SECTION: PIL

IN THE SUPREME COURT OF INDIA
(CIVIL ORIGINAL JURISDICTION)

WRIT PETITION (CIVIL) NO. 607 OF 2021

IN THE MATTER OF:

DR. JACOB PULIYEL .... PETITIONER

VERSUS

UNION OF INDIA & ORS. ...RESPONDENTS

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PAPER BOOK

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(ADDITIONAL AFFIDAVIT ON BEHALF OF THE PETITIONER)

COUNSEL FOR THE PETITIONER**: PRASHANT BHUSHAN**

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IN THE HON'BLE SUPREME COURT OF INDIA

(CIVIL ORGINAL WRIT JURISDICTION)

I.A. NO. _____ OF 2021

IN

WRIT PETITION (CIVIL) NO. 607 OF 2021

IN THE MATTER OF

DR. JACOB PULIYEL .....PETITIONER

VERSUS

THE UNION OF INDIA & ORS. .....RESPONDENTS

ADDITIONAL AFFIDAVIT ON BEHALF OF THE PETITIONER

I, Dr. Jacob Puliyel, S/o Late Mr. P M Mammen, r/o 6A, 7 Raj Narayan Marg, Delhi – 110054, do hereby solemnly affirm and state on oath as under:

1. That I am the Petitioner in the aforementioned writ petition and being familiar with the facts and circumstances of the case, I am competent and authorized to swear this Affidavit.

2. Through this additional affidavit the petitioner seeks to bring on record some important aspects for the consideration of this Hon'ble Court, mainly regarding the scientific evidence that has emerged regarding natural immunity which is long lasting and robust as compared to vaccine immunity, that vaccines do not prevent infection or transmission for Covid-19 and are not effective in preventing against infection from the new variants, that the clinical

trials in relation to the vaccines have not been completed and the vaccines are only authorized for emergency use and further that serious adverse events are being reported in India and globally from the Covid 19 vaccinations. In light of this, any mandates for these vaccines are not only against scientific caution, cannot be in issued in public interest and are also against an individual's right to free and complete informed consent and the right to self determination.

3. There are two aspects to consider - the individual and subjective aspect concerning a fundamental right of the individual which needs to be balanced with the societal and objective aspect concerning health as a public interest matter. For any vaccine to be mandated, the public health rationale underlying such a policy must be based essentially on efficacy and safety of vaccination and transmission of the disease. However as detailed in this affidavit, various scientific studies have now emerged that provide evidence that vaccinated people not just transmit the virus as much as unvaccinated but also that breakthrough infections and hospitalizations are now rampant across various countries in vaccinated populations. The vaccination is therefore not preventing against serious disease nor its transmission and therefore no public interest purpose is served by mandating the vaccine. The State in mandating such vaccines has clearly exceeded the wide margin of appreciation to be granted by the court since relevant medical literature and studies do not signify either efficacy of the vaccines in preventing or transmitting the disease. Such mandates are arbitrary and discriminatory and

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therefore an unconstitutional infringement of a citizens fundamental rights.

4. The petitioner submits that the mandates that are being issued by various authorities across the country, both public and private institutions, making vaccination compulsory by way of coercion, are unconstitutional and repugnant to an individual's right to self determination. Coercion to take the vaccine is also illegal and contrary to what the government has responded to in numerous right to information applications, stating that the vaccination programme is voluntary. Further, the petitioner would like to bring on record before this Hon'ble Court why such vaccine mandates are illegal on constitutional and medical grounds including those set out below.

Natural immunity is enduring and outweighs vaccine immunity

5. According to the World Health Organisation, the mean infection fatality rate ("**IFR**") for COVID-19 is 0.15%. IFR is a calculation of the percentage of people who are infected with a virus and die. The recovery rate of people who tested positive for the Virus is over 99% in most countries that have been materially affected by the Virus. It has been shown scientifically that the immunity that results from natural infection is enduring and possibly lasts a lifetime. Therefore the public health messaging in India that is being used to coerce people to take the vaccine on pain or penalty that "no one is safe till everyone is safe" is also false and misleading on account of

natural immunity acquired by those who have recovered from Covid being stronger and more enduring that any immunity that can be provided by a vaccine that has only been in use under emergency authorisation for about 6 months and whose efficacy is being tested, results of trials and long term side effects still being unknown. This when serological studies show that more than 67.6% of the population of India has already had covid.

6. A large volume of studies have now demonstrated that an unvaccinated individual with prior infection is exponentially safer to be around than someone who had the vaccine but not prior infection. Studies have shown that those with prior infection are immune more so than those with vaccines. A report in theblaze.com points to 15 studies that have demonstrated naturally acquired immunity to be more durable and robust than vaccine immunity.

(A copy of the Blaze article, "15 studies that indicate natural immunity from prior infections is more robust than the Covid vaccines" is annexed as **Annexure P40** (**Page 45 to 52).**

7. Various research has shown that naturally acquired immunity is strong and long lasting. An article in The Defender, states that as covid surges among the fully vaccinated, the more the variant deviates from the original sequence used for the vaccine, the less effective the vaccine will be on that variant. The article also states how the break through infection in both the US and Israel are

among those who are fully vaccinated. 50% of the new infections reported in Israel are from fully vaccinated people.

"The CDC's latest breakthrough numbers, as of July 25, show 6,587 fully vaccinated people with COVID breakthrough cases. Of those, 6,239 people were hospitalized and 1,263 people died...

Brian Hooker, Ph.D., P.E., Children's Health Defense chief scientific officer and professor of biology at Simpson University, said while the Delta variant is likely more transmissible, it's also likely less pathogenic. "What we're seeing is virus evolution 101," Hooker said. ...Hooker said the more the variant deviates from the original sequence used for the vaccine, the less effective the vaccine will be on that variant, which could explain why fully vaccinated people are getting infected with the Delta variant. But this isn't the case for natural immunity, he explained.

Hooker said:

"The vaccine focuses on the spike protein, whereas natural immunity focuses on the entire virus. Natural immunity — with a more diverse array of antibodies and T-cell receptors — will provide better protection overall as it has more targets in which to attack the virus, whereas vaccine-derived immunity only focuses on one portion of the virus, in this case, the spike protein. Once that portion of the virus has mutated sufficiently, the vaccine no longer is effective."

...

According to research published last week in Scientific Reports, the highest risk for establishing a vaccine-resistant virus strain occurs when a large fraction of the population has already been vaccinated but the transmission is not controlled.

The data was consistent with a study released July 30, by the CDC which showed vaccinated people may transmit the Delta variant — now responsible for 80% of COVID cases in the U.S. — just as easily as the unvaccinated.

The team of scientists who published the data in Scientific Reports said their findings follow what's known as selective pressure — the force that drives any organism to evolve.

"Generally, the more people infected, the more the chances for vaccine resistance to emerge," said Fyodor Kondrashov of the Institute of Science and Technology Austria.

"So the more Delta is infectious, the more reason for concern," Kondrashov said. **"By having a situation where you vaccinate everybody, a vaccine-resistant mutant actually gains a selective advantage."**

...

At least 233 staffers at two major San Francisco hospitals tested positive for COVID — the majority of whom were fully vaccinated and became infected with the Delta variant.

Between 75% and 80% of the more than 50 staff members infected with COVID at Zuckerberg San Francisco General Hospital were fully vaccinated, Dr. Lukejohn Day, the hospital's chief medical officer, told The New York Times Saturday."

(A copy of the article in The Defender dated 3.08.2021 "Scientist: 'What We're Seeing Is Virus Evolution 101' — Delta Variant More Transmissible, Not More Deadly" is annexed as **Annexure P41 (Page 53 to 61).**

8. An article published on Nature.com titled "A long-term perspective on immunity to COVID" published in June 2021, further clarifies that studies have shown that memory plasma cells secreted antibody specific for the spike protein encoded in SARS-CoV-2 even 11 months after the infection. The study shows that immune memory to many viruses is stable over decades, if not for a lifetime.

> "Generating immunity against the SARS-CoV-2 corona virus is of the utmost importance for bringing the COVID-19 pandemic under control, protecting vulnerable individuals from severe disease and limiting viral spread. Our immune systems protect against SARS-CoV-2 either through a sophisticated reaction to infection or in response to vaccination.
>
> ...
>
> The presence in the bone marrow of long-lived, antibody-secreting memory plasma cells is probably the best available predictor of long-lasting immunity. For SARS-CoV-2, most studies so far have analysed the acute phase of the immune response, which spans a few months after infection, and have monitored T cells, B cells and secreted antibodies...

Turner and colleagues took up the challenge of identifying antibody-secreting memory plasma cells in the bone marrow of people who have recovered from COVID-19 (called convalescent individuals). Memory plasma cells are rare, and those specific for a particular disease-causing agent will obviously be extremely scarce. Nevertheless, **Turner and colleagues detected memory plasma cells that secreted antibodies specific for the spike protein encoded by SARS-CoV-2 in 15 of 19 individuals, approximately 7 months after infection. Notably, when the authors obtained samples 4 months later (11 months after SARS-CoV-2 infection), the number of such plasma cells had remained stable in all but one of the individuals analysed. Those plasma cells did not proliferate, which classifies them as bona fide memory plasma cells. Their numbers equaled those of memory plasma cells found in the individuals after vaccination against tetanus or diphtheria, and which provide long-term immunity to those diseases.**

When Turner et al. tracked the concentrations of antibodies against SARS-CoV-2 in the individuals' blood serum for up to one year, they observed a biphasic pattern (Fig. 1). In the acute immune response around the time of initial infection, antibody concentrations were high. They subsequently declined, as expected, because most of the plasma cells of an acute immune response are short-lived. After a few months, the antibody concentrations leveled off and remained more or

less constant at roughly 10–20% of the maximum concentration observed. This is consistent with the expectation that 10–20% of the plasma cells in an acute immune reaction become memory plasma cells, and is a clear indication of a shift from antibody production by short-lived plasma cells to antibody production by memory plasma cells. This is not unexpected, given that immune memory to many viruses and vaccines is stable over decades, if not for a lifetime...

For SARS-CoV, a coronavirus very like SARS-CoV-2 that was originally identified in 2003 and causes severe acute respiratory syndrome (SARS), the continued presence of high concentrations of neutralizing antibodies in blood serum for more than 17 years was reported in 2020. Wang and colleagues' results suggest that long-term immunity might also be expected for SARS-CoV-2. The authors report a follow-up investigation of serum antibodies and memory B cells specific for SARS-CoV-2 approximately one year after infection. The individuals studied had previously been analysed by Wang and colleagues' group after six months10, but it is only now, after a year, that the transition from an acute immune reaction to the generation of immunological memory has become evident."

(A copy of the article in Nature.com "A long term perspective on immunity from Covid" is annexed as **annexure P42 (Page 62 to 63)**

9. A study conducted on 52238 employees of the Cleveland Clinic Health System working in Ohio, compared the cumulative incidence of SARS-CoV-2 infection over five months, among previously infected subjects who received the vaccine with those of previously infected subjects who remained unvaccinated, previously uninfected subjects who received the vaccine, and previously uninfected subjects who remained unvaccinated. The results showed that not one of the previously infected subjects who remained unvaccinated had SARS CoV-2 infection over the during of the study. The study concluded:

> "Conclusions: Individuals who have had SARS-CoV-2 infection are unlikely to benefit from COVID-19 vaccination, and vaccines can be safely prioritized to those who have not been infected before."

(A copy of the pre print study "Necessity of Covid-19 vaccination in previously infected individuals" is annexed as **annexure P43 (Page 64 to 75).**

https://www.medrxiv.org/content/10.1101/2021.06.01.21258176v2

10. Two third of the India population has Covid antibodies according to the latest serosurvey conducted by the Indian Council for Medical Research (ICMR).

"Up to two-thirds of the Indian population above the age of six have already been infected with the coronavirus, the latest nationwide serological survey conducted by the Indian Council of Medical Research (ICMR) has found. That still leaves about 40 crore people who are susceptible to the virus.

The serosurvey, the fourth such exercise, was conducted in June and July, after the second wave had began to subside. A total of 28,975 people were tested for the presence of antibodies specific to SARS-CoV2 virus, and 67.6% were found to have them. For the first time, minors in the age group of 6 to 17 years were also included in the serosurvey, with antibodies interestingly discovered in nearly half of them.

... The fact that two-thirds of the population has already been infected — with the sero-prevalence found to be the same in rural and urban areas — reduces the possibility of a fresh round of infections as severe as the second wave was."

(A copy of the report in The Indian Express dated 21st July 2021 is annexed as **Annexure P44 (Page 76 to 79).**

11. The latest data from Israel suggests that reinfection after natural infection is extremely rare: only 72 instances have been recorded out of 800,000+ recorded cases (0.0086%). This is much smaller than breakthrough infections after vaccination.

"Coronavirus patients who recovered from the virus were far less likely to become infected during the latest wave of the

pandemic than people who were vaccinated against COVID, according to numbers presented to the Israeli Health Ministry. Health Ministry data on the wave of COVID outbreaks which began this May show that Israelis with immunity from natural infection were far less likely to become infected again in comparison to Israelis who only had immunity via vaccination. More than 7,700 new cases of the virus have been detected during the most recent wave starting in May, but just 72 of the confirmed cases were reported in people who were known to have been infected previously – that is, less than 1% of the new cases. Roughly 40% of new cases – or more than 3,000 patients – involved people who had been infected despite being vaccinated."

(A copy of the report in Israel National News dated 13th July 2021 titled "Natural infection vs vaccination: which give more protection?" is annexed as **annexure P45 (Page 80 to 81).**

12. A preprint study in the British Medical Journal, Yale has compared natural immunity to vaccine induced immunity in the light of waning vaccine-induced immunity against COVID-19, making the comparable long-term protection conferred by previous infection with SARS-CoV-2 unclear. The papers abstract states the results and conclusion as follows:

"Results: SARS-CoV-2-naïve vaccines had a 13.06-fold (95% CI, 8.08 to 21.11) increased risk for breakthrough infection with the Delta variant compared to those previously infected,

when the first event (infection or vaccination) occurred during January and February of 2021. The increased risk was significant for symptomatic diseases as well. When allowing the infection to occur at any time before vaccination (from March 2020 to February 2021), evidence of waning natural immunity was demonstrated, through SARS-CoV-2 naïve vaccines had a 5.96 fold increased risk for breakthrough infection and a 7.13 fold increased risk for symptomatic disease. SARS-CoV-2 naïve vaccines were also at a greater risk for COVID-19 related hospitalization compared to those that were previously infected.

Conclusions: This study demonstrated that natural immunity confers longer lasting and stronger protection against infection, symptomatic disease and hospitalization caused by the Delta variant of SARS-CoV-2, compared to the BNT162b2 two-dose vaccine-induced immunity. Individuals who were both previously infected with SARS-CoV-2 and given a single dose of the vaccine gained additional protection against the Delta variant."

(A copy of the preprint paper titled "Comparing SARS-CoV-2 natural immunity to vaccine induced immunity: reinfections versus breakthrough infection." In the British Medical Journal is annexed as **annexure P46 (Page 82 to 98).**

Vaccines do not prevent infection from Covid 19

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13. The efficacy of vaccines in preventing infection or transmission has not been established. This is not being communicated to the public. Such incorrect/false messaging and information sooner or later gets exposed and once exposed erodes public trust in the official messaging and thus creates greater vaccine hesitancy. Various studies have now been published that show that the vaccines do not prevent infection or transmission of the Covid 19 virus. There are many examples of outbreaks of the virus amongst fully vaccinated populations. Examples include Iceland and Israel where a high percentage of the population have been fully vaccinated, yet an increase of cases is being experienced. Therefore administering the vaccine through coercion cannot be a matter of public health since the vaccines are not an effective guarantee against infection and transmission. Discriminating against those who are unvaccinated is arbitrary and without any rational scientific basis.

14. The Centre for Disease Control's Director Rochelle Walensky in a recent interview stated that those persons who are vaccinated are the people who get more serious disease.

"New data confirms that vaccine protection against COVID-19 has decreased for the Delta variant of the virus, U.S. Centers for Disease Control and Prevention Director Dr. Rochelle Walensky said on Wednesday...

Study of nursing homes shows vaccine effectiveness declined to 53% with the Delta variant. She also noted an Israel-based

study that showed increased risk of severe disease among those vaccinated early."

(A copy of the report in Reuters.com dated 18th August 2021, titled "CDC says vaccine protectiveness slipped amid Delta variant" is annexed as **Annexure P47 (Page 99).**

15. Kerala's Pathanamthitta district saw over 7000 vaccinated people getting severely infected. Initial assessments show that breakthrough cases were recorded among those who received one or both doses of Covaxin as well as Covishield.

"Collector of Pathanmthitta Divya S Iyer confirmed to ET that atleast "5042 people turned positive after two doses of vaccines of which 258 turned positive after completing two weeks after two doses".

As many as 14974 turned positive after first dose alone. Of these, 4490 turned positive after two weeks, she added.

"We need more details to assess if this is a case of vaccine failure or whether there is any other element at work. So, we have sought details from all districts on first dose and second dose breakthrough cases from the state government to get a more holistic picture of the situation. It has been flagged off to the centre as well as an area of concern," a central team member told ET on condition of anonymity.".

(A copy of the Economic Times report dated 6th August 2021, titled "Covid-19: Over 7,000 breakthrough infections in Kerala district" is annexed as **Annexure P48 (Page 100 to 101).**

16. In a Banaras Hindu University study of 1500 participants was conducted with the primary objective of assessing the rate of occurrence of COVID-19 in vaccinated people and determining the safety of COVID-19 vaccines. The study concludes that the disproportionately high occurrence of SARS-CoV-2 infection and COVID-19 in priority vaccinated groups in our study can be explained to some extent by the existence of variants such as the delta which might have escaped the vaccine generated immune protection.

"**Results:** Among 1650 enrolled vaccine recipients, 1500 participants of the study (Female/Male: 472/1028; mean age 38.8 years) completed at least 2 months of follow-up, after the second dose. The common comorbidities in study participants were hypertension (170, 11.3%), diabetes (142, 9.5%), and hypothyroidism (54, 3.6%). **Of those who received a single dose of vaccine** (n=65), laboratory confirmed **SARS-CoV-2 infection was observed in 27 individuals** (41.5%) and 3 were suspects. Severity wise, infections were mild in 21 out of 30 (70%) cases, moderate in five (16.7%) and severe in two (6.7%). **Of those who received both doses of vaccine (n=1435), 388 were diagnosed as confirmed or suspect cases of SARS-CoV-2 infection.**

...

404 out of the 1500 total participants were doctors including consultant/teaching faculty, resident doctors, and those in general practice. **Among the 377 doctors who received both doses of vaccine, 160 were diagnosed as confirmed or suspect cases of SARS-CoV-2 infection...**Breakthrough infections occurring at > 14 days after receiving the second dose were seen in 148 doctors who received both doses (39.2%), or 119 doctors (31.6%) if only laboratory confirmed cases were considered. Four deaths occurred in the study participants during the study period, two in partially vaccinated group and two in fully vaccinated group. Two of these participants, both in partially vaccinated group had developed SARS-CoV-2 infection during their follow-up."

(A copy of the study in Research Square titled, "Occurrence of COVID-19 in priority groups receiving ChAdOx1 nCoV-19 coronavirus vaccine (recombinant): a preliminary analysis from north India" is annexed as **Annexure P49 (Page 102 to 112).**

17. More than half of the hospitalized Covid-19 cases in Bengaluru are among the vaccinated. About 56% of people hospitalised for Covid-19 in Bengaluru in July had received at least one dose of the vaccine.

"Sources in the Bruhat Bengaluru Mahanagara Palike (BBMP) said that about 2,700 people were hospitalised between July 2 and 27. Of these, 1,600 had received at least one dose of a vaccine, comprising 1,200 Covishield and 400 Covaxin receivers.

Of the 1,200 Covishield receivers, about 450 had got the second dose. Among the 400 Covaxin receivers, 180 had the second dose."

(A copy of the Deccan Herald article dated 3rd August 2021 titled, "More than half of hospitalized Covid-19 cases among vaccinated in Bengaluru", is annexed as **annexure P50 (Page 113 to 115).**

18. Almost half of COVID-19 cases in the UK are among people who are partly or fully vaccinated people, according to data from a large study. The finding came from the ZOE COVID Study run by King's College London. It uses information logged daily by over a million people to predict COVID-19 trends

"As of July 15, an estimated 17,581 new daily UK cases of COVID-19 were in unvaccinated people, the study authors said in a press release on Thursday.

That compares to an estimated 15,537 new COVID-19 cases in people who had at least one dose of the vaccine, which is about 47% of all cases."

(A copy of the article in the Business Insider dated 16th July, titled "Almost half of UK Covid infections are in people who are at least partly vaccinated, study suggests. But the cases were much milder" is annexed as **Annexure P51 (Page 116 to 118).**

19. Covid-19 outbreak in Israel, with most cases coming from vaccinated people, in a country which was assumed to have reached herd immunity. About a month ago, Israel celebrated what seemed like the end of its domestic pandemic. The country dropped all coronavirus restrictions, including mask mandates and social distancing requirements, reported Reuters.

> "COVID-19 cases have begun to rise in Israel over the last few weeks, reported Reuters...
>
> Last week, Israel recorded an average of 775 new daily cases last week, according to data from Reuters.
>
> This is Israel's highest number of daily new infections since March, Reuters reported.
>
> The average number of weekly hospital admissions is currently 120 people, according to The Washington Post.
>
> The country has reimposed mask mandates, social distancing requirements and quarantines for everyone arriving in Israel.
>
> Just like in many other countries, the recent outbreak has been driven by the more contagious and "more vaccine-resistant" delta variant, reported The Washington Post."

(A copy of the report in Desert News dated 20th July 2021, titled "A look inside Israel's recent coronavirus outbreak" is annexed as **annexure P52 (Page 119 to 122).**

20. In July Britain's Royal Navy reports Covid outbreak in Defense aircraft carrier HMS Queen Elizabeth which was at sea in pacific ocean with 100 fully vaccinated crew members testing positive

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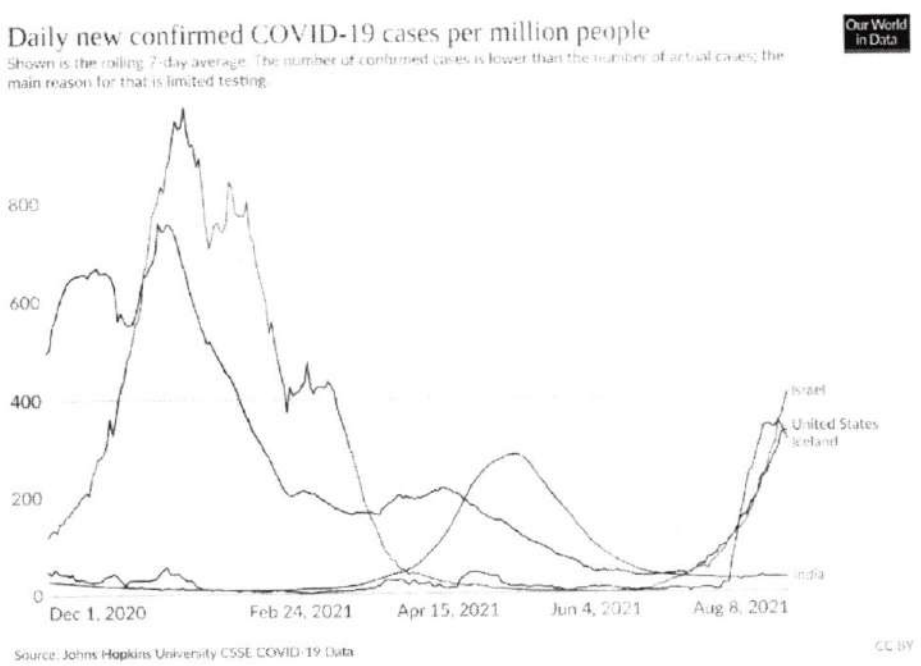
onboard the British Defense aircraft carrier HMS Queen Elizabeth. The Navy ship has a case rate of 1 in 16 — the highest case rate recorded. This suggests vaccine-induced herd immunity is impossible, as these injections apparently cannot prevent COVID-19 even if 100% of a given population gets them.

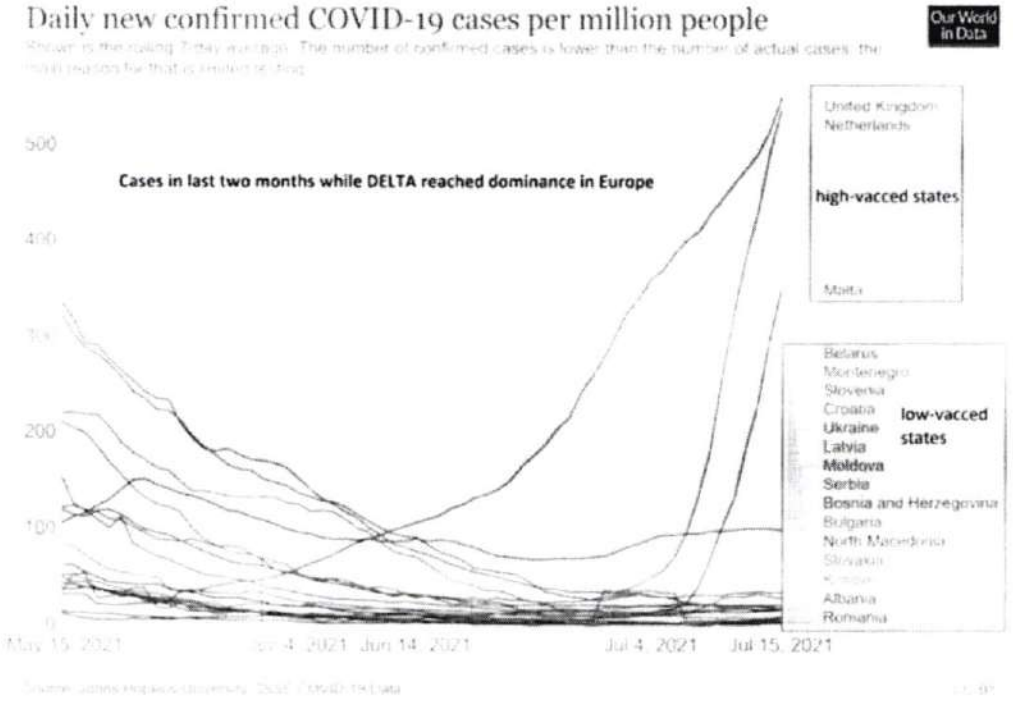
(A copy of the report in the Independent dated 14th July 2021 titled "Royal Navy flotilla reports Covid outbreak with 100 cases despite all sailors being vaccinated" is annexed as **Annexure P53 (Page 123 to 124).**

21. The country of Iceland is the current starkest example that vaccination does not protect against infection or transmission. Iceland's Covid vaccination has not led to herd immunity and Iceland is currently facing a huge surge in Covid cases. Iceland has over



75% of its population fully vaccinated.

22. Data shows that countries with the highest COVID injection rates are also experiencing the greatest upsurges in cases, while countries with the lowest injection rates have the lowest caseloads.



Studies on breakthrough infections indicate that vaccinated people also transmit the virus, hence vaccine mandates are not in public interest

23. The petitioner submits that there is now compelling scientific evidence that the vaccines are not effective in protection against infection or transmission especially from the new variants as evidenced by the breakout infections in vaccinated populations globally and that vaccinated people also carry and transmit the virus. This evidence then is compelling enough for the governments

not to make vaccines mandatory from a public health point of view. In such circumstances, interference with a persons physical integrity cannot be justified by any public health considerations and necessity to control the spreading of the disease since vaccinated populations also transmit the disease.

24. An article in the National Geographic Science states that a study has shown that in the case of a breakthrough infection, the Delta variant is able to grow in the noses of vaccinated people to the same degree as if they were not vaccinated at all. The virus that grows is just as infectious as that in unvaccinated people, meaning vaccinated people can transmit the virus and infect others.

> "Previous studies in hospitals in India; Provincetown, Massachusetts; and Finland have also shown that after vaccine breakthrough infections with Delta, there can be high levels of virus in people's nose whether they are vaccinated or not. The next logical step was to determine whether vaccinated people could shed infectious virus. Many experts suspected they did, but until this study it hadn't been proven in the lab.
>
> We're the first to demonstrate, as far as I'm aware, that infectious virus can be cultured from the fully vaccinated infections," says Kasen Riemersma, a virologist at University of Wisconsin who is one of the authors of the study.
>
> "Delta is breaking through more preferentially after vaccines as compared to the non-Delta variants" because it's extremely infectious and evades the immune response, says Ravindra

Gupta, a microbiologist at University of Cambridge. Gupta's lab was one of the first to document that fully vaccinated healthcare workers could get infected with Delta and had high levels of virus in their noses.

If the Wisconsin study finding holds up, then people with breakthrough infections—many of whom do not develop COVID symptoms—can unknowingly spread the virus. "It [is] an alarming finding," explains Katarina Grande, a public health supervisor and the COVID-19 Data Team Lead of Madison & Dane County, who led the study.

What concerns Eric Topol, the founder and director of the Scripps Research Translational Institute, is that fully vaccinated individuals who are infected with the Delta variant can transmit the virus and this can happen at a higher rate than previous strains in the days before symptoms, or in the absence of symptoms. "Which is why masks and mitigation measures are important, even for people [who are] vaccinated," he says."

(A copy of the article in National Geographic article dated 20th August 2021 titled, "Evidence mounts that people with breakthrough infections can spread Delta easily" is annexed as **Annexure P54 (Page 125 to 128).**

25. Vaccinated people make up 74% of total cases in Massachusetts outbreak according to CDC Study. Delta variant produces similar

viral loads in vaccinated, unvaccinated. In July 2021, following multiple large public events in a Barnstable County, Massachusetts, town, 469 COVID-19 cases were identified among Massachusetts residents who had traveled to the town during July 3–17; 346 (74%) occurred in fully vaccinated persons. Testing identified the Delta variant in 90% of specimens from 133 patients. Cycle threshold values were similar among specimens from patients who were fully vaccinated and those who were not.

(A copy of the CDC report dated 6th August 2021 titled "Outbreak of SARS-CoV-2 infections, including COVID-19 vaccine breakthrough infections, associated with large public gatherings is annexed as **Annexure P55 (Page 129 to 132).**

26. Further, as reported in the Associated Press news on 31st July 2021, a study concluded that vaccinated people can carry as much virus as others and therefore contribute equally to the transmission of the disease.

"Scientists who studied a big COVID-19 outbreak in Massachusetts concluded that vaccinated people who got so-called breakthrough infections carried about the same amount of the coronavirus as those who did not get the shots.

Health officials on Friday released details of that research, which was key in this week's decision by the Centers for Disease Control and Prevention to recommend that vaccinated people return to wearing masks indoors in parts of the U.S. where the delta variant is fueling infection surges.

The findings have the potential to upend past thinking about how the disease is spread. Previously, vaccinated people who got infected were thought to have low levels of virus and to be unlikely to pass it to others. But the new data shows that is not the case with the delta variant.

The outbreak in Provincetown — a seaside tourist spot on Cape Cod in the county with Massachusetts' highest vaccination rate — has so far included more than 900 cases. About three-quarters of them were people who were fully vaccinated.

The Provincetown outbreak and the documents highlight the enormous challenge the CDC faces in encouraging vaccination while acknowledging that breakthrough cases can occur and can be contagious but are uncommon.

The documents appear to be talking points for CDC staff to use with the public. One point advised: "Acknowledge the war has changed," an apparent reference to deepening concern that many millions of vaccinated people could be a source of wide-ranging spread.

People with breakthrough infections make up an increasing portion of hospitalizations and in-hospital deaths among COVID-19 patients, coinciding with the spread of the delta variant, according to the leaked documents."

(A copy of the article in the Associated Press dated 31st July 2021 titled "Study: Vaccinated people can carry as much virus as others" is annexed as **Annexure P56 (Page 133 to 137).**

27. A study by the University of Oxford scientists has found that people who contract the Delta variant of Covid-19 after being fully vaccinated carry a similar amount of the coronavirus as those who catch the disease and have not been inoculated. The findings could have implications for policy makers who've banked for months on hopes that by vaccinating a large proportion of any given population, they will also protect people who cannot or will not get inoculated themselves by reducing transmissions overall.

