDSI), Physicians Association of Navi Mumbai, National Hydro Power Corporation (NHPC), GVK Emergency Management and Research Institute, Delhi Pharmaceutical Sciences and Research University (DPSRU), Power Grid Corporation of India, NTPC Vidyut Vyapar Nigam Limited and various other organizations have been trained in these webinars.

The 3 International webinar series conducted in collaboration with Global Development Centre (GDC) at Research and Information System for Developing Countries (RIS), on COVID-19 and related topics was attended by more than 780 International Healthcare Professionals from 31 countries that include Afghanistan, Australia, Bangladesh, Bhutan, Burkina Faso, Canada, Ethiopia, Germany, Ghana, Hong Kong, Ivory Coast, Kenya, Malaysia, Maldives, Mozambique, Myanmar, Nepal, Nigeria, Oman, Pakistan, Russia, Rwanda, Singapore, South Africa, Sri Lanka, Thailand, Turkey, Uganda, United Kingdom, USA and Zambia.

## Upcoming Programmes

- Upcoming PHFI-GDC-RIS e- workshop Series on Post lockdown preparedness in the context of COVID 19 (series of 4 webinars) for International participants (healthcare professionals) scheduled from 6th – 9th May 2020
- Upcoming e- workshop Series in collaboration with Lions Clubs International on Post lockdown preparedness in the context of COVID 19 (series of 5 webinars) for Primary Care Physicians in India and a 2-webinar series for International participants (healthcare professionals) scheduled from 13th – 17th June and 4th -5th July respectively.
- Preparing and designing a special 2 hrs module for the Biju Patnaik Police Academy Odisha covering various aspects of COVID-19 for 67,000 strong State Police force of Odisha.
- PFIZER Inc USA has sanctioned around Rs 67.5 lakhs grant for conducting series of webinars on COVID-19 for Health care professionals and community for next one year.

## Glimpses of E-workshops



**Prof K Srinath Reddy (President, PHFI) and Ambassador Amar Sinha (Distinguished Fellow, RIS) giving opening remarks**



### Diabetes

- Glucovigilance
  - Good glucose control
  - Avoid hypoglycemia
- Intensify glycemic monitoring
  - Minimum dependence upon health care system for monitoring
- Good immunity
  - Vaccination: pneumococcal, influenza

**Session by Dr Sanjay Kalra (President, Endocrine Society of India) during webinar series for international participants**

## Annexure-1

S.No	Topic
1	Magnitude of the problem, Epidemiology, clinical features and differential diagnosis
2	Diagnosis and management of COVID-19 cases
3	Management of COVID 19 with endocrine comorbid conditions
4	Management of COVID 19 with non-endocrine comorbid conditions
5	Preparing facilities for isolation, quarantine and infection prevention
6	Communicating with patients, families & motivating healthcare team
7	Epidemiology & prevention: surveillance & containment; social marketing of social distancing; routine vaccination; disaster action plan, rehabilitation
8	Management of COVID-19 cases: Resource Husbandry in resource challenged times: A Diabetes perspective
9	Preparing and managing health facilities: Protecting healthcare workers; ambulance operation, dead body management
10	Communication: Communicating with patients, families & motivating healthcare team
11	Occupational Health & Safety: Practicing Principles Applicable for Effective COVID-19 Prevention & Management
12	Hospital Preparedness During and Post COVID-19
13	Understanding COVID-19 & Tackling Post COVID-19 Situation
14	Disaster Management & Preparedness During the Times of COVID-19
15	Mental Health Implications of COVID-19
16	Protocols for COVID-19 Screening, Diagnosis and Management (including management of suspect and confirmed cases)
17	Preparing Healthcare Facilities & Protecting Healthcare Personnel (IPC, BMW, triage, isolation, PPE)
18	Resumption of Hospital Services (OP, IP, ICU, OT, Lab, Support, patient flow, common areas, teleconsultation)
19	Post lockdown Mental Health for Patient & Healthcare Personnel

# IIPH-Delhi Covid Initiatives

## Summary Of Covid Related Activities – IIPH Delhi

IIPH Delhi faculty members and MPH students have been actively engaged in various activities related to the containment of the ongoing COVID-19 pandemic response.

### 1. Team working with NCDC

One team of faculty members including Mr. Shomik Ray, Dr. Preeti Negandhi and Dr. Tanica Lyngdoh, along with 6 MPH students, started their work on 9th March 2020 after a discussion between senior officials at PHFI and senior officials of MoHFW, GoI and NCDC, Delhi. The team were given a list of names of 14 COVID positive patients admitted at Safdarjung hospital with COVID-19, and were asked to collect data of these patients in the Case Investigation Form (CIFs). Later, as the cases started rising, the student teams were assigned the task of collecting data of COVID positive patients in Delhi NCR, and filling up the CIFs for these patients. A total of 41 additional CIFs of Delhi – NCR region were successfully filled by the students over a period of about 10-12 days. During this period, they would telephonically contact the respective district's DSO as well as the patients themselves/ their family members and collect information related to their socio-demographic information, onset of symptoms, travel history, etc. They also tried to collect as much information as possible about the close contacts of these patients. Subsequently, they also followed up with each patient on a daily basis, to get information of their disease status.

Another task assigned to the students was to contact the District Surveillance Officers (DSOs) in each district of Delhi-NCR to get information about the hotels in the area where foreigners had or were staying during the period of surveillance. The objective of this exercise was to procure information about the country from which these foreigners had arrived, how long they stayed in that hotel, where they were going next, their contact details, etc. Over the next few days, the students (each student was allotted a couple of districts) continued their follow up with the DSOs and hotels to get this information in a specified format.

