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# A new strategy is needed to rejuvenate India's healthcare sector

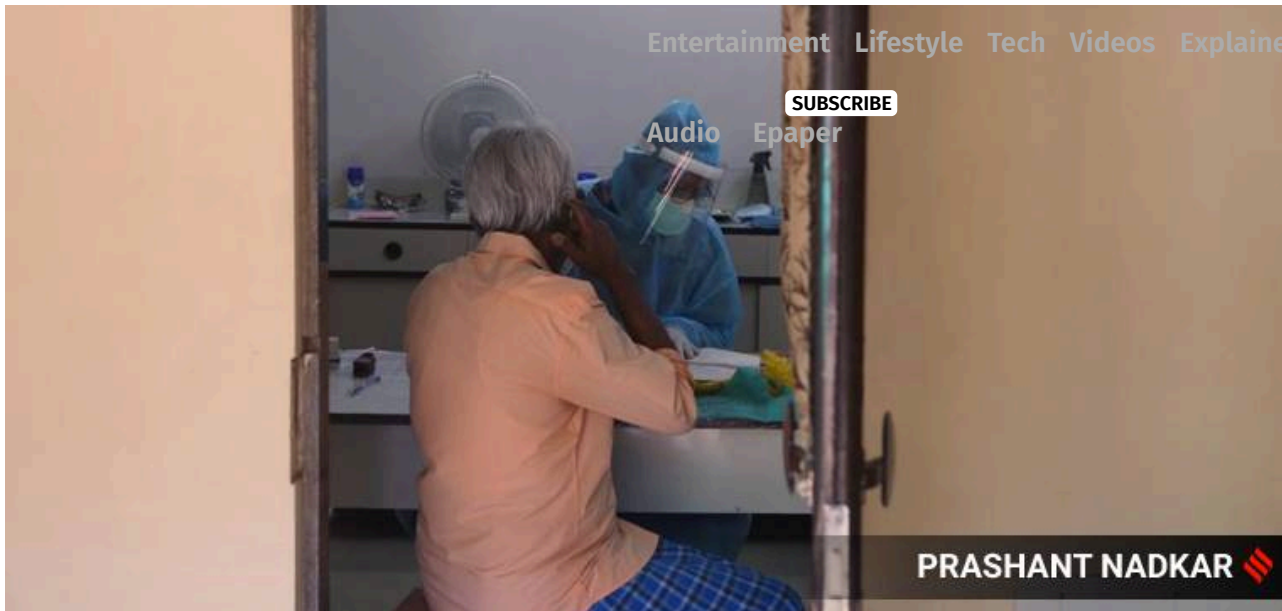
The new economic package that has been announced by the government should include a package for the healthcare industry of around Rs 2.1 lakh crore.

Updated: May 21, 2020 1:11:43 pm



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PRASHANT NADKAR

A doctor writes down details of a patient in Mumbai.

*Written by Janak Nabar, Ketan Reddy, Dipti Singhania, Subash Sasidharan*

India's response to the [COVID-19 pandemic](#) has been characterised as being amongst the most stringent, according to the Oxford COVID-19 Government Response Tracker. The country has been under a lockdown since March 24, and given India's inadequate health infrastructure, a stringent response had to be undertaken early on to contain the spread of the virus. In recent weeks, the focus has increasingly shifted towards a gradual exit from the lockdown, and several economists have suggested ways of managing the significant economic fallout that individuals and businesses have faced as a result of the extended lockdown.

On May 12, Prime Minister [Narendra Modi](#) announced a Rs 20 lakh crore economic package equivalent to 10 per cent of GDP. While the package has targeted liquidity issues for MSMEs, due attention should also be given to the healthcare system, and the increasing strain it will face once the lockdown is lifted. There have been several examples of how public research laboratories, public institutions like the IITs, and private players including startups have risen to the challenge of working on COVID-19 testing kits, masks, alcohol-based sanitizers, personal protective equipment (PPEs) and ventilators, to overcome challenges of global supply chain disruptions and to cater to domestic needs. It would be prudent to anticipate that some of these needs are only going to increase in a post lockdown world, and with the spotlight currently on India's indigenous innovative capabilities in the fight

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## Focus on healthcare infrastructure and healthcare R&D to aid India's economic recovery

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To put India's poor health infrastructure into perspective, consider this – according to a Brookings study by Prachi Singh, Shamika Ravi and Sikim Chakraborty published in March 2020 and using data from the National Health Profile-2019, the total number of hospital beds in the country was 7,13,986 which translates to 0.55 beds per 1000 population. Furthermore, the study also highlighted that 12 states that account for 70 per cent of India's 1.3 billion population were found to have hospital beds per 1000 population below the national average of 0.55 beds. In terms of access and quality of health services, India was ranked 145 out of 195 countries in a Lancet study published in 2018, below countries like [China](#) (48), [Sri Lanka](#) (71) [Bhutan](#) (134) and [Bangladesh](#) (132).