"The survey of real-world U.K. data indicates, however, that vaccinated people with "breakthrough" infections could still pose a significant infection risk to those who have not been vaccinated.

...

The survey compared U.K. government data on more than 380,000 people who tested positive for the coronavirus between December and May of this year, when the first-discovered Alpha variant accounted for most of the cases in Britain, with figures for more than 350,000 people infected over the following four months, when Delta was dominant.

Oxford's lead researcher, Dr. Sarah Walker, told The Telegraph that the study shows two doses of the Pfizer/BioNTech, Moderna or AstraZeneca vaccines "are still protective. You are still less likely to get infected - but if you do, you will have similar levels of virus as someone who hasn't been vaccinated at all."

> The data used for the study do not show how likely it is that a fully vaccinated person with the Delta variant can pass on the infection to another individual, compared to an unvaccinated individual with the virus. But the high viral loads found in the study are a strong indicator that the risks of transmission from both vaccinated and unvaccinated people with the Delta variant could be similar."

(A copy of the article in CBS news dated 19th August 2021 titled, "Study: Fully vaccinated people with breakthrough Covid Delta infections carry as much virus as the unvaccinated" is annexed as **annexure P57 (Page 138 to 140).**

28. Fully vaccinated people who catch Covid variants may pass virus on as reported in an article by the Telegraph citing a study done by the University of Washington that sequenced samples from 20 health workers who went on to contract Covid after receiving both doses of the vaccine. The study showed that all 20 were infected with variants of concern that have been driving second waves of Covid in many part of the world.

"While everyone in the vaccinated group had a variant of concern, only 67 per cent of non-vaccinated individuals did. **The study also showed that the vaccinated individuals infected with Covid had high viral loads.**

Dr Pavitra Roychoudhury, the lead author of the study, said the ""prevailing understanding"" was that while vaccine breakthrough cases would occur, they would be mild.

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""But in contrast to that, what we saw among our 20 samples was that a number of them actually had quite robust viral loads. That was concerning in the sense that there was definitely enough virus to sequence, and potentially there might be enough virus to transmit,"" she said."

(A copy of The Telegraph article titled "Fully vaccinated people who catch covid variants may pass virus on, study finds" dated 29th May is annexed as **Annexure P58 (Page 141 to 143).**

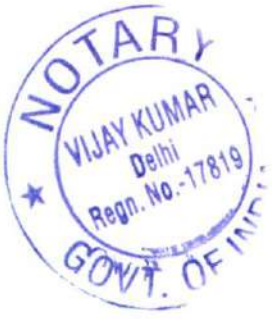
29. Fully vaccinated and unvaccinated 'can both transmit Covid', Public Health England findings on similar viral loads spark fears that jabs will not suppress spread as much as hoped, The Telegraph reported.

"People who are fully vaccinated have a similar viral load to the unvaccinated, suggesting both can transmit Covid.

New analysis by Public Health England (PHE) found little difference in how much virus was present in people who had been jabbed, leading to fears that the vaccines will not suppress spread as much as hoped.

Scientists believed the jabs would prevent transmission as well as protecting people against the disease by lowering viral replication.

Minutes of a Sage meeting from July 22, published on Friday, also show growing concern among government scientists that the delta variant causes a higher viral load than the alpha strain, even after vaccination."



(A copy of The Telegraph report "Fully vaccinated and unvaccinated can both transmit Covid" dated 6th August 2021 is annexed as **Annexure P59 (Page 144 to 146).**

30. Delta variant has wrecked hopes of herd immunity, warn scientists in the UK. There is no way of stopping Covid spreading through the entire population, experts tell MPs as they call for end of mass testing,

> "Prof Andrew Pollard, who led the Oxford vaccine team, said it was clear that the delta variant could infect people who had been vaccinated, which made herd immunity impossible to reach even with high vaccine uptake.
>
> "We don't have anything that will stop transmission, so I think we are in a situation where herd immunity is not a possibility and I suspect the virus will throw up a new variant that is even better at infecting vaccinated individuals.""

(A copy of an article in The Telegraph "Delta variant has wrecked hopes of herd immunity, warn scientists", dated 10th August is annexed as **annexure P60 (Page 147 to 149)**

31. The HART group, a group of doctors and medical professionals in the UK, have written: "Busting the myth that vaccination prevents transmission".

> "Recent infection rates in the fully vaccinated adult population (ages 20+) appear, from official data

(available here and here), to be about the same as rates in the un-vaccinated implying — at first sight — very little or no efficacy at all against infection. Clearly the thinking in Israel generally is that these vaccines are no longer the "silver bullet" they were proclaimed to be, and the country is discussing the need to order booster shots, a strategy which seems no more rational than the initial vaccination programme.

The principle defence against a respiratory virus actually takes place in the mucosal membranes of the respiratory tract, and the high proportion of those with some degree of natural immunity fight off SARS-CoV-2 there, preventing it replicating significantly in the bloodstream. Therefore, it is not actually surprising that a vaccine which works mainly in the circulatory system has little effect on stopping what starts as a respiratory infection. If that is the case, it is illogical to expect any reduction in transmission...

Specifically, as reported by the Washington Post:

"The game-changer for the agency was data showing that vaccinated people infected with the highly infectious delta variant carry the same viral load as unvaccinated people who are infected."...

Whether or not the vaccine reduces the severity of disease remains an open question, although Israel has concerns that this is also waning. If that is the sole benefit of the vaccines which has survived transition from the clinical trial scenario to the real world, any discrimination or coercion of any form

aimed at those who choose not to be vaccinated is completely unsustainable."

(A copy of the letter written by the Hart group is annexed as **Annexure P61 (Page 150 to 153).**

32. As of mid-May, the US CDC had announced that vaccinated Americans may go without masks. However, as of 13 Aug 2021, the same CDC has changed the guidance to ask fully vaccinated people to wear masks indoors, clearly suggesting that the vaccinated can transmit the virus.

> "If you are fully vaccinated, to maximize protection from the Delta variant and prevent possibly spreading it to others, wear a mask indoors in public if you are in an area of substantial or high transmission."

(A copy of the CDC guidelines on masks is annexed as **Annexure P62 (Page 154 to 157)**

The clinical trials in relation to the Vaccines have not been completed and the Vaccines are only authorised for emergency use

33. The clinical trials on the Vaccines are scheduled to complete in 2023 and what is available are interim analysis. However, the data from this interim analysis has not been made public. The vaccine trial results have not been validated by independent scientists.

Accordingly the medium and long term side effects of the vaccines are unknown.

34. It is pertinent to bring to the attention of this Hon'ble Court that the Covaxin has not even been validated by the WHO as a vaccine that can be given under emergency use authorisation. It has been banned from use in countries like the USA and Brazil by their regulatory bodies for lack of data and for serious ethical breaches in manufacturing and trails.

35. Adverse events recording systems show unprecedented levels of adverse events, including death, resulting from the administering of the Vaccines. Contrary to public reports and health guidelines, it cannot be guaranteed that the vaccine is 100% safe. There continue to be new side effects being reported and/or listed by bodies such as the FDA. These side effects are only the short-term side effects. These side effects include myocarditis, blood clots and facial nerve disorders, with new reports indicating a possible side effect related to a nerve/nervous system disease (Guillain-Barre syndrome). The long-term side effects are a completely unknown.

Grant of emergency approval to Zydus Cadila for vaccinating children above 12 years

36. Zydus Cadila vaccine received approval in August 2021 for emergency use to be administered in children and adults 12 years and above, through a clinical trial process that remains opaque to public scrutiny. This raises serious concerns regarding its suitability

for emergency use, especially in Children. Administering experimental vaccines to children which have not gone through complete phase 3 trials and for which safety and efficacy data from phase 3 trials in adults is not available raises serious concerns. Besides there are deeply disturbing reports that government and health advisory groups are calling out in the media for the COVID-19 vaccine rollout in children to enable schools reopening, contact sports or for admissions, etc. Any sort of such coercion of children or their parents to accept the COVID -19 vaccines that are still at research stage and about which no medium or long term side effects are known and against a disease which presents no material risk to children, is unethical and irresponsible. It violates the principles of medical freedom, informed consent and bodily autonomy which are to be preserved and protected, especially while dealing with vulnerable populations such as children.

37. No medical intervention should be introduced on a 'one size fits all' basis, but instead should be fully assessed for suitability according to the characteristics of the age cohort and of the individuals concerned, weighing up the risk versus benefit profile for each cohort and the individuals within a group. It has been established through published research that healthy children are at almost no risk from COVID-19, with risk of death as low as 1 in 2.5 million. Previously healthy children dying of COVID or requiring admissions to hospital or intensive care are exceedingly rare, with most children having no or very mild symptoms. It has been established that a

child's naturally acquired immunity will give broader and better lasting immunity than vaccination.

38. All medical interventions carry a risk of harm, so we have a duty to act with caution and proportionality. This is particularly the case when considering mass intervention in a healthy population, in which situation there must be firm evidence of benefits far greater than harms. The current, available evidence clearly shows that the risk versus benefit calculation does NOT support administering rushed and experimental COVID-19 vaccines to children, who have virtually no risk from COVID-19, yet face known and unknown risks from the vaccines. The Declaration of the Rights of the Child states that, "the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal protection".

39. In a Press Release dated 20.08.2021, **the Ministry of Science and Technology announced that Zydus Cadila has received approval for emergency use**, that it would be administered on children and adults aged 12 years and above, and that its clinical trials were funded by the Government of India:

> "Zydus Cadila has received approval for Emergency Use Authorization (EUA) from the Drug Controller General of India (DCGI) for ZyCoV-D today i.e 20/08/2021, the world's first and India's indigenously developed DNA based vaccine for COVID-19 to be administered in humans including Children and adults 12 years and above. Developed in partnership with the

Department of Biotechnology, Government of India under the 'Mission COVID Suraksha' and implemented by BIRAC, ZyCoV-D has been supported under COVID-19 Research Consortia through National Biopharma Mission for Preclinical studies, Phase I and Phase II Clinical Trials and under the Mission COVID Suraksha for Phase III Clinical Trial..."

(A copy of the Press Release dated 20th August 2021 titled "DBT-BIRAC supported ZyCoV-D developed by Zydus Cadila Receives Emergency Use Authorization: World's First COVID-19 DNA vaccine developed in partnership with DBT-BIRAC under Mission COVID Suraksha" is annexed as **Annexure P63 (Page 158 to 159)**.

40. In a The Wire Science article dated 22.08.2021 and titled "ZyCoV-D Continues India's Habit of Approving COVID Vaccines With Invisible Data", the author a noted public health physician, independent researcher and epidemiologist in the UK, raises serious questions on the approval of ZyCoV-D for children. The scientific paper corresponding to the vaccines phase 2 trial has been hard to find and Zydus Cadila hasn't published its phase 3 data.

"Earlier, on July 1, the company had announced that it had applied to India's regulator, the Drug Controller General of India (DCGI), for approval. Its press release said it had presented an interim analysis from its phase 3 clinical trial involving 28,000 participants. These results claimed an efficacy, *including against the dominant delta variant*, of 66.6% against symptomatic COVID-19. The analysis also

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claimed 100% efficacy both against moderate disease after three doses of the vaccine and against severe disease or death after two doses.

The full details of the analysis have not yet been made available for independent review, not even as a preprint paper that could lend itself to public review...

Its approval process is quite similar to the authorisation that the DGCI granted to Bharat Biotch's Covaxin – two months before the company released the first interim analysis of data from its phase 3 trial. The decision was roundly criticised and contributed significantly to hesitancy.

Today, we have no numbers pertaining to the ZyCoV-D phase 3 trial other than the total number of participants and the stated efficacy against symptomatic COVID-19, of 66.6%. As with the CTRI registration, the Zydus Cadila July 1 press release doesn't tell us how many people were in the treatment and control arms of the trial, how many people got COVID-19 in each arm nor even the confidence intervals of the 66.6% point-estimate of efficacy (as a result, we don't know how *precise* this figure is).

Finally, the July 1 press release states that of the 28,000 participants recruited, a thousand were aged 12-18 years, and that in this group the vaccine was "safe and well-tolerated". It fails to divulge, again, the number of COVID-19 cases in this sub-group. And considering how small this sub-group is relative to the overall cohort, it's quite concerning that the

DCGI saw fit to grant ZyCoV-D an EUA for people aged 12 years and above."

(A copy of the The Wire Science article dated 22nd August 2021 and titled "ZyCoV-D Continues India's Habit of Approving COVID Vaccines With Invisible Data" is annexed as **Annexure P64 (Page 160 to 166)**

41. According to the official data of the Phase I trials of ZyCoV-D available with the Clinical Trials Registry of India, the age-group on which these trials were conducted were aged 18 years to 60 years. The date of first enrollment of subjects provided herein is 19.03.2021.

(A copy of the Phase I Official Trial Registration of ZyCoV-D available with the Clinical Trials Registry of India (CTRI) is annexed as **Annexure P65 (Page 167 to 170).**

42. According to the official data of the Phase II trials of ZyCoV-D available with the Clinical Trials Registry of India, the age-group on which these trials were conducted were aged 18 years to 55 years. The date of first enrolment of subjects provided herein is 13.07.2020.

(A copy of the Phase II Official Trial Registration of ZyCoV-D available with the Clinical Trials Registry of India (CTRI) is annexed as **Annexure P66 (Page 171 to 177).**

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43. Zydus Cadila reported the results of a phase 2 study involving 1,000 participants through a press release dated 24.12.2020, claiming adequate safety, tolerability and immunogenicity.

(A copy of the Zydus Cadila's Press Release dated 24th December 2020 is annexed as **Annexure P67 (Page 178 to 179).**

44. According to the official data of the Phase III trials of ZyCoV-D available with the Clinical Trials Registry of India, the age-group on which these trials were conducted were aged 12 years to 99 years. This change in age-group inclusion criteria was a marked difference from its earlier clinical trials. The date of first enrollment of subjects provided herein is 20.01.2021. According to the registration, this was a randomised, placebo-controlled, multicentre double-blind study. The total number of participants to be recruited was 28,216, across 59 trial sites.

(A copy of the Phase III Official Trial Registration of ZyCoV-D available with the Clinical Trials Registry of India (CTRI) is annexed as **Annexure P68 (Page 180 to 189).**

45. In an advisory by WHO published on their website last updated on 14.07.2021 and titled "COVID-19 advice for the public: Getting vaccinated", the body states that:

> "Children and adolescents tend to have milder disease compared to adults, so unless they are part of a group at higher risk of severe COVID-19, it is less urgent to vaccinate

them than older people, those with chronic health conditions and health workers.

More evidence is needed on the use of the different COVID-19 vaccines in children to be able to make general recommendations on vaccinating children against COVID-19."

So far only Pfizer-BioNTech vaccines have been approved by WHO for children. Pfizer-BionTech has also been granted full approval in its home-country by the US Food and Drug Administration for people aged 16 and older.

(A copy of the WHO advisory last updated last updated on 14 July 2021 and titled "COVID-19 advice for the public: Getting vaccinated" is annexed as **Annexure P69 (Page 190 to 194).**

46. A The Hindu article dated 25.08.2021 titled "NTAGI to soon chalk out roadmap to introduce Zydus Cadila's vaccine in Covid inoculation drive" noted that NTAGI will be monitoring and devising the inoculation of children for Zydus Cadila's COVID vaccine:

"The National Technical Advisory Group on Immunisation (NTAGI) will soon hold a meeting to devise a roadmap for introducing Zydus Cadila's Covid vaccine in the inoculation drive and prioritising beneficiaries focusing on those aged 12-18 years with comorbidities."

(A copy of the Hindu article dated 25th August 2021 titled "NTAGI to soon chalk out roadmap to introduce Zydus Cadila's vaccine in Covid inoculation drive" is annexed as **Annexure P70 (Page 195 to 196)**

47. On 17.02.2021, Hindustan Times reported in an article titled "5 of private lab in Noida detained for 'unauthorised' Covid vaccine". The report highlights the dubious manner in which Zydus Cadila was conducting trials on people without their informed consent:

> "..the lab management informed the health department that they were conducting the third phase clinical trial of a Covid vaccine, developed by private pharma company, Zydus Cadila Healthcare Limited.
>
> The health department said the vaccine manufacturer had authorised Flores Hospital in Ghaziabad to conduct the clinical trial. "The hospital was supposed to conduct the trial, but it shared the vaccine vials with the Dadri lab. We have seized 275 vials and initiated action against the hospital and the lab," chief medical officer Deepak Ohri said."

(A copy of the Hindustan Times article dated 17th February 2021 titled "5 of private lab in Noida detained for 'unauthorised' Covid vaccine" is annexed as **Annexure P71 (Page 197 to 199).**

High Court orders on discrimination against unvaccinated people

48. As held by various High Courts in the country, a notification making vaccination mandatory cannot put a fetter on the fundamental right

to life of an individual by denying them the right to livelihood or access to any essential services, etc. When there is no legal mandate from the government with regard to mandatory vaccination (by means of a law), these notifications cannot prohibit or take away the livelihood of a citizen on that ground. Therefore citizen's rights, including right to work and rights to bodily integrity are being unreasonably limited by mandatory vaccination notifications and therefore must be struck down as unconstitutional. Various High Courts have also held that the welfare policy for vaccination can never affect a major fundamental right, i.e. right to life, personal liberty and livelihood, especially when there exists no reasonable nexus between vaccination and prohibition of continuance of occupation and/or profession. Vaccination by coercive methods, vitiates the very fundamental purpose of the welfare attached to it. It has been shown by the petitioner through various studies quoted above, that the vaccination does not prevent transmission of the disease. Therefore discriminating against unvaccinated persons by denying them access to services or the means to earn their livelihood is arbitrary, discriminatory and unconstitutional. Coercive mandates for covid 19 vaccines that are still untested, for which adverse events are not completely known, does not find any force in law and therefore needs to be declared ultra vires ab initio by this Hon'ble Court.

49. The Gauhati High Court in an order dated 2.07.2021 in WP (C) 37/2020 held

13. With respect to Clause 6(1) and 6(5) of the SOP, there is discrimination at large, as persons who have been vaccinated with the first dose of the vaccine are allowed to earn their livelihood, but not the un-vaccinated persons. There is nothing to show that vaccinated persons (first dose) cannot be infected with the corona virus or that they cannot be spreaders. If the vaccinated person and un-vaccinated person cover their face with a mask, as per the covid behavior protocols laid down by the State respondents, there is no reason to discriminate only against un-vaccinated persons.

14. It has been brought to our notice that even persons who have been vaccinated can still be infected with the covid virus, which would in turn imply that vaccinated persons who are covid positive, can also spread the said virus to others. It is not the case of the State respondents that vaccinated persons cannot be infected with the covid virus or are incapable of spreading the virus. Thus, even a vaccinated infected covid person can be a superspreader. If vaccinated and un-vaccinated persons can be infected by the covid virus and if they can both be spreaders of the virus, the restriction placed only upon the un-vaccinated persons, debarring them from earning their livelihood or leaving their houses to obtain essential items is unjustified, grossly unreasonable and arbitrary. As such, the submission made by the learned Additional Advocate General that the restrictions made against the unvaccinated persons vis-à-vis the vaccinated persons is

reasonable does not hold any water. As the vaccinated and un-vaccinated persons would have to follow the covid proper behavior protocols as per the SOP, there is no justification for discrimination."

(A copy of the Gauhati High Court order dated 2.07.2021 is annexed as **annexure P72 (Page 200 to 208).**

1. The petitioner states in conclusion that studies are piling up which show that a) those who are Covid recovered (more than 2/3 of India population) have more robust and durable immunity than the vaccinated; b) that the vaccination does not significantly reduce susceptibility to re-infection especially with the delta variant nor does it significantly reduce the ability to transmit the virus; c) healthy children are almost at no risk of serious disease from Covid-19 and administering experimental vaccines to children, about which no medium or long term side effects are known is unethical and irresponsible. Even if the vaccine reduces susceptibility to severe disease or death, without significantly reducing transmission, it is not a public health issue and every individual must be left free to determine the cost benefit of the risks to oneself due to Covid versus the risk of adverse events (short and long term, known and unknown).

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DEPONENT

VERIFICATION:

I, the above named Deponent, do hereby verify that the contents of the above Affidavit are true and correct to my knowledge; that no part of it is false and that nothing material has been concealed therefrom.

Verified at New Delhi on 3rd day of September 2021.

DEPONENT

NOTARY VIJAY KUMAR Delhi Regn. No.-17819

ATTESTED

NOTARY PUBLIC DELHI

13 SEP 2021

ANNEXURE: P40

The Blaze

Horowitz: 15 studies that indicate natural immunity from prior infection is more robust than the COVID vaccines

DANIEL HOROWITZ

August 25, 2021

Horowitz: 15 studies that indicate natural immunity from prior infection is more robust than the COVID vaccines in the pandemic. The debate over forced vaccination with an ever-waning vaccine is cresting right around the time when the debate should be moot for a lot of people. Among the most fraudulent messages of the CDC's campaign of deceit is to force the vaccine on those with prior infection, who have a greater degree of protection against all versions of the virus than those with any of the vaccines. It's time to set the record straight once and for all that natural immunity to SARS-CoV-2 is broader, more durable, and longer-lasting than any of the shots on the market today. Our policies must reflect that reality.

It should be noted that this exercise is not even necessary now that our own government concedes that immunity from the vaccines, particularly the Pfizer shot, wanes each month. With the Mayo Clinic researchers suggesting, based on old data that likely got even worse since, that Pfizer's efficacy against infection is only 42%, there is no reason to even attempt to compare this degree of immunity to the near-perfect immunity of prior infection, even against Delta. It should be obvious to any intellectually honest person that an unvaccinated individual with prior infection is exponentially safer to be around than someone who had the vaccines but not prior infection.

Remember, a significant portion of the population already got infected, and when the latest Delta wave is over in the South, the region will likely reach clear supermajorities of

the population with immunity, as was found in India following the circulation of this very contagious strain of the virus.

Now consider the fact that studies have shown those with prior infection are associated with 4.4x increased odds of clinically significant side effects following mRNA vaccination. Thus, it is as scandalous as it is unnecessary to vaccinate those with prior infection, even if one supports vaccination for those without prior immunity. But as you can imagine, that would take a massive share of the market off the table from the greedy hands of Big Pharma.

To that end, it's important to clarify once and for all, based on the current academic literature, that yes, people with prior infection are indeed immune, more so than those with vaccines. Here is just a small list of some of the more recent studies, which demonstrate the effectiveness of natural immunity — even from mild infection — much later into the pandemic than the study window of the vaccines:

1) New York University, May 3, 2021

The authors studied the contrast between vaccine immunity and immunity from prior infection as it relates to stimulating the innate T-cell immunity, which is more durable than adaptive immunity through antibodies alone. They concluded, "In COVID-19 patients, immune responses were characterized by a highly augmented interferon response which was largely absent in vaccine recipients. Increased interferon signaling likely contributed to the observed dramatic upregulation of cytotoxic genes in the peripheral T cells and innate-like lymphocytes in patients but not in immunized subjects."

The study further notes: "Analysis of B and T cell receptor repertoires revealed that while the majority of clonal B and T cells in COVID-19 patients were effector cells, in vaccine recipients clonally expanded cells were primarily circulating memory cells." What this means in plain English is that effector cells trigger an innate response that is quicker and

more durable, whereas memory response requires an adaptive mode that is slower to respond. Natural immunity conveys much more innate immunity, while the vaccine mainly stimulates adaptive immunity.

2) Washington University, St. Louis, Missouri, May 24, 2021, published in Nature

The media scared people last year into thinking that if antibody levels wane, it means their immunity is weakening, as we are indeed seeing with the vaccines today. But as Nature wrote, "People who recover [even] from mild COVID-19 have bone-marrow cells that can churn out antibodies for decades." Thus, aside from the robust T-cell memory that is likely lacking from most or all vaccinated individuals, prior infection creates memory B cells that "patrol the blood for reinfection, while bone marrow plasma cells (BMPCs) hide away in bones, trickling out antibodies for decades" as needed.

It's therefore not surprising that early on in the pandemic, an in-vitro study in Singapore found the immunity against SARS-CoV-2 to last even 17 years later from SARS-1-infected patients who never even had COVID-19.

3) Cleveland Clinic, June 19, 2021

In a study of 1,359 previously infected health care workers in the Cleveland Clinic system, not a single one of them was reinfected 10 months into the pandemic, despite some of these individuals being around COVID-positive patients more than the regular population.

4) Fred Hutchinson Cancer Research Center, Seattle/Emory University, Washington, July 14, 2021, published in Cell Medicine

The study found that most recovered patients produced durable antibodies, memory B cells, and durable polyfunctional CD4 and CD8 T cells, which target multiple parts of the virus. "Taken together, these results suggest that broad and effective immunity may

persist long-term in recovered COVID-19 patients," concluded the authors. In other words, unlike with the vaccines, no boosters are required to assist natural immunity.

5) University of California, Irvine, July 21, 2021

The authors conclude: "Natural infection induced expansion of larger CD8 T cell clones occupied distinct clusters, likely due to the recognition of a broader set of viral epitopes presented by the virus not seen in the mRNA vaccine" (emphasis added).

6) University of California, San Francisco, May 12, 2021

Conclusion: "In infection-naïve individuals, the second dose boosted the quantity but not quality of the T cell response, while in convalescents the second dose helped neither. Spike-specific T cells from convalescent vaccinees differed strikingly from those of infection-naïve vaccinees, with phenotypic features suggesting superior long-term persistence and ability to home to the respiratory tract including the nasopharynx."

Given that we know the virus spreads through the nasopharynx, the fact that natural infection conveys much stronger mucosal immunity makes it clear that the previously infected are much safer to be around than infection-naive people with the vaccine. The fact that this study artfully couched the choices between vaccinated naive people and vaccinated recovered rather than just plain recovered doesn't change the fact that it's the prior infection, not the vaccine, conveying mucosal immunity. In fact, studies now show that infected vaccinated people contain just as much viral load in their nasopharynx as those unvaccinated, a clearly unmistakable conclusion from the virus spreading wildly in many areas with nearly every adult vaccinated.

7) Israeli researchers, August 22, 2021

Aside from more robust T cell and memory B cell immunity, which is more important than antibody levels, Israeli researchers found that antibodies wane slower among those with prior infection. "In vaccinated subjects, antibody titers decreased by up to 40% each subsequent month while in convalescents they decreased by less than 5% per month."

8) Irish researchers, published in Wiley Review, May 18, 2021

Researchers conducted a review of 11 cohort studies with over 600,000 total recovered COVID patients who were followed up with over 10 months. The key finding? Unlike the vaccine, after about four to six months, they found "no study reporting an increase in the risk of reinfection over time."

9) Cornell University, Doha, Qatar, published in the Lancet, April 27, 2021

This is one of the only studies that analyzed the population-level risk of reinfection based on whole genome sequencing in a subset of patients with supporting evidence of reinfection. Researchers estimate the risk at 0.66 per 10,000 person-weeks. Most importantly, the study found no evidence of waning of immunity for over seven months of the follow-up period. The few reinfections that did occur "were less severe than primary infections," and "only one reinfection was severe, two were moderate, and none were critical or fatal." Also, unlike many vaccinated breakthrough infections in recent weeks that have been very symptomatic, "most reinfections were diagnosed incidentally through random or routine testing, or through contact tracing."

10) Israeli researchers, April 24, 2021

Several months ago, Israeli researchers studied 6.3 million Israelis and their COVID status and were able to confirm only one death in the entire country of someone who supposedly already had the virus, and he was over 80 years old. Contrast that to the torrent of

hospitalizations and deaths we are seeing in those vaccinated more than five months ago in Israel.

11) French researchers, May 11, 2021

Researchers tested blood samples from health care workers who never had the virus but got both Pfizer shots against blood samples from those health care workers who had a previous mild infection and a third group of patients who had a serious case of COVID. They found, "No neutralization escape could be feared concerning the two variants of concern [Alpha and Beta] in both populations" of those previously infected.

12) Duke-NUS Medical School, Singapore, published in Journal of Experimental Medicine

Many people are wondering: If they got only an asymptomatic infection, are they less protected against future infection than those who suffered infection with more evident symptoms? These researchers believe the opposite is true. "Asymptomatic SARS-CoV-2–infected individuals are not characterized by weak antiviral immunity; on the contrary, they mount a highly functional virus-specific cellular immune response," wrote the authors after studying T cell responses from both symptomatic and asymptomatic convalescent patients. If anything, they found that those with asymptomatic infection only had signs of non-inflammatory cytokines, which means that the body is primed to deal with the virus without producing that dangerous inflammatory response that is killing so many hospitalized with the virus.

13) Korean researchers, published in Nature Communications on June 30, 2021

The authors found that the T cells created from convalescent patients had "stem-cell like" qualities. After studying SARS-CoV-2-specific memory T cells in recovered patients who had the virus in varying degrees of severity, the authors concluded that long-term "SARS-

CoV-2-specific T cell memory is successfully maintained regardless of the severity of COVID-19."

14) Rockefeller University, July 29, 2021

The researchers note that far from suffering waning immunity, memory B cells in those with prior infection "express increasingly broad and potent antibodies that are resistant to mutations found in variants of concern." They conclude that "memory antibodies selected over time by natural infection have greater potency and breadth than antibodies elicited by vaccination." And again, this is even before getting into the innate cellular immunity which is exponentially greater in those with natural immunity.

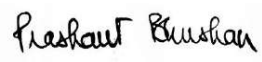
15) Researchers from Madrid and Mount Sinai, New York, March 22, 2021

Until now, we have established that natural immunity provides better adaptive B cell and innate T cell responses that last longer and work for the variants as compared to the vaccines. Moreover, those with prior infection are at greater risk for bad side effects from the vaccines, rendering the campaign to vaccinate the previously infected both unnecessary and dangerous. But the final question is: Do the vaccines possibly harm the superior T cell immunity built up from prior infection?

Immunologists from Mount Sinai in New York and Hospital La Paz in Madrid have raised serious concerns. In a shocking discovery after monitoring a group of vaccinated people both with and without prior infection, they found "in individuals with a pre-existing immunity against SARS-CoV-2, the second vaccine dose not only fail to boost humoral immunity but determines a contraction of the spike-specific T cell response." They also note that other research has shown "the second vaccination dose appears to exert a detrimental effect in the overall magnitude of the spike-specific humoral response in COVID-19 recovered individuals."

As early as March 27, among the many accurate statements Dr. Fauci made before he became a political animal, he declared he was "really confident" in the immunity conferred by prior infection. That was long before 17 months of data and dozens of studies confirmed that. Yet, today, there are thousands of doctors and nurses with infinitely better immunity than what the vaccines can confer who are losing their jobs during a staffing crisis for not getting the shots. Just know that the big lie about natural immunity is perhaps the most verifiable lie, but it is likely not the only lie with devastating consequences we are being told about the virus, the vaccines, and alternative treatment options.

Link:https://www.theblaze.com/amp/horowitz-15-studies-that-indicate-natural-immunity-from-prior-infection-is-more-robust-than-the-covid-vaccines-2654789339?__twitter_impression=true&s=08



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ANNEXURE: P41

The Defender

Scientist: 'What We're Seeing Is Virus Evolution 101' — Delta Variant More Transmissible, Not More Deadly

As COVID — especially the Delta variant — surges among the fully vaccinated, Brian Hooker, Ph.D., said the more the variant deviates from the original sequence used for the vaccine, the less effective the vaccine will be on that variant.

By
Megan Redshaw

50% of new infections reported in Israel are from fully vaccinated people.
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The Centers for Disease Control and Prevention (CDC) on July 27, issued an update on breakthrough infections, stating they "happen in only a small proportion of people who are fully vaccinated, even with the Delta variant."

The CDC's statement, however, stands in contrast to what the director of Israel's Public Health Services told viewers of the CBS program "Face the Nation" on Sunday — that 50% of new infections reported in Israel are from fully vaccinated people.

Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases and chief medical advisor to President Biden, and Dr. Sharon Alroy-Preis, director of Israel's Public Health Services, were interviewed during the program.

Israel and the U.S. began administering COVID vaccines in December 2020.

During the interview, Fauci adhered to the CDC's position — that breakthrough infections are happening only in a small proportion of fully vaccinated people — while Alroy-Preis said Israel is seeing breakthrough infections occurring in 50% of those who test positive for COVID.