Subsequently, all the students worked with the NCDC team from within the NCDC premises, based on the request of the NCDC officials. Some students assisted the NCDC officials in planning State-wise strategies for contact tracing and cluster containment measures. And the rest worked with different staff members of the IDSP program on data entry, sorting, and preliminary analyses. Later, they have helped NCDC staff with data analyses and report writing as well. They also spent time on collating data and updating the portal with relevant information regarding patients from various States.

The faculty group has been coordinating the entire activity; they are fully engaged with the students in this work and are providing necessary support and guidance to students and helping them to sort out bottlenecks / challenges they face. The activities carried out by the students and the status of the patients are summarised and sent to NCDC on a regular basis.

This team of IIPH Delhi has also provided actionable information for identification and contact tracing of the Tablighi Jamaat network in Delhi and Mumbai.

## 2. Work with MoHFW, Government of India

Two faculty members, Dr. Himanshu Negandhi and Dr. Tanica Lyngdoh, are part of a team that provides need-based expert epidemiology inputs to the BCG team operating within the Ministry of Health and Family Welfare, GoI.

## 3. Publications related to COVID

One of our faculty members, Dr. Habib Hasan, has contributed to background papers on “Investment requirements for scaling up COVID 19 response”, and “National Health Systems support and Advisory Strategy” developed by PHFI.

Dr. Habib has also written an opinion piece titled “Making Sense of Lockdown in Context of Coronavirus” along with Prof. Sanjay Zodpey for the e-newspaper News18.com (URL - <https://www.news18.com/news/opinion/opinion-making-sense-of-lockdown-in-context-of-coronavirus-2606679.html>).

He has also been providing technical support to an independent initiative for development of technology platform for real time monitoring of COVID 19 cases and logistics support. (COVID19India.org).

## 4. Proposed work with ILO on multi-country study

One of our faculty members, Dr. Anup Karan, was invited by ILO Delhi to participate in a UN led proposed multi-country study which wants to capture the impacts of COVID-19 on smallholder farmers, the elderly, informal, domestic and platform workers, migrant workers and their families (both with and left behind), social security systems, SME recovery, intra-household dynamics and other impacts on children, impact on wellbeing and capacity of public workers, access to public services during and post-epidemic, including access to sexual and reproductive health services. Currently, it is in early stages – only certain points related to survey design and points to be covered in the proposed survey have been shared with the ILO.

## 5. Creating awareness at various platforms

Dr. Shifalika Goenka has been actively creating awareness about the need for physical activity during this period across various social media platforms. The campaign includes not only measures that can be taken to protect oneself and the family from this virus, but also steps to stay protected from the increase in non-communicable diseases, which also have a potential to rise in such circumstances. IEC messages have been prepared and shared with Government of India.

## 6. Systematic review related to COVID-19 management

Dr. Niveditha Devasenapathy has recently completed a systematic review titled “Efficacy and safety of convalescent plasma for severe COVID-19 based on evidence in other severe respiratory viral infections: a systematic review and meta-analysis”.

This systematic review and meta-analysis on efficacy and safety of convalescent plasma in COVID-19 has been accepted for publication and is expected to support the guideline on COVID-19 management.

## 7. Engagement of IIPH Delhi research staff working in various States

Colleagues working on the ADARSH project of IIPH Delhi are involved in different COVID-related activities as follows:

Lucknow: Dr Manish Mishra is working on data discrepancies of COVID Positive cases under Dr Mohit Singh Chauhan from State control room and Dr Rashmi from CMO Kanpur.

### **Meghalaya: Ms Uniquey Mawrie is working with IIPH Shillong on:**

1. Doing Literature review for the COVID 19 prediction models which were designed by the experts from IIPH S for Meghalaya.
2. Has contributed in data analysis of "status of passengers who have travelled from abroad to Meghalaya" and submitted summary report of the same to the Government of Meghalaya
3. The preparation of the "knowledge of hand wash practice, community quarantine and respiratory etiquette" survey which will be conducted by IIPH-S, a project requested by the Government of Meghalaya.
4. Contributing to the WHO project "Informal Women Worker's Response to COVID-19 Pandemic" conducted by the North East Network, Shillong and Self Employed Women's Association (SEWA) and IIPH Shillong.

### **Haryana: Dr Rahul Pandey has been working in the following ways -**

1. Contact tracing, excel sheet compilation on daily basis
2. Support in ensuring sample collection updating on excel sheet
3. Support in quarantine facility reports updating
4. Sharing contact tracing sheet list with ACP and DCP
5. Preparation of SOP's for containment zones. Part of active surveillance team in the containment zone.

Gujarat: Dr Snehal Parmar is a part of the State level team formed by Govt. of Gujarat for "Contact tracing of COVID-19 positive cases & prevention of transmission of the disease" to focus on tracing of contacts of COVID-19 positive cases across the state in coordination with District health authorities. Contributions:

1. Assisting team leader in data management & day to day analysis.
2. Maintaining a separate sheet on Epidemiological connection of positive cases.
3. Assisted in case investigation procedure especially foreign travellers.
4. Assisted in contact tracing of 'Tabligh Jammat' contacts & have done analysis of traced data from district level.
5. Maintaining day to day updates of quarantined high risk & low risk contacts & their status of testing.

6. Maintaining a monitoring sheet of total no of household & facility quarantined contacts of positive cases.

Orissa: Dr Subhrabhanu Panda was initially part of the team to support call center employees for contact tracing and counselling.

## 8. Development of proposals on COVID-19

Some proposals are being developed by faculty teams on topics related to COVID-19.

