

Social and R&D Initiatives to support fight against Covid-19:

1. **Task:** Lab made Sanitizer
Brief about initiative: Dr. Mudrika Khandelwal (MSME dept.) has developed sanitizer and distributed to various essential services in the IITH campus.
Expected number of Beneficiaries: 500
2. **Task:** Lab made Sanitizer for Local Administration
Brief about initiative: Dr. Jyotsnendu Giri (BME dept.) has developed hand sanitizer and at present under his leadership about 100 liters of Sanitizer is being prepared daily and supplying to the District Collectorate.
Expected number of Beneficiaries: 30000
3. **Task:** Lab made Sanitizer for Local Administration
Brief about initiative: Pure EV, a company incubated out of IITH and situated just outside IITH Campus, with one of our faculty (Dr. Nishanth Dongari, MAE dept.) leading the research activities there, has made about 3000 bottles of sanitizers (250 ml).
Expected number of Beneficiaries: 20000
4. **Task:** Own made mask for needy
Brief about initiative: Pure EV have manufactured about 5500 3-ply masks and distributed to local needy people.
Expected number of Beneficiaries: 5000
5. **Task:** UV-C based LED sanitizer
Brief about initiative: Prof. Zafar Ali Khan (EE dept.) is working on UV-C based LED sanitizer.
Expected number of Beneficiaries: 50000
6. **Task:** Face Shield & Protective Gears
Brief about initiatives:
 - a) Dr. Renu John (BME dept.), Dr. Suryakumar (MAE dept.) and their team are working on Design and production deployment of reusable face masks. These PPE face masks, which provide better protection than cloth masks are autoclavable and can be reused by changing the filter.
 - b) One of the incubates of CfHE, Dr. Sai Laxman under the mentorship of Dr. Renu John (BME dept.) has come up with a full design of PPE (protective gear, and face shield), ""USafe - Sterilisable Face Shield & Protective Gown"", designed, tested and prototyped.
 - c) The fellows of CfHE are working on an isolation hood for Covid-19 positive patients where healthcare providers can go near without fear and do procedures like intubations and inoculations.
 - d) Dr Kousik Sarathy is working on UV box for disinfection of Masks.
 - e) Dr. Jyotsnendu Giri (BME dept.) and EaffoCare Innovation developing Antiviral coating for PPE and common surface.
 - f) Pure EV, under the leadership of Dr. Nishanth Dongari (MAE dept.) is working on to bring out a face shield in large quantity in collaboration with RCI Hyderabad.**Expected number of Beneficiaries:** 50000
7. **Task:** Ventilators and other hardware
Brief about initiatives:

- a) Aerobiosys, a startup of Centre for Health Care Entrepreneurship (CfHE) at IITH, has developed a low cost portable ventilator, Jeevan Lite.
- b) Dr. Prashant Kumar and his student Mangesh Ratolikar (MAE dept) have developed a remotely operated mobile robot for hospitals and isolation wards for the purpose of interacting with patients or persons in quarantine, distributing food or medicines, and collecting trash.
- c) Dr. Prashant Kumar, Dr. Syed Khaderi and Dr. Viswanath (MAE dept.) are developing low cost, portable easily scalable mechanically actuated ventilator.
- d) Dr. Nishanth Dongari (MAE dept.) and Dr. Chandrasekhar (CHE dept.) are developing Lithium batteries for thermal scanners and medical equipment.
- e) Dr. Amit Acharyya & Dr. Ashudeb Dutta (EE dept.) and their team through their startup "Sensehealth" at iTIC IITH, has developed "Low-Cost One-stop ECG Solution functional as (a). Ambulatory (inside ambulance), (b). Hospital, (c). at home (during isolation period) and as (d). Holter in COVID-19 pandemic."

Expected number of Beneficiaries: 50000

8. **Task:** Drugs, Vaccines & Treatment

Brief about initiatives:

- a) Dr. Ashudeb Dutta, Dr. Soumya Jana and Dr. Shiv Govind Singh (EE dept.) are developing a smart wearable patch for the prevention of quick spread COVID-19 pandemic.
- b) Dr. Ranjith (MSME dept.) & Dr. Aravind Rengan (BME dept.) are developing Smart accessories for control and mitigation of infectious organisms.
- c) Dr. Satya Prakash Singh (Maths Dept.) is working on A cost effective approach to the design and analysis of multiple experimental groups: a useful methodology for comparing potential treatments for COVID-19.
- d) Many other faculty members are working on a number of ideas in this specific subject and their results are expected within a time frame of 12-18 months.