ORDER TODAY: Robert F. Kennedy, Jr.'s New Book — 'The Real Anthony Fauci'
Despite mounting evidence COVID vaccine protection is waning over time, Fauci told "Face the Nation":

"…the predominant message is that if you are vaccinated and you get a breakthrough infection … you're much, much more protected against getting infected than an unvaccinated [person] who is completely vulnerable."

A breakthrough case refers to a person who is diagnosed with COVID after being fully vaccinated. A person is considered fully vaccinated 14 days after receiving the second dose of either the Pfizer or Moderna COVID vaccine, or two weeks after receiving the single-dose Johnson & Johnson (J&J) vaccine.

CDC: 3,907 hospitalizations + 750 deaths in people fully vaccinated against COVID with an FDA-authorized vaccine as of June 21.https://t.co/IthNjLnc0G

— Robert F. Kennedy Jr (@RobertKennedyJr) June 30, 2021

The CDC's latest breakthrough numbers, as of July 25, show 6,587 fully vaccinated people with COVID breakthrough cases. Of those, 6,239 people were hospitalized and 1,263 people died.

In May, the CDC revised its guidance for reporting breakthrough cases, stating it would count only those cases that result in hospitalization or death. Previously, the agency had included in its breakthrough count anyone who tested positive for COVID.

According to the CDC, the surveillance system for breakthrough cases is passive and relies on voluntary reporting from state health departments, which may not be complete.

In addition, some breakthrough cases will not be identified due to lack of testing. This is particularly true in instances of asymptomatic or mild illness, the CDC said.

NBC News investigated breakthrough cases not reported by CDC

NBC News contacted health agencies in 50 states and the District of Columbia to collect information on breakthrough cases, citing a lack of comprehensive data available from the CDC.

Data collected from 38 states showed more than 125,000 fully vaccinated Americans tested positive for COVID, and 1,400 died.

This conflicts with the CDC's data published July 26. Research by NBC News indicates the number who have been hospitalized or died passed 7,300 in just 30 states providing data.

The total number of breakthrough cases is likely higher than 125,683, as nine states, including Pennsylvania and Missouri, did not provide information, while 11 states did not provide death and hospitalization totals. Four states gave death and hospitalization numbers, but not total cases.

In addition, vaccinated adults who had breakthrough cases but showed no symptoms could be missing from the data altogether, officials told NBC.

For states like Utah, where full data was published, breakthrough cases accelerated in the past two months. As of June 2, just 27 (8%) of 312 new cases in the state were breakthrough cases. As of July 26, there were 519 new cases and 94 cases (almost 20%) were breakthroughs, according to state data.

In Virginia, total breakthrough cases resulting in death from COVID increased from 17 in mid-July to 42 on July 30.

In Oklahoma, breakthrough cases are up by 67%, with incidents of breakthrough greater with J&J's vaccine than with Moderna.

Delta variant more transmissible, but not more pathogenic than original strain

World Health Organization (WHO) officials said they are still trying to understand why the Delta variant is more transmissible than the original COVID virus strain.

"There are certain mutations in the Delta variant that, for example, allow the virus to adhere to a cell more easily," said Dr. Maria Van Kerkhove, WHO'S technical lead on COVID, at a press briefing July 30. "There are some laboratory studies that suggest that there's increased replication in some of the modeled human airway systems."

The CDC warned lawmakers July 29 of new research indicating the Delta strain is more contagious than chickenpox. It also appears to have a longer transmission window than the original COVID strain, and may make older people sicker, even if they've been fully vaccinated, CNBC reported.

Brian Hooker, Ph.D., P.E., Children's Health Defense chief scientific officer and professor of biology at Simpson University, said while the Delta variant is likely more transmissible, it's also likely less pathogenic. "What we're seeing is virus evolution 101," Hooker said.

Hooker explained:

"Viruses like to survive, so killing the host (i.e. the human who is infected) defeats the purpose because killing the host kills the virus, too.

"For this reason, new variants of viruses that circulate widely through the population tend to become more transmissive but less pathogenic. In other words, they will spread more easily from person to person, but they will cause less damage to the host."

Hooker said the more the variant deviates from the original sequence used for the vaccine, the less effective the vaccine will be on that variant, which could explain why fully vaccinated people are getting infected with the Delta variant. But this isn't the case for natural immunity, he explained.

Hooker said:

"The vaccine focuses on the spike protein, whereas natural immunity focuses on the entire virus. Natural immunity — with a more diverse array of antibodies and T-cell receptors — will provide better protection overall as it has more targets in which to attack the virus, whereas vaccine-derived immunity only focuses on one portion of the virus, in this case, the spike protein. Once that portion of the virus has mutated sufficiently, the vaccine no longer is effective."

As The Defender reported Monday, vaccinated people may play a key role in aiding the evolution of COVID variants.

Scientific Reports research: highest risk for establishing a vaccine-resistant virus strain occurs when large fraction of population has already been vaccinated but transmission is not controlled.

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— Robert F. Kennedy Jr (@RobertKennedyJr) August 3, 2021

According to research published last week in Scientific Reports, the highest risk for establishing a vaccine-resistant virus strain occurs when a large fraction of the population has already been vaccinated but the transmission is not controlled.

The data was consistent with a study released July 30, by the CDC which showed vaccinated people may transmit the Delta variant — now responsible for 80% of COVID cases in the U.S. — just as easily as the unvaccinated.

The team of scientists who published the data in Scientific Reports said their findings follow what's known as selective pressure — the force that drives any organism to evolve.

"Generally, the more people infected, the more the chances for vaccine resistance to emerge," said Fyodor Kondrashov of the Institute of Science and Technology Austria.

"So the more Delta is infectious, the more reason for concern," Kondrashov said. "By having a situation where you vaccinate everybody, a vaccine-resistant mutant actually gains a selective advantage."

U.S. senator and Kentucky state senator test positive for COVID despite being fully vaccinated

Sen. Lindsey Graham (R-S.C.) said Monday he tested positive for COVID despite being fully vaccinated, The Hill reported.

Graham said:

"I started having flu-like symptoms Saturday night and went to the doctor this morning. I feel like I have a sinus infection and at present time I have mild symptoms. I will be quarantining for 10 days."

Graham's announcement came amid growing public concern of breakthrough cases.

Sen. Roy Blunt (R-Mo.) warned reporters against sensationalizing the news about Graham, as it would "probably discourage some people at least from getting the vaccine."

Blunt has been talking to CDC officials about how to make sure reports of fully vaccinated people getting COVID aren't overshadowed by the fact that it is less likely to result in a severe case.

Kentucky Sen. Alice Forgy Kerr also tested positive for COVID despite being fully vaccinated, she announced on Facebook Monday night.

Forgy Kerr said in the post three other family members who were also fully vaccinated tested positive in the last three weeks as well, The Enquirer reported.

"Please be careful out there," she wrote. "This Delta variant is a 'new ballgame' apparently."

At least 233 staffers at two major hospitals test positive for COVID, majority vaccinated

At least 233 staffers at two major San Francisco hospitals tested positive for COVID — the majority of whom were fully vaccinated and became infected with the Delta variant.

Between 75% and 80% of the more than 50 staff members infected with COVID at Zuckerberg San Francisco General Hospital were fully vaccinated, Dr. Lukejohn Day, the hospital's chief medical officer, told The New York Times Saturday.

The University of California, San Francisco Medical Center said in a statement Friday, 153 of its 183 infected staff members had been fully vaccinated. Some of the cases were asymptomatic, but most involved mild to moderate symptoms with two requiring hospitalization, officials said.

Day said the number of staff infections reported in July is almost as many as during the peak of the winter surge. Despite the majority of staffers infected having been vaccinated, Day said without vaccinations the hospitalization rate would be much worse.

Yankee starting pitcher latest player to get COVID

The Yankees' top starting pitcher tested positive for the virus and will miss his next game, Manager Aaron Boone announced Monday.

"Gerrit will not be pitching tomorrow," Boone said. "He's actually tested positive for COVID."

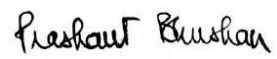
Twice this season the Yankees have had outbreaks among fully vaccinated members that involved several players or staff, but Monday's news was limited to Cole.

Boone did not say whether Cole is vaccinated or not. The majority of COVID cases among Yankees players and staff this season have occurred in those who were fully vaccinated, The Times reported.

Megan Redshaw

Megan Redshaw is a freelance reporter for The Defender. She has a background in political science, a law degree and extensive training in natural health.

Link:https://childrenshealthdefense.org/defender/brian-hooker-covid-delta-variant-vaccine-less-effective/?utm_source=salsa&eType=EmailBlastContent&eId=44b8347a-f675-40cd-9689-5743565c89a7



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Coronavirus

A long-term perspective on immunity to COVID

Andreas Radbruch & Hyun-Dong Chang

Determining the duration of protective immunity to infection by SARS-CoV-2 is crucial for understanding and predicting the course of the COVID-19 pandemic. Clinical studies now indicate that immunity will be long-lasting. **See p.421 & p.426**

Generating immunity against the SARS-CoV-2 coronavirus is of the utmost importance for bringing the COVID-19 pandemic under control, protecting vulnerable individuals from severe disease and limiting viral spread. Our immune systems protect against SARS-CoV-2 either through a sophisticated reaction to infection or in response to vaccination. A key question is, how long does this immunity last? Turner *et al.*[1] (page 421) and Wang *et al.*[2] (page 426) now characterize human immune responses to SARS-CoV-2 infection over the course of a year.

There is ongoing discussion about which aspects of the immune response to SARS-CoV-2 provide hallmarks of immunity (in other words, correlates of immunological protection). However, there is probably a consensus that the two main pillars of an antiviral response are immune cells called cytotoxic T cells, which can selectively eliminate infected cells, and neutralizing antibodies, a type of antibody that prevents a virus from infecting cells, and that is secreted by immune cells called plasma cells. A third pillar of an effective immune response would be the generation of T helper cells, which are specific for the virus and coordinate the immune reaction. Crucially, these latter cells are required for generating immunological memory — in particular, for orchestrating the emergence of long-lived plasma cells[3], which continue to secrete antiviral antibodies even when the virus has gone.

Immunological memory is not a long-lasting version of the immediate immune reaction to a particular virus; rather, it is a distinct aspect of the immune system. In the memory phase of an immune response, B and T cells that are specific for a virus are maintained in a state of dormancy, but are poised to spring into action if they encounter the virus again or a vaccine that represents it. These memory B and T cells arise from cells activated in the initial immune reaction. The cells undergo changes to their chromosomal DNA, termed epigenetic modifications, that enable them to react rapidly to subsequent signs of infection and drive responses geared to eliminating the disease-causing agent[4]. B cells have a dual role in immunity: they produce antibodies that can recognize viral proteins, and they can present parts of these proteins to specific T cells or develop into plasma cells that secrete antibodies in large quantities. About 25 years ago[5], it became evident that plasma cells can become memory cells themselves, and can secrete antibodies for long-lasting protection. Memory plasma cells can be maintained for decades, if not a lifetime, in the bone marrow[6].

The presence in the bone marrow of long-lived, antibody-secreting memory plasma cells is probably the best available predictor of long-lasting immunity. For SARS-CoV-2, most studies so far have analysed the acute phase of the immune response, which spans a few months after infection, and have monitored T cells, B cells and secreted antibodies[7]. It has remained unclear whether the response generates long-lived memory plasma cells that secrete antibodies against SARS-CoV-2.

Turner and colleagues took up the challenge of identifying antibody-secreting memory plasma cells in the bone marrow of people who have recovered from COVID-19 (called convalescent individuals). Memory plasma cells are rare, and those specific for a particular disease-causing agent will obviously be extremely scarce. Nevertheless, Turner and colleagues detected memory plasma cells that secreted antibodies specific for the spike protein encoded by SARS-CoV-2 in 15 of 19 individuals, approximately 7 months after infection. Notably, when the authors obtained samples 4 months later (11 months after SARS-CoV-2 infection), the number of such plasma cells had remained stable in all but one of the individuals analysed. Those plasma cells did not proliferate, which classifies them as bona fide memory plasma cells. Their numbers equalled those of memory plasma cells found in the individuals after vaccination against tetanus or diphtheria, and which provide long-term immunity to those diseases.

When Turner *et al.* tracked the concentrations of antibodies against SARS-CoV-2 in the individuals' blood serum for up to one year, they observed a biphasic pattern (Fig. 1). In the acute immune response around the time of initial infection, antibody concentrations were high. They subsequently declined, as expected, because most of the plasma cells of an acute immune response are short-lived. After a few months, the antibody concentrations levelled off and remained more or less constant at roughly 10–20% of the maximum concentration observed. This is consistent with the expectation that 10–20% of the plasma cells in an acute immune reaction

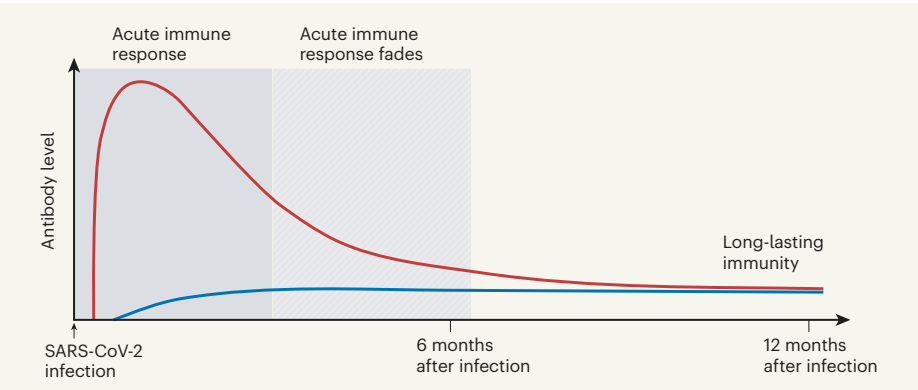

Figure 1 | The immune response to SARS-CoV-2 infection. Data are becoming available that shed light on longer-term aspects of the human immune response to coronavirus infection. One component of the defence response is the production of antibodies that target viral proteins (red line). During the initial, acute phase of the immune response, antibody levels peak rapidly; this peak is generated by short-lived immune cells called plasma cells. Turner *et al.*[1] present clinical evidence, from people who have had COVID-19, that long-lived, memory plasma cells that produce antibodies are generated in the bone marrow. These cells provide long-term antibody production that offers stable protection at a level of 10–20% of that during the acute phase (blue line). Memory plasma cells are a cell type that can be maintained for many years, if not a lifetime[8]. Wang *et al.*[2] have characterized antibody responses at between six months and a year in people who have been infected with SARS-CoV-2; their results also provide evidence for the generation of immunological memory.

become memory plasma cells[5], and is a clear indication of a shift from antibody production by short-lived plasma cells to antibody production by memory plasma cells. This is not unexpected, given that immune memory to many viruses and vaccines is stable over decades, if not for a lifetime[8].

For SARS-CoV, a coronavirus very like SARS-CoV-2 that was originally identified in 2003 and causes severe acute respiratory syndrome (SARS), the continued presence of high concentrations of neutralizing antibodies in blood serum for more than 17 years was reported[9] in 2020. Wang and colleagues' results suggest that long-term immunity might also be expected for SARS-CoV-2. The authors report a follow-up investigation of serum antibodies and memory B cells specific for SARS-CoV-2 approximately one year after infection. The individuals studied had previously been analysed by Wang and colleagues' group after six months[10], but it is only now, after a year, that the transition from an acute immune reaction to the generation of immunological memory has become evident.

Wang *et al.* show that, between 6 and 12 months after infection, the concentration of neutralizing antibodies remains unchanged. That the acute immune reaction extends even beyond six months is suggested by the authors' analysis of SARS-CoV-2-specific memory B cells in the blood of the convalescent individuals over the course of the year. These memory B cells continuously enhance the reactivity of their SARS-CoV-2-specific antibodies through a process known as somatic hypermutation. The authors demonstrated this with *in vitro* tests of antibody neutralization of a broad collection of SARS-CoV-2 variant strains.

Finally, Wang and colleagues show that immunity can be boosted even further in convalescent individuals by vaccinating them after a year. This resulted in the generation of more plasma cells, together with an increase in the level of SARS-CoV-2 antibodies that was up to 50 times greater than before vaccination. Some of the plasma cells will probably be recruited to become memory plasma cells, although this remains to be demonstrated formally, as does the induction of stable, long-term memory as a consequence of SARS-CoV-2 vaccination.

In evaluating vaccine efficacy, we should not expect the high antibody concentrations characteristic of acute immune reactions to be maintained in the memory phase[11]. It is an old misconception, when advocating frequent revaccinations, that antibody concentrations during the acute immune reaction can be compared with those later on, to calculate an imaginary 'half-life' of antibody-mediated immunity. This ignores the biphasic character of the immune response (Fig. 1).

The good news is that the evidence thus far predicts that infection with SARS-CoV-2 induces long-term immunity in most individuals. This provides a welcome positive note as we wait for further data on memory responses to vaccination.

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ANNEXURE: P43

Necessity of COVID-19 vaccination in previously infected individuals

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Keywords: SARS-CoV-2; COVID-19; Incidence; Vaccines; Immunity;

Running Title: COVID-19 vaccination if already infected

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Summary: Cumulative incidence of COVID-19 was examined among 52238 employees in an American healthcare system. COVID-19 did not occur in anyone over the five months of the study among 2579 individuals previously infected with COVID-19, including 1359 who did not take the vaccine.

ABSTRACT

Background. The purpose of this study was to evaluate the necessity of COVID-19 vaccination in persons previously infected with SARS-CoV-2.

Methods. Employees of the Cleveland Clinic Health System working in Ohio on Dec 16, 2020, the day COVID-19 vaccination was started, were included. Any subject who tested positive for SARS-CoV-2 at least 42 days earlier was considered previously infected. One was considered vaccinated 14 days after receipt of the second dose of a SARS-CoV-2 mRNA vaccine. The cumulative incidence of SARS-CoV-2 infection over the next five months, among previously infected subjects who received the vaccine, was compared with those of previously infected subjects who remained unvaccinated, previously uninfected subjects who received the vaccine, and previously uninfected subjects who remained unvaccinated.

Results. Among the 52238 included employees, 1359 (53%) of 2579 previously infected subjects remained unvaccinated, compared with 20804 (42%) of 49659 not previously infected. The cumulative incidence of SARS-CoV-2 infection remained almost zero among previously infected unvaccinated subjects, previously infected subjects who were vaccinated, and previously uninfected subjects who were vaccinated, compared with a steady increase in cumulative incidence among previously uninfected subjects who remained unvaccinated. Not one of the 1359 previously infected subjects who remained unvaccinated had a SARS-CoV-2 infection over the duration of the study. In a Cox proportional hazards regression model, after adjusting for the phase of the epidemic, vaccination was associated with a significantly lower risk of SARS-CoV-2 infection among those not previously infected (HR 0.031, 95% CI 0.015 to 0.061) but not among those previously infected (HR 0.313, 95% CI 0 to Infinity).

Conclusions. Individuals who have had SARS-CoV-2 infection are unlikely to benefit from COVID-19 vaccination, and vaccines can be safely prioritized to those who have not been infected before.

INTRODUCTION

The two FDA-approved (BNT162b2 mRNA [Pfizer-BioNTech] and mRNA-1273 [Moderna]) mRNA vaccines have been shown to be very efficacious in protecting against Severe Acute Respiratory Syndrome (SARS) – associated Coronavirus-2 (SARS-CoV-2) infection [1,2]. The effectiveness of the Pfizer-BioNTech vaccine in a real-world setting has also been shown to be comparable to the efficacy demonstrated in clinical trials [3,4]. Given these, there has been an understandable desire to vaccinate as many people as possible.

The ability to vaccinate a large part of the population is limited by the supply of vaccine. As of March 21, 2021, 78% of 447 million doses of the coronavirus disease 2019 (COVID-19) vaccines that had been deployed had gone to only ten countries [5]. The COVAX initiative was borne out of the recognition that equitable distribution of vaccines worldwide was essential for effective control of the COVID-19 pandemic. However, the reality is that there is great disparity in the availability of vaccines across countries. Countries with limited supplies of vaccine have to prioritize how their supply of vaccines will be allocated within their populations. Criteria used for such prioritization have included profession, age, and comorbid conditions. Data that inform prioritization criteria with help maximize the benefits of whatever vaccine is available.

Observational studies have found very low rates of reinfection among individuals with prior SARS-CoV-2 infection [6–8]. This brings up the question about whether it is necessary to vaccinate previously infected individuals. These studies notwithstanding, there remains a theoretical possibility that the vaccine may still provide some benefit in previously infected persons. A prior large observational study concluded that immunity from natural infection cannot be relied on to provide adequate protection and advocated for vaccination of previously infected individuals [9]. The CDC website recommends that persons previously infected with SARS-CoV-2 still get the vaccine [10]. Despite these recommendations, credible reports of previously infected persons getting COVID-19 are rare. The rationale often provided for getting the COVID-19 vaccine is that it is safer to get vaccinated than to get the disease. This is

certainly true, but it is not an explanation for why people who have already had the disease need to be vaccinated. A strong case for vaccinating previously infected persons can be made if it can be shown that previously infected persons who are vaccinated have a lower incidence of COVID-19 than previously infected persons who did not receive the vaccine.

The purpose of this study was to attempt to do just that, and thereby evaluate the necessity of the COVID-19 vaccine in persons who were previously infected with SARS-CoV-2.

METHODS

Study design

This was a retrospective cohort study conducted at the Cleveland Clinic Health System in Ohio, USA. The study was approved by the Cleveland Clinic Institutional Review Board. A waiver of informed consent and waiver of HIPAA authorization were approved to allow access to personal health information by the research team, with the understanding that sharing or releasing identifiable data to anyone other than the study team was not permitted without additional IRB approval.

Setting

PCR testing for SARS-CoV-2 at Cleveland Clinic began on March 12, 2020, and a streamlined process dedicated to the testing of health care personnel (HCP) was begun shortly thereafter. All employees with a positive SARS-CoV-2 test were interviewed by Occupational Health, with date of onset of symptoms of COVID-19 being one of the questions asked. Vaccination for COVID-19 began at Cleveland Clinic on December 16, 2020. When initially started it was the Pfizer-BioNTech vaccine that was administered, until the Moderna vaccine became available, from which time employees received one or the other. All employees were scheduled to receive their second vaccine dose 28 days after the first one, regardless of which vaccine was given. The employee cohort was chosen for this study because of documentation of their COVID-19 vaccination and of any SARS-CoV-2 infection in the Occupational Health database.

Participants

All employees of the Cleveland Clinic Health System, working in Ohio, on Dec 16, 2020, were screened for inclusion in the study. Those who were in employment on December 16, 2020, were included.

Variables

SARS-CoV-2 infection was defined as a positive nucleic acid amplification test. The date of infection was taken to be the date of onset of symptoms when available, and the date of specimen collection when not. A person was considered vaccinated 14 days after receipt of the second dose of the vaccine (which would have been 42 days after receipt of the first dose of the vaccine for most subjects). For the sake of consistency in the duration assumed for development of natural and vaccine immunity, any person who tested positive for SARS-CoV-2 at least 42 days before the vaccine rollout date, was considered previously infected. Other covariates collected were age, job location, job type (patient-facing or non-patient facing), and job category. The job location variable could be one of the following: Cleveland Clinic Main Campus, regional hospital (within Ohio), ambulatory center, administrative center, or remote location. The job category was one of the following: professional staff, residents/fellows, advance practice practitioners, nursing, pharmacy, clinical support, research, administration, and administration support.

Outcome

The study outcome was time to SARS-CoV-2 infection, the latter defined as a positive nucleic acid amplification test for SARS-CoV-2 on or after December 16, 2020. Time to SARS-CoV-2 infection was calculated as number of days from December 16, 2020 (vaccine rollout date) to SARS-CoV-2 infection. For those with a prior SARS-CoV-2 infection positive tests within 90 days of the first positive test were considered part of the initial episode of illness. Employees that had not developed a SARS-CoV-2 infection were censored at the end of the study follow-up period (May 15, 2021). Those who received the Johnson & Johnson vaccine (81 subjects) without having had a SARS-CoV-2 infection were censored on the day of receipt of the vaccine, and those whose employment was terminated during the study period before they had SARS-CoV-2 infection (2245 subjects) were censored on the date of

termination of employment. The health system never had a requirement for asymptomatic employee test screening. Most of the positive tests, therefore, would have been tests done to evaluate suspicious symptoms. A small proportion would have been tests done as part of pre-operative or pre-procedural screening.

Statistical analysis

A Simon-Makuch hazard plot [11] was created to compare the cumulative incidence of SARS-CoV-2 infection among previously infected subjects who were vaccinated, with those of previously infected subjects who remained unvaccinated, previously uninfected subjects who were vaccinated, and previously uninfected subjects who remained unvaccinated. Previous infection was treated as a time-independent covariate (SARS-CoV-2 infection at least 42 days before Dec 16, 2020), and vaccination (14 days after receipt of the second dose of the vaccine) was treated as a time-dependent covariate (Figure 1). Curves for the unvaccinated were based on data for those who did not receive the vaccine over the duration of the study, and for those who did until the date they were considered vaccinated, from which point onwards their data were recorded into the corresponding vaccinated set. A Cox proportional hazards regression model was fitted with time to SARS-CoV-2 infection as the outcome variable against vaccination (as a time-dependent covariate whose value changed on the date a subject was considered vaccinated)[12]. Previous infection (as a time-independent covariate) and an interaction term for previous infection and vaccination were included as covariates. The phase of the epidemic was adjusted for by including the slope of the epidemic curve as a time-dependent covariate whose value changed continuously with the slope of the epidemic curve. The analysis was performed by NKS and ASN using the *survival* package and R version 4.0.5 [12–14].

RESULTS

Of 52238 employees included in the study, 2579 (5%) were previously infected with SARS-CoV-2.

Baseline characteristics

Those previously infected with SARS-CoV-2 were significantly younger (mean ± SD age; 39 ± 13 vs. 42 ± 13, p<0.001), and included a significantly higher proportion with patient-facing jobs (65% vs. 51%, p<0.001). Table 1 shows the characteristics of subjects grouped by whether or not they were previously infected. A significantly lower proportion of those previously infected (47%, 1220 subjects) were vaccinated by the end of the study compared to 58% (28855) of those not previously infected (p<0.001). Of those vaccinated, 63% received the Moderna vaccine. Twelve percent of subjects with previous SARS-CoV-2 infection did not have a symptom onset date, suggesting they may possibly have been identified on pre-operative or pre-procedural screening, and may not have had symptomatic infection. When vaccination was begun, the epidemic in Ohio was at the peak of its third wave (Figure 2).

Cumulative incidence of COVID-19

Figure 3 is a Simon-Makuch plot showing that SARS-CoV-2 infections occurred almost exclusively in subjects who were not previously infected with SARS-CoV-2 and who remained unvaccinated. The cumulative incidence of SARS-CoV-2 infection among previously infected unvaccinated subjects did not differ from that of previously infected subjects who were vaccinated, and that of previously uninfected subjects who were vaccinated. For all three of these groups, the cumulative incidence of SARS-CoV-2 infection was much lower than that of subjects who were not previously infected and who remained unvaccinated. Of the 2154 SARS-CoV-2 infections during the study period, 2139 (99.3%) occurred among those not previously infected who remained unvaccinated or were waiting

to get vaccinated, and15 (0.7%) occurred among those not previously infected who were vaccinated. Not one of the 2579 previously infected subjects had a SARS-CoV-2 infection, including 1359 who remained unvaccinated throughout the duration of the study.

Association of vaccination with occurrence of COVID-19

In a Cox proportional hazards regression model, after adjusting for the phase of the epidemic, vaccination was associated with a significantly lower risk of SARS-CoV-2 infection among those not previously infected (HR 0.031, 95% CI 0.015 – 0.061) but not among those previously infected (HR 0.313, 95% CI 0 – Infinity). The absence of events among those who were previously infected, whether they received the vaccine or not, precluded accurate or precise estimates for the latter effect size.

Duration of protection

This study was not specifically designed to determine the duration of protection afforded by natural infection, but for the previously infected subjects the median duration since prior infection was 143 days (IQR 76 – 179 days), and no one had SARS-CoV-2 infection over the following five months, suggesting that SARS-CoV-2 infection may provide protection against reinfection for 10 months or longer.

DISCUSSION

This study shows that subjects previously infected with SARS-CoV-2 are unlikely to get COVID-19 reinfection whether or not they receive the vaccine. This finding calls into question the necessity to vaccinate those who have already had SARS-CoV-2 infection.

It is reasonable to expect that immunity acquired by natural infection provides effective protection against future infection with SARS-CoV-2. Observational studies have indeed found very low rates of reinfection over the following months among survivors of COVID-19 [6–8]. Reports of true reinfections are extremely rare in the absence of emergence of new variants. When such reinfections occur, it would be purely speculative to suggest that a vaccine might have prevented them. Duration of protective immunity from natural infection is not known. However, the same also can be said about duration of protective immunity from vaccination. Uncertainty about the duration of protective immunity afforded by natural infection is not by itself a valid argument for vaccinating previously infected individuals. This study provides direct evidence that vaccination with the best available vaccines does not provide additional protection in previously infected individuals.

A prior study concluded that natural infection cannot be relied on to protect against COVID-19 [9]. That study was based on comparison of PCR-positivity rates during a second COVID-19 surge in Denmark between those who tested positive and negative during the first COVID-19 surge, and indirectly calculated that prior infection provided 80.5% protection against repeat infection, and that protection against those older than 65 years was only 47.1%. The study did not compare vaccinated and unvaccinated people, and it is therefore an assumption to consider that a vaccine would have provided better protection in that particular population. Furthermore, there was a gap of only seven weeks between the end of the first surge and the beginning of the second in that study. It is now well-known that a small number of people can continue to have positive PCR test results for several weeks to a few months after infection, one study finding that 5.3% remained positive at 90 days [15]. It is possible that some of the positives picked up in the early part of the second surge were not necessarily new infections but residual

virus from the tail end of the first surge. Since the actual number of infections was small, a few such misclassifications could change the rates substantially. Our study examined rates of SARS-CoV-2 infection in vaccinated and unvaccinated individuals and showed that those previously infected who did not receive the vaccine did not have higher rates of SARS-CoV-2 infection than those previously infected who did, thereby providing direct evidence that vaccination does not add protection to those who were previously infected.

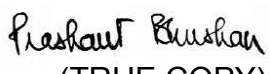
There are several strengths to our study. Its large sample size and follow-up of up to 5 months provide us with an ample degree of confidence in its findings. A major strength of our study is that we adjusted the analyses for the phase of the epidemic at all time points. The risk of acquisition of infection is strongly influenced by the phase of the epidemic at any given time, and it is important to adjust for this for accurate risk analyses. Given that was this a study among employees of a health system, and that the health system had policies and procedures in recognition of the critical importance of keeping track of the pandemic among its employees, we had an accurate accounting of who had COVID-19, when they were diagnosed with COVID-19, who received a COVID-19 vaccine, and when they received it.

The study has its limitations. Because we did not have a policy of asymptomatic employee screening, previously infected subjects who remained asymptomatic might have been misclassified as previously uninfected. Given this limitation, one should be cautious about drawing conclusions about the protective effect of prior asymptomatic SARS-CoV-2 infection. It should be noted though, that 12% of the subjects classified as previously infected did not have a symptom onset date recorded, suggesting that at least some of those classified as previously infected might have been asymptomatic infections. It is reassuring that none of these possibly asymptomatically infected individuals developed COVID-19 during the duration of the study. The study follow-up duration was short, being only five months, but this was longer than published mRNA vaccine efficacy studies [1,2], and longer than the follow-up duration of the largest published vaccine effectiveness studies to date [3,4]. Median freedom from reinfection (time from initial infection until end of follow-up) in this study, for those previously infected, of almost 10 months, is consistent with findings in an earlier study that immunoglobulin G (IgG) to the spike protein remained

stable over more than six months after an episode of infection [16]. Our study included no children and few elderly subjects, and the majority would not have been immunosuppressed. Data governance policies in our institution precluded us from obtaining detailed clinical information on employees. While one cannot generalize this study's findings to assume that prior infection would provide adequate immunity in these groups, there is also no reason to expect a vaccine to provide additional protection in these same groups. Lastly, it is necessary to emphasize that these findings are based on the prevailing assortment of virus variants in the community during the study. It is not known how well these results will hold if or when some of the newer variants of concern become prominent. However, if prior infection does not afford protection against some of the newer variants of concern, there is little reason to suppose that the currently available vaccines would either. Vaccine breakthrough infections with variants have indeed been reported [17].