1. Dr. Tanica Lyngdoh, Dr. Preeti Negandhi and Dr. Ranjana Singh are developing a proposal titled "Technical Support to All India Institute of Ayurveda (AIIA) in implementing research studies related to Covid-19" in which they would provide technical assistance and train AYUSH doctors on the conduct of clinical trials for management of COVID-19. This work is being developed in collaboration with Ministry of AYUSH.
2. Dr. Tanica Lyngdoh and Dr. Preeti Negandhi are developing a proposal along with WHO SEARO titled "Evaluation of integration of AYUSH into the public health system for combating COVID-19". This study seeks to understand the level of integration of AYUSH into the current health system through assessing the responsiveness and acceptance of the health system to the introduction of traditional medicine for large scale prophylaxis during an epidemic.
3. Dr. Suparna Ghosh-Jerath is planning to undertake a research activity on the impact of COVID 19 on food systems of the tribal communities of Jharkhand titled "Impact of COVID 19 on food security, diets and farming practices of the tribal communities of Jharkhand" as part of her current DBT/Wellcome trust fellowship. She is adapting a tool developed by the COVID-19 Surveillance Community Action Network for Food Systems, along with colleagues at Montana State University. The work will entail a telephonic survey using a short questionnaire designed to capture information related to food environments, diets, and farming practices in the tribal communities in the context of the coronavirus pandemic (COVID-19). The questionnaire includes a set of core questions as well as optional and more context-specific questions to be asked over the telephone. The survey is designed to be short and simple as a rapid assessment of the present situation and will capture longitudinal data on the same themes periodically to capture the long term impact of COVID on food systems.
4. Prof. Sanjay Zodpey and Dr. Himanshu Negandhi are developing a proposal titled "Predictors of COVID-19 disease severity in India: A case-control study". The objectives of this hospital-based study would be to determine the factors associated with severe and critical COVID-19 disease in India, and to develop and validate a prediction model (risk-scoring system) for severe and critical COVID-19 disease.



# Indian Institute of Public Health, Gandhinagar (IIPHG)

IIPHG team has done various support efforts to help improve response to Covid epidemic. Pl see attached excel worksheets giving details and links. We have done the following;

1. Two faculty Dr. Deepak Saxena and Dr. Anish Sinha went to Delhi at short notice to help NCDC in various activities including contact tracing, taking detailed epidemiological history of quarantine / isolated cases in Safdarjung hospital along with IIPHD faculty and students. A details report with short-term and long-term suggestion has been given to govt.
2. IIPHG faculty and RAs have prepared various health educational materials for public like videos. We have also participated in TV and FM radio debates/ talk shows as experts to provide technical information to the public. We have written various open editorials and articles in newspapers, online media and health magazines.
3. IIPHG faculty have advocated for SARI surveillance at national level and state level. SARI surveillance has started in Gujarat in public and private hospitals.
4. IIPHG faculty have conducted online training/orientation to various managers of NGOs working in the community.
5. IIPHG faculty have provided technical support to educational institutions including IIT Gandhinagar on preparing the campus for COVID control.
6. IIPHG faculty have provided inputs and advocacy for making testing widely available.
7. IIPHG is member of the Research coordination committee of Gujarat govt on Covid.
8. IIPHG faculty has disseminated various information to professional colleagues via social media on issues such as PPE use and reuse, mortality rates, secondary attack rates etc which are very much related to covid epidemic control.
9. IIPHG has motivated students to take up special studies on various aspects of the epidemic in various countries through secondary data and media reports.
- 10 Faculty of IIPHG with PHFI are building mathematical models of the epidemic in India to predict the course of the disease.
11. IIPHG encouraged students to make videos and social media posts on various methods of prevention such as social distancing, hand washing etc. These are available on Youtube.
12. IIPHG is also planning to make low cost hand sanitizers for local distribution - plan could not be executed due to supply problems after lockdown. We will revive this after lockdown is over.
13. IIPHG based NIDHI Techno-Business Incubator is supporting new product development for prevention of Covid epidemic. It is also giving a new call for proposals in this area.

14. IIPHG faculty have also undertaken social media campaigns to reduce fear of the disease in the community.
16. IIPHG is planning to make various case studies and exercises to teach the students using real data from the epidemic.
17. IIPHG is guiding its alumni working in the government of Gujarat to do analysis of the epidemic and its prevention activities.
18. IIPHG has prepared various proposals to work on different aspects of the epidemic including new rapid lab test development, behavioural change, epidemiology, training of community workers, training program for health workers. etc. These are being sent to various CSR funding agencies. IIPHG has also prepared brief proposal to set up a new Biosafety level III lab for work on respiratory and other viruses.
19. Gujarat govt has requested to take over IIPHG hostel of 150 person capacity for quarantine as and when needed. IIPHG has agreed to this request and Preparations have been made for this.

## IEC Videos

1. WASH Short film

[\*\*https://www.youtube.com/watch?v=rrXjMVdZHc4\*\*](https://www.youtube.com/watch?v=rrXjMVdZHc4)

2. Corona COVID19 English

[\*\*https://www.youtube.com/watch?v=kWj3XIDHuGc&t=74s\*\*](https://www.youtube.com/watch?v=kWj3XIDHuGc&t=74s)

3. Corona COVID19Gujarati

[\*\*https://www.youtube.com/watch?v=2e5SE3-lojY&t=32s\*\*](https://www.youtube.com/watch?v=2e5SE3-lojY&t=32s)

4. Corona COVID19Hindi

[\*\*https://www.youtube.com/watch?v=6f0H\\_08l8dI&t=56s\*\*](https://www.youtube.com/watch?v=6f0H_08l8dI&t=56s)

5. Corona Virus Video (Information and travel advisory)

[\*\*https://www.youtube.com/watch?v=S56GvwLP-yA\*\*](https://www.youtube.com/watch?v=S56GvwLP-yA)

