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Vaccine: A cure or leap of faith?

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The efficacy of the COVID-19 vaccines are based on clinical trials conducted, there is no real world evidence so far as the vaccines have been developed within a very short time frame. Real world data about the efficacy of the vaccines will be available soon, once mass inoculation is initiated.

The world has waited with bated breath for the cure of COVID-19, and finally we are on the brink of a major breakthrough not only in terms of a vaccine but also the advancements that we have seen in the last one year when it comes to how the future is going to be going forward. COVID-19 not only scarred the year 2020, but it has left a lasting impression on every individual for years to come. Everything else took a backseat as COVID-19 ravaged through nations. The pharma and healthcare fraternity were baffled with what SARS-CoV-2 was capable of doing. Initial treatments were just experimental drugs that were repurposed for the treatment of COVID-19 infections as they showed promising results. Scientists and researchers spent sleepless nights trying to understand the virus to combat it.

Currently as per the World Health Organisation (WHO) there are 52 vaccine candidates (as on December 10, 2020) that are in different phases of clinical trial and another 162 candidate vaccines in preclinical evaluation. India has five vaccine candidates in advanced phases of human clinical trials. COVAXIN, being developed by Hyderabad based Bharat Biotech in collaboration with Indian Council of Medical Research (ICMR), COVISHIELD developed by Pune based Serum Institute of India, ZyCoV-D developed by Ahmedabad based Zydus and Hyderabad firm Biological E's novel Covid-19 vaccine, and Russia's Sputinik V in association with Dr. Reddy's Labs.

--------- Dr Sanjiv Kumar, Chair,Indian Academy of Public by Health, Delhi and Gurugram based Indian Alliance of Patients Group; Former Senior Advisor, United Nations Children's Fund (UNICEF), Delhi is of the opinion that vaccines for COVID-19 have been developed at an unprecedented pace. "COVID-19 vaccines are available in less than a year whereas earlier it took about ten years. Regulatory authorities including WHO and ICMR have repeatedly emphasised that there is no compromise on safety standards. Though all measures to ensure safety have been taken in fast tracking COVID-19 vaccine development", he says.

The UK has gone ahead and approved Pfizer's vaccine for emergency use authorisation (EUA) having an efficacy of 95 per cent. It has also been approved in the US, Singapore and Canada. Russia's Sputnik V, the first vaccine that was registered

with the WHO for the treatment of COVID-19 as well has an efficacy of 91.4 per cent. The frontrunners to the COVID-19 vaccine have been in different phases of trial and will be awaiting approvals once the data is submitted.

----------**Dr Ambarish Dutta, Additional Professor – Epidemiology, Indian Institute of Public Health (an institution of Public Health Foundation of India), Bhubaneswar, says**, "The efficacy of the vaccine is likely to change with data emerging from longer follow-up periods (though unrelated with mass inoculation as it does not depend how many people get. The herd immunity depends on that and not vaccine efficacy). That will determine whether repeat shots will be needed or not." The cure to pandemics of the past has mostly been herd immunity or a vaccine. The world was put on notice and we had a herculean task at hand, to find an effective cure to save mankind from a virus that just jumped from animal to humans. According to David Wallace- Wells, Journalist, Author, The Uninhabitable Earth, Moderna's mRNA-1273 vaccine was ready by January 13, 2020 just two days after the genetic sequence had been made public. Yet that wasn't all. The vaccine still had to undergo trials to determine the efficacy of the vaccine, once the trials were over, the vaccine would have to be approved, commercialisation, availability, supply chain to the masses were some massive challenges.

----------**Dr Debkishore Gupta, Consultant Clinical Microbiology, Infectious Disease and Head of Infection Control, CK Birla Hospitals, Kolkata mentions,** "As per the normal norms, usually above 60 per cent efficacy is enough but with recent data most of the vaccines are reaching up to 90 per cent, which we did not expect in the beginning and seems to be encouraging."
The trials that have been conducted is nothing short of a miracle as per today's standards. To develop and perfect a vaccine usually would take about ten years. Yet today we have 52 vaccine candidates that will be approved in the coming days depending on the data from the trials and their efficacies.

----------Dr Anup R Warrier, Senior Consultant Infection Control, Aster Medcity, Kochi opines, "The trials have limitations in the time required to identify long term efficacy. But both antibodies production and infections in the three months post vaccination are markers to show short term protection. Similarly, long term safety data will emerge only over time." We may or may not have a perfect vaccine for the COVID-19, but the world is better prepared than ever to deal with pandemics in the future. COVID-19 has been a wake- up call for major investments in R&D and a better healthcare infrastructure striving towards UHC. The long term implications of the vaccine are yet to be determined. This is mainly due to the short time frame that vaccine developers have had to test the vaccines in the long run.

Talking on this **Dr Bharesh Dedhia, Consultant, Critical Care, Hinduja Hospital, Khar, Mumbai** says "Long term impact of vaccines will only be available retrospectively, after a few years. But there is no question that preventing COVID-19 through vaccines is far safer than allowing natural immunity by getting infected." In the coming days as more trials are completed and approvals granted by authorities, the number of COVID-19 vaccines will see an upsurge. Depending on the country and also the availability, people are going to get vaccinated eventually. In the following months, there will likely be a steep decline in the number of COVID-19 infections and deaths.

----------Dr Soumya Swaminathan, Chief Scientist, WHO, Geneva, Switzerland says, "We hope the vaccine will prevent infection so that transmission is cut as well, but as of now we don't have the evidence to prove that. So it's really important that everyone who gets the vaccine continues to take precautions." Currently the challenge is to complete the clinical trials with stringent measures following all protocols, then making it available to the masses for inoculation. Experts have shown confidence in the vaccines based on the data of clinical trials conducted. The data has been promising, volunteers developed antibodies once they were vaccinated with major side effects or reactions. The other challenge that still needs to be addressed is how long will the antibodies remain in the body after vaccination. Currently there isn't enough data on how long the antibodies last. Most vaccines will be available in two doses for maximum efficacy.

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