Our study's findings have important implications. Worldwide, COVID-19 vaccines are still in short supply. As of March 9, 2021, dozens of countries had not been able to administer a single dose of the vaccine [18]. As of May 17, 2021, only 17 countries had been able to reach ten percent or more of their populations with at least the first dose of vaccine [19]. Given such a scarcity of the vaccine, and the knowledge that vaccine does not provide additional protection to those previously infected, it would make most sense to limit vaccine administration to those who have not previously had the infection. In addition to profession, age, and comorbid conditions, previous infection should be an important consideration in deciding whom to prioritize to receive the vaccine. A practical and useful message would be to consider symptomatic COVID-19 to be as good as having received a vaccine, and that people who have had COVID-19 confirmed by a reliable laboratory test do not need the vaccine.

In conclusion, individuals who have laboratory-confirmed symptomatic SARS-CoV-2 infection are unlikely to benefit from COVID-19 vaccination, and vaccines can be safely prioritized to those who have not been infected before.



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ANNEXURE: P44

The Indian Express

Two-thirds of Indians have Covid antibodies, 40 crore still at risk: ICMR

The serosurvey, the fourth such exercise, was conducted in June and July, after the second wave had began to subside.

Written by Harikishan Sharma | New Delhi |
Updated: July 21, 2021 8:12:47 am

Up to two-thirds of the Indian population above the age of six have already been infected with the coronavirus, the latest nationwide serological survey conducted by the Indian Council of Medical Research (ICMR) has found. That still leaves about 40 crore people who are susceptible to the virus.

The serosurvey, the fourth such exercise, was conducted in June and July, after the second wave had began to subside. A total of 28,975 people were tested for the presence of antibodies specific to SARS-CoV2 virus, and 67.6% were found to have them. For the first time, minors in the age group of 6 to 17 years were also included in the serosurvey, with antibodies interestingly discovered in nearly half of them.

The results of the latest serosurvey mark a huge jump in the prevalence of infection among the population from the previous such exercises, carried out in the same districts. In the third serosurvey, carried out in December 2020-January this year, less than 25% of the surveyed population was found to have the antibodies. In the first survey, carried out between May and June last year, only about 0.7% people were found with antibodies. A subsequent exercise in August and September had found antibodies in 7.1% people.

The fact that two-thirds of the population has already been infected — with the sero-prevalence found to be the same in rural and urban areas — reduces the possibility of a fresh round of infections as severe as the second wave was. More so, because at least 32 crore people have received at least one dose of the vaccine. There would be a considerable overlap between those who have been infected, and those who have got the vaccine, but the two figures together mean that over 70% of the population over the age of six can be expected to have developed some sort of immunity against the disease.

Indicates a milder 3rd wave

The findings of the fourth sero-survey, are significant. Apart from dissipating some worries regarding the ferocity of a third wave, it will also help the government go ahead with its gradual opening up.

Unless the virus mutates in a manner that enables it to escape this immunity, and begins to re-infect people in a big way, the chances of a repeat of a second wave are slim.

But that does not rule out small, localised surges in districts or states. Even at the national level, a vulnerable population of 40 crore leaves a fair possibility for surges like the first wave, or smaller. As ICMR Director General Dr Balram Bhargava also warned, the epidemic was far from over.

"Two-thirds of the general population that is above the age of six years had SARS-CoV-2 infection. More importantly, a third of the population did not have any antibodies… 40 crore population of this country is still vulnerable," Bhargava said, addressing a press conference.

"The implications of this large serosurvey clearly show that there is a ray of hope. But there is no room for complacency. We must maintain Covid-appropriate behaviour," he said.

Asked if the government was going to plan opening of schools in a staggered way, as is being suggested by many experts, Bhargava said primary schools can be opened first, then secondary schools. "The antibody exposure in children is very similar to adults," he noted.

Among minors, the sero-prevalence was 57.2% in the age group 6-9 years and 61.6% among 10-17-year-olds.
As per vaccination status, the sero-prevalence was 62.3% among those who had taken Covid shots, 81% in people who had taken one dose and 89.8% in people who had taken both.

The survey also found sero-prevalence higher among women (69.2% of total) than men (65.8%). Among the different age groups, it was the highest, 77.6%, in the 45-60 age group.

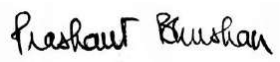
As for health-workers, 7,252 were surveyed and 85% of them were found to have antibodies against Covid-19, with Bhargava stressing the need to ensure full vaccination for all of them "as soon as possible".
The different sero rates indicate the possibility of future waves of infection, he said. "There may be some states which are very low and the population which is vulnerable is much higher there. Therefore the chances of future waves are higher in those states."

Bhargava categorically said that social, public, religious and political congregations should be avoided. He also advised against non-essential travel, as well as travel only if one is fully vaccinated, saying these were the messages from the survey.

On school reopening, Bhargava said, "We know clearly that children can handle viral infections much better than adults. Young children… have lower number of ace receptors, to which the virus attaches."

He gave the example of Scandinavian countries and several parts of Europe which did not shut down primary schools, over successive waves. "So, once India starts considering and the districts start considering, it will be wise to open the primary schools first, and that should be done before the secondary schools… Also, we have to ensure that all the support staff, the school bus driver or teachers, are vaccinated," Bhargava said.

Link: https://indianexpress.com/article/india/covid-antibodies-two-thirds-population-40-crore-vulnerable-govt-7413839/



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ANNEXURE: P45

Israel National News

Natural infection vs vaccination: Which gives more protection?

Nearly 40% of new COVID patients were vaccinated - compared to just 1% who had been infected previously.

David Rosenberg , Jul 13 , 2021 9:24 AM

Coronavirus patients who recovered from the virus were far less likely to become infected during the latest wave of the pandemic than people who were vaccinated against COVID, according to numbers presented to the Israeli Health Ministry.

According to a report by Israel's Channel 13, Health Ministry data on the wave of COVID outbreaks which began this May show that Israelis with immunity from natural infection were far less likely to become infected again in comparison to Israelis who only had immunity via vaccination.

More than 7,700 new cases of the virus have been detected during the most recent wave starting in May, but just 72 of the confirmed cases were reported in people who were known to have been infected previously – that is, less than 1% of the new cases.

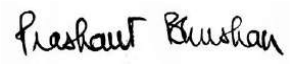
Roughly 40% of new cases – or more than 3,000 patients – involved people who had been infected despite being vaccinated.

With a total of 835,792 Israelis known to have recovered from the virus, the 72 instances of reinfection amount to 0.0086% of people who were already infected with COVID.

By contrast, Israelis who were vaccinated were 6.72 times more likely to get infected after the shot than after natural infection, with over 3,000 of the 5,193,499, or 0.0578%, of Israelis who were vaccinated getting infected in the latest wave.

According to the report by Channel 13, the disparity has confounded – and divided – Health Ministry experts, with some saying the data proves the higher level of immunity provided by natural infection versus vaccination, while others remained unconvinced.

Link: https://www.israelnationalnews.com/News/News.aspx/309762



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ANNEXURE: P46

Title page

Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections

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Abstract

Background:

Reports of waning vaccine-induced immunity against COVID-19 have begun to surface. With that, the comparable long-term protection conferred by previous infection with SARS-CoV-2 remains unclear.

Methods:

We conducted a retrospective observational study comparing three groups: (1)SARS-CoV-2-naïve individuals who received a two-dose regimen of the BioNTech/Pfizer mRNA BNT162b2 vaccine, (2)previously infected individuals who have not been vaccinated, and (3)previously infected *and* single dose vaccinated individuals. Three multivariate logistic regression models were applied. In all models we evaluated four outcomes: SARS-CoV-2 infection, symptomatic disease, COVID-19-related hospitalization and death. The follow-up period of June 1 to August 14, 2021, when the Delta variant was dominant in Israel.

Results:

SARS-CoV-2-naïve vaccinees had a 13.06-fold (95% CI, 8.08 to 21.11) increased risk for breakthrough infection with the Delta variant compared to those previously infected, when the first event (infection or vaccination) occurred during January and February of 2021. The increased risk was significant (P<0.001) for symptomatic disease as well. When allowing the infection to occur at any time before vaccination (from March 2020 to February 2021), evidence of waning natural immunity was demonstrated, though SARS-CoV-2 naïve vaccinees had a 5.96-fold (95% CI, 4.85 to

7.33) increased risk for breakthrough infection and a 7.13-fold (95% CI, 5.51 to 9.21) increased risk for symptomatic disease. SARS-CoV-2-naïve vaccinees were also at a greater risk for COVID-19-related-hospitalizations compared to those that were previously infected.

Conclusions:

This study demonstrated that natural immunity confers longer lasting and stronger protection against infection, symptomatic disease and hospitalization caused by the Delta variant of SARS-CoV-2, compared to the BNT162b2 two-dose vaccine-induced immunity. Individuals who were both previously infected with SARS-CoV-2 and given a single dose of the vaccine gained additional protection against the Delta variant.

Introduction

The heavy toll that SARS-CoV-2 infection has been taking on global health and healthcare resources has created an urgent need to estimate which part of the population is protected against COVID-19 at a given time in order to set healthcare policies such as lockdowns and to assess the possibility of herd immunity.

To date, there is still no evidence-based, long-term correlate of protection[1]. This lack of correlate of protection has led to different approaches in terms of vaccine resource allocation, namely the need for vaccine administration in recovered patients, the need for booster shots in previously vaccinated individuals or the need to vaccinate low-risk populations, potentially previously exposed.

The short-term effectiveness of a two-dose regimen of the BioNTech/Pfizer BNT162b2 mRNA COVID-19 vaccine was demonstrated in clinical trials[2] and in observational settings[3,4]. However, long term effectiveness across different variants is still unknown, though reports of waning immunity are beginning to surface, not merely in terms of antibody dynamics over time[5–7], but in real-world settings as well[8].

Alongside the question of long-term protection provided by the vaccine, the degree and duration to which previous infection with SARS-CoV-2 affords protection against repeated infection also remains unclear. Apart from the paucity of studies examining long-term protection against reinfection[9], there is a challenge in defining reinfection as opposed to prolonged viral shedding[10]. While clear-cut cases exist, namely two separate clinical events with two distinct sequenced viruses, relying solely on these cases will likely result in an under-estimation of the incidence of reinfection. Different criteria based on more widely-available information have been suggested[11], the Centers for Disease Control and Prevention's (CDC) guidelines refer to two positive SARS-CoV-2 polymerase chain reaction (PCR) test results at least 90 days

apart.[12] Using similar criteria, population-based studies demonstrated natural immunity[13,14] with no signs of waning immunity for at least 7 months, though protection was lower for those aged 65 or older[9].

The Delta (B.1.617.2) Variant of Concern (VOC), initially identified in India and today globally prevalent, has been the dominant strain in Israel since June 2021. The recent surge of cases in Israel[15], one of the first countries to embark on a nationwide vaccination campaign (mostly with the BioNTech/Pfizer BNT162b2 vaccine), has raised concerns about vaccine effectiveness against the Delta variant, including official reports of decreased protection[16]. Concomitantly, studies have demonstrated only mild differences in short-term vaccine effectiveness[17] against the Delta variant, as well as substantial antibody response[18]. Apart from the variant, the new surge was also explained by the correlation found between time-from-vaccine and breakthrough infection rates, as early vaccinees were demonstrated to be significantly more at risk than late vaccinees[8]. Now, when sufficient time has passed since both the beginning of the pandemic and the deployment of the vaccine, we can examine the long-term protection of natural immunity compared to vaccine-induced immunity.

To this end, we compared the incidence rates of breakthrough infections to the incidence rates of reinfection, leveraging the centralized computerized database of Maccabi Healthcare Services (MHS), Israel's second largest Health Maintenance Organization.

Methods

Study design and population

A retrospective cohort study was conducted, leveraging data from MHS' centralized computerized database. The study population included MHS members aged 16 or older who were vaccinated prior to February 28, 2021, who had a documented SARS-CoV-2 infection by February 28, 2021, or who had both a documented SARS-CoV-2 infection by February 28, 2021 *and* received one dose of the vaccine by May 25, 2021, at least 7 days before the study period. On March 2, 2021, The Israeli Ministry of Health revised its guidelines and allowed previously SARS-CoV-2 infected individuals to receive one dose of the vaccine, after a minimum 3-month-interval from the date of infection

Data Sources

Anonymized Electronic Medical Records (EMRs) were retrieved from MHS' centralized computerized database for the study period of March 1, 2020 to August 14, 2021.

MHS is a 2.5-million-member, state-mandated, non-for-profit, second largest health fund in Israel, which covers 26% of the population and provides a representative sample of the Israeli population. Membership in one of the four national health funds is mandatory, whereas all citizens must freely choose one of four funds, which are prohibited by law from denying membership to any resident. MHS has maintained a centralized database of EMRs for three decades, with less than 1% disengagement rate among its members, allowing for a comprehensive longitudinal medical follow-up. The centralized dataset includes extensive demographic data, clinical measurements, outpatient and hospital diagnoses and procedures, medications

dispensed, imaging performed and comprehensive laboratory data from a single central laboratory.

Data extraction and definition of the study variables

COVID-19-related data

COVID-19-related information was captured as well, including dates of the first and second dose of the vaccine and results of any polymerase chain reaction (PCR) tests for SARS-CoV-2, given that all such tests are recorded centrally. Records of COVID-19-related hospitalizations were retrieved as well, and COVID-19-related mortality was screened for. Additionally, information about COVID-19-related symptoms was extracted from EMRs, where they were recorded by the primary care physician or a certified nurse who conducted in-person or phone visits with each infected individual.

Exposure variable: study groups

The eligible study population was divided into three groups: (1)fully vaccinated and SARS-CoV-2-naïve individuals, namely MHS members who received two doses of the BioNTech/Pfizer mRNA BNT162b2 vaccine by February 28, 2021, did not receive the third dose by the end of the study period and did not have a positive PCR test result by June 1, 2021; (2) unvaccinated previously infected individuals, namely MHS members who had a positive SARS-CoV-2 PCR test recorded by February 28, 2021 and who had not been vaccinated by the end of the study period; (3) previously infected *and* vaccinated individuals, including individuals who had a positive SARS-CoV-2 PCR test by February 28, 2021 and received one dose of the vaccine by May 25, 2021, at least 7 days before the study period. The fully vaccinated group was the comparison (reference) group in our study. Groups 2 and 3, were matched to the

comparison group 1 in a 1:1 ratio based on age, sex and residential socioeconomic status.

Dependent variables

We evaluated four SARS-CoV-2-related outcomes, or second events: documented RT-PCR confirmed SARS-CoV-2 infection, COVID-19, COVID-19-related hospitalization and death. Outcomes were evaluated during the follow-up period of June 1 to August 14, 2021, the date of analysis, corresponding to the time in which the Delta variant became dominant in Israel.

Covariates

Individual-level data of the study population included patient demographics, namely age, sex, socioeconomic status (SES) and a coded geographical statistical area (GSA, assigned by Israel's National Bureau of Statistics, corresponds to neighborhoods and is the smallest geostatistical unit of the Israeli census). The SES is measured on a scale from 1 (lowest) to 10, and the index is based on several parameters, including household income, educational qualifications, household crowding and car ownership. Data were also collected on last documented body mass index (BMI) and information about chronic diseases from MHS' automated registries, including cardiovascular diseases[19], hypertension[20], diabetes[21], chronic kidney disease[22], chronic obstructive pulmonary disease, immunocompromised conditions, and cancer from the National Cancer Registry[23].

Statistical analysis

Two multivariate logistic regression models were applied that evaluated the four aforementioned SARS-CoV-2-related outcomes as dependent variables, while the study groups were the main independent variables.

Model 1– previously infected vs. vaccinated individuals, with matching for time of first event

In model 1, we examined natural immunity and vaccine-induced immunity by comparing the likelihood of SARS-CoV-2-related outcomes between previously infected individuals who have never been vaccinated and fully vaccinated SARS-CoV-2-naïve individuals. These groups were matched in a 1:1 ratio by age, sex, GSA and time of first event. The first event (the preliminary exposure) was either the time of administration of the second dose of the vaccine *or* the time of documented infection with SARS-CoV-2 (a positive RT-PCR test result), both occurring between January 1, 2021 and February 28, 2021. Thereby, we matched the "immune activation" time of both groups, examining the long-term protection conferred when vaccination or infection occurred within the same time period. The three-month interval between the first event and the second event was implemented in order to capture reinfections (as opposed to prolonged viral shedding) by following the 90-day guideline of the CDC.

Model 2

In model 2, we compared the SARS-CoV-2 naïve vaccinees to unvaccinated previously infected individuals while intentionally *not* matching the time of the first event (i.e., either vaccination or infection), in order to compare vaccine-induced immunity to natural immunity, regardless of time of infection. Therefore, matching

was done in a 1:1 ratio based on age, sex and GSA alone. Similar to the model 1, either event (vaccination or infection) had to occur by February 28, to allow for the 90-day interval. The four SARS-CoV-2 study outcomes were the same for this model, evaluated during the same follow-up period.

Model 3

Model 3 examined previously infected individuals vs. previously-infected-and-once-vaccinated individuals, using "natural immunity" as the baseline group. We matched the groups in a 1:1 ratio based on age, sex and GSA. SARS-CoV-2 outcomes were the same, evaluated during the same follow-up period.

In all three models, we estimated natural immunity vs. vaccine-induced immunity for each SARS-CoV-2-related outcome, by applying logistic regression to calculate the odds ratio (OR) between the two groups in each model, with associated 95% confidence intervals (CIs). Results were then adjusted for underlying comorbidities, including obesity, cardiovascular diseases, diabetes, hypertension, chronic kidney disease, cancer and immunosuppression conditions.

Analyses were performed using Python version 3.73 with the stats model package. $P < 0.05$ was considered statistically significant.

Ethics declaration

This study was approved by the MHS (Maccabi Healthcare Services) Institutional Review Board (IRB). Due to the retrospective design of the study, informed consent was waived by the IRB, and all identifying details of the participants were removed before computational analysis.

Data availability statement

According to the Israel Ministry of Health regulations, individual-level data cannot be shared openly. Specific requests for remote access to de-identified community-level data should be directed to KSM, Maccabi Healthcare Services Research and Innovation Center.

Code availability

Specific requests for remote access to the code used for data analysis should be referred to KSM, Maccabi Healthcare Services Research and Innovation Center.

Results

Overall, 673,676 MHS members 16 years and older were eligible for the study group of fully vaccinated SARS-CoV-2-naïve individuals; 62,883 were eligible for the study group of unvaccinated previously infected individuals and 42,099 individuals were eligible for the study group of previously infected and single-dose vaccinees.

Model 1 – previously infected vs. vaccinated individuals, with matching for time of first event

In model 1, we matched 16,215 persons in each group. Overall, demographic characteristics were similar between the groups, with some differences in their comorbidity profile (Table 1a).

During the follow-up period, 257 cases of SARS-CoV-2 infection were recorded, of which 238 occurred in the vaccinated group (breakthrough infections) and 19 in the previously infected group (reinfections). After adjusting for comorbidities, we found a statistically significant 13.06-fold (95% CI, 8.08 to 21.11) increased risk for breakthrough infection as opposed to reinfection ($P<0.001$). Apart from age ≥60 years, there was no statistical evidence that any of the assessed comorbidities significantly affected the risk of an infection during the follow-up period (Table 2a).

As for symptomatic SARS-COV-2 infections during the follow-up period, 199 cases were recorded, 191 of which were in the vaccinated group and 8 in the previously infected group. Symptoms for all analyses were recorded in the central database within 5 days of the positive RT-PCR test for 90% of the patients, and included chiefly fever, cough, breathing difficulties, diarrhea, loss of taste or smell, myalgia, weakness, headache and sore throat. After adjusting for comorbidities, we found a 27.02-fold risk (95% CI, 12.7 to 57.5) for symptomatic breakthrough infection as

opposed to symptomatic reinfection (P<0.001) (Table 2b). None of the covariates were significant, except for age ≥60 years.

Nine cases of COVID-19-related hospitalizations were recorded, 8 of which were in the vaccinated group and 1 in the previously infected group (Table S1). No COVID-19-related deaths were recorded in our cohorts.

Model 2 –previously infected vs. vaccinated individuals, without matching for time of first event

In model 2, we matched 46,035 persons in each of the groups (previously infected vs. vaccinated). Baseline characteristics of the groups are presented in Table 1a. Figure 1 demonstrates the timely distribution of the first infection in reinfected individuals.

When comparing the vaccinated individuals to those previously infected at any time (including during 2020), we found that throughout the follow-up period, 748 cases of SARS-CoV-2 infection were recorded, 640 of which were in the vaccinated group (breakthrough infections) and 108 in the previously infected group (reinfections). After adjusting for comorbidities, a 5.96-fold increased risk (95% CI, 4.85 to 7.33) increased risk for breakthrough infection as opposed to reinfection could be observed (P<0.001) (Table 3a). Apart from SES level and age ≥60, that remained significant in this model as well, there was no statistical evidence that any of the comorbidities significantly affected the risk of an infection.

Overall, 552 symptomatic cases of SARS-CoV-2 were recorded, 484 in the vaccinated group and 68 in the previously infected group. There was a 7.13-fold (95% CI, 5.51 to 9.21) increased risk for symptomatic breakthrough infection than symptomatic reinfection (Table 3b). COVID-19 related hospitalizations occurred in 4 and 21 of the reinfection and breakthrough infection groups, respectively. Vaccinated

individuals had a 6.7-fold (95% CI, 1.99 to 22.56) increased to be admitted compared to recovered individuals. Being 60 years of age or older significantly increased the risk of COVID-19-related hospitalizations (Table S2). No COVID-19-related deaths were recorded.

Model 3 - previously infected vs. vaccinated and previously infected individuals

In model 3, we matched 14,029 persons. Baseline characteristics of the groups are presented in Table 1b. Examining previously infected individuals to those who were both previously infected and received a single dose of the vaccine, we found that the latter group had a significant 0.53-fold (95% CI, 0.3 to 0.92) (Table 4a) decreased risk for reinfection, as 20 had a positive RT-PCR test, compared to 37 in the previously infected and unvaccinated group. Symptomatic disease was present in 16 single dose vaccinees and in 23 of their unvaccinated counterparts. One COVID-19-related hospitalization occurred in the unvaccinated previously infected group. No COVID-19-related mortality was recorded.

We conducted a further sub-analysis, compelling the single-dose vaccine to be administered *after* the positive RT-PCR test. This subset represented 81% of the previously-infected-and-vaccinated study group. When performing this analysis, we found a similar, though not significant, trend of decreased risk of reinfection, with an OR of 0.68 (95% CI, 0.38 to 1.21, *P*-value=0.188).

Discussion

This is the largest real-world observational study comparing natural immunity, gained through previous SARS-CoV-2 infection, to vaccine-induced immunity, afforded by the BNT162b2 mRNA vaccine. Our large cohort, enabled by Israel's rapid rollout of the mass-vaccination campaign, allowed us to investigate the risk for additional infection – either a breakthrough infection in vaccinated individuals or reinfection in previously infected ones – over a longer period than thus far described.

Our analysis demonstrates that SARS-CoV-2-naïve vaccinees had a 13.06-fold increased risk for breakthrough infection with the Delta variant compared to those previously infected, when the first event (infection or vaccination) occurred during January and February of 2021. The increased risk was significant for a symptomatic disease as well.

Broadening the research question to examine the extent of the phenomenon, we allowed the infection to occur at any time between March 2020 to February 2021 (when different variants were dominant in Israel), compared to vaccination only in January and February 2021. Although the results could suggest waning natural immunity against the Delta variant, those vaccinated are still at a 5.96-fold increased risk for breakthrough infection and at a 7.13-fold increased risk for symptomatic disease compared to those previously infected. SARS-CoV-2-naïve vaccinees were also at a greater risk for COVID-19-related-hospitalization compared to those who were previously infected.

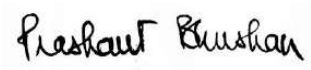
Individuals who were previously infected with SARS-CoV-2 seem to gain additional protection from a subsequent single-dose vaccine regimen. Though this finding corresponds to previous reports[24,25], we could not demonstrate significance in our cohort.

The advantageous protection afforded by natural immunity that this analysis demonstrates could be explained by the more extensive immune response to the SARS-CoV-2 proteins than that generated by the anti-spike protein immune activation conferred by the vaccine[26,27]. However, as a correlate of protection is yet to be proven[1,28], including the role of B-Cell[29] and T-cell immunity[30,31], this remains a hypothesis.

Our study has several limitations. First, as the Delta variant was the dominant strain in Israel during the outcome period, the decreased long-term protection of the vaccine compared to that afforded by previous infection cannot be ascertained against other strains. Second, our analysis addressed protection afforded solely by the BioNTech/Pfizer mRNA BNT162b2 vaccine, and therefore does not address other vaccines or long-term protection following a third dose, of which the deployment is underway in Israel. Additionally, as this is an observational real-world study, where PCR screening was not performed by protocol, we might be underestimating asymptomatic infections, as these individuals often do not get tested.

Lastly, although we controlled for age, sex, and region of residence, our results might be affected by differences between the groups in terms of health behaviors (such as social distancing and mask wearing), a possible confounder that was not assessed. As individuals with chronic illness were primarily vaccinated between December and February, confounding by indication needs to be considered; however, adjusting for obesity, cardiovascular disease, diabetes, hypertension, chronic kidney disease, chronic obstructive pulmonary disease, cancer and immunosuppression had only a small impact on the estimate of effect as compared to the unadjusted OR. Therefore, residual confounding by unmeasured factors is unlikely.

This analysis demonstrated that natural immunity affords longer lasting and stronger protection against infection, symptomatic disease and hospitalization due to the Delta variant of SARS-CoV-2, compared to the BNT162b2 two-dose vaccine-induced immunity. Notably, individuals who were previously infected with SARS-CoV-2 and given a single dose of the BNT162b2 vaccine gained additional protection against the Delta variant. The long-term protection provided by a third dose, recently administered in Israel, is still unknown.



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ANNEXURE: P47

Reuters

CDC says vaccine protectiveness slipped amid Delta variant

August 18, 20219:31 PM ISTLast Updated 15 days ago

WASHINGTON, Aug 18 (Reuters) - New data confirms that vaccine protection against COVID-19 has decreased for the Delta variant of the virus, U.S. Centers for Disease Control and Prevention Director Dr. Rochelle Walensky said on Wednesday.

Walensky, making the case for additional booster shot vaccines, said a U.S. Study of nursing homes shows vaccine effectiveness declined to 53% with the Delta variant. She also noted an Israel-based study that showed increased risk of severe disease among those vaccinated early.

Reporting By Jarrett Renshaw and Carl O'Donnell, Editing by Franklin Paul

Link:https://www.reuters.com/business/healthcare-pharmaceuticals/cdc-says-vaccine-protectiveness-slipped-amid-delta-variant-2021-08-18/

Prashant Bhushan

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ANNEXURE: P48

The Economic Times

Covid-19: Over 7,000 breakthrough infections in Kerala district

Synopsis

While research and anecdotal evidence during the second wave have indicated there have been breakthrough infections and variants, especially Delta, overcame vaccine-induced immunity, the
recorded data of such a high figure is a cause for concern.

By ANUBHUTI VISHNOI
ET Bureau

Last Updated: Aug 06, 2021, 08:59 AM IST 6

Covid-19 severely infected over 7,000 vaccinated people in Kerala's Pathanamthitta district, a six-member central team learnt during its recent visit to the state. Initial assessments show that breakthrough cases were recorded among those who received one or both doses of Covaxin as well as Covishield.

The central team has submitted a special report on the district and sought details from the state on samples for genome sequencing from Pathanamthitta and otherdistricts too in an effort to determine the reason behind the unusually high recorded cases of breakthrough infections.

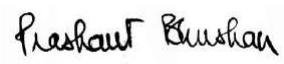
While research and anecdotal evidence during the second wave have indicated there have been breakthrough infections and variants, especially Delta, overcame vaccine-induced immunity, the recorded data of such a high figure is a cause for concern. Collector of Pathanmthitta Divya S Iyer confirmed to ET that atleast "5042 people turned positive

after two doses of vaccines of which 258 turned positive after completing two weeks after two doses".
As many as 14974 turned positive after first dose alone. Of these, 4490 turned positive after two weeks, she added.

"We need more details to assess if this is a case of vaccine failure or whether there is any other element at work. So, we have sought details from all districts on first dose and second dose breakthrough cases from the state government to get a more holistic picture of the situation. It has been flagged off to the Centre as well as an area of concern," a central team member told ET on condition of anonymity.

Breakthrough cases were found in Thiruvananthapuram district too. The team chaired by National Centre for Disease Control director Sujeet Singh was dispatched to Kerala as the state continued to record over 10,000 daily new infections for several weeks after the 'second wave' officially abated in almost the rest of the country.

Link:https://m.economictimes.com/news/india/covid-19-over-7000-breakthrough-infections-in-kerala-district/articleshow/85088255.cms?from=mdr



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Occurrence of COVID-19 in priority groups receiving ChAdOx1 nCoV-19 coronavirus vaccine (recombinant): a preliminary analysis from north India

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Short Report

Keywords: Breakthrough, Delta, Real-world, Variants

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Abstract

Background: In randomized controlled settings, vaccine efficacy close to 70% against symptomatic COVID-19 has been demonstrated by the ChAdOx1 nCoV-19 vaccine which is a recombinant chimpanzee adenovirus based vaccine expressing the SARS-CoV-2 spike protein. Post approval studies are however necessary to validate the findings in the real world.

Methods: A prospective observational study is being conducted in a tertiary hospital of north India since 5th February 2021 with the primary objective of determining safety of COVID-19 vaccines and the secondary objective of assessing the rate of occurrence of COVID-19 in vaccinated group. High risk group comprising health care workers, other frontline workers (police, sanitary workers etc) and elderly citizens who were initially focus groups for vaccine roll-out in India, were enrolled in the study. The study included all vaccine recipients who provided consent and were enrolled at the time of receiving the first or second dose of COVISHIELD vaccine, and followed up telephonically.

Results: Among 1650 enrolled vaccine recipients, 1500 participants of the study (Female/Male: 472/1028; mean age 38.8 years) completed at least 2 months of follow-up, after the second dose. The common comorbidities in study participants were hypertension (170, 11.3%), diabetes (142, 9.5%), and hypothyroidism (54, 3.6%). Of those who received a single dose of vaccine (n=65), laboratory confirmed SARS-CoV-2 infection was observed in 27 individuals (41.5%) and 3 were suspects. Severity wise, infections were mild in 21 out of 30 (70%) cases, moderate in five (16.7%) and severe in two (6.7%). Of those who received both doses of vaccine (n=1435), 388 were diagnosed as confirmed or suspect cases of SARS-CoV-2 infection. Of these 388, RT-PCR positivity was seen in 271 (18.9%) individuals, 82 (5.7%) were labelled as ‘suspects’ and 35 (2.4%) were RT-PCR negative suspects. Severity wise, majority of SARS-CoV-2 infections were ‘mild’ (331/388, 85.3%), followed by ‘moderate’ (33/388, 8.5%) and ‘severe’ (6/388, 1.5%). 404 out of the 1500 total participants were doctors including consultant/teaching faculty, resident doctors, and those in general practice. Among the 377 doctors who received both doses of vaccine, 160 were diagnosed as confirmed or suspect cases of SARS-CoV-2 infection. Of these, 131 (34.7%), 17 (4.5%) and 12 (3.2%) were laboratory confirmed cases, ‘suspects’ and RT-PCR negative suspects respectively. The infection was asymptomatic, ‘mild’, ‘moderate’ and ‘severe’ in 9 (5.6%), 130 (81.3%), 16 (10%) and 5 (3.1%) respectively. Breakthrough infections occurring at > 14 days after receiving the second dose were seen in 148 doctors who received both doses (39.2%), or 119 doctors (31.6%) if only laboratory confirmed cases were considered. Four deaths occurred in the study participants during the study period, two in partially vaccinated group and two in fully vaccinated group. Two of these participants, both in partially vaccinated group had developed SARS-CoV-2 infection during their follow-up.