6. Social Stigma associated with COVID19

[\*\*https://www.youtube.com/watch?v=ebqT4Efm9n8\*\*](https://www.youtube.com/watch?v=ebqT4Efm9n8)

7. Safety and Care of Hostel Residents during COVID19 (English)

[\*\*https://www.youtube.com/watch?v=jVouw7urAKo&t=75s\*\*](https://www.youtube.com/watch?v=jVouw7urAKo&t=75s)

8. Safety and Care of Hostel Residents during COVID19 (Gujarati)

[\*\*https://www.youtube.com/watch?v=MZWAjU8fAko\*\*](https://www.youtube.com/watch?v=MZWAjU8fAko)

# Indian Institute of Public Health, Hyderabad (IIPHH)

Faculty and Staff at Indian Institute of Public Health – Hyderabad (PHFI) are putting up their untiring efforts in helping the State Government and ESI Medical College Hospital in myriad ways like:

Engagement with IIHFW-Hyderabad- the following are supported and planned

1. Dr GVS Murthy and Dr Jayaram are providing technical support to the Telangana Government.
2. IIPHH students and faculty are providing support to various Districts of Telangana and AP with regards to Containment activity, Spot mapping, Data Analysis and Isolation guidelines
3. Training and capacity building
  - i. Helping in developing their training material, abridged protocols in forms of Flow charts and SOPs that can be easily disseminated as ready tools.
  - ii. Devising the remote training strategy in the form of short recorded videos and using video conferencing. It is proposed to form a roster of subject experts who shall be available to the health and outreach staff through phone/ dedicated numbers. This is being explored
4. IEC
  - i. We shared the material prepared by PHFI before just placing the material on-site. But it was realised to devise a whole strategy.
  - ii. The immediate requirement was to support them in compiling IEC material and translating already available from MOHFW and WHO-India. Have associated 2 research staff for the same.
5. IIHFW's Requirement for innovative material for special and high risk groups, particularly IEC targeted to rural population in Telugu. This can be jointly developed along with IIHFW.
  - a. Those with co-morbidities any specific considerations
  - b. Elderly
  - c. Disabled, can we also identify hospitals which may be user friendly
  - d. Pregnant and children amidst gaps in routine care
  - e. What shall a person going into facility quarantine expect or prepare for
  - f. Mental health needs of those quarantined. IEC for wards and videos that can be played for them
  - g. What should the family members of those facility quarantined expect and manage
  - h. If in future epidemic explodes, the mild positive cases may be required to stay at homes. Can we plan strategy for slowly sensitising the community without creating panic?

### Engagement with ESI Medical College Hospital:

- 1) Developed the in-house IEC material and collated and shared IEC that was developed by others but have open licenses – Shared with ESI hospital
- 2) We have also advised them on how to share information on prevention with their patients.

### Consultation to State Governments (by Bengaluru Campus)

- Consultation provided to Karnataka State government
- Consultation provided to Andhra Pradesh State government for preparedness
- Consultation being provided to Uttar Pradesh State government
- Dr. Giridhar R Babu - Member of Epidemiology and surveillance Research group constituted by National Task Force for COVID-19
- Information dissemination through journals and newspaper articles.

## Indian Institute of Public Health, Bhubaneswar (IIPHB)

Under the leadership of Dr Subhash Salunke, Director – IIPHB and Senior Advisor - PHFI, the Indian Institute of Public Health Bhubaneswar is providing technical and managerial support to Department of Health and Family Welfare, Government of Odisha on all aspects of COVID19. In addition to Odisha, Dr Salunke being the chair and member of various committees providing technical support to Government of Maharashtra and Government of India. Following are the key activities providing support to Government of Odisha

1. IIPHB is one of the 13 member expert group formed during a meeting chaired by Chief Secretary, Government of Odisha. We are giving technical inputs to Government of Odisha on all aspects of COVID19. This group operates through a WhatsApp group, telephone and emails.
2. IIPHB developed and shared a planning tool for containment and mitigation of COVID19 at state and district level.
3. IIPHB developed and shared tentative epidemiological prediction model graphs for future planning of containment and mitigation (shared with only Health Secretary for planning purpose and not for public use to avoid panic).
4. IIPHB shared experiences of Maharashtra for learning and decision making e.g. engaging private sector.
5. IIPHB did advocacy for ensuring safety of health staff and suggested approaches for that.
6. IIPHB is member of training committee for capacity building of medical and paramedical staff of public and private sector including undergraduates through online courses on COVID offered by Government of Odisha. This group operates through a WhatsApp group, telephone and emails.
7. IIPHB will coordinate capacity building of undergraduate nursing students of both public and private sector through online courses offered by Government of Odisha.
8. IIPHB estimated human resource requirement for a proposed 100 bed COVID hospital. Also shared the costing estimates per bed per day.
9. IIPHB is regularly sharing the guidelines of MOHFW, GOI and their update with Government of Odisha
10. IIPHB is analysing epidemiological data on testing and case detection in other states and sharing with Government of Odisha for learning and decision making.
11. In the current academic year, IIPHB has 30 in service doctors as students of Post Graduate Diploma in Public Health Management (PGDPHM) and 14 senior doctors as students of Certificate Course in Public Health Management (CCPHM). In consultation with Government of Odisha, the classes of both the course has been suspended and these officers has been sent back to their original duty stations to work for COVID19 pandemic. The faculties are sharing ground level experiences gained through the network of PGDPHM and CCPHM alumni and students at district and peripheral level and also providing mentoring to these alumni and students.
12. IIPHB is also doing community practice through opinion article on economics and COVID through print media.
13. IIPHB is supporting on any other requests made by Govt of Odisha.