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An emergency quarantine centre with 1,200 beds is set up in Navi Mumbai.

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India's general government expenditure on healthcare as a per cent of GDP was just 1.0 per cent in 2017, according to WHO data, placing it at number 165 out of 186 countries in terms of government expenditure on healthcare. Compounding this problem of poor health infrastructure and low spending, especially in the current environment that has caused significant disruptions to the global supply chains, is India's dependence on medical devices imports.

### **Editorial | Government's conservative approach towards addressing economic shock will need to be reexamined**

According to the Association of Indian Medical Device Industry (AiMeD), India's medical devices imports were around Rs 39,000 crore in FY2019, having seen a growth of 24 per cent from the previous year. Furthermore, these imports were



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Much of the data presented above highlights the fact that fighting any major health emergency let alone an outbreak of this magnitude was always going to be a tough task for India. The pandemic has provided India an opportunity to focus on its indigenous innovative capabilities, with some commendable public and private partnerships currently underway to tackle the crisis. It is important to note that India's expenditure on R&D as a per cent of GDP has continued to remain stagnant at 0.7 per cent of GDP for three decades, with the public sector accounting for 51.8 per cent of national R&D expenditure. This compares to around 2.8 per cent of GDP for the US, 2.1 per cent of GDP for China, 4.4 per cent of GDP for Korea and around 3 per cent for Germany where the dominant sector by spending on R&D is the private sector. Furthermore, while India's public R&D expenditure on healthcare as a share of central government spending on R&D has increased to 5.5 per cent, a figure that is now comparable to that in Germany, it remains low compared to over 25 per cent in the US and around 9 per cent in Korea. When one considers the ranking of the world's top 2500 R&D firms globally according to the 2019 EU Industrial R&D scoreboards, there are 13 Indian firms present in the Pharmaceuticals & Biotechnology sector as compared to 221 firms from the US, 44 firms from China and 9 firms from Germany, whereas India has no R&D presence in the healthcare equipment and services sector as compared to 48 firms from the US, 6 from China and 8 from Germany.

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Healthcare professionals in Mumbai.

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The structure of India's healthcare industry means that India now needs to build on its competitive position in the Pharmaceutical and Biotechnology sector, where it has established a name for itself in delivering low cost drugs and vaccines. The industry has been at the forefront globally in the fight against COVID-19, with medical supplies having been provided to over 120 countries. Given the massive industrial base and demand for healthcare in India, a ramp up in spending on health infrastructure and healthcare R&D with a focus on healthcare equipment and services would surely aid in India's economic recovery, by not only protecting the well-being of its own citizens but also providing access to high quality and affordable healthcare equipment globally.

**Synergise government, academia and industry efforts**



innovation, i.e., bringing together the government, academia and industry, now explained more than ever. To this end, the Government of India established a 'COVID-19 Taskforce' with the objective of mapping together various technological advancements related to COVID-19 in public R&D labs, academia, start-ups, and industries. The task force has already identified over 500 entities in the fields of medicines, ventilators, protective gear, among others. India has seen the benefits of such collaborations in the past – in 2014, the Rotavac vaccine was developed under the leadership of Dr M K Bhan, as part of an international consortium that included India's Department of Biotechnology and other partners from academia and industry.

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Several public-private partnerships and collaborations are already underway. The Defence Research and Development Organisation (DRDO) which has developed ventilators, is collaborating with industry to scale up production to 10,000 units per month. Nocca Robotics, a start-up incubated at the Indian Institute of Technology Kanpur, has entered into an agreement with Bharat Dynamics Ltd. (BDL), a public sector undertaking where the latter will be involved in large scale development of ventilators. Startups like Marut Dronetech are partnering with various state governments to employ drones to monitor adherence to [social distancing](#) norms. Pune based startup, MyLab Discovery Solutions, has developed a cost-effective indigenous testing kit, Pathodetect, and has not only received approval from ICMR and CDSCO but has also been selected to receive financial assistance from the Technology Development Board to ramp up the manufacturing of these kits. The Pathodetect test kit costs almost a quarter of the cost of kits from its international competitors and also provides the results in less than 3 hours compared to alternative testing kits that take upto 7-8 hours to provide results. The Mahindra & Mahindra group has recently launched its low-cost ventilator AIR 100, and is an outcome of the collaboration between the Mahindra & Mahindra group and the Indian government.