Conclusion: The disproportionately high occurrence of SARS-CoV-2 infection and COVID-19 in priority vaccinated groups in our study can be explained to some extent by the existence of variants such as the delta which might have escaped the vaccine generated immune protection. Despite the high incidence, the severity of COVID-19 was observed to be low. Since the ongoing study was primarily focused on adverse events following immunization (AEFIs) and enrolled only vaccinated individuals, the secondary outcome

results lack a control unvaccinated group. However, the result of this preliminary analysis necessitates vigorous research on the performance of vaccines against variants, optimal timing of vaccination, need for boosters, and also optimal timings of effectiveness studies to guide future vaccination policy.

Introduction

To deal with the ongoing COVID-19 crisis, some countries have given emergency use authorization to COVID-19 vaccines. These include mRNA vaccines, adeno viral vector-based vaccines and inactivated SARS-CoV-2 vaccines. In randomized controlled settings, efficacy close to 70% against symptomatic COVID-19 has been demonstrated for the ChAdOx1 nCoV-19 vaccine which uses a recombinant chimpanzee adenovirus coding for the SARS-CoV-2 spike protein. Post approval studies are however necessary to validate the findings in the real world. A prospective observational study is being conducted in a tertiary hospital of north India since 5th February 2021 with the primary objective of determining safety of COVID-19 vaccines and the secondary objective of assessing the rate of occurrence of COVID-19 in vaccinated group. High risk group comprising health care workers, other frontline workers (police, sanitary workers etc) and elderly citizens who were initially focus groups for vaccine roll-out in India, were enrolled in the study. As per government policies, COVISHIELD, based on the ChAdOx1 platform was the designated vaccine for the study centre during the study enrolment period. The authors recently demonstrated a favourable safety profile of COVISHIELD when assessed up to seven days after second dose.[1] Here we report the preliminary findings with respect to our secondary outcome measure of post-vaccination COVID-19 or SARS-CoV-2 infections. The data is based on at least 2 months of follow-up since second dose of vaccine in enrolled participants who could be successfully contacted telephonically for details.

Methods

The study included all vaccine recipients who provided consent and were enrolled at the time of receiving the first or second dose of COVISHIELD vaccine. The recipients included predominantly medical and paramedical personnel as they were the initial beneficiaries of vaccine roll-out. In the later stages of enrolment, elderly non-healthcare workers who visited the study centre for vaccination, were also enrolled. Baseline demographic details of each participant was collected in a pre-designed case report form.[1] Enrolment was continued till target sample size (n = 1650) was reached. As part of the ongoing prospective observational study, each participant is being monitored telephonically at specific intervals following second dose, for a total duration of one year (study duration). Those who received only one dose are also being followed up in a similar fashion. For secondary objective, details pertaining to development of COVID-19 like symptoms, RT-PCR positivity, or rapid antigen test positivity for SARS-CoV-2 at any time following vaccination, were collected. Symptoms of COVID-19 if any, need for hospitalization, oxygen requirement details were also collected. In case of deaths of any of the vaccine recipients, telephonic ascertainment of cause of death was done from family members, and a request was made to provide

medical certification documents. This interim analysis of the vaccine recipients is being performed after at least two months of follow up since second dose.

COVID-19 cases were defined as ‘confirmed’ and ‘suspect’ based on investigators’ assessment and guided by recommendations issued by the Ministry of Health and Family Welfare, Government of India.[2] Any person with laboratory confirmation of SARS-CoV-2 infection irrespective of clinical signs or symptoms was considered a confirmed case. COVID-19 suspect cases are those having a suggestive clinical pattern of symptoms, and exposure to confirmed/probable cases of COVID-19 within the past 14 days. They were divided into COVID-19 suspects (Not tested)- in the absence of rapid antigen test or RT-PCR test, and RT-PCR negative COVID-19 suspects- with a negative RT-PCR test.

Results

Among 1650 enrolled vaccine recipients, 1500 participants of the study (Female/Male: 472/1028) completed at least 2 months of follow-up, after the second dose. Baseline characteristics of the participants in this preliminary analysis are provided in **Table 1**. Among these 1500, 1435 participants received both doses and 65 received only one dose of the vaccine.

Occurrence and severity of COVID-19 after single dose of vaccine:

Of those who received a single dose of vaccine (n=65), laboratory confirmed SARS-CoV-2 infection was observed in 27 individuals (41.5%). Two individuals (3.1%) were labelled as ‘suspects’, and one (1.5%) as RT-PCR negative suspect. Severity wise, infections were mild in 21 out of 30 (70%) cases, moderate in five (16.7%) and severe in two (6.7%). One participant (3.3%) was asymptomatic. Three individuals required hospitalization (10% of cases) for oxygen requirement. Two deaths were observed in this group, one in an elderly male with pre-existing coronary artery disease who died because of unspecified cardiac event following recovery from COVID-19, and the other in an elderly male with comorbid diabetes and congestive heart failure who succumbed to unspecified post-COVID-19 complications. Details of both events were based on history provided by family members. (**Table 1**)

Occurrence and severity of COVID-19 after both doses of vaccine:

Of those who received both doses of vaccine (n=1435), 388 were diagnosed as confirmed or suspect cases of SARS-CoV-2 infection. Of these 388, RT-PCR positivity was seen in 271 (18.9%) individuals, 82 (5.7%) were labelled as ‘suspects’ and 35 (2.4%) were RT-PCR negative suspects. Severity wise, majority of SARS-CoV-2 infections were ‘mild’ (331/388, 85.3%), followed by ‘moderate’ (33/388, 8.5%) and ‘severe’ (6/388, 1.5%). Infection was asymptomatic in 18/388 (4.7%). Infection occurred within ≤ 14 days of receiving the second dose in 31 and after 14 days of receiving second dose in 357. Breakthrough infection rate was determined to be close to 25% (357/1435), and 17% (246/1435) if only laboratory confirmed cases were considered. Nineteen individuals needed hospitalization (1.3%) of whom six were admitted because of respiratory distress or oxygen requirements (0.4%). Two deaths were reported. One was a

middle-aged man with comorbid diabetes who developed cellulitis of the lower limb leading to sepsis and encephalopathy and died due to multiorgan failure. He was assessed twice for SARS-CoV-2 infection but tested negative. The other death was of a healthcare worker with comorbid diabetes and hypertension who died of an unspecified cardiac event. COVID-19 details for this participant could not be obtained from the family members. Details of both events were based on history provided by family members. (**Table 1**)

Occurrence of COVID-19 in doctors:

404 out of the 1500 total participants were doctors including consultant/teaching faculty, resident doctors, and those in general practice. Among these, 27 had received one dose and 377 had received both doses of the vaccine, at the time of analysis. Among the 27 having received a single dose, RT-PCR confirmed SARS-CoV-2 infection occurred in 18 (66.7%) and one participant was labelled as RT-PCR negative 'suspect'. Infection was 'asymptomatic' in one (5.3%), and 'mild', 'moderate' and 'severe' in 14/19 (73.7%), 3/19 (15.8%) and 1/19 (5.3%), respectively.

Among the 377 doctors who received both doses of vaccine, 160 were diagnosed as confirmed or suspect cases of SARS-CoV-2 infection. Of these, 131 (34.7%), 17 (4.5%) and 12 (3.2%) were laboratory confirmed cases, 'suspects' and RT-PCR negative suspects respectively. The infection was asymptomatic, 'mild', 'moderate' and 'severe' in 9 (5.6%), 130 (81.3%), 16 (10%) and 5 (3.1%) respectively. Breakthrough infections occurring at > 14 days after receiving the second dose were seen in 148 doctors (39.2%), or 119 doctors (31.6%), if only laboratory confirmed cases were considered. (**Table 1**)

Discussion

ChAdOx1 vaccine was found to reduce the rate of symptomatic COVID-19 by around 70% in randomized controlled trials and similar protection against symptomatic COVID-19 has been observed in some real world studies too.[3–5] The percentage of individuals developing COVID-19 in controlled and real-world settings after vaccination with ChAdOx1 vaccine has been low and has varied from 0.6–1.2%.[3, 6] However, there may be differences in vaccine effectiveness and breakthrough infection rates depending on when surveillance is carried out with respect to the timing of COVID-19 waves. In a relatively quiescent period after the downslope of a wave, there may be few cases while the case numbers including breakthrough may be higher during an ongoing wave. Victor PJ et al, reported a close to 10% rate of occurrence of COVID-19 in fully vaccinated healthcare workers from a tertiary care hospital in southern India. Rates of hospitalization and oxygen requirement in the vaccinated group were 0.9% and 0.06% respectively. In our study, 4.6% of individuals who received one dose and 0.4% who received both doses, were hospitalized for oxygen needs. Some participants who developed hypoxemia preferred home based management including oxygen supplementation. Another Indian study from a tertiary hospital in northern India has reported a rather low rate (2.6%) of occurrence of COVID-19 after two doses of COVISHIELD vaccine. Even after excluding RT-PCR negative and untested suspects, the rates of SARS-CoV-2 infection were much higher (close to 19%) in the fully vaccinated participants in our study, and nearly 34% among fully vaccinated doctors.

This disproportionately high occurrence of SARS-CoV-2 infection and COVID-19 in vaccinated high-risk groups in our study can be explained to some extent by the existence of variants such as the delta which might have escaped the vaccine generated immune protection. An outbreak of the delta variant of SARS-CoV-2 was reported following the first dose of ChAdOx1 based vaccine (VAXZEVRIA) in an elderly care home in London.[7] A reduced protection against the delta variant compared to alpha variant has been shown for ChAdOx1 nCoV-19 vaccine recently.[8] Other potential explanations for the discrepancy in the rate of occurrence of SARS-CoV-2 infection between different Indian studies can be related to the study designs and regional variations. The study by Rana et al mentions the minimum follow up period of 2 weeks following second dose and also the median time to breakthrough following second dose (29.5 days) but does not mention the total duration of follow up. The possibility of infections happening in other healthcare workers with immunity waning with time, hence cannot be ruled out.[9] The south Indian study which reported relatively higher rate of infections coincided in timing with our study, and the peak of the second wave in India.[10] However, regional variations between different states may explain the difference in breakthrough rates. Further, there may be a difference in dominant SARS-CoV-2 variants between the two hospitals. We are continuing the follow up of all included participants and believe the future results to provide a more accurate representation of COVID-19 occurrence.

Despite the high rate of occurrence of SARS-CoV-2 infections in vaccinated individuals, the severity of COVID-19 was observed to be low. 41% individuals who received only one dose of the vaccine and 19% of those who received both doses developed laboratory confirmed SARS-CoV-2 infection. Occurrence of ‘severe’ COVID-19 was 7.7 times lower (0.4%) in fully vaccinated participants compared to partially vaccinated group (3.1%). These rates might reflect a dose response relationship of the vaccine in reducing infections as well as disease severity. Of the four deaths observed, one was possibly related to COVID-19 and occurred in a partially vaccinated elderly patient. No deaths due to COVID-19 were observed in fully vaccinated individuals.

Since the ongoing study was primarily focused on adverse events following immunization (AEFIs) and enrolled only vaccinated individuals, the secondary outcome results lack a control unvaccinated group. Hence, the authors cannot comment upon the effectiveness of vaccine against infection, hospitalization, and death. A separate study has been initiated to analyse the outcomes in both unvaccinated and vaccinated healthcare workers and auxiliary staff of the hospital.

Conclusion

The second wave of the COVID-19 pandemic hit large parts of India in April and May. The findings of the present study suggest that real-world protection by the ChAdOx1 vaccine against symptomatic COVID-19 may not be as high as observed in clinical trial settings or even in real world settings when a wave has just subsided. Differences may also exist depending on the prevailing variants. Though the rate of infection in vaccinated individuals was more than 20 times higher than what has been observed in randomized controlled settings, severe COVID-19 occurred only in 0.4% fully vaccinated individuals. Detailed analysis of cause of death in the four cases with mortality could not be performed due to the observational nature

of the study. The result of this preliminary analysis necessitates vigorous research on the performance of vaccines against variants, optimal timing of vaccination, need for boosters, and also optimal timings of effectiveness studies to guide future vaccination policy.

Declarations

Acknowledgements: None

Conflict of interest: None **Funding:** None

Ethical Permission: Ethical approval was obtained prior to conducting the study from the institute ethics committee of the Institute of Medical Sciences, Banaras Hindu University, Varanasi, UP, India. No human experimentation was performed. Written informed consent was taken from all participants of this observational study.

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Tables

Demographic characteristics of all vaccine recipients (n=1500)		
Male, Female	1028,472	
Age in years (Mean ± SD)	38.8 ± 12.8	
Diabetes mellitus, n (%)	142 (9.5)	
Hypertension, n (%)	170 (11.3)	
Heart diseases, n (%)	CAD: 21 (1.4) RHD: 1 (0.1) ASD: 1 (0.1)	
Hypothyroidism, n (%)	54 (3.6)	
Respiratory diseases, n (%)	Asthma: 41 (2.8) ILD: 1 (0.1)	
Characteristics of COVID-19 (n=1500)		
	Participants who received single dose of vaccine (n=65)	**Participants who received both doses of vaccine (n=1435)**
Confirmed or suspect cases, n (%)	30 (46.1)	388 (27) ≤14 days after second dose: n=31 >14 days after second dose: n=357
RT-PCR confirmed SARS-CoV-2 infections COVID-19 suspect (Not tested)* RT-PCR negative COVID-19 suspect#	27 (41.5) 2 (3.1) 1 (1.5)	271 (18.9) 82 (5.7) 35 (2.4)
Severity¶ (all confirmed or suspect) Asymptomatic Mild Moderate	 1 (3.3) 21 (70) 5 (16.7)	 18 (4.6) 331 (85.3) 33 (8.5) 6 (1.5)

Severe Unsure	2 (6.7), including one death 1 (3.3), one death (other cause)	--
Hospitalization needed	3 (all for oxygen requirement)	19 (6 for oxygen requirement, 12 for observation, 1 for general caregiver support)
Median time of onset following vaccine dose in days (Q1,Q3; range)	45 (29,55;1-73)	39 (28,47;0-99)
Death due to other cause	1	2
Characteristics of COVID-19 in doctors (n=404)		
	Doctors who received single dose, n=27	**Doctors who received both doses, n=377**
Confirmed or suspect cases, n (%)	19 (70.4)	160 (42.4) ≤14 days after second dose: n=12 >14 days after second dose: n=148
RT-PCR confirmed SARS-CoV-2 infections COVID-19 suspect (Not tested)* RT-PCR negative COVID-19 suspect#	18 (66.7) 0 (0) 1 (3.7)	131 (34.7) 17 (4.5) 12 (3.2)
Severity¶ (all confirmed or suspect) Asymptomatic Mild Moderate Severe	 1 (5.3) 14 (73.7) 3 (15.8) 1 (5.3)	 9 (5.6) 130 (81.3) 16 (10) 5 (3.1)
Hospitalization needed	1	13 (5 for oxygen requirement, 7 for observation, 1 for general caregiver support)
Death due to other cause	0	1

Table 1. Demographic characteristics and details of COVID-19 in vaccinated individuals

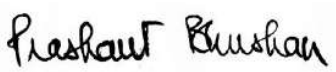
[COVID-19 suspect cases are those in whom the investigators suspected COVID-19 based on clinical pattern of symptoms, exposure to confirmed/probable cases of COVID-19 within the past 14 days, and general guidance from the clinical guidelines issued by the Ministry of Health and Family Welfare (MoHFW), Government of India. They were divided into:

*COVID-19 suspect (Not tested)- in the absence of rapid antigen test or RT-PCR test

#RT-PCR negative COVID-19 suspect- with a negative RT-PCR test

¶As defined by the MoHFW, Government of India (For severity, all percentages are out of total confirmed and suspect infections)

Abbreviations- ASD: atrial septal defect, CAD: coronary artery disease, RHD: rheumatic heart disease, RT-PCR: reverse transcriptase- polymerase chain reaction]



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ANNEXURE: P50

Deccan Herald

More than half of hospitalised Covid-19 cases among vaccinated in BengaluruThese hospitalisations are indicative of the extent of vaccine penetration in the public, explained BBMP Chief Commissioner, Gaurav Gupta

Akhil Kadidal

Akhil Kadidal, DHNS, Bengaluru,
AUG 03 2021, 22:50 IST UPDATED: AUG 04 2021, 07:09 IST

A health worker collects swab samples from a woman for Covid test at a private hospital in in Bengaluru on Tuesday. Credit: DH Photo/B K Janardhan

About 56% of people hospitalised for Covid-19 in Bengaluru in July had received at least one dose of the vaccine.

Sources in the Bruhat Bengaluru Mahanagara Palike (BBMP) said that about 2,700 people were hospitalised between July 2 and 27. Of these, 1,600 had received at least one dose of a vaccine, comprising 1,200 Covishield and 400 Covaxin receivers.

Of the 1,200 Covishield receivers, about 450 had got the second dose. Among the 400 Covaxin receivers, 180 had the second dose.

These hospitalisations are indicative of the extent of vaccine penetration in the public, explained BBMP Chief Commissioner, Gaurav Gupta.

"If you take the data about the 45+ age group who are generally susceptible (to Covid-19), 82% have been vaccinated. So, I am not surprised that a lot of the hospitalised people have been vaccinated," Gupta said.

Also read: Delta infections among vaccinated likely contagious; Lambda variant shows vaccine resistance in lab

"We must ask for the doctor's comments as to whether there is any difference between those who are vaccinated and those who are not vaccinated, for severity. We still require adequate data to come to any conclusion."

Clinical indications are present in some hospitals. Research conducted at Apollo Hospital examined 500 patients with moderate to severe Covid-19 pneumonia admitted, for over 40 days between April 21 and May 30. They found that 148 patients were cases of breakthrough infection -- after being administered at least once by a vaccine.

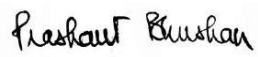
Some 124 (84%) had received the Covishield, while 24 (16%) had received Covaxin. The median age was 58. The researchers, led by senior pulmonologist Dr Ravindra Mehta who is also a member of the BBMP's Covid-19 task force committee, said the median time for hospitalisation from first dose to hospitalisation was 25 days and it was 18 days for second dose to admission.

About 19.5% of the vaccinated group (29 people) had severe symptoms, as compared to 125 people (35.5%) who had not been vaccinated. In addition, 66 of the vaccinated group required respiratory support at baseline. In the end, of the 20 patients who died, all had received just one dose of the vaccine. "All patients who received two doses (14 people) were eventually discharged from the hospital," the researchers said.

Currently, at Aster CMI, one out of three ICU Covid-19 patients had been vaccinated (with one dose). Dr Prakash Doraiswamy, Critical Care expert, said: "We have seen many cases of vaccinated patients getting Covid infection and re-infections but they did not suffer from any serious complications."

Fortis hospitals, meantime, has seen about 15 such cases since June. "All of the ICU cases had only dose. This shows the importance of getting two doses," said Dr Pruthu Narendra Dhekane, Infectious Diseases specialist at the Bannerghatta Road branch.

Link: https://www.deccanherald.com/amp/state/top-karnataka-stories/more-than-half-of-hospitalised-covid-19-cases-among-vaccinated-in-bengaluru-1015918.html?__twitter_impression=true&s=04



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ANNEXURE: P51

Business Insider

Almost Half Of UK COVID Infections Are In People Who Are At Least Partly Vaccinated, Study Suggests. But The Cases Were Much Milder.

MARIANNE GUENOT

JUL 16, 2021, 19:30 IST

Almost half of UK COVID infections are in people who are at least partly vaccinated, study suggests. But the cases were much milder.

Almost half of coronavirus cases in the UK were among vaccinated people, per a large UK study.

The virus seems to be "running out" of people who do not have immunity, the study lead said.

Hospitalization in the UK could stabilize and likely fall in the UK, he told Insider.

Almost half of COVID-19 cases in the UK are among people who are partly or fully vaccinated people, according to data from a large study.

The finding came from the ZOE COVID Study run by King's College London. It uses information logged daily by over a million people to predict COVID-19 trends

As of July 15, an estimated 17,581 new daily UK cases of COVID-19 were in unvaccinated people, the study authors said in a press release on Thursday.

That compares to an estimated 15,537 new COVID-19 cases in people who had at least one dose of the vaccine, which is about 47% of all cases.

"That's probably because the virus is just running out of people to infect who haven't already been exposed and don't have natural immune unity in those groups [unvaccinated

people]," Prof Tim Spector, an epidemiologist from King's College London, said in a video accompanying the press release.

People who have had only one dose of the vaccine are less protected against mild symptoms of COVID

COVID-19 is spreading more quickly in those who have received only one dose of vaccines, as can be seen in the graph below from ZOE's data:

Almost half of UK COVID infections are in people who are at least partly vaccinated, study suggests. But the cases were much milder.

Rate of positive COVID-19 tests in the UK by vaccination status among Zoe COVID Symptom Study participants. Zoe COVID Symptom Study/Insider

In an email to Insider, Spector said: "Our research showed fewer, milder symptoms were reported in vaccinated people compared to unvaccinated adults who had contracted the virus."

This aligns with other data suggesting that two doses provide the best protection from the Delta variant, and the one dose gives significantly less, but is better than nothing.

According to figures from Public Health England (PHE), one dose of AstraZeneca or Pfizer vaccine reduced the risk of catching mild symptoms of COVID-19 by 35%.

However, even one dose of vaccine protects against the more severe risk of COVID-19, reducing the risk of hospitalization by 80%.

Two doses of vaccine were much more protective, reducing the risk of having mild symptoms of the disease by about 80%, and the risk of hospitalization by 96%, the PHE data said.

Preliminary data from ZOE also suggests the risk of long COVID is also substantially reduced by two doses of vaccine, Spector told Insider.

Cases seem to be plateauing in unvaccinated - a good signal

Cases in unvaccinated people were estimated to be 22% lower than the previous week, while cases in vaccinated people rose by 40%. This suggests the wave in the unvaccinated population has now peaked in the UK, the study authors said in the press release.

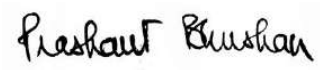
Hospitalization rates in the UK have risen slightly, with 3,615 new COVID patients in the hospital as of July 14, compared to about 900 in May.

Cases continue to rise driven by the Delta variant. "It is my belief that as more people in the UK receive their second vaccination, hospitalizations will stabilize and likely fall," Spector told Insider in an email.

Spector told Insider that the figures should be taken with a grain of salt, as there are fewer ZOE app contributors that are now unvaccinated.

"We will monitor cases closely in the next few days in order to confirm the peak."

Link: https://www.businessinsider.in/science/news/almost-half-of-uk-covid-infections-are-in-people-who-are-at-least-partly-vaccinated-study-suggests-but-the-cases-were-much-milder-/articleshow/84473793.cms



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ANNEXURE: P52

Deseret News
A look inside Israel's recent coronavirus outbreak

The first country to reach vaccine herd immunity has seen a recent rise in cases among vaccinated people. Here's what's going on and how vaccines are making a difference

By Aspen Pflughoeft on July 20, 2021 8:15 am

The trend has brought a slew of questions about the efficacy of COVID-19 vaccines and the implications of new strains for future outbreaks. While these trends initially seem like cause for vaccine skepticism, a closer look at Israel's current outbreaks shows that vaccines are effective and working — even against the delta variant.

Let's unpack the situation.

What's happening in Israel's coronavirus outbreak?

About a month ago, Israel celebrated what seemed like the end of its domestic pandemic. The country dropped all coronavirus restrictions, including mask mandates and social distancing requirements, reported Reuters. Unfortunately, the celebration was premature.

COVID-19 cases have begun to rise in Israel over the last few weeks, reported Reuters. The outbreaks started in schools among unvaccinated children then began spreading to vaccinated adults.

Last week, Israel recorded an average of 775 new daily cases last week, according to data from Reuters.

This is Israel's highest number of daily new infections since March, Reuters reported.

The average number of weekly hospital admissions is currently 120 people, according to The Washington Post.

The country has reimposed mask mandates, social distancing requirements and quarantines for everyone arriving in Israel.

Just like in many other countries, the recent outbreak has been driven by the more contagious and "more vaccine-resistant" delta variant, reported The Washington Post.

Who is testing positive for COVID-19 in Israel?

Unlike in many other countries, most of the people testing positive in Israel are vaccinated, reported The Washington Post.

But this should not be surprising, according to epidemiologist Katelyn Jetelina, per The Washington Post.

"The more vaccinated a population, the more we'll hear of the vaccinated getting infected," she said.

And Israel has one of the most vaccinated populations in the world. About 60% of the nation's entire population of 9.3 million has received at least one vaccine dose, reported Reuters. Among adults, about 85% have been vaccinated which means that Israel's vaccinated community is five times larger than its unvaccinated community.

"Countries with high vaccination will see mostly vaccinated people getting ill from COVID," wrote Arieh Kovler, a political analyst, on Hat Tip.

The people who are not testing positive in the current outbreak are those who have had COVID-19 previously and recovered. These people account for 9% of Israel's population but less than 1% of recent infections, according to Kovler's analysis. This has brought new questions about whether natural infections are more protective against the delta variant than vaccinations — but the answer is not yet certain.

What does Israel's experience show about vaccines?

The Israel Health Ministry's data analysis has produced some new estimates about the effectiveness of Pfizer vaccines, according to The Washington Post:

In protecting against infection, Pfizer vaccines are 95% effective for the alpha variant but only 64% effective for the delta variant.

In preventing symptomatic COVID-19 cases, Pfizer vaccines are 97% effective for the alpha variant but only 64% effective for the delta variant.

In preventing hospitalization and serious disease, Pfizer vaccines are 97.5% effective for the alpha variant and still 93% effective for the delta variant.

While the Pfizer vaccine is less effective against the delta variant, the vaccine's effectiveness still far exceeds the 50% vaccine efficacy threshold required for WHO approval, according to the organization's website.

"Just because a variant emerges that renders the vaccines less effective doesn't mean those vaccines weren't effective in the first place," according to The Washington Post.

What is Israel's post-vaccination outbreak like compared to pre-vaccination?
While vaccinated people are testing positive and being hospitalized in Israel's delta outbreak, the current post-vaccination outbreak is only a fraction of the country's worst pre-vaccination outbreak in January, reported The Washington Post.

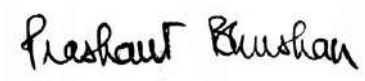
Currently, cases are less than one-tenth as many as during January's peak.
Hospitalizations during the current outbreaks are less than one-sixteenth of January's peak, per The Washington Post. Put differently, Israel is currently averaging 120 weekly hospital admissions. In January, the country averaged 2,000 weekly hospital admissions.

Most importantly, admission to intensive care units for severe COVID-19 cases is less than one-twentieth the number of admissions in January.

"We estimate that we won't reach high waves of severe cases like in previous waves," said Israel's health ministry's director-general, Nachman Ash, per Reuters.

What does Israel's experience mean for other countries?
"Israel is as good an example of vaccine efficacy as just about anywhere in the world," according to The Washington Post. "The delta variant means the virus will probably continue to spread, even among vaccinated people and even in a strongly vaccinated country, such as Israel."

Link:
https://www.google.com/amp/s/www.deseret.com/platform/amp/coronavirus/2021/7/20/22584134/whats-going-on-in-israels-outbreak-among-vaccinated-people



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ANNEXURE: P53

Independent

Royal Navy flotilla reports Covid outbreak with 100 cases despite all sailors being vaccinated

The outbreak has not prompted a rethink of the Royal Navy's voyage to 40 countries

Namita Singh

Wednesday 14 July 2021 08:08

More than 100 cases of coronavirus have been reported aboard the Royal Navy's new aircraft carrier and an escorting group of warships.

The vessels affected include the Royal Navy's flagship HMS Queen Elizabeth carrier, with unconfirmed media reports saying the group of warships recently stopped off for a brief spell of shore leave in Limassol, Cyprus.

The virus has spread through the strike group's 3,700 strength crew despite them being fully vaccinated. "As part of routine testing, a small number of crew from the Carrier Strike Group have tested positive for Covid-19," a Royal Navy spokesman confirmed in a statement.

The incident comes despite a series of measures deployed on board Navy warships in light of the pandemic. These include the use of masks, social distancing and a track and trace system.

The outbreak has not yet prompted a rethink of the strike group's planned voyage to 40 countries, said a Royal Navy spokesperson. "The Carrier Strike Group will continue to deliver their operational tasks and there are no effects on the deployment."

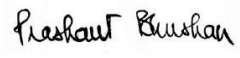
The aircraft carrier was about a quarter of the way through its 28-week deployment when the Covid cases were detected. It is leading a strike group that includes 10 Marine Corps F35-B fighters and is currently in the Indo-Pacific.

It is the largest combined naval and air task force assembled under British command since the Falklands War, and was expected to pass through the South China Sea.

Ben Wallace, the defence secretary, said during a press briefing on Tuesday that the first cases involving the strike group were reported on 4 July.

"Our crew are double vaccinated so you'll be glad to know there is no serious effects on any of the crew and we will manage it," he said, adding that going forwards he will offer support to the captain of the ship in "whatever decision he makes".

Link: https://www.independent.co.uk/news/uk/home-news/hms-queen-elizabeth-covid-royal-navy-b1883699.html



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ANNEXURE: P54

National Geographic

Evidence mounts that people with breakthrough infections can spread Delta easily

A new study finds that this dominant variant can grow in the noses of vaccinated people as strongly as in unvaccinated people.

BY SANJAY MISHRA
PUBLISHED AUGUST 20, 2021

A preliminary study has shown that in the case of a breakthrough infection, the Delta variant is able to grow in the noses of vaccinated people to the same degree as if they were not vaccinated at all. The virus that grows is just as infectious as that in unvaccinated people, meaning vaccinated people can transmit the virus and infect others.

Previous studies in hospitals in India; Provincetown, Massachusetts; and Finland have also shown that after vaccine breakthrough infections with Delta, there can be high levels of virus in people's nose whether they are vaccinated or not. The next logical step was to determine whether vaccinated people could shed infectious virus. Many experts suspected they did, but until this study it hadn't been proven in the lab.

"We're the first to demonstrate, as far as I'm aware, that infectious virus can be cultured from the fully vaccinated infections," says Kasen Riemersma, a virologist at University of Wisconsin who is one of the authors of the study.

"Delta is breaking through more preferentially after vaccines as compared to the non-Delta variants" because it's extremely infectious and evades the immune response, says Ravindra Gupta, a microbiologist at University of Cambridge. Gupta's lab was one of the first to document that fully vaccinated healthcare workers could get infected with Delta and had high levels of virus in their noses.

If the Wisconsin study finding holds up, then people with breakthrough infections—many of whom do not develop COVID symptoms—can unknowingly spread the virus. "It [is] an alarming finding," explains Katarina Grande, a public health supervisor and the COVID-19 Data Team Lead of Madison & Dane County, who led the study.

What concerns Eric Topol, the founder and director of the Scripps Research Translational Institute, is that fully vaccinated individuals who are infected with the Delta variant can transmit the virus and this can happen at a higher rate than previous strains in the days before symptoms, or in the absence of symptoms. "Which is why masks and mitigation measures are important, even for people [who are] vaccinated," he says.

Studies like these highlight that transmission of the Delta variant can be much higher that currently estimated, according to Ethan Berke, chief public health officer of the UnitedHealth Group. Berke's research has shown that frequent testing with rapid results, even if preliminary, can be very effective in curtailing the COVID-19 pandemic. Berke was not involved in the Wisconsin study.

"Even though the study was based on one region, it offers important insight into how people can spread the virus to others whether they're fully vaccinated or not. This sort of insight, especially as it's tested and refined, is incredibly helpful as organizations develop policies around testing, social distancing, and vaccinations," Berke says.

How do we know the virus in the sample is infectious?

To test for SARS-CoV-2, the scientists employed a measurement called threshold cycle (Ct) that uses glowing dyes to reveal the quantity of viral RNA in the nose.

"SARS-CoV-2 virus infects nose and upper airway. It is very difficult to get a very high level of antibodies for long periods of time in that area. The immune system is not really designed to put high levels of antibodies at those sites," Gupta says.