# Report of activities on COVID-19 by IIPH Shillong

The Commissioner & Secretary Health & Family Welfare, Government of Meghalaya (GoM) requested the Indian Institute of Public Health Shillong to provide technical support during the COVID crisis to the Dept of Health, GoM. Thus our faculty and research teams have been contributing to the Meghalaya State's COVID preparations. Although there were no cases reported in Meghalaya until 13 April, 2020, the health department had geared up planning and preparation on several fronts including general measures and health system preparedness. IIPH-Shillong faculty and research team members have been supporting the state in data analysis, assessment of health system preparedness, mathematical modelling and projections, research and publication for improving general awareness about Covid -19. Our faculty are also members on state level expert committees and task forces – working group (Ministry of Ayush).

## Activities

1. **Data analysis:** Our team have been extending support to the States' IDSP team in analyzing data and in assessing significance of higher numbers of fever and or respiratory infections observed in some districts in Meghalaya during the past weeks.
2. **Health system preparedness:** In assessing preparedness of hospitals in the public sector and private sector for covid preparedness, in preparing checklists and surveys (lead by epidemiologist Badondor Shylla). Some of our MPH students are also helping in the management of the newly established Corona Care Centers.
3. **Mathematical modelling:** We have also developed predictive models for health system planning in collaboration with (lead by Dr Rajiv Sarkar, Asst Professor) in collaboration with researchers from the Indian Statistical Institute and IIT Rourkee. The Dept of Health, GoM has used these figures for their Covid planning and preparations.
4. **Research:** on the request of the Govt we have developed a survey questionnaire on "A cross sectional study to assess knowledge, attitude and practices towards hand hygiene, respiratory etiquette and community quarantine in Meghalaya", however the roll out of the survey was hampered by the lockdown announcement.
5. **Membership to Expert Committees /Task force/working groups**
  - a. Prof Sandra Albert is a member of the Working group on Epidemiology Survey and Documentation constituted by the Interdisciplinary AYUSH Research and Development Task Force on Covid-19. Notification No. A.17020/1/2020-E.1 of **Ministry of AYUSH**
  - b. Dr Rajiv Sarkar, Badondor Shylla and Uniqueky Mawrie are members of the technical support group of the State response team for Covid-19, GoM
  - c. Prof Sandra Albert is a member of the **Medical Expert Committee** on Covid-19 constituted by the Govt of Meghalaya

6. **Publications on Covid 19:** a series of articles and bulletins on Covid were published in the Shillong Times newspaper (Established 1945); one the oldest and widely read newspapers in the northeast region of India. This was done to improve general awareness, for education and as a means to reduce the general panic that was gripping the populace.

## List of publications in the Shillong Times March-April 2020

### 1. Novel Corona virus Covid-19 infection: A pragmatic approach

**by Dr Sandra Albert**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=6&eddate=2020-03-19&edcode=820009>

### 2. Covid-19 Bulletin

**Dr Sandra Albert and Dr Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-03-19&edcode=820009>

### 3. Stages and life span of a pandemic: India and the world

**Dr Sandra Albert and Dr Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-03-20&edcode=820009>

### 4. Testing for Covid-19 during stage 3

**By Sandra Albert and Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-03-21&edcode=820009>

### 5. Vaccines and medicines for COVID-19

**By Sandra Albert and Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=10&eddate=2020-03-22&edcode=820009>

### 6. Effects of public health measures for COVID-19

Scenarios and strategy building for Meghalaya

**By Sandra Albert and Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-03-23&edcode=820009>



## 7. Science must drive the Covid-19 decision making

**By Sandra Albert and Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-03-24&edcode=820009>

## 8. TB remains top infectious killer worldwide

**By Sandra Albert**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-3-26&edcode=820009>

March 31, 2020

## 9. Now is the time to prepare for the post-lockdown phase

**By Sandra Albert and Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-03-31&edcode=820009>

April 8, 2020

## 10. Meghalaya's Covid strategy is on the right track

**By Sandra Albert and Glenn Kharkongor**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=7&eddate=2020-04-08&edcode=820009>

30 April 2020

## 11. What about the others? Has health care for other patients been compromised

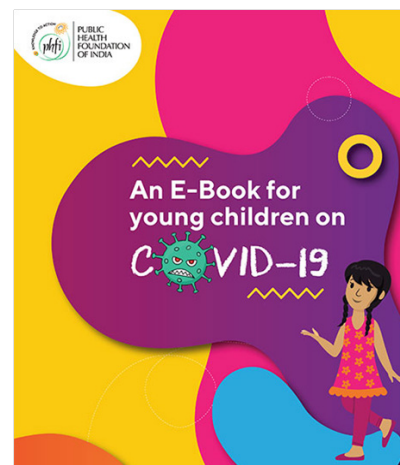
**By Meban A Kharkongor and Sandra Albert**

<http://epaper.theshillongtimes.com/epapermain.aspx?pgno=6&eddate=2020-04-30&edcode=820009>

# Covid 19- Resources Developed at PHFI and IIPHs

## The E-book on COVID19 for young children

The E-book on COVID19 for young children, a joint collaborative effort of the Public Health Foundation of India (PHFI) and Indian Institute of Public Health, Gandhinagar (IPH-G), has been conceptualised and designed keeping in mind the nuances of the Indian context and to empower children with simple practical information so that they are our ‘ambassadors of good health’ both outside and in the family. Seen through the eyes of two young siblings, the book carries a universal message of keeping ourselves, our families and our communities safe during the COVID-19 pandemic. It is currently available in 5 languages – English, Hindi, Urdu, Kannada and Telugu. This initiative was led by Dr Preeti Kumar, VP, PHFI and colleagues at the Indian Institute of Public Health, Gandhinagar.



