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Short Communication

SARS-CoV-2 (Covid-19) Vaccine Trials – A Perspective

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Vaccines are the lifeblood of stopping any pandemic, and closely monitored vaccine trials are essential to collect correct data. Good data means safe and effective vaccine for the population. The trials need to be conducted on a sufficiently large population (post the initial safety test) with diverse gender (male, female, non-binary), demographic, ethnographic, socio-economic status, and other parameters to ensure that the vaccine is safe for all strata of people.

India approved two vaccines Covaxin and Covishield, for phase 1 as Emergency Use Authorization (EUA). Currently, phase 2/3 is on for both Covishield and Covaxin. India has started widespread vaccination for the population ≥ 45 years before the final results of the various trials are available due to the pandemic and is going to start vaccinating the younger population ≥ 18 years starting the 1st of May, 2021

This rollout raises an essential and pertinent question, is this right thing to and what are the costs of this decision. What is important to remember is that from a statistical point of view, a value may be insignificant, but looking from an individual's viewpoint, if affected, it would be devastating.

Let us compare both the vaccines Covaxin and Covishield and understand their trial mechanisms to get things into perspective.

Covaxin is a whole virion inactivated SARS-CoV-2 vaccine formulated with a toll-like receptor 7/8 agonist molecule adsorbed to Alum. It was trialed (Phase 1) between July 13-30, 2020, across 11 hospitals in India. Overall, 375 people participated, 75 participants received control solution, and the rest divided into groups of 100, administered three different dosages and combinations [1]. The result concluded that there was no adverse effect and deferred the analysis of efficacy, vaccine-induced antibody responses, or long-term safety outcomes. The participants in the trials were predominantly male with less ethnic diversity and, as the study quoted, requires more research.

The Phase 2 trial was between the 5th and 12th of September, 2020 [2], where 380 participants were part of the trial. The participants were between the age of 12-65 years, and as the study points out, more study to be conducted during phase 3 (which is currently happening)

Covishield, on the other hand, is a derivative of the AstraZeneca vaccine (ChAdOx1 nCoV-19), which was developed at Oxford University and consists of a replication-deficient chimpanzee adenoviral vector ChAdOx1, containing the SARS-CoV-2 structural surface glycoprotein antigen (spike protein; nCoV-19) gene. It was first trialed in the UK in April 2020 [3] and subsequently in other countries like Brazil, South Africa, and Kenya (although they have not yet published the outcome from Kenya). There are four ongoing blinded, randomized, controlled trials outside India, with Covishield trialed in India. The first trial, titled COV001 (Phase1/2, UK), is a safety trial on

1077 patients in the 18-55 age group. The other trials COV002 (Phase 2/3, UK), COV003 (Phase 3, Brazil), and COV005 (Phase1/2, South Africa). The vaccine's safety is assessed using data from all the studies. The pooled data from COV002 and COV003 is used to assess the interim efficacy.

A total of 23848 participants [3] across three countries (Brazil, UK, and South Africa) were part of the trial and 11636 participant's data were included in the interim primary efficacy analysis. The participants were from a broader geographic location and were of diverse ethnicity and gender. The UK predominantly trialed on women volunteers. They started with single-dose efficacy but modified the protocol for two dosages. The results seem positive in that the interim report does prove the efficacy of the vaccine.

Regarding the adverse effects of both on the trial participants, the AstraZeneca vaccine (ChAdOx1 nCoV-19) was paused in mid-march [4] due to adverse reports of thromboembolic events in vaccinated individuals. The EMA (European Medicines Agency) reported around 30 cases out of approximately 5 million people vaccinated in the European Economic Area (EEA). The company analyzed data from Denmark and found through statistical analysis that the occurrence is not more due to vaccination and calls out that there is no concrete evidence of this vaccine not causing thromboembolic events. The above is an interesting analysis as the data has been studied only for Denmark (as noted in the paper). However, across the other European countries, the occurrences seem to be within Danish occurrences. This analysis may or may not be a valid line of reasoning as there are differences between the European geographies, and definitely, alluding them to be homogeneous and extrapolating them does not seem very apt. The countries restarted the paused trial as the pandemic increased and are monitoring the incidences.

In the case of Covaxin, there are no severe adverse reactions reported. It could be due to various reasons as Covaxin is currently under trial with EUA, there could be areas where this is not tracked or not attributed to this vaccine.

There is a systemic review of the adverse events reported from covid-19 vaccine trials [5], and this paper compares most vaccines up to December 2020. Also, this paper is limited to the data published by the vaccine companies.

When we compare and contrast the approach taken by these two vaccines in terms of the number of participants, the diversity of the population tested upon, the age group, it seems that Covishield has done more than Covaxin. An open question in both the trials is the overall safety of the participants with co-morbidities like diabetes. The long-term effect of this in the older population also needs to be studied. It is all the more imperative that as we are vaccinating the entire population eligible to be vaccinated a close eye on the adverse symptoms, however small and insignificant they may be, should be reported, captured, and analyzed.

Covaxin, for example, in phase 2 tested on people till age 65, but as we are vaccinating the older population, this exercise in itself is becoming a so-called phase 3. How are we monitoring and capturing data from this is something the companies have to tell?.

To summarize, the government's decision to authorize emergency use and then vaccinate the broader population was to stop the pandemic. Appropriate follow-up mechanisms should in place for following up on the status of the vaccinated. Establishing call centers and widespread information booths to help even the socially and economically weaker section of the society to share their symptoms/adverse reactions is important. Also, we need to be aware that EMA is not a commercially available vaccine as per Food and Drug Administration (FDA), where governments control the vaccine distribution. Here in India, the vaccine is being marketed (in a broad sense of usage) to different private players for vaccinating the population. So being watchful and monitoring will help keep the population safe.

References

1. Raches Ella, Krishna Mohan Vadrevu, Harsh Jogdand, DVM Sai Prasad, Siddharth Reddy, Vamshi Sarangi, etal. Safety and Immunogenicity of an Inactivated SARS-CoV-2 Vaccine, BBV152: a Double-Blind, Randomised, phase 1 trial. Lancet Infect Dis . 2021;21(5):637-646.

2. Raches Ella, Siddharth Reddy, Harsh Jogdand, Vamshi Sarangi, Brunda Ganneru, Sai Prasad, et al. Safety and Immunogenicity of an Inactivated SARS-CoV-2 Vaccine, BBV152: Interim Results from a Double-blind, Randomised, Multicentre, Phase 2 trial, and 3-month Follow-Up of A Dou-

ble-Blind, Randomised Phase 1 Trial. Lancet Infect Dis. 202;S1473-3099(21)00070-0.

3. Merryn Voysey, Sue Ann Costa Clemens, Shabir A Madhi, Lily Y Weckx, Pedro M Folegatti, et al. Safety and Efficacy of the ChAdOx1 nCoV-19 Vaccine (AZD1222) against SARS-CoV-2: an Interim Analysis of Four Randomised Controlled Trials In Brazil, South Africa, and the UK. Lancet. 2021;397(10269):99-111.

4. Søren Dinesen Østergaard, Morten Schmidt, Erzsébet Horváth-Puhó, Reimar Wernich Thomsen, Henrik Toft Sørensen. Thromboembolism and the Oxford-AstraZeneca COVID-19 vaccine: side-effect or coincidence?. Lancet . 2021;397(10283):1441-1443.

5. Rimple Jeet Kaur, Siddhartha Dutta, Pankaj Bhardwaj, Jaykaran Charan, Sameer Dhingra, et al. Adverse Events Reported From COVID-19 Vaccine Trials: A Systematic Review. Indian J Clin Biochem . 2021;1-13.