Ct values correlate with the viral load, which is the number of viral particles present in the body. When the quantity of virus passes a certain threshold, researchers expect an infected person to shed SARS-CoV-2 and potentially infect others. The Wisconsin study analyzed the nasal swabs from 719 cases of unvaccinated and fully vaccinated people who had all tested positive and found that 68 percent of the studied breakthrough patients had very high viral loads. High viral load is a sign that the virus is replicating, Gupta says.

To discover whether the nasal swabs had infectious virus, the Wisconsin researchers grew virus from 55 patient samples (from both vaccinated and unvaccinated people who tested positive) in special cells prone to SARS-CoV-2 infection. Grande's team detected infectious virus in nearly everyone: from 88 percent of unvaccinated individuals and 95 percent of vaccinated people.

"We put the samples onto cells, and the cells died when they got infected. And so that clearly demonstrates that there is virus there, and that it's infectious," Riemersma explains.

If vaccinated people can still produce a lot of infectious viruses, it means they can spread the virus as easily as those who are not vaccinated.

Masks and vaccination needed to prevent viral transmission

"We have kind of a perfect storm of multiple things going on: super-infectious variants, really susceptible population, debates around masking," Grande says.

More than 93.8 percent of the U.S. is at substantial or high level of risk for community transmission of SARS-CoV-2, according to the Centers for Disease Control and Prevention (CDC). CDC defines an area to be at high risk when either the number of new cases in a county exceeds 100 per 100,000 persons, or more than 10 percent of COVID-19 tests come back positive in the past seven days. In those areas, CDC recommends wearing a mask indoors in public to maximize protection from the Delta variant and prevent spreading it to others.

Although authorized vaccines prevent severe COVID-19 and death, they offer substantially lower protection among older people, those with weakened immune system, or with an underlying medical condition.

"We need more information about the Delta variant to better understand how it works, can be transmitted, and ultimately informs how we protect ourselves at home, work and within our communities," Berke says. "In the meantime, basic hygiene, including masking, social distancing, regular testing and vaccines will continue playing a vital role in slowing transmission and preventing serious illness and death."

Link:https://www.nationalgeographic.com/science/article/evidence-mounts-that-people-with-breakthrough-infections-can-spread-delta-easily

Prashant Bhushan

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Outbreak of SARS-CoV-2 Infections, Including COVID-19 Vaccine Breakthrough Infections, Associated with Large Public Gatherings — Barnstable County, Massachusetts, July 2021

Catherine M. Brown, DVM[1]; Johanna Vostok, MPH[1]; Hillary Johnson, MHS[1]; Meagan Burns, MPH[1]; Radhika Gharpure, DVM[2]; Samira Sami, DrPH[2]; Rebecca T. Sabo, MPH[2]; Noemi Hall, PhD[2]; Anne Foreman, PhD[2]; Petra L. Schubert, MPH[1]; Glen R. Gallagher PhD[1]; Timelia Fink[1]; Lawrence C. Madoff, MD[1]; Stacey B. Gabriel, PhD[3]; Bronwyn MacInnis, PhD[3]; Daniel J. Park, PhD[3]; Katherine J. Siddle, PhD[3]; Vaira Harik, MS[4]; Deirdre Arvidson, MSN[4]; Taylor Brock-Fisher, MSc[5]; Molly Dunn, DVM[5]; Amanda Kearns[5]; A. Scott Laney, PhD[2]

On July 30, 2021, this report was posted as an MMWR *Early Release on the* MMWR *website (https://www.cdc.gov/mmwr).*

During July 2021, 469 cases of COVID-19 associated with multiple summer events and large public gatherings in a town in Barnstable County, Massachusetts, were identified among Massachusetts residents; vaccination coverage among eligible Massachusetts residents was 69%. Approximately three quarters (346; 74%) of cases occurred in fully vaccinated persons (those who had completed a 2-dose course of mRNA vaccine [Pfizer-BioNTech or Moderna] or had received a single dose of Janssen [Johnson & Johnson] vaccine ≥14 days before exposure). Genomic sequencing of specimens from 133 patients identified the B.1.617.2 (Delta) variant of SARS-CoV-2, the virus that causes COVID-19, in 119 (89%) and the Delta AY.3 sublineage in one (1%). Overall, 274 (79%) vaccinated patients with breakthrough infection were symptomatic. Among five COVID-19 patients who were hospitalized, four were fully vaccinated; no deaths were reported. Real-time reverse transcription–polymerase chain reaction (RT-PCR) cycle threshold (Ct) values in specimens from 127 vaccinated persons with breakthrough cases were similar to those from 84 persons who were unvaccinated, not fully vaccinated, or whose vaccination status was unknown (median = 22.77 and 21.54, respectively). The Delta variant of SARS-CoV-2 is highly transmissible (*1*); vaccination is the most important strategy to prevent severe illness and death. On July 27, CDC recommended that all persons, including those who are fully vaccinated, should wear masks in indoor public settings in areas where COVID-19 transmission is high or substantial.* Findings from this investigation suggest that even jurisdictions without substantial or high COVID-19 transmission might consider expanding prevention strategies, including masking in indoor public settings regardless of vaccination status, given the potential risk of infection during attendance at large public gatherings that include travelers from many areas with differing levels of transmission.

During July 3–17, 2021, multiple summer events and large public gatherings were held in a town in Barnstable County, Massachusetts, that attracted thousands of tourists from across the United States. Beginning July 10, the Massachusetts Department of Public Health (MA DPH) received reports of an increase in COVID-19 cases among persons who reside in or recently visited Barnstable County, including in fully vaccinated persons. Persons with COVID-19 reported attending densely packed indoor and outdoor events at venues that included bars, restaurants, guest houses, and rental homes. On July 3, MA DPH had reported a 14-day average COVID-19 incidence of zero cases per 100,000 persons per day in residents of the town in Barnstable County; by July 17, the 14-day average incidence increased to 177 cases per 100,000 persons per day in residents of the town (*2*).

During July 10–26, using travel history data from the state COVID-19 surveillance system, MA DPH identified a cluster of cases among Massachusetts residents. Additional cases were identified by local health jurisdictions through case investigation. COVID-19 cases were matched with the state immunization registry. A cluster-associated case was defined as receipt of a positive SARS-CoV-2 test (nucleic acid amplification or antigen) result ≤14 days after travel to or residence in the town in Barnstable County since July 3. COVID-19 vaccine breakthrough cases were those in fully vaccinated Massachusetts residents (those with documentation from the state immunization registry of completion of COVID-19 vaccination as recommended by the Advisory Committee on Immunization Practices,† ≥14 days before exposure). Specimens were submitted for whole genome sequencing§ to either the Massachusetts State Public Health Laboratory or the Broad Institute of the Massachusetts Institute of

* https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated.html

† As of May 2021, ACIP recommended that all adults aged ≥18 years receive any of the three COVID-19 vaccines available in the United States via Emergency Use Authorization from the Food and Drug Administration, including Pfizer-BioNTech, Moderna, and Janssen; persons aged ≥12 years are eligible to receive the Pfizer-BioNTech COVID-19 vaccine. Full vaccination is defined as receipt of 2 doses of the Pfizer-BioNTech or Moderna COVID-19 vaccines or 1 dose of Janssen COVID-19 vaccine ≥14 days before exposure.

§ Genomic sequencing was performed using Illumina NovaSeq using the NEB LunaScript RT ARTIC SARS-CoV-2 Kit. Novel mutations were not identified in the spike protein of the cluster-associated genomes compared with genomes collected during the same period from ongoing genomic surveillance efforts at Broad Institute. Raw and assembled genomic data are publicly available under NCBI BioProject PRJNA715749.

Summary

What is already known about this topic?

Variants of SARS-CoV-2 continue to emerge. The B.1.617.2 (Delta) variant is highly transmissible.

What is added by this report?

In July 2021, following multiple large public events in a Barnstable County, Massachusetts, town, 469 COVID-19 cases were identified among Massachusetts residents who had traveled to the town during July 3–17; 346 (74%) occurred in fully vaccinated persons. Testing identified the Delta variant in 90% of specimens from 133 patients. Cycle threshold values were similar among specimens from patients who were fully vaccinated and those who were not.

What are the implications for public health practice?

Jurisdictions might consider expanded prevention strategies, including universal masking in indoor public settings, particularly for large public gatherings that include travelers from many areas with differing levels of SARS-CoV-2 transmission.

Technology and Harvard University. Ct values were obtained for 211 specimens tested using a noncommercial real-time RT-PCR panel for SARS-CoV-2 performed under Emergency Use Authorization at the Broad Institute Clinical Research Sequencing Platform. On July 15, MA DPH issued the first of two Epidemic Information Exchange notifications to identify additional cases among residents of U.S. jurisdictions outside Massachusetts associated with recent travel to the town in Barnstable County during July 2021. This activity was reviewed by CDC and was conducted consistent with applicable federal law and CDC policy.[¶]

By July 26, a total of 469 COVID-19 cases were identified among Massachusetts residents; dates of positive specimen collection ranged from July 6 through July 25 (Figure 1). Most cases occurred in males (85%); median age was 40 years (range = <1–76 years). Nearly one half (199; 42%) reported residence in the town in Barnstable County. Overall, 346 (74%) persons with COVID-19 reported symptoms consistent with COVID-19.[**] Five were hospitalized; as of July 27, no deaths were reported. One hospitalized patient (age range = 50–59 years) was not vaccinated and had multiple underlying medical conditions.[††] Four additional, fully vaccinated patients[§§] aged 20–70 years were also hospitalized, two of whom had underlying medical conditions. Initial genomic sequencing of specimens from 133 patients identified the Delta variant in 119 (89%) cases and the Delta AY.3 sublineage in one (1%) case; genomic sequencing was not successful for 13 (10%) specimens.

Among the 469 cases in Massachusetts residents, 346 (74%) occurred in persons who were fully vaccinated; of these, 301 (87%) were male, with a median age of 42 years. Vaccine products received by persons experiencing breakthrough infections were Pfizer-BioNTech (159; 46%), Moderna (131; 38%), and Janssen (56; 16%); among fully vaccinated persons in the Massachusetts general population, 56% had received Pfizer-BioNTech, 38% had received Moderna, and 7% had received Janssen vaccine products. Among persons with breakthrough infection, 274 (79%) reported signs or symptoms, with the most common being cough, headache, sore throat, myalgia, and fever. Among fully vaccinated symptomatic persons, the median interval from completion of ≥14 days after the final vaccine dose to symptom onset was 86 days (range = 6–178 days). Among persons with breakthrough infection, four (1.2%) were hospitalized, and no deaths were reported. Real-time RT-PCR Ct values in specimens from 127 fully vaccinated patients (median = 22.77) were similar to those among 84 patients who were unvaccinated, not fully vaccinated, or whose vaccination status was unknown (median = 21.54) (Figure 2).

Transmission mitigation measures included broadening testing recommendations for persons with travel or close contact with a cluster-associated case, irrespective of vaccination status; local recommendations for mask use in indoor settings, irrespective of vaccination status; deployment of state-funded mobile testing and vaccination units in the town in Barnstable County; and informational outreach to visitors and residents. In this tourism-focused community, the Community Tracing Collaborative[¶¶] conducted outreach to hospitality workers, an international workforce requiring messaging in multiple languages.

The call from MA DPH for cases resulted in additional reports of cases among residents of 22 other states who had traveled to the town in Barnstable County during July 3–17, as well as reports of secondary transmission; further analyses are ongoing. As of July 3, estimated COVID-19 vaccination coverage among the eligible population in Massachusetts was 69% (*3*). Further investigations and characterization of breakthrough infections and vaccine effectiveness among this highly vaccinated population are ongoing.

[¶] 45 C.F.R. part 46, 21 C.F.R. part 56; 42 U.S.C. Sect.241(d); 5 U.S.C. Sect.552a; 44 U.S.C. Sect.3501 et seq.

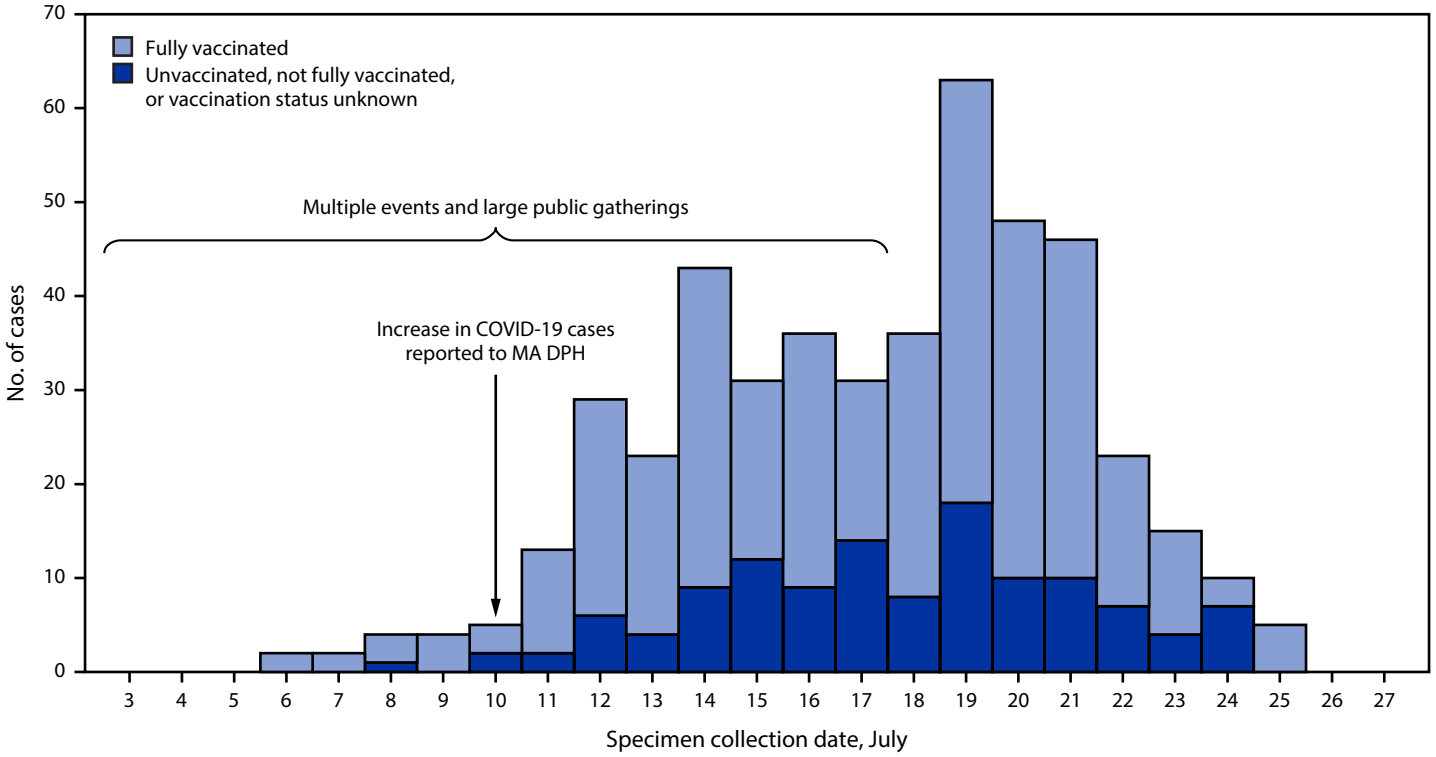
[**] COVID-like symptoms were based on the Council of State and Territorial Epidemiologists surveillance case definition for COVID-19. https://ndc.services.cdc.gov/case-definitions/coronavirus-disease-2019-2020-08-05/

[††] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html

[§§] One vaccinated, hospitalized COVID-19 patient had received the Pfizer-BioNTech vaccine and three had received the Janssen vaccine.

[¶¶] The Community Tracing Collaborative is a multiorganization partnership that has supported COVID contact tracing and outbreak investigation in Massachusetts. https://www.mass.gov/info-details/learn-about-the-community-tracing-collaborative

FIGURE 1. SARS-CoV-2 infections (N = 469) associated with large public gatherings, by date of specimen collection and vaccination status* — Barnstable County, Massachusetts, July 2021



Abbreviation: MA DPH = Massachusetts Department of Public Health.
* Fully vaccinated was defined as ≥14 days after completion of state immunization registry–documented COVID-19 vaccination as recommended by the Advisory Committee on Immunization Practices.

Discussion

The SARS-CoV-2 Delta variant is highly transmissible (*1*), and understanding determinants of transmission, including human behavior and vaccine effectiveness, is critical to developing prevention strategies. Multipronged prevention strategies are needed to reduce COVID-19–related morbidity and mortality (*4*).

The findings in this report are subject to at least four limitations. First, data from this report are insufficient to draw conclusions about the effectiveness of COVID-19 vaccines against SARS-CoV-2, including the Delta variant, during this outbreak. As population-level vaccination coverage increases, vaccinated persons are likely to represent a larger proportion of COVID-19 cases. Second, asymptomatic breakthrough infections might be underrepresented because of detection bias. Third, demographics of cases likely reflect those of attendees at the public gatherings, as events were marketed to adult male participants; further study is underway to identify other population characteristics among cases, such as additional demographic characteristics and underlying health conditions including immunocompromising conditions.*** MA DPH, CDC, and affected jurisdictions are collaborating in this response; MA DPH is conducting additional case investigations, obtaining samples for genomic sequencing, and linking case information with laboratory data and vaccination history. Finally, Ct values obtained with SARS-CoV-2 qualitative RT-PCR diagnostic tests might provide a crude correlation to the amount of virus present in a sample and can also be affected by factors other than viral load.††† Although the assay used in this investigation was not validated to provide quantitative results, there was no significant difference between the Ct values of samples collected from breakthrough cases and the other cases. This might mean that the viral load of vaccinated and unvaccinated persons infected with SARS-CoV-2 is also similar. However, microbiological studies are required to confirm these findings.

Event organizers and local health jurisdictions should continually assess the need for additional measures, including limiting capacity at gatherings or event postponement, based on current rates of COVID-19 transmission, population vaccination coverage, and other factors.§§§ On July 27, CDC released

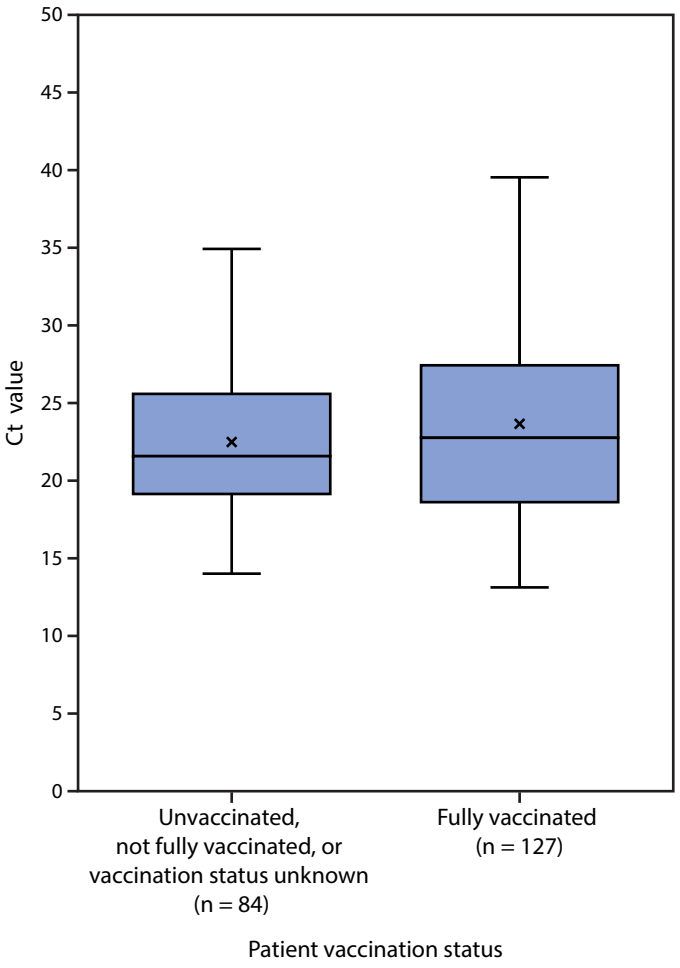
*** A preliminary analysis matching cluster-associated COVID-19 cases with the state HIV case surveillance data identified 30 (6%) cases with verified HIV infection; all were virally suppressed, and none were hospitalized as a result of infection with SARS-CoV-2.

††† https://www.cdc.gov/coronavirus/2019-ncov/lab/faqs.html

§§§ https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/considerations-for-events-gatherings.html

recommendations that all persons, including those who are fully vaccinated, should wear masks in indoor public settings in areas where COVID-19 transmission is high or substantial. Findings from this investigation suggest that even jurisdictions without substantial or high COVID-19 transmission might consider expanding prevention strategies, including masking in indoor public settings regardless of vaccination status, given the potential risk of infection during attendance at large public gatherings that include travelers from many areas with differing levels of transmission.

FIGURE 2. SARS-CoV-2 real-time reverse transcription–polymerase chain reaction cycle threshold values* for specimens from patients with infections associated with large public gatherings, by vaccination status† — Barnstable County, Massachusetts, July 2021§



Abbreviations: Ct = cycle threshold; RT-PCR = reverse transcription–polymerase chain reaction.

* Specimens were analyzed using a noncommercial real-time RT-PCR panel for SARS-CoV-2 performed under Emergency Use Authorization at the Clinical Research Sequencing Platform, Broad Institute of the Massachusetts Institute of Technology and Harvard University.

† Fully vaccinated was defined as ≥14 days after completion of state immunization registry–documented COVID-19 vaccination as recommended by the Advisory Committee on Immunization Practices.

§ Whiskers represent minimum and maximum observations; top of box represents the third quartile (Q3), bottom represents the first quartile (Q1), and box height represents the interquartile range. Midline is the median; "x" is the mean.

Acknowledgments

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Corresponding author: Catherine Brown, catherine.brown@mass.gov.

[1]Massachusetts Department of Public Health; [2]CDC COVID-19 Response Team; [3]Broad Institute, Cambridge, Massachusetts; [4]Barnstable County Department of Health and the Environment, Massachusetts; [5]Community Tracing Collaborative, Commonwealth of Massachusetts.

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Prashant Bhushan
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ANNEXURE: P56

AP NEWS

Study: Vaccinated people can carry as much virus as others

By LINDSEY TANNER, MIKE STOBBE and PHILIP MARCELO

July 31, 2021

A study of a large coronavirus outbreak in Provincetown suggests the amount of virus in fully vaccinated people was as great as the viral load in unvaccinated people. Health officials released the study Friday, July 30, 2021, saying it explains their call this week for vaccinated people return to wearing masks indoors in parts of the U.S. where the delta variant of the coronavirus is fueling infection surges. The study focused on an outbreak this month in Provincetown, a seaside tourist spot located in the Massachusetts county with the state's highest vaccination rate. (AP Photo/Steven Senne, File)

In another dispiriting setback for the nation's efforts to stamp out the coronavirus, scientists who studied a big COVID-19 outbreak in Massachusetts concluded that vaccinated people who got so-called breakthrough infections carried about the same amount of the coronavirus as those who did not get the shots.

Health officials on Friday released details of that research, which was key in this week's decision by the Centers for Disease Control and Prevention to recommend that vaccinated people return to wearing masks indoors in parts of the U.S. where the delta variant is fueling infection surges. The authors said the findings suggest that the CDC's mask guidance should be expanded to include the entire country, even outside of hot spots.

The findings have the potential to upend past thinking about how the disease is spread. Previously, vaccinated people who got infected were thought to have low levels of virus and to be unlikely to pass it to others. But the new data shows that is not the case with the delta variant.

The outbreak in Provincetown — a seaside tourist spot on Cape Cod in the county with Massachusetts' highest vaccination rate — has so far included more than 900 cases. About three-quarters of them were people who were fully vaccinated.

Travis Dagenais, who was among the many vaccinated people infected, said "throwing caution to the wind" and partying in crowds for long nights over the July Fourth holiday was a mistake in hindsight.

"The dominant public messaging has been that the vaccine means a return to normal," the 35-year-old Boston resident said Thursday. "Unfortunately, I've now learned it's a few steps toward normal, not the zero-to-sixty that we seem to have undertaken."

Dagenais credits being vaccinated with easing the worst of the flu-like symptoms in a couple of days. He has recovered.

Like many states, Massachusetts lifted all COVID-19 restrictions in late May, ahead of the traditional Memorial Day start of the summer season. Provincetown this week reinstated an indoor mask requirement for everyone.

Leaked internal documents on breakthrough infections and the delta variant suggest the CDC may be considering other changes in advice on how the nation fights the coronavirus, such as recommending masks for everyone and requiring vaccines for doctors and other health workers.

The delta variant, first detected in India, causes infections that are more contagious than the common cold, flu, smallpox and the Ebola virus, and it is as infectious as chickenpox, according to the documents, which mentioned the Provincetown cases.

The documents were obtained by The Washington Post. As they note, COVID-19 vaccines are still highly effective against the delta variant at preventing serious illness and death.

The Provincetown outbreak and the documents highlight the enormous challenge the CDC faces in encouraging vaccination while acknowledging that breakthrough cases can occur and can be contagious but are uncommon.

The documents appear to be talking points for CDC staff to use with the public. One point advised: "Acknowledge the war has changed," an apparent reference to deepening concern that many millions of vaccinated people could be a source of wide-ranging spread.

An agency spokeswoman declined to comment on the documents.

The White House on Friday defended its approach to rising virus cases and shifting public health guidelines, repeatedly deferred to the CDC while stressing the need for vaccinations.

"The most important takeaway is actually pretty simple. We need more people to get vaccinated," White House spokeswoman Karine Jean-Pierre said.

Pressed about the changing guidance, Jean-Pierre repeatedly said, "We don't make those types of decisions from here."

People with breakthrough infections make up an increasing portion of hospitalizations and in-hospital deaths among COVID-19 patients, coinciding with the spread of the delta variant, according to the leaked documents.

Although experts generally agreed with the CDC's revised indoor masking stance, some said the report on the Provincetown outbreak does not prove that vaccinated people are a significant source of new infections.

"There's scientific plausibility for the (CDC) recommendation. But it's not derived from this study," said Jennifer Nuzzo, a Johns Hopkins University public health researcher.

The CDC report is based on about 470 COVID-19 cases linked to the Provincetown festivities, which included densely packed indoor and outdoor holiday events at bars, restaurants, guest houses and rental homes.

Researchers ran tests on a portion of them and found roughly the same level of virus in those who were fully vaccinated and those who were not.

Three-quarters of the infections were in fully vaccinated individuals. Among those fully vaccinated, about 80% experienced symptoms with the most common being cough, headache, sore throat, muscle aches and fever.

Dagenais said he started to feel ill the evening he returned home and initially chalked it up to long nights of partying in packed Provincetown nightclubs.

But as the days wore on and the fever, chills, muscle aches and fatigue set in, he knew it was something more.

In the report, the measure researchers used to assess how much virus an infected person is carrying does not indicate whether they are actually transmitting the virus to other people, said Dr. Angela Rasmussen, a virologist at the University of Saskatchewan.

CDC officials say more data is coming. They are tracking breakthrough cases as part of much larger studies that involve following tens of thousands of vaccinated and unvaccinated people across the country over time.

Link:https://apnews.com/article/science-health-coronavirus-pandemic-d9504519a8ae081f785ca012b5ef84d1
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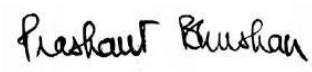

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ANNEXURE: P57

CBS News

Study: Fully vaccinated people with "breakthrough" COVID Delta infections carry as much virus as the unvaccinated

BY TUCKER REALS

UPDATED ON: AUGUST 19, 2021 / 6:18 AM / CBS NEWS

A study by University of Oxford scientists has found that people who contract the Delta variant of COVID-19 after being fully vaccinated carry a similar amount of the coronavirus as those who catch the disease and have not been inoculated. The researchers stressed that vaccination still offers good protection against catching the disease in the first place, and protects against getting seriously ill with it.

The survey of real-world U.K. data indicates, however, that vaccinated people with "breakthrough" infections could still pose a significant infection risk to those who have not been vaccinated.

"With Delta, infections occurring following two vaccinations had similar peak viral burden to those in unvaccinated individuals," the study, which has not yet been peer reviewed, concludes. Viral "burden" or viral load refers to how much coronavirus-infected people carry and thus "shed," or release into the environment around them, where it can potentially infect others.

The survey compared U.K. government data on more than 380,000 people who tested positive for the coronavirus between December and May of this year, when the first-discovered Alpha variant accounted for most of the cases in Britain, with figures for more than 350,000 people infected over the following four months, when Delta was dominant.

Biden recommends booster shots for millions o...
Oxford's lead researcher, Dr. Sarah Walker, told The Telegraph that the study shows two doses of the Pfizer/BioNTech, Moderna or AstraZeneca vaccines "are still protective. You are still less likely to get infected - but if you do, you will have similar levels of virus as someone who hasn't been vaccinated at all."

The data used for the study do not show how likely it is that a fully vaccinated person with the Delta variant can pass on the infection to another individual, compared to an unvaccinated individual with the virus. But the high viral loads found in the study are a strong indicator that the risks of transmission from both vaccinated and unvaccinated people with the Delta variant could be similar.

Biden to tie vaccines for nursing home staff to funding
The findings could have implications for policy makers who've banked for months on hopes that by vaccinating a large proportion of any given population, they will also protect people who cannot or will not get inoculated themselves by reducing transmissions overall.

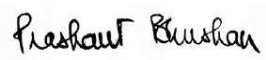
"The fact that they [fully vaccinated people] can have high levels of virus suggests that people who aren't yet vaccinated may not be as protected from the Delta variant as we hoped," Walker told the British newspaper. "It comes back to this concept of herd immunity, and the hope that the unvaccinated could be protected if we could vaccinate enough people. But I suspect the higher levels of the virus in vaccinated people are consistent with the fact that unvaccinated people are still going to be at high risk."
Pfizer CEO on vaccine supply
The message from Walker and her team at Oxford was clear: Vaccination remains the best way to protect against infection, and certainly against serious illness or hospitalization with COVID-19, including the Delta variant.

None of the coronavirus vaccines approved for use in the U.S. or U.K. thus far eliminate the risk of infection, but they all reduce that risk by between about 70% and 90% — and they've proven much more potent at preventing hospitalizations and deaths.

"There are lots of reasons why the vaccines may be very good at reducing the consequences of having the virus," Walker told The Telegraph. "You may well still have a milder infection and might not end up getting hospitalized."

She said that while the results of the ongoing vaccine effectiveness study were important, "they aren't everything, and it is really important to remember the vaccines are super-effective at preventing hospitalizations."

Link:https://www.cbsnews.com/news/covid-vaccine-delta-variant-infections-carry-same-virus-load-unvaccinated/



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ANNEXURE: P58

The Telegraph

Fully vaccinated people who catch Covid variants may pass virus on, study finds

Study shows post-jab cases more likely to be infected with virus strains that have emerged in recent months

By
Anne Gulland

29 May 2021 • 6:00pm

People wait to receive Covid vaccinations at the UMass Memorial Health Care Vaccination Center in Worcester, Massachusetts
Fully vaccinated people infected with Covid variants may be likely to pass the virus on, researchers have said.

No vaccine is 100 per cent effective, and while the number of people who contract Covid after vaccination – known as post-vaccine breakthrough cases – is tiny, a growing number of studies show that these cases are more likely to be infected with variants that have emerged in recent months.

Researchers at the University of Washington in the United States sequenced samples from 20 health workers who went on to contract Covid after receiving both doses of either the Pfizer or Moderna vaccine.

The study showed that all 20 were infected with variants of concern that have been driving second waves of Covid in many parts of the world – eight had the UK variant, one the South African variant, 10 had one of the two California variants and one had the Brazilian variant.

The researchers then compared the samples collected from this group with samples collected from 5,174 non-vaccinated individuals who had Covid.

While everyone in the vaccinated group had a variant of concern, only 67 per cent of non-vaccinated individuals did. The study also showed that the vaccinated individuals infected with Covid had high viral loads.

Dr Pavitra Roychoudhury, the lead author of the study, said the "prevailing understanding" was that while vaccine breakthrough cases would occur, they would be mild.