## Post Lockdown Lifting – Resumption of Hospital Services

Association of Healthcare Providers (India) & the Training Division of Public Health Foundation of India (PHFI) has extensively worked on and prepared a document titled – **“Post Lockdown Lifting – Resumption of Hospital Services.”** This document provides a comprehensive set of action plans and key guidelines to be followed in the context of continuous hospital preparedness. It specifically addresses the action plan for resuming of services, in the safest and most effective manner to safeguard both patients and healthcare workers. Link to the document. [https://phfi.org/wp-content/uploads/2020/05/Post\\_Lockdown\\_Lifting-Resumption-of-Hospital-Services-compressed.pdf](https://phfi.org/wp-content/uploads/2020/05/Post_Lockdown_Lifting-Resumption-of-Hospital-Services-compressed.pdf)



This document has been disseminated to various hospitals, Medical Associations and Primary Care Physicians both Private and Government across the country. Even International Society for Quality in Health Care (ISQua) has added this document on their COVID resource page at <https://www.isqua.org/covid19-research-page.html>

This was led by Dr Sandeep Bhalla, Director, Training and colleagues at the Training Division at PHFI.

## 'Health and Safety Handbook for the Workplace - An employer's guide for post-lockdown operations in non-healthcare settings'.

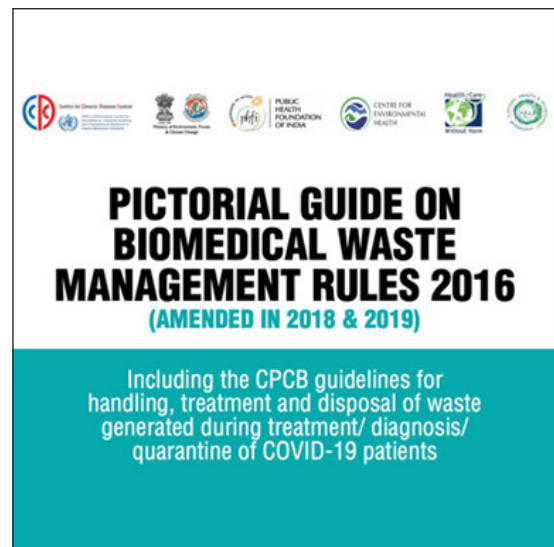
Public Health Foundation of India (PHFI) with Global Insurance Brokers Private Limited, has come out with a 'Health and Safety Handbook for the Workplace - An employer's guide for post-lockdown operations in non-healthcare settings'.

This handbook has been prepared as a guidance tool for employers, to generate awareness and enable them to implement risk mitigation measures at their workplace, in order to provide a safe and healthy environment for their employees. Currently, there are many gaps in our understanding of the pandemic and there is an urgent need to develop safe and effective counter measures to tackle COVID-19 at the community, workplace and society level. This handbook has been designed to help businesses respond to COVID-19 and to help in their preparedness for the post Lockdown scenario, with the best available information available currently. This initiative was led by Dr Preeti Kumar, VP, PHFI

## Pictorial Guide on Biomedical Waste Management Rules 2016 (Amended in 2018 & 2019)

The Pictorial Guide on Biomedical Waste Management (BMWM) Rules, 2016 (amended in 2018 & 2019) is a product of joint research by the Centre for Chronic Disease Control (CCDC), Centre for Environmental Health (CEH) –Public Health Foundation of India (PHFI) and Health Care Without Harm (HCWH). The guide is a compilation of important strategies that are key to appropriate management of biomedical waste in India. The pictorial guide provides a quick, user-friendly view of the important elements of biomedical

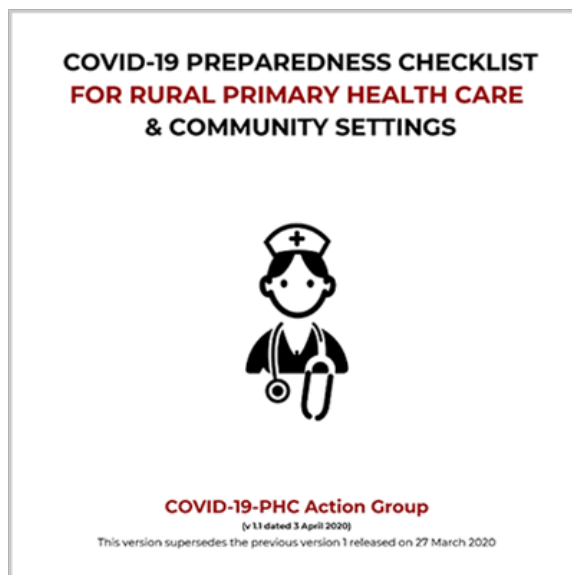
waste handling, treatment and disposal through its illustrative components. These are based on the specifications provided in the BMWM Rules, 2016 and its subsequent amendments. *Importantly, the guide also includes the provisions for COVID-19 waste management as prescribed in the Central Pollution Control Board Guidelines 2020.* This work was led by Dr Poornima Prabhakaran, Deputy Director, Centre for Environmental Health, PHFI.