Expected number of Beneficiaries: Mass Population

9. **Task:** Sensors/Detection

Brief about initiatives:

- a) Dr. Harish Dixit (MAE dept.) is working on developing flow sensors for the ventilator system that faculty from the same dept. are developing.
- b) Dr. Shiv Govind Singh (EE dept.) is developing rapid, ultrasensitive biomolecule sensor for detecting coronavirus in individuals.
- c) Nemocare and Heamac, two startups of CfHE, mentored by Dr. Renu John (BME dept.) are working on wearables for Covid-19 patient monitoring in isolation wards without having to go near to the patient unless there is an emergency. Nemocare Raksha is a wireless wearable for monitoring Covid-19 patients. This device is for Covid-19 patients in the ICU segment and home care segment. The device is ready to be manufactured in a large scale.
- d) Kvyat Medical, a start up from CfHE, under the mentorship of Dr. Renu John (BME dept.) has developed a product "Traqaro", which enables organised tracking and monitoring of Covid-19 patients with the help of a Bluetooth-based wearable.
- e) Heamac Solutions, a start up from CfHE, under the mentorship of Dr. Renu John (BME dept.) has developed A Tracker to diagnose and prevent Covid-19 spread with the help of a wrist band to detect symptoms of Covid-19 infection, screening and support.
- f) Dr. Jyotsnendu Giri (BME dept.) is working on rapid, affordable, portable SARS-Cov-2 screening kit.
- g) Many other faculty members are working on a number of ideas in this area and their results are expected within a time frame of 6-12 months.

Expected number of Beneficiaries: 50000

10. **Task:** App for Data Collection

Brief about initiatives:

- a) Dr. Sobhan Babu (CSE dept.) is developing apps that collect data about health conditions of the citizens and provide to local administration on a constant basis.
- b) On the request of Telangana state government, his group has developed an app that helps to monitor quarantining.
- c) Dr. Kiran Kuchi and Dr. Pradeep Yemula (EE dept.) are working on the development of an analytics engine that processes the Covid-19 pandemic data collected by the state.

Expected number of Beneficiaries: Mass population

11. **Task:** Remote monitoring

Brief about initiative: Dr. Rajalakshmi (EE dept.) is working on IoT enabled remote monitoring of temperature and respiratory rate for Covid-19 infected patients.

Expected number of Beneficiaries: Mass population

12. **Task:** Visual Surveillance

Brief about initiative: Dr. Krishna Mohan (CSE dept) is leading a team to work on using visual surveillance to detect social distancing and people wearing masks.

Expected number of Beneficiaries: Mass population

13. **Task:** Transportation

Brief about initiative: Dr. Digvijay Pawar and Dr. Pritha Chatterjee (CE dept.) are modeling the Impact of Covid-19 outbreak on daily commute and vehicular emissions during the transition phase.

Expected number of Beneficiaries: Mass population

14. **Task:** Working mothers

Brief about initiative: Dr. Mahati and Dr. Haripriya (LA dept.) are working on exploring working mothers' experiences, regarding housework, childcare and professional work during the lockdown through regular interviews.

Expected number of Beneficiaries: Mass population

15. **Task:** Support Villages adopted under Unnat Bharat Abhiyan

Brief about initiatives:

- a) Interacting with Panchayat Secretaries of Mandal Panchayat of all the 5 adopted villages. A WhatsApp group has been created with all the secretaries as members also other members like farmer/ ASHA worker/ANM and Self-Help Group leaders have also been added to the group.
- b) Brochures, videos and other informative material related to COVID-19 have been shared through this group. We have translated some of the brochures sent by coordinating institute in Telugu to be shared with the village members which is attached for your reference.
- c) We are in constant touch with all the secretaries over the phone and they have been asked to reach us in case of any difficulty in the present situation.
- d) We have also reached out to the Regional Coordinating Institute -NIRD-PR who are also coordinating activities towards this pandemic.
- e) Activities under MNREGA scheme have started in the villages and Secretaries are asking for some face-masks for MNREGA workers. Hence, we have come-up with a procedure to

make a cloth mask locally. We are preparing a brochure/ video to be shared with the village SHGs to produce the masks.

- f) We have also shared call for proposals under UBA with all the faculty for technology development and customization in the adopted villages.
- g) We also had a web meeting with the Coordinating Institute (IIT Delhi) and all the Participating institutes of NIRDPR on 13th April.

Expected number of Beneficiaries: Mass population