"But in contrast to that, what we saw among our 20 samples was that a number of them actually had quite robust viral loads. That was concerning in the sense that there was definitely enough virus to sequence, and potentially there might be enough virus to transmit," she said.

None of the 20 patients studied were hospitalised and it is not known whether they passed the disease to others, said Dr Roychoudhury.

A recent study by the US Centers for Disease Control and Prevention also showed that vaccinated individuals who contracted the disease were also likely to be infected with variants.

Data released earlier this week showed that, as of April 30, there were 10,262 cases of post-vaccination infection among the 101 million people that had been fully vaccinated.

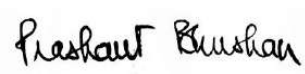
Some 555 of these 10,000 samples were sequenced and researchers found that 356 were identified as variants of concern. Of these, more than half were the UK variant, 33 per cent were one of the two California variants, eight per cent were the Brazilian variant and four per cent were the South African variant.

Dr Roychoudhury said the finding of high viral loads showed that it was important to monitor breakthrough cases and highlighted the importance of continuing self-isolation. She added that monitoring breakthrough cases would help vaccine manufacturers who are currently looking at booster shots, saying: "It can help us identify a potential redesign of the booster shots and improve them."

However, Dr Roychoudhury said the findings of her study did not indicate that the current vaccines were not effective.

"A lot of the antibody responses are pretty broad. The vaccines are not designed to be super specific so they will be able to target the variants," she said. She added that, as more people are vaccinated, the number of vaccination breakthrough cases is likely to come down as infection levels reduce in the wider population.

Link: https://www.telegraph.co.uk/global-health/science-and-disease/fully-vaccinated-people-catch-covid-variants-may-pass-virus/



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The Telegraph

Delta variant has wrecked hopes of herd immunity, warn scientists

There is no way of stopping Covid spreading through the entire population, experts tell MPs as they call for end of mass testing

By
Sarah Knapton,
SCIENCE EDITOR
10 August 2021 • 5:30pm

Scientists have called for an end to mass testing so Britain can start to live with Covid
The delta variant has wrecked any chance of herd immunity, a panel of experts including the head of the Oxford vaccine team said as they called for an end to mass testing so Britain can start to live with Covid.

Scientists said it was time to accept that there was no way of stopping the virus spreading through the entire population, and monitoring people with mild symptoms was no longer helpful.

Prof Andrew Pollard, who led the Oxford vaccine team, said it was clear that the delta variant could infect people who had been vaccinated, which made herd immunity impossible to reach even with high vaccine uptake.

It comes as Angela Merkel became the first major world leader to announce the end of free testing, with the provision set to stop in Germany from Oct 11.

On Tuesday, the Department of Health confirmed that more than three quarters of adults have now received both jabs, and calculated that 60,000 deaths and 66,900

hospitalisations had been prevented by vaccination. But experts said it would never be enough to stop Covid from spreading.

Speaking to the all-party parliamentary group on Covid, Sir Andrew said: "Anyone who is still unvaccinated will, at some point, meet the virus.

"We don't have anything that will stop transmission, so I think we are in a situation where herd immunity is not a possibility and I suspect the virus will throw up a new variant that is even better at infecting vaccinated individuals."

Until recently, it was hoped that increasing the number of Britons jabbed would create a ring of protection around the population. As late as last week, the Joint Committee on Vaccination and Immunisation said one of the reasons it had advised that 16 and 17-year-olds should be vaccinated was because it may help prevent a winter Covid wave.

However, analysis by Public Health England has shown that when vaccinated people catch the virus they have a similar viral load to unvaccinated individuals and may be as infectious.

Paul Hunter, professor in medicine at the University of East Anglia and an expert in infectious diseases, told the committee: "The concept of herd immunity is unachievable because we know the infection will spread in unvaccinated populations and the latest data is suggesting that two doses is probably only 50 percent protective against infection."

Prof Hunter, who advises the World Health Organisation on Covid, also said it was time to change the way the data was collected and recorded as the virus became endemic.
"We need to start moving away from just reporting infections, or just reporting positive cases admitted to hospital, to actually start reporting the number of people who are ill

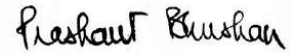
because of Covid," he added. "Otherwise we are going to be frightening ourselves with very high numbers that actually don't translate into disease burden."

On Tuesday, Sajid Javid, the Health Secretary, confirmed that third dose booster shots would be given from next month. However, Sir Andrew argued that, if mass testing was not stopped, Britain could be in a situation of continually vaccinating the population.

"I think as we look at the adult population going forward, if we continue to chase community testing and are worried about those results, we're going to end up in a situation where we're constantly boosting to try and deal with something which is not manageable," he said.
"It needs to be moving to clinically driven testing in which people are willing to get tested and treated and managed, rather than lots of community testing. If someone is unwell they should be tested, but for their contacts, if they're not unwell then it makes sense for them to be in school and being educated."

Dr Ruchi Sinha, consultant paediatrician at Imperial College Healthcare NHS Trust, told MPs and peers that choosing not to vaccinate children would be unlikely to cause problems in the health service.

"What matters is the burden of patient hospitalisation and critical care and actually there hasn't been as much with this delta variant," she said. "They tend to be the children who have got their comorbidities, obesity, or severe neurological problems and those children are already considered for vaccination. Covid on its own in paediatrics is not the problem."
Link: https://www.telegraph.co.uk/news/2021/08/10/delta-variant-has-wrecked-hopes-herd-immunity-warn-scientists/



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ANNEXURE: P60

The Telegraph

Delta variant has wrecked hopes of herd immunity, warn scientists

There is no way of stopping Covid spreading through the entire population, experts tell MPs as they call for end of mass testing

By

Sarah Knapton,

SCIENCE EDITOR

10 August 2021 • 5:30pm

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Until recently, it was hoped that increasing the number of Britons jabbed would create a ring of protection around the population. As late as last week, the Joint Committee on Vaccination and Immunisation said one of the reasons it had advised that 16 and 17-year-olds should be vaccinated was because it may help prevent a winter Covid wave.

However, analysis by Public Health England has shown that when vaccinated people catch the virus they have a similar viral load to unvaccinated individuals and may be as infectious.

Paul Hunter, professor in medicine at the University of East Anglia and an expert in infectious diseases, told the committee: "The concept of herd immunity is unachievable because we know the infection will spread in unvaccinated populations and the latest data is suggesting that two doses is probably only 50 percent protective against infection."

Prof Hunter, who advises the World Health Organisation on Covid, also said it was time to change the way the data was collected and recorded as the virus became endemic.

"We need to start moving away from just reporting infections, or just reporting positive cases admitted to hospital, to actually start reporting the number of people who are ill

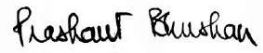
because of Covid," he added. "Otherwise we are going to be frightening ourselves with very high numbers that actually don't translate into disease burden."

On Tuesday, Sajid Javid, the Health Secretary, confirmed that third dose booster shots would be given from next month. However, Sir Andrew argued that, if mass testing was not stopped, Britain could be in a situation of continually vaccinating the population.

"I think as we look at the adult population going forward, if we continue to chase community testing and are worried about those results, we're going to end up in a situation where we're constantly boosting to try and deal with something which is not manageable," he said.
"It needs to be moving to clinically driven testing in which people are willing to get tested and treated and managed, rather than lots of community testing. If someone is unwell they should be tested, but for their contacts, if they're not unwell then it makes sense for them to be in school and being educated."

Dr Ruchi Sinha, consultant paediatrician at Imperial College Healthcare NHS Trust, told MPs and peers that choosing not to vaccinate children would be unlikely to cause problems in the health service.

"What matters is the burden of patient hospitalisation and critical care and actually there hasn't been as much with this delta variant," she said. "They tend to be the children who have got their comorbidities, obesity, or severe neurological problems and those children are already considered for vaccination. Covid on its own in paediatrics is not the problem."
Link: https://www.telegraph.co.uk/news/2021/08/10/delta-variant-has-wrecked-hopes-herd-immunity-warn-scientists/



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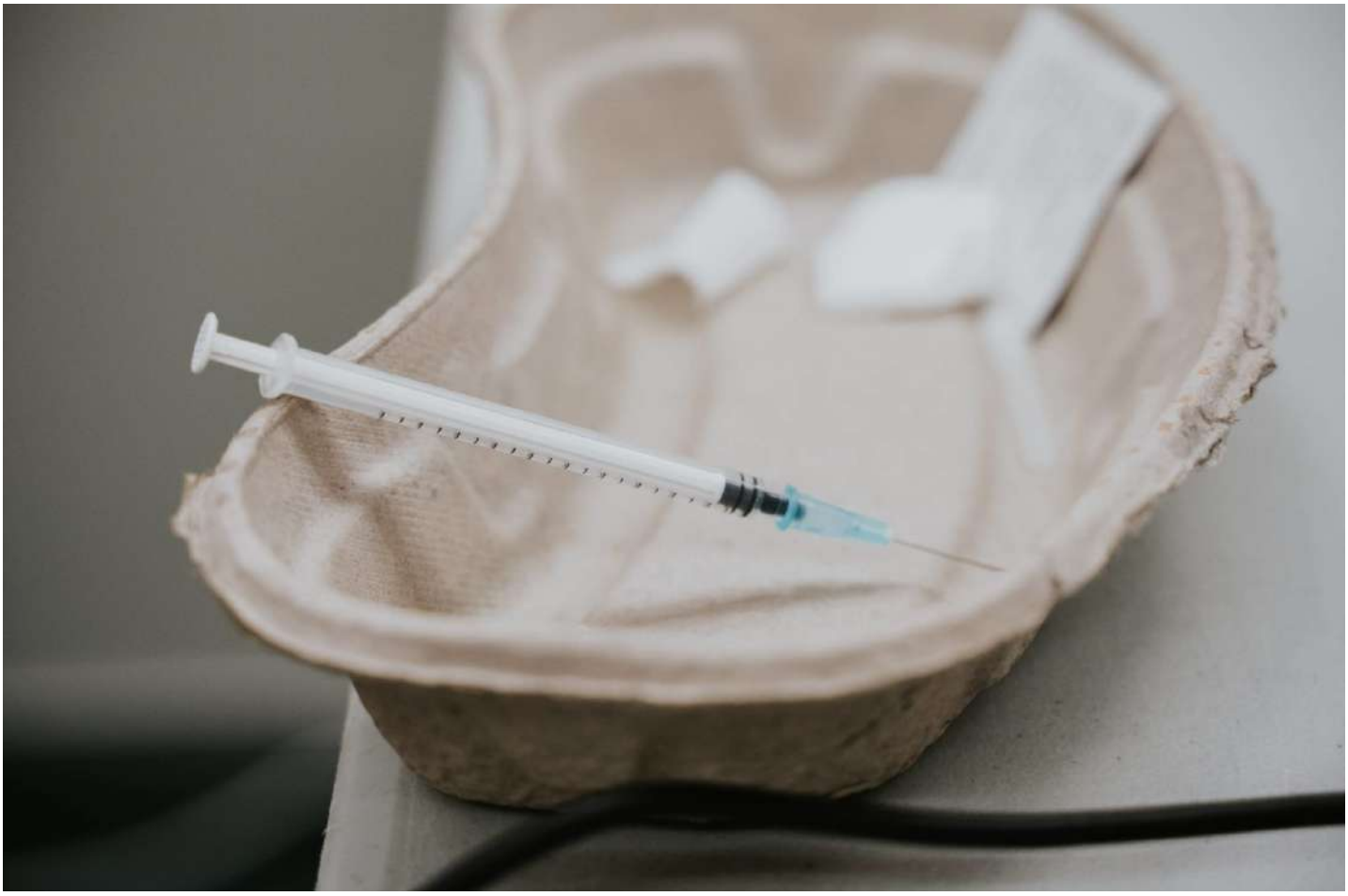
Busting the myth that vaccination prevents transmission

July 29, 2021 (https://www.hartgroup.org/vaccination-prevents-transmission-myth/)



The real-world evidence is clear

The UK Government seemingly fixed upon a strategy in mid-2020 — without apparently considering the extensive collateral harm — of suppressing the spread of SARS-CoV-2 until such time as a vaccination became available.

The strategy necessitated maintaining the claim — against all real-world evidence — that the unprecedented restrictions on our daily lives have had a significant effect on viral

spread and infection rates. A claim that does not stand up when scrutinised against real-world case rates falling since legal restrictions were removed on 19 July, as discussed here (https://www.hartgroup.org/cases-dropping-puzzles-scientists/).

The other key plank of this narrative is the safety and effectiveness of vaccination. While safety concerns have been mounting for some time and are now reaching the mainstream, attention is turning towards effectiveness, particularly following disturbing news from Israel, where even previously prominent cheerleaders for vaccines (https://twitter.com/DrEricDing/status/1418669720874721283?s=20), and healt (https://www.timesofisrael.com/hmo-those-who-inoculated-early-twice-as-likely-to-catch-covid-as-later-adopters/)h (https://www.timesofisrael.com/hmo-those-who-inoculated-early-twice-as-likely-to-catch-covid-as-later-adopters/) providers (https://www.timesofisrael.com/hmo-those-who-inoculated-early-twice-as-likely-to-catch-covid-as-later-adopters/), are acknowledging that efficacy is declining substantially, with less protection being afforded by a vaccination given in January compared to in April / May. The Prime Minister meanwhile, stated that protection against the Delta variant is less than had been hoped (https://www.timesofisrael.com/bennett-protection-afforded-by-vaccines-weaker-than-wed-hoped-against-delta/).

Recent infection rates in the fully vaccinated adult population (ages 20+) appear, from official data (available here (https://datadashboard.health.gov.il/COVID-19/general) and here (https://data.gov.il/dataset/covid-19)), to be about the same as rates in the un-vaccinated implying — at first sight — very little or no efficacy at all against infection. Clearly the thinking in Israel generally (https://www.i24news.tv/en/news/coronavirus/1626980447-vaccine-39-effective-at-halting-virus-transmission-91-against-serious-illness-israel-s-health-ministry-says) is that these vaccines are no longer the “silver bullet” they were proclaimed to be, and the country is discussing the need to order booster shots (https://en.globes.co.il/en/article.aspx?did=1001379831#utm_source=iglobes&utm_medium=referral&utm_campaign=iglobes), a strategy which seems no more rational than the initial vaccination programme.

The principle defence against a respiratory virus actually takes place in the mucosal membranes of the respiratory tract, and the high proportion of those with some degree of natural immunity fight off SARS-CoV-2 there, preventing it replicating significantly in

the bloodstream. Therefore, it is not actually surprising that a vaccine which works mainly in the circulatory system has little effect on stopping what starts as a respiratory infection. If that is the case, it is illogical to expect any reduction in transmission.

Meanwhile, in the USA, the CDC, in a reversal of earlier guidance (https://www.nytimes.com/live/2021/05/13/world/covid-vaccine-coronavirus-cases/cdc-masks-guidance) triumphantly endorsed directly by the President (https://twitter.com/POTUS/status/1392935847863934987), is now recommending continued (and of course entirely un-evidenced) mask-wearing for vaccinated individuals (https://twitter.com/CDCgov/status/1420104200957038594?s=20), thereby expressing a distinct lack of confidence in the vaccines to prevent transmission. Specifically, as reported by the Washington Post (https://www.washingtonpost.com/gdpr-consent/?next_url=https%3a%2f%2fwww.washingtonpost.com%2fworld%2f2021%2f07%2f27%2fcdc-masks-who%2f):

"The game-changer for the agency was data showing that vaccinated people infected with the highly infectious delta variant carry the same viral load as unvaccinated people who are infected."

USA Today had earlier reported (https://archive.is/066JQ) that NBC had been told by an unnamed official that vaccinated individuals could actually carry ***higher*** viral loads, though later it dropped (https://eu.usatoday.com/story/news/health/2021/07/27/covid-vaccine-variant-hospitalization-children-mask-mandates/5380480001/) this aspect of the story.

On the other hand, the CDC is apparently still maintaining the breathtakingly misleading — and entirely contradictory — claim that 99% of cases are in the unvaccinated, a claim which, as one epidemiologist has pointed out (https://twitter.com/andrewbostom/status/1418015706021515267?s=20), could only be substantiated by starting such a count of cases from January, when cases were very high and before the vaccination rollout had begun in earnest.

The apparent inability of vaccination to end the pandemic as claimed by the authorities is also being noticed in other nations; Gibraltar (https://twitter.com/GibraltarGov/status/1420378470241157125?s=20), Scotland (https://www.thescottishsun.co.uk/news/scottish-news/7388128/coronavirus-hospitals-

vaccinated-admissions/), Seychelles (https://www.bloomberg.com/news/articles/2021-06-25/seychelles-extends-virus-curbs-indefinitely-as-outbreak-rages)and India (https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2020-03-01..latest&pickerSort=desc&pickerMetric=new_cases_smoothed_per_million&Metric=Confirmed+cases&Interval=7-day+rolling+average&Relative+to+Population=true&Align+outbreaks=false&country=~IND) are several such examples. HART has always been concerned about the "vaccine saviour" narrative and calls to "believe" in vaccination — when life or death decisions are being made, it is imperative that we rely on a robust evidential base and reject quack science.

Whether or not the vaccine reduces the severity of disease remains an open question, although Israel has concerns that this is also waning (https://www.ynetnews.com/health_science/article/bytq34n0u?s=09). If that is the sole benefit of the vaccines which has survived transition from the clinical trial scenario to the real world, any discrimination or coercion of any form aimed at those who choose not to be vaccinated is completely unsustainable.

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First name

Prashant Bhushan
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CDC Centers for Disease Control and Prevention

ANNEXURE: P62

Your Guide to Masks

Updated Aug. 13, 2021 Print

- If you are not fully vaccinated and aged 2 or older, you should wear a mask in indoor public places.
- In general, you do not need to wear a mask in outdoor settings.
  - In areas with high numbers of COVID-19 cases, consider wearing a mask in crowded outdoor settings and for activities with close contact with others who are not fully vaccinated.
- People who have a condition or are taking medications that weaken their immune system may not be fully protected even if they are fully vaccinated. They should continue to take all precautions recommended for unvaccinated people, including wearing a well-fitted mask, until advised otherwise by their healthcare provider.
- If you are fully vaccinated, to maximize protection from the Delta variant and prevent possibly spreading it to others, wear a mask indoors in public if you are in an area of substantial or high transmission.
- If you are fully vaccinated, see When You've Been Fully Vaccinated.

Wearing a mask over your nose and mouth is required on planes, buses, trains, and other forms of public transportation traveling into, within, or out of the United States and while indoors at U.S. transportation hubs such as airports and stations. Travelers are not required to wear a mask in outdoor areas of a conveyance (like on open deck areas of a ferry or the uncovered top deck of a bus).

COVID-19 County Check

Find community transmission levels by county.

Select a Location

State

County

How to Select

When selecting a mask, there are many choices. Here are some do's and don'ts.

DO choose masks that

Have two or more layers of washable, breathable fabric

Completely cover your nose and mouth

Fit snugly against the sides of your face and don't have gaps

DO NOT choose masks that

Are made of fabric that makes it hard to breathe, for example, vinyl

Have exhalation valves or vents which allow virus particles to escape

Are prioritized for healthcare workers, including N95 respirators

Have a nose wire to prevent air from leaking out of the top of the mask

Special Considerations

Gaiters & face shields

Wear a gaiter with two layers, or fold it to make two layers

Not recommended: Evaluation of face shields is ongoing, but effectiveness is unknown at this time.

Children

Find a mask that is made for children to help ensure proper fit

Check to be sure the mask fits snugly over the nose and mouth and under the chin and that there are no gaps around the sides

Do NOT put on children younger than 2 years old

People with beards

Certain types of facial hair, like beards, can make mask fitting difficult. Masks that fit well protect you better. To have a better fit, people with beards can shave their beards or trim their beards close to the face.

Other ways to improve fit

Use a mask fitter or brace.

Wear one disposable mask underneath a cloth mask that has multiple layers of fabric. The second mask should push the edges of the inner mask against the face and beard.

For people with beards that are not trimmed close to the face, masks may fit loosely around the beard. However, people with beards should still wear a mask. Masks designed for people with beards are being evaluated, and information will be provided when it becomes available.

Wearing a mask does not raise the carbon dioxide (CO_2) level in the air you breathe

Cloth masks and surgical masks do not provide an airtight fit across the face. The CO_2 escapes into the air through the mask when you breathe out or talk. CO_2 molecules are small enough to easily pass through mask material. In contrast, the respiratory droplets that carry the virus that causes COVID-19 are much larger than CO_2, so they cannot pass as easily through a properly designed and properly worn mask.

How to Wear

Wear a mask **correctly** and **consistently** for the best protection.

- Be sure to wash your hands or use hand sanitizer before putting on a mask.
- Do **NOT** touch the mask when wearing it. If you have to often touch/adjust your mask, it doesn't fit you properly, and you may need to find a different mask or make adjustments.

Do wear a mask that

- Covers your nose and mouth and secure it under your chin.
- Fits snugly against the sides of your face.

How NOT to wear a mask

Around your neck

On your forehead

Under your nose

Only on your nose

On your chin

Dangling from one ear

On your arm

How to take off a mask

1. Carefully, untie the strings behind your head or stretch the ear loops
2. Handle only by the ear loops or ties
3. Fold the outside corners together
4. Be careful not to touch your eyes, nose, and mouth when removing and wash hands immediately after removing

How to Clean

Reusable masks should be washed whenever it gets dirty or at least daily. If you have a disposable face mask, throw it away after wearing it once. Always and wash your hands after handling or touching a used mask.

Using a washing machine

- Include your mask with your regular laundry.
- Use regular laundry detergent and the appropriate settings according to the fabric label.

By hand

- Wash your mask with tap water and laundry detergent or soap.
- Rinse thoroughly with clean water to remove detergent or soap.

Dry your mask

COVID-19

By hand

- Hang your mask in direct sunlight to dry completely. If you cannot hang it in direct sunlight, hang or lay it flat and let it dry completely.

For information on the sources for our mask guidance, see Recent Studies.

How to Store

Store wet or dirty masks in a plastic bag

If your mask is wet or dirty from sweat, saliva, make-up, or other liquids or substances, keep it in a sealed plastic bag until you can wash it. Wash wet or dirty masks as soon as possible to prevent them from becoming moldy. Wet masks can be hard to breathe through and are less effective than dry masks.

Store masks that are not wet or dirty in a paper bag

You can store your mask temporarily to reuse later. Remove your mask correctly and wash your hands after touching a used mask. Keep it in a dry, breathable bag (like a paper or mesh fabric bag) to keep it clean between uses. When reusing your mask, keep the same side facing out.

If you are taking off your mask to eat or drink outside of your home, you can place it somewhere safe to keep it clean, such as your pocket, purse, or paper bag. Make sure to wash or sanitize your hands after removing your mask. After eating, put the mask back on with the same side facing out. Be sure to wash or sanitize your hands again after putting your mask back on.

Last Updated Aug. 13, 2021

Prashant Bhushan
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DBT-BIRAC supported ZyCoV-D developed by Zydus Cadila Receives Emergency Use Authorization

World's First COVID-19 DNA vaccine developed in partnership with

DBT-BIRAC under Mission COVID Suraksha

Posted On: 20 AUG 2021 7:04PM by PIB Delhi

Zydus Cadila has received approval for Emergency Use Authorization (EUA) from the Drug Controller General of India (DCGI) for ZyCoV-D today i.e 20/08/2021, the world's first and India's indigenously developed DNA based vaccine for COVID-19 to be administered in humans including Children and adults 12 years and above. Developed in partnership with the Department of Biotechnology, Government of India under the 'Mission COVID Suraksha' and implemented by BIRAC, ZyCoV-D has been supported under COVID-19 Research Consortia through National Biopharma Mission for Preclinical studies, Phase I and Phase II Clinical Trials and under the Mission COVID Suraksha for Phase III Clinical Trial. This 3 dose vaccine which when injected produces the spike protein of the SARS-CoV-2 virus and elicits an immune response, which plays a vital role in protection from disease as well as viral clearance. The plug-and-play technology on which the plasmid DNA platform is based can be easily adapted to deal with mutations in the virus, such as those already occurring.

Interim results from Phase-III Clinical Trials, in over 28,000 volunteers, showed primary efficacy of 66.6 per cent for symptomatic RT-PCR positive cases. This has been the largest vaccine trial so far in India for COVID-19. This vaccine had already exhibited robust immunogenicity and tolerability and safety profile in the adaptive Phase I/II clinical trials carried out earlier. Both the Phase I/II and Phase III clinical trials have been monitored by an independent Data Safety Monitoring Board (DSMB).

Vaccine Technology Centre (VTC), vaccine research centre of the Zydus group, Translational Health Science and Technology Institute (THSTI), an autonomous institute of the Department of Biotechnology (DBT and Interactive Research School for Health Affairs (IRSHA), Pune, GCLP Lab set up under the Department of Biotechnology - National Biopharma Mission (NBM) also played a vital role in this success story.

Dr Renu Swarup, Secretary, DBT and Chairperson, BIRAC said that "It is a matter of great pride that today we have the EUA for the world's first DNA COVID-19 vaccine ZyCoV-D by Zydus developed in partnership with the Department of Biotechnology and supported through Mission COVID Suraksha. The Indian Vaccine Mission COVID Suraksha was launched under the Atma Nirbhar Bharat package 3.0 being implemented by BIRAC, is aimed at the development of safe and efficacious COVID-19 vaccines for public health. We are confident that this will be an important vaccine for both India and the world. This is an important milestone in our Indigenous Vaccine Development Mission and positions India on the Global Map for Novel Vaccine Development"

Speaking on the development, Chairman of the Zydus Group, Mr. Pankaj R. Patel said, "We are extremely happy that our efforts to put out a safe, well tolerated and efficacious vaccine to fight COVID-19 has become

a reality with ZyCoV-D. To create the world's first DNA vaccine at such a crucial juncture and despite all the challenges, is a tribute to the Indian research scientists and their spirit of innovation. I'd like to thank the Department of Biotechnology, Government of India for their support in this mission of Atma Nirbhar Bharat and Indian Vaccine Mission COVID Suraksha."

For Further Information: Contact Communication Cell of DBT/BIRAC

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www.birac.nic.in

About DBT

The Department of Biotechnology (DBT), under the Ministry of Science and Technology, promotes and improves biotechnology development in India through its development and implementation in agriculture, healthcare, animal sciences, the environment, and industry.

About BIRAC

A non-for-profit Public Sector Enterprise, Biotechnology Industry Research Assistance Council (BIRAC), has been set up by the Department of Biotechnology (DBT), Government of India, which acts as an interface agency to enhance and encourage the evolving biotechnology industry to implement strategic research and development activities in regards to the product development needs of the Nation.

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(Release ID: 1747669)

Prashant Bhushan
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ANNEXURE: P64

The Wire Science

ZyCoV-D Continues India's Habit of Approving COVID Vaccines With Invisible Data

22/08/2021

By DR JAMMI NAGARAJ RAO

- ZyCov-D uses a novel vaccine delivery platform: it is a DNA plasmid vaccine.
- The scientific paper corresponding to the vaccine's phase 2 trial has been hard to find, and Zydus Cadila hasn't shared the phase 3 data.
- Significant details are missing, including numbers with which to make sense of the vaccine's claimed efficacy, and the approval seems to have been rushed.

On August 20, India's Ministry of Science and Technology announced that a COVID-19 vaccine manufactured by Ahmedabad-based Zydus Cadila, called ZyCoV-D, had been granted 'emergency use authorisation' (EUA) for those aged 12 years or older.

Earlier, on July 1, the company had announced that it had applied to India's regulator, the Drug Controller General of India (DCGI), for approval. Its press release said it had presented an interim analysis from its phase 3 clinical trial involving 28,000 participants. These results claimed an efficacy, including against the dominant delta variant, of 66.6% against symptomatic COVID-19. The analysis also claimed 100% efficacy both against moderate disease after three doses of the vaccine and against severe disease or death after two doses.

The full details of the analysis have not yet been made available for independent review, not even as a preprint paper that could lend itself to public review. However, if we take the 66% efficacy at face value, there are many features of ZyCov-D that are noteworthy.

DNA plasmid platform

ZyCov-D uses a novel vaccine delivery platform: it is a DNA plasmid vaccine. According to the WHO COVID-19 vaccine development tracker, 11 of 112 COVID-19 vaccine candidates currently undergoing clinical trials use the DNA platform. Of these 11, ZyCov-D is the only one so far to be studied in a phase 3 trial and the first to have received approval from its regulator. The DCGI's EUA for ZyCoV-D is thus a breakthrough for India.

The DNA plasmid platform is an interesting idea that has been around for some time as a means of delivering genetically engineered DNA into the body to stimulate the manufacture of target proteins – against which the body then mounts an immune response. A plasmid is a "small circular piece of DNA that replicates independently from the host's chromosomal DNA". The trick lies in assembling the right building blocks of the DNA plasmid to instruct the body's cells to manufacture the spike protein of SARS-CoV-2, the virus that causes COVID-19.

This feature of the DNA platform gives it a 'plug and play adaptability'. As in the case of mRNA vaccines, should new variants of the virus arise a whichgainst the current crop of vaccines are not very good, all scientists will have to do is tweak the plasmid to make the spike protein of a new variant, and the corresponding vaccine will be ready.

One more feature of ZyCov-D is its mechanism of delivery: not through a hypodermic needle but through "a narrow stream of fluid to penetrate the skin, and deliver vaccine to the proper tissue depth", according to this technology's developer, a Colorado-based company named PharmaJet.

Development of ZyCoV-D

In its press release, Zydus Cadila acknowledged the support it received from the National Biopharma Mission. This is a mission of the Biotechnology Industry Research Assistance Council (BIRAC) under the auspices of the Department of Biotechnology. The mission has a $125 million loan (Rs 929.4 crore) from the World Bank. The National Institute of Virology, Pune, and its parent body, the Indian Council of Medical Research (ICMR) also collaborated on the project.

McGill University's vaccine tracker team documented the development of ZyCov-D through various trial phases. ICMR's Pragya Yadav and her colleagues uploaded a preprint paper on February 3 reporting animal studies that demonstrated the vaccine's immunogenicity and efficacy among rhesus macaques. A phase 1 trial with 48 (human) participants, conducted between July and October 2020, demonstrated immunogenicity with the PharmaJet injection system without serious adverse effects.

Zydus reported the results of a phase 2 study involving 1,000 participants through a press release, claiming adequate safety, tolerability and immunogenicity. The author couldn't find a preprint or a published paper corresponding to this claim. The press release itself says that an independent data safety monitoring board reviewed the results and that the findings had been shared with the Central Drug Standards Control Organisation.

The phase 3 clinical trial

On the basis of the phase 2 trial results, the company planned and registered a large phase 3 trial with the Clinical Trials Registry of India (CTRI). The results from this trial have not been published in any form thus far; so our best source of information about the trial is the CTRI entry itself.

According to the registration, this was to be a randomised, placebo-controlled, multicentre double-blind study. The total number of participants to be recruited was 28,216, across 59 trial sites. The date of first recruitment was January 20, 2021.

About the primary endpoint, the CTRI entry says: "to demonstrate the efficacy of ZyCoV-D in the prevention of virologically confirmed symptomatic COVID-19 cases as compared to placebo." This statement clearly misses the point of the requirement. It confuses the overarching objective with the trial's clinical endpoints. It is the objective of any phase 3 COVID-19 vaccine trial to evaluate the vaccine's efficacy vis-à-vis preventing COVID-19. The clinical endpoint, on the other hand, is the occurrence of a clinical event – usually confirmed disease of predefined severity or death.

Multiple secondary outcomes are also listed.

For both kinds of endpoints, the observation period is day 84 to day 364. That is, the first dose will be on day 0, the third dose by day 56, and the observation period will begin a further four weeks later and last for the rest of the year from enrollment. Though it hasn't been made explicit, this protocol suggests that the trial analysis will be per-protocol instead of being based on intention-to-treat.

According to one 2011 paper: "Intention-to-treat analysis is a comparison of the treatment groups that includes all patients as originally allocated after randomisation. … Per-protocol analysis is a comparison of treatment groups that includes only those patients who completed the treatment originally allocated." So an intention-to-treat analysis is less prone to bias.