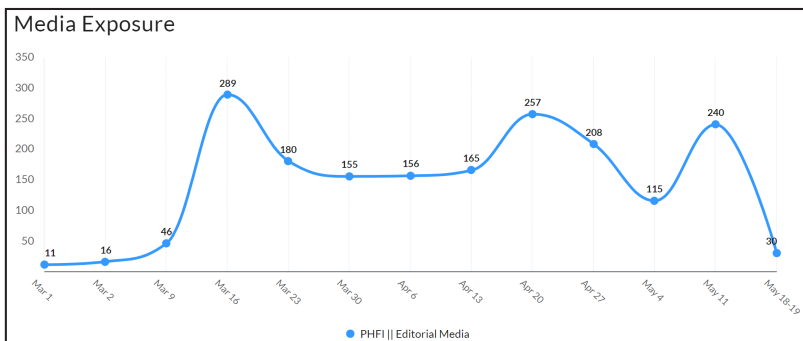
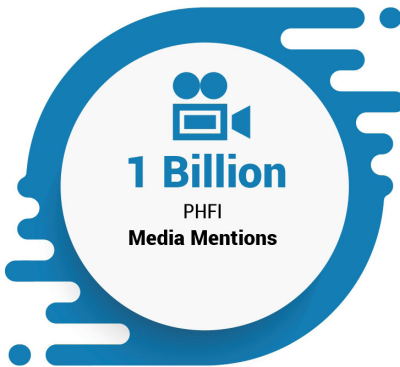


## COVID-19 Preparedness Checklist For Rural Primary Health Care & Community Settings

COVID-19 is an unprecedented pandemic which has led to millions being affected and thousands dying every day across the world. The Government of India has announced a 21-day lockdown to prevent COVID-19 transmission in India -essentially buying time for health systems to be better prepared. While tertiary care systems are also being prepared it is important to ensure preparedness of Primary Health Centres.

Towards this mammoth effort, the Indian medical and public health community is contributing in a big way. To ensure preparedness of Primary Health Centres in rural/community settings, 15 clinicians and public health experts from leading institutions, including The George Institute for Global Health, India formed the COVID-19 PHC Action Group. The COVID-19 PHC Action group, a collaborative is led by Dr Prashanth NS, Institute of Public Health, Bangalore. Dr Giridhara Babu-Head Life course Epidemiology, PHFI contributed to this important piece of work.





# Healthcare reforms shouldn't be transient

Initiatives such as tele-consultation, home-delivery of drugs and administrative mustn't end with the pandemic

**EDITORIAL & SPECIAL INVESTIGATION**

**T**he public health emergency caused by the novel coronavirus has posed unprecedented challenges for the healthcare system. In addition to the massive surge in demand for hospital services, the pandemic has also exposed the weaknesses of the healthcare system. The pandemic has also exposed the weaknesses of the healthcare system. The pandemic has also exposed the weaknesses of the healthcare system.

On March 10, the government issued a decision to allow tele-consultation services. This was a significant step towards addressing the challenges posed by the pandemic. The decision was aimed at reducing the burden on hospitals and ensuring that patients could receive timely medical advice and treatment.

Tele-consultation services have been widely used since their introduction. Patients have been able to consult with their doctors remotely, which has helped to reduce the risk of infection. However, there are still many challenges that need to be addressed to ensure that tele-consultation services are effective and sustainable.

One of the main challenges is the lack of a unified platform for tele-consultation. Currently, there are many different platforms and apps available, which makes it difficult for patients to find the right service. Additionally, there are concerns about the quality of care provided through tele-consultation, particularly for complex cases that require physical examination.

Another challenge is the issue of reimbursement. Tele-consultation services are often not covered by insurance, which makes them less accessible to many patients. This is a significant barrier to the widespread adoption of tele-consultation services.

Home-delivery of drugs is another initiative that has been implemented to reduce the burden on hospitals and ensure that patients can receive their medication safely. This service has been particularly useful for patients who are unable to visit the hospital or pharmacy.

However, there are also challenges associated with home-delivery of drugs. For example, there are concerns about the quality of the drugs and the safety of the delivery process. Additionally, there are issues related to the storage and handling of drugs at home.

Administrative reforms are also needed to improve the efficiency of the healthcare system. This includes streamlining the process of patient admission and discharge, as well as improving the coordination between different departments and services.

One of the key areas for reform is the issue of medical waste management. The pandemic has generated a large amount of medical waste, which poses a significant risk to the environment and public health. It is essential to develop effective strategies for the safe disposal of medical waste.

Another area for reform is the issue of infection control. The pandemic has highlighted the importance of strict infection control measures to prevent the spread of the virus. Healthcare facilities need to ensure that they have adequate resources and protocols in place to manage infections.

Finally, there is a need for ongoing monitoring and evaluation of the healthcare system's response to the pandemic. This will help to identify areas for improvement and ensure that the system is able to cope with future challenges.

In conclusion, the healthcare reforms implemented during the pandemic are essential for ensuring the long-term sustainability and effectiveness of the healthcare system. These reforms should not be transient but should be integrated into the system to prevent a recurrence of the challenges faced during the pandemic.

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# What's the right measure of the impact of Covid-19?

## ESTIMATING SEVERITY Deaths crucial for understanding scale of crisis, gaps in response

### BY INVITATION K Srinath Reddy and Surabhi Pandey

**NEW DELHI:** On May 5, the day following the second and third phases of the lockdown, where did the different states of India stand with respect to deaths resulting from Covid-19? How do we decide which states are doing better?

Usually, media reports mention the total number of deaths, but these are not adjusted for the size or age structure of the population.

That makes comparison between states difficult. A different number which stands out even more prominently in the report is the Case Fatality Ratio (CFR), which refers to the deaths as a percentage of the cases diagnosed.

Which is the number that provides a better comparison of the

## READING THE NUMBERS

Deaths per million and fatality rates better reflect the severity of outbreak and a state's preparedness

	Deaths Per Million	CFR (%)
Maharashtra	3.95	4.2
Gujarat	3.65	5.2
Delhi	3.14	1.6
Madhya Pradesh	1.74	5.4
Rajasthan	0.85	2.5
Telangana	0.78	2.7
Punjab	0.63	2.9
Andhra Pradesh	0.6	2.3
Jammu and Kashmir	0.52	1.2
West Bengal	0.46	5.2
Karnataka	0.35	0.4
Tamil Nadu	0.35	1.1

If we look at case fatality ratio, Delhi (1.6) looks better than Punjab (2.6) or Jharkhand (2.6), which have lower testing rates.

