Editorial

COVID-19 pandemic in India: A clarion call for better preparedness

Coronaviruses (CoVs) comprise a large family of viruses that cause respiratory and intestinal infections in animals and humans. Generally, the respiratory disease caused ranges from a mild common cold-like illness to severe respiratory failure as was seen in the severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome that were CoV-caused outbreaks reported in 2003 and 2012, respectively, each leading to few hundred deaths.[1] The current coronavirus disease 2019 (COVID-19) pandemic caused by SARS–CoV-2 virus, was first reported from China in December 2019 and seems to be engulfing the world in a manner similar to the Spanish flu of 1918. While the Western countries in North America and Europe have been the most affected, COVID-19 has involved more than 200 countries with millions of infections and thousands of deaths.[2] India witnessed a rather late surge, with the first case reported from Kerala on January 30, 2020, and since then, thousands of cases being reported from all states, with Maharashtra being the most affected state in the country.[3] While some countries have reported reduction in daily deaths and the number of active cases, New Zealand has claimed elimination of the virus from its country on April 27, 2020. Based on the suspected-infected-recovered model, some mathematical modeling experts estimate that India will enter equilibrium by the end of May 2020,[4] while others have portrayed a more grim scenario with a predicted long haul and a huge requirements for infrastructure.[5]

The current issue of *Lung India* carries a series of articles related to COVID-19 and its various aspects in terms of public health preparedness and the necessity for innovation, globally in general and locally in particular.

Sheetu and Sharma,[6] in their review on COVID in the current issue of Lung India, describe the various aspects of the disease in detail including the current approaches to management. While the clinical presentation is fairly well described, the ever-emerging data add to our current understanding on a regular basis and the full spectrum may come to the fore sometime in future. In this context, the Centers for Disease Control and Prevention, only yesterday, added chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste or smell as six more symptoms indicative of possible SARS-CoV-2 infection in addition to the initially suggested symptoms of fever, dry cough, and shortness of breath;[7] also warning that the list is not all inclusive. It is important to note that the symptoms generally appear 2–14 days after exposure to the virus and asymptomatic persons may be the "stealth" spreaders capable of causing infection in the community.[8] Critically sick patients have a variety of phenotypic presentations, with the most common being that of a pneumonia rapidly degenerating into an acute respiratory distress syndrome-like illness and multi-organ failure, and death in the most vulnerable. However, other manifestations have included predominant involvement of other organs and development of a diffuse clinically significant coagulopathy, antiphospholipid antibodies, and multiple infarcts, suggestive of a diffuse thrombotic process.[9] Cardiac involvement as the dominant manifestation has also been reported.

The gold standard of diagnosis of COVID-19 is detection of the viral RNA by real-time-polymerase chain reaction from a nasopharyngeal swab or sputum sample, with results within a few hours to 2 days. Various sites of sample collection have varied yield with an overall sensitivity of only around 60%–70%.[10] For this reason, computed tomography imaging was used extensively in China to diagnose the disease, irrespective of the results of the molecular test. The current issue of *Lung India* carries a report from Thailand where a diagnosis of COVID-19 was made in a patient based on the testing of bronchoalveolar lavage (BAL) specimen when the nasopharyngeal specimen was repeatedly negative.[11] While this case emphasizes the possible improved utility of BAL as a specimen for diagnosis, most of the interventional pulmonology societies advise against utilizing aerosol-generating procedures such as bronchoscopy for obtaining specimens for routine diagnosis.[12,13] However, if a decision to perform a bronchoscopy is made, the risks and possible benefits need to be delicately balanced.

As the pandemic started unfolding, the Indian regulatory agencies went on dynamically changing the criteria for testing and quarantining, first focusing only on travelers from certain countries and then incrementally broadening the criteria to involve those who had unexplained severe acute respiratory infection and subsequently to those with unexplained Influenza-like illness.[14] Similar strategy was adopted for quarantine, and uniformity of the policy across the country was lacking, with states resorting to dichotomous approaches. In a major review of its earlier policy, the Ministry as of April 27, 2020, allowed home quarantine for mildly symptomatic and presymptomatic COVID-positive cases with facilities of adequate isolation at home, digital monitoring of movement via the Aarogya Setu mobile app, availability of prophylactically treated care provider, and immediate access to a medical

care facility in case of appearance of certain warning symptoms.[15] The change in policy was brought subsequent to an Apex Court direction in response to a petition filed by a prominent chest physician against the governmental policy of admitting such cases in hospitals, posing a risk to the health-care providers.

