Editorial

Combating COVID-19: Testing and/or Vaccinating?

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Coronavirus SARS-CoV-2 emerged in a wet market in Wuhan, China, and within a few weeks the morbidity and mortality exhibited by it led to the declaration by WHO of a worldwide pandemic of COVID-19 on the 11th of March, 2020 [1]. Plans to halt the pandemic were devised - based on the proportion of the population at risk that needed to be protected in order for transmission to end significantly and quickly enough. The strategies revolved around the Basic Reproductive Number, R_0 being reduced to less than 1. At this value the spread of infection shrinks and gradually shrivels up [2]. The R_0 for India was calculated to be 1.2561 [3]. The highest R_0 for any country was that of the Syrian Arab Republic at 2.7936 and the lowest was for Nigeria at 1.0011. The mean R_0 was estimated to be 2.2 [2].

Bringing the R_0 to levels below 1, requires two alternate strategies: administering vaccination to the population, or testing individuals for the disease. Taking into account the mean R_0 of 2.2, 55% of the vulnerable persons have to be inoculated to attain a R_0 of less than one. On the other hand testing, isolation and treatment of 82% of suspected COVID 19 patients with clinical symptoms is expected yield the same result of R_0. Since the vulnerable population far exceeds the subjects with suspected COVID-19 symptoms, the number of people requiring testing, isolation and treatment would be far less than the number of people that would have to be innoculated [2]. Upon attempting to calculate the number of days it would take to end the pandemic hypothetically, inoculation of 55% of the population would achieve herd-immunity and reduce R_0 to less than 1. However, sporadic infections would continue for many years. In contrast, it is expected that if 80% of symptomatic COVID-19 patients in the population can be tested, isolated and treated, the pandemic would end in one year.

As reported by UN Geoscheme, on the 23rd of March, 2021, the world stands at 126001585 COVID-19 cases, with 806028 being detected that day itself. However, the total number of infected persons in a country remains unknown. We only know the results of those who have been tested. The number of people with positive RTPCR test comprise the positive cases. The 'positive rate' offers a good insight into whether the nations are testing in sufficient numbers. According to WHO, a positive rate of <5% indicates that the infection spread for that country is under control. The positive rate can also help understanding the spread of the virus: an increasing trend suggesting faster spread of the infection. India holds the 5th rank in adequate testing, with an adequacy of testing at 5.77 [4].

However there are various problems with COVID 19 testing. No pathological evaluation is always correct and therefore in clinical practice sensitivity and specificity are assessed by evaluating its performance against a "benchmark test." The absence of a benchmark for COVID-19 diagnostic test makes the determination of the correctness of test results very difficult. A methodical review of RT-PCR studies of COVID -19 revealed that the sensitivity of the test varied from 98% to 71% [5]. The sensitivity of RTPCR also varies depending on the site and adequacy of sampling. For e.g. sensitivity of RTPCR in 205 subjects differed according to the site of sample collection viz. broncho-alveolar lavage (93%), sputum (72%), nasal swabs (63%), and for throat swabs (32%) [6]. The above implies the need for multiple testing.

Within less than 12 months after the beginning of the pandemic, research teams from across various nations rose to develop vaccines offering protection from SARS-CoV-2 genome; and the first safety trials in humans started from as early as March, 2020 itself.

The public opinion polls before rolling out of vaccines indicated a suboptimal acceptance, with 20-27% refusing to take vaccination at all. The causes for vaccination hesitancy were assessed. The commonest reason was fear of developing side effects, followed by scepticism of efficacy of vaccination and lastly desire to acquire natural disease immunity. Vaccine acceptance was associated with improved understanding of COVID-19 and about vaccines in general [7,8]. According to MoHFW, India has given 44846538 first doses so far, highest vaccine acceptance being in Maharashtra, the state with the highest cases.

Testing is the window through which we can assess the pandemic – with no testing, there is no data; with no data, there is no understanding of the pandemic. Only if we understand the pandemic, will we be able to assess and formulate interventions which can be implemented. Whereas, to bring the pandemic to an end, an immune population is essential, and the only likely way to attain that is through vaccination. Vaccination is the most effectual community health method for preventing diseases. In an ideal world with adequate resources both should go hand in hand. What should be done in nations with resource constraints? In our opinion the stress should be on universal vaccination with testing of symptomatic cases and contacts.

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