On the other hand, Punjab has far fewer deaths per million population (0.63) than Delhi (3.14). Jharkhand is even better (0.08 deaths per million).

K. SRINATH REDDY and SURABHI PANDEY, Public Health Consultants of India



NEWS 18

## OPINION | Making Sense of Lockdown in Context of Coronavirus

Over the last few months, the 'lockdown' has emerged as one of the key strategies and possibly the most favoured intervention to contain the spread of the disease by several nations.

Sanjay Zodpey Habib Hasan

The relentless spread of COVID-19 has caught major global economies off-guard, including BRICS nations, USA, UK, and others. The disease was first reported in Wuhan province of China in early January although there were reports of unknown pneumonia as early as last December.

Widespread human to human transmission of SARS-CoV-2, which causes COVID-19, led to a major outbreak in Wuhan and also a potential global spread through major cities connected through global airlines networks. To contain the outbreak, China responded by instituting time-honoured infectious disease

containment measures like testing, tracing, isolation and quarantine and scaling up healthcare infrastructure like testing facilities, hospital beds and ICU beds.

In addition, an extreme form of social and physical distancing along with travel restrictions and closure of all non-essential services, which can also be called a full lockdown, was enforced to contain the spread of the virus in the Wuhan. This may be the first major 'lockdown' of the modern world to contain an infectious disease.

Over the last few months, the 'lockdown' has emerged as one of the key strategies and possibly the most favoured intervention to

contain the spread of the disease by several nations, except a few like Sweden and Japan. Korea, Singapore and Japan. Although the strategies adopted by these countries may be termed as a softer form of lockdown. The decision of national governments, in terms of timing and lockdown, are primarily by disease-related data, health system, population, type and other factors. A legal barrier that any liberty

THE HINDU

## Preventing stigma related to COVID-19 requires full-throated campaign, says expert Gita Sen



"It would have the effect of removing the fear that the information barrage is creating"

Gita Sen, director and distinguished professor, Ramalingaswami Centre for Determinants of Health, spoke to The Hindu about how the stigma attached to COVID-19 is much like what was seen with HIV/AIDS and how it is a result of poor knowledge.

In this time of stress associated with COVID-19, why is a small group of people being stigmatised? How is this different from other crises we have faced?

## World Health Day: Time to Recognise and Honour Nursing Staff

DR DEEPAK B SAXEN

Globally COVID-19 has taken centre stage, with clinicians, modellers, politicians and it out to find solutions. Yet a least recognised and hero engaged in fighting COVID-19 globally; Yet Staff.

This World Health Day, time to recognise the contribution of midwives, doctors, nurses, and other vital role in keeping us healthy.

Nurses are warriors in their broad movement

healthcare workforce in the WHO Western Pacific Region, nurses critical in responding to health settings and across the

jockeys can be seen sharing their opinions, except for nurses, who are busy in demonstrating a new level of leadership during the coronavirus crisis but left trauma and experience

Many of the outbreak memories in fighting the community crisis. It was everyone in the community, doctors, paediatricians, programme



K SRINATH REDDY & SURABHI PANDEY

## Comparing countries on Covid-19 deaths

We need a slew of public health measures to contain Covid-19 and keep the total deaths in our population low even as the count of cases rises

HERE'S A QUOTE which country has the highest number of Covid-19 deaths: the United States. Which of the countries has the lowest number of deaths? The United Kingdom. The United States has the highest number of deaths, while the United Kingdom has the lowest. The United States has the highest number of deaths, while the United Kingdom has the lowest. The United States has the highest number of deaths, while the United Kingdom has the lowest.

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INDIAN INSTITUTE OF PUBLIC HEALTH HYDERABAD @IIPHHyderabad

Our IIPH Bengaluru, PGDPHM students, who are now in-service doctors are helping #migrants reach home safely.

We are super proud of you! 🙌

#COVID19



# hindustan**times**

## Use epidemiology as a tool to fight Covid-19 | Opinion



and control epidemics of diseases. Epidemiology is, as our doctoral mentor Dr Roger Detels defined it, is the basic science of public health, because it describes the relationship of health or disease with other health-related factors, like human pathogens, in human populations. The crisis caused by the coronavirus disease (Covid-19) is a good example to show that, if the epidemiology is not properly understood, it can bring lethal consequences.

A highly placed clinical specialist recently said that epidemiologists are busy projecting numbers that is they do. is a misassumption. Epidemiologists aim to pre-

Countering the adverse impacts of Covid-19 requires two types of measures: Containment and mitigation. Consider, for example, the burden of cases in a big city. The term "burden" refers to the

while mitigat  
air is filled  
system  
the ballo



कोरोना वायरस महामारी के दुष्प्रभाव से विद्यार्थियों को सुरक्षित रखने के उद्देश्य के साथ, प्रदेश के विभिन्न शिक्षण संस्थानों में राष्ट्रीय सेवा योजना के तत्वावधान में विद्यार्थियों की सतत काउंसिलिंग की जा रही है।

कोरोना से डरें नहीं- लड़ें!

On- ground PHFI teams  
**supporting technical  
partners in UP**



**Coronavirus | People with disabilities have special issues during virus outbreak, says Indian Institute of Public Health chief G.V.S. Murthy**



**'They experience hardships in accessing information on prevention and risk of infection'**  
People with...

people with disabilities need much more support than others in the face of a pandemic. They may not be eating properly and may experience higher stress because they are unable to understand what is happening all around them, says Professor G.V.S. Murthy, vice-president and director, Indian Institute of Public Health, Hyderabad.

with disability have special issues  
like the spread of the novel  
(SARS-CoV-2). People with  
are a diverse group, experiencing  
relationships in accessing information  
and risk of infection.ly activities.







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