As the pandemic struck, the world was suddenly staring at the deficit of infrastructure and personnel with effective protection gear. A number of health-care workers lost their lives in the line of their duty, raising serious concerns about the adequacy of the personal protective equipment (PPE) that remains in global shortage. Christopher *et al*.,[16] in their review in the current issue of *Lung India,* delve in detail on the issues that require attention in hospital preparedness and present an implementable model of triaging suspects and moderate and critically sick patients into dedicated areas, with appropriate infrastructure and personnel. These require serious attention of the policy planners, given the backdrop of a country with an inadequate economic cushion which mandates cutting corners and resorting to cost-effective measures. In the same vein, Prakash *et al*.[17] in the current issue of *Lung India* discuss the need for reuse of equipment and propose gamma irradiation of the N95 respirator masks for their reusability in the context of global shortages and cost cutting. Hospitals have to adopt mechanisms to ration the PPE, reuse them following a proper protocol, and allow the access of minimum possible health-care personnel to the contaminated areas.

The management of COVID is largely supportive involving isolation of patients to prevent spread, and symptomatic treatment for symptoms and critical care, including ventilatory support for the very sick. While social distancing and isolation have remained the mainstay of the medical response, repurposed antiviral therapy and other ancillary therapies have been proposed. Singh *et al*., in this issue of *Lung India*,[18] in a systematic review of the literature describe the possible role of hypertonic saline gargles and nasopharyngeal wash in the prevention and care of patients with COVID-19. However, they emphasize that further study is needed for evaluating the measure in the context of COVID-19, in particular.

While no specific evidence-based treatment is available to treat CoV infections in humans, emergency authorization for use on compassionate grounds has been accorded by the FDA for certain agents that have been used in China and other countries and for whom the evidence is just emerging. Such agents include antimalarials such as chloroquine and hydroxychloroquine and antivirals such as remdesivir. Other agents that have been used include darunavir, nelfinavir, azatinavir, galidesivir and combinations of various antivirals typically used for infections such as influenza and HIV. Conflicting data about the efficacy and safety of these agents have emerged, and no evidence-based consensus for their use exists at present. Sheetu and Sharma[6] point to this fact of the faulty design of clinical trials that have been the basis of authorization for the use of some of these agents, specifically hydroxychloroquine. Thus, there is an urgent need for newer/repurposed molecules that are safe and effective for the management of COVID-19. A number of clinical trials are underway for various other investigational agents for possible benefit in COVID-19. Cytokine release syndrome is known to affect a number of COVID-19 cases,[19] and these patients could be potential candidates for anti-cytokine therapy such as interleukin (IL)-6 and IL-6R antagonists. Apart from agents against the virus and the cytokines, immunomodulators may have a role in modulating the immune response of the infected patients. Sehgal *et al*.,[20] in the current issue of *Lung India*, based on their preliminary experience of four cases, found *Mycobacterium* w to be a safe add-on to the management and suggested that immunomodulators such as *Mycobacterium* w could be considered as potential adjuncts in the therapy of sick patients with COVID-19. Unfortunately, empiric therapies currently employed in the management of COVID have all been challenged in clinical trials, and the jury is still out for the final verdict on the evidence-based use of agents such as chloroquine, hydroxychloroquine, and remdesivir, all with tall claims of initial success.

While a number of measures were adopted by the Government of India to tackle the unprecedented crisis, there is scant data on the public perceptions of such measures and the willingness of people to adopt them. Mehta *et al*.[21] conducted an online survey to address these issues in an online survey of 4775 responders and presented their results in this issue of *Lung India*. The survey recorded weak links and potential failure points of the current measures and found that fears and anxiety were rife among the responders that need to be addressed through better communication amidst the virtual epidemic of misinformation. Interestingly, the survey also found that about 60% of well-to-do families would like to pay for quality care available in private facilities rather than further tax the already-burdened public facilities. Policy planners and administrators need to take this aspect into consideration while modulating policies for approach to the pandemic.

While the "lockdown" of the entire country announced by the Prime Minister from March 24 after a single-day Janta Curfew on March 22 is sure to have reduced the transmission, the socioeconomic fallout has ultimately to weighed and balanced against the potential advantages of containment and enforced social distancing. Nonetheless, the prolonged lockdown accorded the authorities the unique opportunity to prepare for a possible upsurge of cases feared when the lockdown is finally removed. The current pandemic while having brought to surface the readiness of the government to take quick proactive albeit tough measures with bravado, is unfortunately a testimony to the weaknesses in our health-care delivery system. While it is evident that any system can be overwhelmed when confronted with the outbreaks of such catastrophic

magnitude like we witnessed in case of the USA and the European systems, the limited capacity of our country to handle such crises clearly stares us in our face. For a country of 1.3 billion people, a spending of 1.2% of GDP on health care may just not be enough to ramp our capacity and the policy planners need to take a serious call on recalibrating our priorities because once it comes to the choice of life versus livelihood, the former takes a clear precedence. We need to be better prepared whenever the next pandemic hits the world so that we are not again caught off guard.

Parvaiz A Koul[1], Raja Dhar[2]

[1]Department of Internal and Pulmonary Medicine, Sher-I-Kashmir Institute of Medical Sciences, Srinagar, Jammu and Kashmir, India, [2]Department of Pulmonology, Fortis Hospital, Kolkata, West Bengal, India
E-mail: parvaizk@gmail.com

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