Better coordination of the various technological developments through greater synergy between the government, academia and industry with respect to research and manufacturing could help minimise duplication of efforts and result in more



by public R&D labs on plasma therapy and genome sequencing of SARS-CoV-2, by startups from the IITs that are developing personal protective equipment or even antimicrobial agents that could be used to coat textiles, and by industry that is using Artificial Intelligence to for purposes of drug discovery for example, need to be closely evaluated and provided necessary regulatory and funding support to bring these technologies into production.

Samples are collected for diagnoses in New Delhi.

## **Spend Rs 2.1 L Crores to boost infrastructure and encourage open innovation**

The new economic package that has been announced by the government should include a package for the healthcare industry of around Rs 2.1 lakh crore. The



technologies that India would need in combating the spread of the virus once the lockdown is lifted. The expenditure on healthcare infrastructure would take India's general government expenditure on healthcare as a share of GDP to around 2.0 per cent, while the Rs 10,000 crore allocation would take India's healthcare R&D spending to close to 20 per cent of central government expenditure on R&D.

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The current funding landscape for collaborative research includes grants that vary from Rs 50 lakh to Rs 1 crore depending on whether it is an early stage proposal or a more advanced workable solution, such as the 'ignition grant' from the US-India Science & Technology Endowment Fund (USISTEF). The National Research Development Corporation (NRDC) is offering financial support up to Rs 10 lakh for necessary infrastructure for researchers and innovators involved in the development of eco-friendly sanitizers, rapid test kits, PPEs, ventilators, medicines, and vaccines. The Department of Science and Technology (DST) also set up a rapid response centre CAWACH – Centre for Augmenting WAR with COVID-19 Health Crisis – to provide support to 50 innovations and startups addressing various challenges posed by the pandemic. The scale of funding required however is significantly larger than what is currently available.

In the current context, an important aspect to consider here while increasing the amount of funding, is the promotion of open innovation models. The open innovation model allows for the integration of an external knowledge talent pool with in-built capabilities of a firm, thereby bringing together a network of collaborators involved in biomedical research and drug discovery. The Pharmaceutical industry has traditionally followed the closed-innovation model characterised by centralized R&D. However the industry has been experiencing a decline in productivity as well as an increase in the cost of operations worldwide – according to a report by Deloitte Centre for Health Solutions, twelve major drug companies had a return of mere 1.8 percent against their R&D spending in 2019 compared to a return of 10.1 percent in 2010. Of late, key pharma majors like Johnson & Johnson have begun to resort to models of open innovation. Similarly in Japan, Takeda, a pharmaceutical giant has launched the “Shonan ipark” an innovation park that promotes cross-industry collaboration. India too has



from government and the private sector to find a low cost cure for tuberculosis. Going forward, an open innovation model especially government funded research would provide a channel for researchers to share their R&D outcomes, thereby enabling maximum involvement of all parties in the collaborative effort and also ensure much needed transparency. These models would also help overcome challenges such as the monopoly power and benefits that accrue to a firm due to patents.

## Structural Changes needed in India's health policy

The ongoing response to the pandemic calls for a new strategy to transform and rejuvenate India's healthcare sector. It would be prudent to include a package for the healthcare industry totalling Rs 2.1 lakh crore to boost India's healthcare infrastructure and support more R&D and innovation in healthcare. The triple helix model of government, academia and industry is ever more important at this time of uncertainty. Accompanying this scale of funding would be the need to promote open innovation models for better coordination of the efforts and for greater transparency in the research collaborations. This is a health crisis that is expected to stay with us for some time to come. The response to the pandemic offers an opportunity to bring about structural changes in India's health policy, see greater technology deepening in the healthcare sector with a focus on healthcare equipment, reduce India's dependence on imports of medical devices, and aid in India's economic recovery.

*Janak Nabar and Dipti Singhania are with the Centre for Technology, Innovation and Economic Research (CTIER), Pune. Ketan Reddy and Subash Sasidharan are with the Indian Institute of Technology Madras. Views are personal.*



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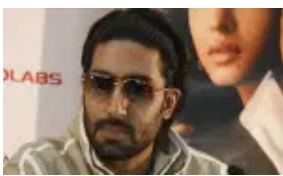
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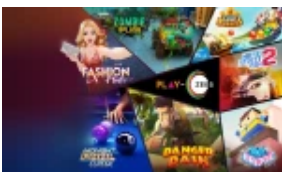
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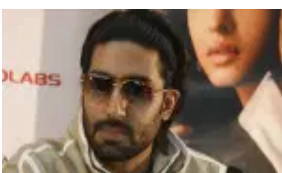
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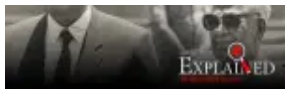


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