The CTRI registration itself doesn't say what the trial's data analysis plan would be. It also doesn't say how many participants will need to get COVID-19 before the clinicians can calculate the vaccine's efficacy, and how many participants will have to get COVID-

19 to permit the interim analyses. Such 'milestones' support event-driven analyses that help the clinicians ensure that when they're calculating anything about the vaccine, they're doing so with an adequate sample size. If they attempt to calculate the vaccine's efficacy before a certain number of participants have got COVID-19, for example, they will be at risk of overestimating the efficacy.

Questions about the EUA

ZyCov-D is a potentially strong vaccine candidate that has been shown to be safe and immunogenic in animal and early-phase human trials. The planned phase 3 efficacy trial recruited 28,000 participants and should thus be able to yield reliable efficacy estimates. But starting with such a strong base and concluding with a complete lack of transparency is a matter of serious concern.

Its approval process is quite similar to the authorisation that the DGCI granted to Bharat Biotch's Covaxin – two months before the company released the first interim analysis of data from its phase 3 trial. The decision was roundly criticised and contributed significantly to hesitancy.

Today, we have no numbers pertaining to the ZyCoV-D phase 3 trial other than the total number of participants and the stated efficacy against symptomatic COVID-19, of 66.6%. As with the CTRI registration, the Zydus Cadila July 1 press release doesn't tell us how many people were in the treatment and control arms of the trial, how many people got COVID-19 in each arm nor even the confidence intervals of the 66.6% point-estimate of efficacy (as a result, we don't know how precise this figure is).

A 66.6% efficacy means that the virus's attack rate in the treatment (or vaccinated) group was a third of the virus's attack rate in the control group. Assuming an equal number of

participants in both arms – i.e. 14,000 each – we can say that for every one COVID-19 case in the treatment group, there were three in the control group.

Imagine two scenarios now, by way of example for the actual number of COVID-19 cases observed in the two arms; the author was able to calculate the estimated 95% confidence intervals for each scenario.

Made with Flourish
We see that the efficacy range varies drastically depending on the absolute number of COVID-19 cases. Note also that the range in Scenario B, of nearly 20 percentage points, is considered large, and ought to be narrower.

Another critical bit of information that's missing is the duration over which the trials' clinicians calculated the vaccine efficacy. Given that the trial's first participant was recruited on January 20, 2021, and that interim analysis happened a little over five months later, on July 1, and assuming that recruitment continued for two months, the observation period of the earliest recruited patients would have begun only in late April. That is, the maximum duration any participant could have been followed up for is two months (May and June).

Of course, in May 2021, India experienced the worst of its second COVID-19 outbreak, and the number of new infections crossed the four-lakh mark. So it is possible that a sufficient number of the trial's participants got COVID-19 to allow the clinicians to perform their calculations. However, we shouldn't have to be at the mercy of such conjectures to be able to trust something we're going to insert in our bodies.

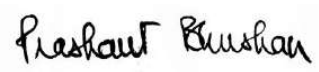
Finally, the July 1 press release states that of the 28,000 participants recruited, a thousand were aged 12-18 years, and that in this group the vaccine was "safe and well-tolerated". It fails to divulge, again, the number of COVID-19 cases in this sub-group.

And considering how small this sub-group is relative to the overall cohort, it's quite concerning that the DCGI saw fit to grant ZyCoV-D an EUA for people aged 12 years and above.

In sum, ZyCov-D may well be a remarkable innovation story for Indian science – but remarkability does not mean it can remain immune to demands of transparency and approval after due process, with publicly available data. In fact, once again, we are on the cusp of a success story being turned into a blemish on the face of Indian science.

Dr Jammi Nagaraj Rao is a public health physician, independent researcher and epidemiologist in the UK.

Link: https://science.thewire.in/health/zydus-cadila-zycov-d-dna-plasmid-covid-vaccine-missing-data-dcgi-approval/



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Clinical Trial Details (PDF Generation Date :- Tue, 31 Aug 2021 04:09:57 GMT)

CTRI Number	CTRI/2021/03/032051 [Registered on: 16/03/2021] - **Trial Registered Prospectively**
Last Modified On	30/03/2021
Post Graduate Thesis	No
Type of Trial	Interventional
Type of Study	Vaccine
Study Design	Randomized, Parallel Group, Placebo Controlled Trial
Public Title of Study	Trial to evaluate 3mg dose of Covid Vaccine of Cadila healthcare Limited
Scientific Title of Study	A prospective, randomized, phase I/II clinical study to evaluate the safety and immunogenicity of 3mg dose of Novel Corona Virus -2019-nCov vaccine candidate of M/s Cadila Healthcare Limited by intradermal route in healthy subjects

Secondary IDs if Any

Secondary ID	Identifier
Project No. 21-01; Version No. 01 Dated 17-02-2021	Protocol Number

Details of Principal Investigator or overall Trial Coordinator (multi-center study)

Details of Principal Investigator	
Name	Dr Ravindra Mittal
Designation	Medical Advisor & Head - Regulatory Affairs
Affiliation	Cadila Healthcare Limited
Address	Zydus Corporate Park, Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Nr. Vaishnodevi Circle, S.G. Highway, Ahmedabad Ahmadabad GUJARAT 382481 India
Phone	079-48041430
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Details Contact Person (Scientific Query)

Details Contact Person (Scientific Query)	
Name	Dr Jayesh Sanmukhani
Designation	Deputy General Manager - New Product Development
Affiliation	Cadila Healthcare Ltd.
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Details Contact Person (Public Query)

Details Contact Person (Public Query)	
Name	Dr Jayesh Sanmukhani
Designation	Deputy General Manager - New Product Development
Affiliation	Cadila Healthcare Ltd.
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Phone	7600012192
Fax	
Email	jayeshsanmukhani@zyduscadila.com

Source of Monetary or Material Support

Source of Monetary or Material Support
> Cadila Healthcare Limited

Primary Sponsor

Primary Sponsor Details	
Name	Cadila Healthcare Limited
Address	Zydus Corporate Park, Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Nr. Vaishnodevi Circle, S.G. Highway, Ahmedabad
Type of Sponsor	Pharmaceutical industry-Indian

Details of Secondary Sponsor

Name	Address
NIL	NIL

Countries of Recruitment

List of Countries
India

Sites of Study

Name of Principal Investigator	Name of Site	Site Address	Phone/Fax/Email
Dr Jinen Mukeshbhai Shah	Aartham Multi Super Speciality Hospital	Clinical Research Room - Basement 2; Aartham Hospital, Opp. Polytechnic, Nr. Panjarapole cross road, Ambawadi Ahmadabad GUJARAT	9724440891 jinenshah@gmail.com
Dr Abhishek Pande	Axon Multispeciality Hospital Rukhmini Complex	Research Room, Axon hospital, Hingna Rd, near Mascott Honda, Bansi Nagar Nagpur MAHARASHTRA	8793653698 dr_abhishekpande@yahoo.com
Dr Chandra Prakash Suthar	Dana Shivam Heart & Superspeciality Hospital	Clinical Research Room, Basement, Dana Shivam hospital, Plot No:2, Opp. Times Square, Sector 2, Vijay Bari, Vidyadhar Nagar Jaipur RAJASTHAN	9413861322 danashivam.cr@gmail.com
Dr Amit Bhate	Jeevan Rekha Hospital	Clinical Research Department, Second Floor, Jeevan Rekha Hospital, Dr. B.R. Ambedkar Road Opp Civil Hospital Belagavi (Belgaum) Belgaum KARNATAKA	9695237796 dr.amitsureshbhate@gmail.com

Details of Ethics Committee

Name of Committee	Approval Status	Date of Approval	Is Independent Ethics Committee?
IEC Maharaja Agrasen Hospital	Approved	23/02/2021	No
Institutional Ethics Committee Jeevan Rekha Hospital	Approved	22/03/2021	No

Institutional Ethics Committee of Vidharbha Institute of Medical Sciences	Approved	27/02/2021	No
Sangini Hospital Ethics Committee	Approved	25/02/2021	No

Regulatory Clearance Status from DCGI

Status	Date
Approved/Obtained	15/03/2021

Health Condition / Problems Studied

Health Type	Condition
Healthy Human Volunteers	Healthy Volunteers

Intervention / Comparator Agent

Type	Name	Details
Intervention	Novel Corona Virus-2019-nCov vaccine of M/s. Cadila Healthcare Limited (ZyCoVD)	3 mg dose (0.1ml dose at three sites) to be given twice at day 0 and 28
Comparator Agent	Placebo	0.1ml dose at three sites to be given twice at day 0 and 28

Inclusion Criteria

Inclusion Criteria	
Age From	18.00 Year(s)
Age To	60.00 Year(s)
Gender	Both
Details	1. Healthy subject of either gender 18 to 60 years of age 2. Informed consent from the subjects (Audio video recording in case of vulnerable subject) 3. Adult subjects literate enough to fill the diary card 4. Females of childbearing potential, must agree to use one of the approved contraception methods (double barrier methods, oral or injectable hormonal contraceptives or surgical sterilization), from screening until completion of the follow-up visit and males who agree to use contraception

Exclusion Criteria

Exclusion Criteria	
Details	1. Febrile illness (temperature ? 38°C or 100.4°F) or any acute illness or infection within 4 weeks of enrolment 2. History or laboratory evidence of confirmed SARS-CoV-2 positive 3. History of contact with a confirmed active SARS-CoV-2 positive patient within 14 days 4. Subjects positive for antibodies against SARS-CoV-2 on antibody detection test / RTPCR positive at the time of screening 5. History of SARS/ MERS infection 6. Previous participation in any clinical trial of a SARS-CoV-2 candidate vaccine 7. Past history of hypersensitivity reaction or any serious adverse event after any vaccination 8. Subjects with thrombocytopenia or any coagulation disorder, or subjects on anticoagulation therapy 9. Subjects with confirmed or suspected immunosuppressive or immunodeficiency disorder; or subjects on any immunosuppressive or immunostimulant therapy 10. Clinically significant systemic disorder such as cardiovascular, respiratory, neurologic, gastrointestinal, hepatic, renal, endocrine, haematological, psychiatric or immunological disorder 11. Subjects administered blood, blood containing products or immunoglobulins within the last 3 months or planned administration during the study 12. Any other vaccine administration within the last 30 days or planned to be administered during the study period 13. Pregnant and lactating women & female subjects not using

	acceptable contraceptive measures (double barrier methods, oral or injectable hormonal contraceptives or surgical sterilization) 14. Participation in another clinical trial in the past 3 months 15. History of drug / alcohol abuse

Method of Generating Random Sequence	Computer generated randomization
Method of Concealment	Pre-numbered or coded identical Containers
Blinding/Masking	Participant and Investigator Blinded

Primary Outcome

Outcome	Timepoints
Adverse events (solicited, unsolicited and SAEs) reported during the study in the two groups Seroconversion rate based on IgG antibodies against S1 antigen (by ELISA) at Day 56.	Day 56

Secondary Outcome

Outcome	Timepoints
Seroconversion rate based on of IgG antibodies against S1 antigen (by ELISA)	Day 28 and 42
Geometric Mean Titre and Geometric Mean Fold Rise	Day 28, 42 and 56
Neutralizing antibody assay	Day 42 and 56

Target Sample Size	**Total Sample Size=**150 **Sample Size from India=**150 **Final Enrollment numbers achieved (Total)=**Applicable only for Completed/Terminated trials **Final Enrollment numbers achieved (India)=**Applicable only for Completed/Terminated trials
Phase of Trial	Phase 1/ Phase 2
Date of First Enrollment (India)	19/03/2021
Date of First Enrollment (Global)	No Date Specified
Estimated Duration of Trial	**Years=**0 **Months=**6 **Days=**0
Recruitment Status of Trial (Global)	Not Applicable
Recruitment Status of Trial (India)	Open to Recruitment
Publication Details	NA
Brief Summary	The current study is being planned as a proof of concept study to evaluate the effect of 2 doses of 3mg given by Pharmajet at interval of 28 days. healthy subjects will be screened as per inclusion and exclusion criteria and will be randomized in 2:1 ratio to receive either the vaccine or placebo. Randomized subjects will be given two doses of vaccine / placebo at an interval of 28 days. Each dose of vaccine / placebo comprises of 3mg (0.3 ml) Novel Corona Virus-2019-nCov vaccine / placebo. The vaccine / placebo will be given as 3 shots of 0.1ml each via intradermal route using Pharmajet Tropis device at three different sites on the upper arm. Subjects will be followed for 28 days after last dose of vaccine. Blood samples will be taken at Day 0, 28, 42 and 56 for immunogenicity analysis.

Prashant Bhushan
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ANNEXURE: P66

Clinical Trial Details (PDF Generation Date :- Tue, 31 Aug 2021 05:48:32 GMT)

CTRI Number	CTRI/2020/07/026352 [Registered on: 04/07/2020] - **Trial Registered Prospectively**
Last Modified On	08/11/2020
Post Graduate Thesis	No
Type of Trial	Interventional
Type of Study	Vaccine
Study Design	Other
Public Title of Study	Novel Corona Virus-2019-nCov vaccine by intradermal route in healthy subjects.
Scientific Title of Study	A prospective, randomized, adaptive, phase I/II clinical study to evaluate the safety and immunogenicity of Novel Corona Virus -2019-nCov vaccine candidate of M/s Cadila Healthcare Limited by intradermal route in healthy subjects

Secondary IDs if Any

Secondary ID	Identifier
NCOV 1002 Version 02 dated 02 July 2020	Protocol Number

Details of Principal Investigator or overall Trial Coordinator (multi-center study)

Details of Principal Investigator	
Name	Dr Ravindra Mittal
Designation	Senior Vice President
Affiliation	Cadila Healthcare Limited
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Email	r.mittal@zyduscadila.com

Details Contact Person (Scientific Query)

Details Contact Person (Scientific Query)	
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Designation	Deputy General Manager
Affiliation	Cadila Healthcare Limited
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Email	kevinkumarkansagra@zyduscadila.com

Details Contact Person (Public Query)

Details Contact Person (Public Query)	
Name	Dr Ravindra Mittal
Designation	Senior Vice President
Affiliation	Cadila Healthcare Limited
Address	Zydus Corporate Park, Scheme No. 63, Survey No. 536, Nr. Vaishnodevi Circle, S.G. Highway Ahmadabad GUJARAT 382481 India

Phone	07948040000
Fax	
Email	r.mittal@zyduscadila.com

Source of Monetary or Material Support

Source of Monetary or Material Support
> Cadila Healthcare Limited, Zydus Corporate Park, Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Near Vaishnodevi Circle, S-G Highway, Ahmedabad

Primary Sponsor

Primary Sponsor Details	
Name	Cadila Healthcare Ltd
Address	Zydus Corporate Park, 3rd Floor B Wing (NPD), Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Near Vaishnodevi Circle, S-G Highway, Ahmedabad – 382 481,
Type of Sponsor	Pharmaceutical industry-Indian

Details of Secondary Sponsor

Name	Address
NIL	NIL

Countries of Recruitment

List of Countries
India

Sites of Study

Name of Principal Investigator	Name of Site	Site Address	Phone/Fax/Email
Dr Hari Shankar Gupta	VIMS Hospital	Kamptee Rd, LIC Square, Mohan Nagar, Nagpur, Maharashtra 440001 Nagpur MAHARASHTRA	9890924509 drhari_gupta@yahoo.com
Dr Parshottam Koradia	BAPS Pramukh Swami Hospital	Shri Pramukh Swami Maharaj Marg, Adajan char rasta. Adajan. Surat - 395 009 Gujarat, India Surat GUJARAT	9825312027 purushottam_koradia@yahoo.co.in
Dr Vipul Prajapati	GCS Medical College, Hospital & Research Centre	Opposite DRM office, Near Chamunda Bridge, Naroda Road, Ahmedabad – 380025, Gujarat Ahmadabad GUJARAT	9909912551 Prajapativipul1983@gmail.com
Dr Suresh Bhate	Jeevan Rekha Hospital	Dr. B.R. Ambedkar Road, Opp. Civil Hospital, Belagavi (Belgaum), Karnataka – 590002 Belgaum KARNATAKA	9845273830 drsureshgbhate@gmail.com
Dr Manish Kumar Jain	Maharaja Agrasen Superspeciality Hospital	Central Spine Agrasen Aspatal Marg, Sector No. - 7 Vidhyadhar Nagar, Jaipur, Rajasthan -302039 Jaipur RAJASTHAN	9414414834 doctormanishjain2@gmail.com
Dr Virendra Nath Tripathi	Prakhar Hospital Pvt. Ltd.	8/219, Arya Nagar, Kanpur, Uttar Pradesh	9415050777

		208002 Kanpur Nagar UTTAR PRADESH	principalinvestigator1177@gmail.com
Dr Ajeet Pratap Singh	Rana Hospital Pvt. Ltd.	Rail Vihar, Medical College Road, Chargawa, Gorakhpur, Uttar Pradesh 273001 Gorakhpur UTTAR PRADESH	7652456810 ajeetpsingh1177@gmail.com
Dr Talati Kalpesh Chimanlal	Zydus Hospitals and Healthcare Research Pvt Ltd.	Zydus Hospitals Road, S.G. Highway, Thaltej, Ahmedabad, Gujarat 380054 Ahmadabad GUJARAT	9824014187 KALPESHTALATI@zydushospitals.com
Dr Taufik Momin	Zydus Research Centre	Survey No. 396/403, Opp. Sarvotam Hotel, Nr. Nova Petrochemicals, Sarkhej-Bavla N.H. No. 8A, Village: Moraiya, Ahmedabad 382213, Gujarat, India Ahmadabad GUJARAT Ahmadabad GUJARAT	02717665555 Taufik.Momin@zydusca dila.com

Details of Ethics Committee

Name of Committee	Approval Status	Date of Approval	Is Independent Ethics Committee?
BAPS Pramukh Swami Hospital Ethics Committee, BAPS Pramukh Swami Hospital, Adajan Cross Road. Adajan. Surat-395009	Approved	18/07/2020	No
Ethics Committee Prakhar Hospital Pvt Ltd. Prakhar Hospital Pvt. Ltd. 8/219, Arya Nagar, Kanpur, Uttar Pradesh 208002	Approved	15/07/2020	No
IEC Maharaja Agrasen Hospital, Maharaja Agrasen Superspeciality Hospital, Central Spine, Agrasen Aspatal Marg, Sector No. - 7 Vidhyadhar Nagar, Jaipur, Rajasthan -302039	Approved	19/07/2020	No
Instituional Ethics Committee Jeevan Rekha Hospital Dr. B R Ambedkar Road Belgavi-590002	Approved	16/07/2020	No
Institutional Ethics Committee of VIMS,	Approved	20/07/2020	No

Mohan nagar, LIC Square, Kamptee Road, Nagpur 440001, Maharastra India.			
Institutional Ethics Committee Rana Hospital Pvt. Ltd., Rail Vihar Medical College Road, Chargawa Gorakhpur-273001	Approved	15/07/2020	No
Institutional Ethics Committee, GCS Medical College, Hospital and Research Centre, Opp DRM Office, Nr Chamunda Bridge, Naroda Road, Ahmedabad-380025	Approved	29/07/2020	No
Sangini Hospital Ethics Committee,C/o Sangini Hospital, First Floor,Santorini Square, b/h Abhishree Complex, Opp. Star Bazar, Nr. Jodhpur Cross Roads, Satellite, Ahmedabad-380015, Gujarat,India	Approved	03/07/2020	No
Zydus Hospital Ethics Commitee Zydus Hospitals and Healthcare Research Pvt Ltd., Zydus Hospitals Road, S.G. Highway, Thaltej, Ahmedabad, Gujarat 380054	Approved	27/07/2020	No

Regulatory Clearance Status from DCGI

Status	Date
Approved/Obtained	02/07/2020

Health Condition / Problems Studied

Health Type	Condition
Healthy Human Volunteers	Healthy

Intervention / Comparator Agent

Type	Name	Details
Comparator Agent	Placebo in Phase Ii	1)Dose:-0.1 ml in either of arm for Arm 1 (1 mg) with Needle and Arm 2(1 mg) with Pharmajet. In Arm 3 (2mg) with Needle and Arm 4(2mg) with Pharmajet,in both arm dose will given.(2)Frequency:-single time at day 0, day 28 and day 56.(3)Route: Intradermal
Intervention	nCov Vaccine	For Phase I: 1)Dose:-0.1 ml in either of arm for Arm 1 (1 mg) with Needle and Arm 2(1 mg) with Pharmajet. In Arm 3 (2mg) with Needle and Arm 4(2mg) with Pharmajet,in both arm dose

		will given..(2)Frequency:-single time at day 0 day 28 and day 56.(3)Route: Intradermal. For Phase II : (1)Dose:-0.1 ml in either of arm for Arm 1 (1 mg) with Needle and Arm 2(1 mg) with Pharmajet. In Arm 3 (2mg) with Needle and Arm 4(2mg) with Pharmajet,in both arm dose will given..(2)Frequency:-single time at day 0 day 28 and day 56.(3)Route: Intradermal.

Inclusion Criteria

Inclusion Criteria	
Age From	18.00 Year(s)
Age To	55.00 Year(s)
Gender	Both
Details	1.Healthy male and non-pregnant, non-lactating female subjects between 18-55 years of age (both inclusive) 2.Body weight > 50 kg for male and > 45 kg for female and BMI within the range 18.5 - 29.9 kg/m2 (Both inclusive) 3.Able and willing to complete informed consent process with understanding of the purpose and procedures of the study 4.Subjects who, in the opinion of the Investigator, are healthy as determined by their pre study medical history, clinical examination, 12-lead ECG and clinical laboratory tests within the institutional normal range or judged as not clinically significant by the Investigator, including the following parameters: haematology, serum biochemistry, urinalysis, and serology 5.Subjects who can comply with trial procedures and who are available for the duration of follow up 6.Male subjects and female subjects of childbearing potential must practice highly effective contraception during the study and be willing and able to continue contraception for 90 days after administration of last study vaccine. For Phase II:- 1.Healthy subject of either gender ?12 years of age 2.Informed consent from the adult subjects or from the parents of paediatric subjects. Additionally, assent from paediatric subjects (Audio video recording in case of vulnerable subject) 3.Adult subjects or parents of paediatric subjects literate enough to fill the diary card 4.Females of childbearing potential, must agree to use one of the approved contraception methods, from screening until completion of the follow-up visit and males will agree to use contraception.

Exclusion Criteria

Exclusion Criteria	
Details	For Phase I 1.Febrile illness (temperature ? 38°C or 100.4°F) or any acute illness or infection within 4 weeks of enrolment 2.History of confirmed SARS-CoV-2 positive 3.History of contact with a confirmed active SARS-CoV-2 positive patient within 14 days 4.History of SARS/ MERS infection 5.Subjects positive for antibody and antigen against SARS-CoV-2. 6.Previous participation in any clinical trial of a SARS-CoV-2 candidate vaccine 7.Any clinically significant laboratory or ECG findings during screening or check-in 8.History or presence of significant smoking (?10 cigarettes per day) 9.Systolic blood pressure more than 140 mmHg and less than 100 mmHg and diastolic blood pressure more than 90 mmHg and less than 60 mmHg. 10.History of, or positive screening test for, hepatitis C infection

	(defined as positive for hepatitis C virus antibody), hepatitis B infection (defined as positive for hepatitis B surface antigen), or human immunodeficiency virus I or II For Phase II 1.Febrile illness (temperature ? 38°C or 100.4°F) or any acute illness or infection within 4 weeks of enrolment 2.History of confirmed SARS-CoV-2 positive 3.History of contact with a confirmed active SARS-CoV-2 positive patient within 14 days 4.History of SARS/ MERS infection 5.Subjects positive for antibodies against SARS-CoV-2 on antibody detection test at the time of screening 6.Previous participation in any clinical trial of a SARS-CoV-2 candidate vaccine 7.Past history of hypersensitivity reaction or any serious adverse event after any vaccination 8.Subjects with thrombocytopenia or any coagulation disorder, or subjects on anticoagulation therapy

Method of Generating Random Sequence	Computer generated randomization
Method of Concealment	Other
Blinding/Masking	Outcome Assessor Blinded

Primary Outcome

Outcome	Timepoints
Phase I:-To evaluate the safety of Novel Corona Virus-2019-nCov Vaccine Candidate of M/s Cadila Healthcare Limited by intradermal route in healthy subjects. Phase II:-To evaluate the immunogenicity of Novel Corona Virus-2019-nCov Vaccine Candidate of M/s Cadila Healthcare Limited by intradermal route in healthy subjects compared to placebo.	Phase I: Day 0 and Day 84 Phase II: Day 0 and Day 224

Secondary Outcome

Outcome	Timepoints
Phase I:-1)To evaluate the safety of Novel Corona Virus-2019-nCov Vaccine Candidate of M/s Cadila Healthcare Limited by intradermal route in healthy subjects. Phase II:-1)To evaluate the safety of Novel Corona Virus-2019-nCov Vaccine Candidate of M/s Cadila Healthcare Limited by intradermal route in healthy subjects compared to placebo.	Phase I: Day 0 and Day 84 Phase II: Day 0 and Day 224

Target Sample Size	**Total Sample Size=**1048 **Sample Size from India=**1048 **Final Enrollment numbers achieved (Total)=**Applicable only for Completed/Terminated trials **Final Enrollment numbers achieved (India)=**Applicable only for Completed/Terminated trials
Phase of Trial	Phase 1/ Phase 2
Date of First Enrollment (India)	13/07/2020
Date of First Enrollment (Global)	No Date Specified
Estimated Duration of Trial	**Years=**1 **Months=**0 **Days=**0

Recruitment Status of Trial (Global)	Not Applicable
Recruitment Status of Trial (India)	Closed to Recruitment of Participants
Publication Details	NIL
Brief Summary	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in January, 2020. The virus is highly transmissible between humans and has spread rapidly, causing the COVID-19 pandemic. Patients infected with SARS-CoV-2, especially older patients and those with pre-existing respiratory or cardiovascular conditions are at greater risk for severe complications, including severe pneumonia, acute respiratory distress syndrome, multiple organ failure, and in some cases, death. In the absence of effective prevention measures, current management to control the epidemic is the enforcement of quarantine, isolation, and physical distancing. Effective vaccines against COVID-19 are urgently needed to reduce the enormous burden of mortality and morbidity associated with SARS-CoV-2 infection.

Prashant Bhushan
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Zydus dedicated to life

Press Release Press Release Press Release Press Release Press Release Press Release Press Release Press Release

Zydus Cadila submits Phase I/II clinical trial data of ZyCoV-D, seeks nod to start Phase III Clinical Trials

- *Immunogenicity in Phase II clinical trial of ZyCoV-D in healthy subjects clearly established as also endorsed by the independent Data Safety Monitoring Board (DSMB).*
- *Zydus seeks approval to commence Phase III clinical trial*

Ahmedabad, India, December 24, 2020

Zydus Cadila, an innovation driven global pharmaceutical company focused on discovering and developing NCEs, Novel Biologicals, Biosimilars and Vaccines, today announced that its plasmid DNA vaccine to prevent COVID-19, ZyCoV-D was found to be safe, well tolerated and immunogenic in the Phase I/II clinical trials. The company is now planning to initiate Phase III clinical trial in around 30,000 volunteers upon receiving necessary approvals.

The Phase II study of the vaccine ZyCoV-D had been conducted in over 1000 healthy adult volunteers as part of the adaptive Phase I/II dose escalation, multi-centric, randomized, double-blind placebo controlled study. The vaccine was found to be safe and immunogenic. The trial has been reviewed by an independent Data Safety Monitoring Board (DSMB) and reports have been submitted to Central Drugs Standard Control Organisation (CDSCO) regularly for the update on safety outcome.

Speaking on the development, Mr. Pankaj R. Patel, Chairman of the Zydus Group said, “After establishing safety in Phase I clinical trial, ZyCoV-D has now completed Phase II clinical trials and the vaccine has been found to be safe and immunogenic. We are optimistic of Phase III clinical trial outcomes as well and that we would be able to start the production of the Novel Vaccine on its successful completion. I would like to thank all the volunteers who have participated in the study so far and helped us in evaluating the vaccine to fight COVID-19”.

Advantages of ZyCoV-D

With ZyCoV-D, the Company has successfully established the DNA vaccine platform in the country. The platform is also known to show much improved vaccine stability thus requiring lower cold chain requirements. This makes the vaccine ideal for access in remotest regions of the country. Administered through the intradermal route, it also allows for the ease of administration. Further, the platform also provides ease of manufacturing the vaccine with minimal biosafety requirements (BSL-1). Furthermore, the platform can be rapidly used to modify the vaccine in couple of weeks in case the virus mutates to ensure that the vaccine still elicits protection.

For further information please contact :
The Corporate Communications Department

Cadila Healthcare Limited
Regd. Office : ‘Zydus Corporate Park’, Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Nr. Vaishnodevi Circle, S. G. Highway, Ahmedabad 382 481, India.
Phone : +91-079-71800000, +91-079-48040000 www.zyduscadila.com
CIN : L24230GJ1995PLC025878

The plasmid DNA when introduced into the host cells would be translated into the viral protein and will elicit a strong immune response mediated by the cellular and humoral arms of the human immune system, which play a vital role in protection from disease as well as viral clearance. Zydus acknowledges the support of National Biopharma Mission, BIRAC, Department of Biotechnology, ICMR and NIV Pune in the development of ZyCoV-D.

***

For further information please contact :
The Corporate Communications Department

Cadila Healthcare Limited
Regd. Office : 'Zydus Corporate Park', Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Nr. Vaishnodevi Circle, S. G. Highway, Ahmedabad 382 481, India.
Phone : +91-079-71800000, +91-079-48040000 www.zyduscadila.com
CIN : L24230GJ1995PLC025878

Prashant Bhushan
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FULL DETAILS (Read-only)

CTRI Number	**CTRI/2021/01/030416** [Registered on: 12/01/2021] **Trial Registered Prospectively**
Last Modified On:	24/08/2021
Post Graduate Thesis	No
Type of Trial	Interventional
Type of Study	Vaccine
Study Design	Other
Public Title of Study	Novel Corona Virus-2019-nCov vaccine by intradermal route in healthy subjects.
Scientific Title of Study	A phase III, randomized, multi-centre, double blind, placebo controlled, study to evaluate efficacy, safety and immunogenicity of Novel Corona Virus -2019-nCov vaccine candidate of M/s Cadila Healthcare Limited.
Secondary IDs if Any Modification(s)	**Secondary ID** / **Registry** NCOV.20.002,Version 03, dated 08 January 2021 / Protocol Number
Details of Principal Investigator or overall Trial Coordinator (multi-center study)	**Name**: Dr Ravindra Mittal **Address**: Zydus Corporate Park, Scheme No. 63, Survey No. 536, Nr. Vaishnodevi Circle, S.G. Highway. Ahmadabad GUJARAT 382481 India **Phone**: 07948040000 **Fax**: **Email**: r.mittal@zyduscadila.com
Details Contact Person Scientific Query	Name: Dr Kevinkumar Kansagra **Address**: Zydus Research Center, Survey No. 396/403, Sarkhej-Bavla National Highway No.8A Moraiya, Ahmadabad GUJARAT 382213 India **Phone**: 02717665555 **Fax**: **Email**: kevinkumarkansagra@zyduscadila.com
Details Contact Person Public Query	**Name**: Dr Ravindra Mittal **Address**: Zydus Corporate Park, Scheme No. 63, Survey No. 536, Nr. Vaishnodevi Circle, S.G. Highway. Ahmadabad GUJARAT 382213 India **Phone**: 02717665555 **Fax**: **Email**: r.mittal@zyduscadila.com
Source of Monetary or Material Support	Cadila Healthcare Limited, Zydus Corporate Park, Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Near Vaishnodevi Circle, S-G Highway, Ahmedabad
Primary Sponsor	**Name**: Cadila Healthcare Ltd **Address**: Zydus Corporate Park, 3rd Floor B Wing (NPD), Scheme No. 63, Survey No. 536, Khoraj (Gandhinagar), Near Vaishnodevi Circle, S-G Highway, Ahmedabad – 382 481, **Type of Sponsor**: Pharmaceutical industry-Indian
Details of Secondary Sponsor	**Name** / **Address** NIL / NIL

Countries of Recruitment	India

Sites of Study
Modification(s)

No of Sites = **59**

Contact Person	Name of Site	Site Address	Phone/Fax/Email
Dr Deepak Langade	DR. D.Y.Patil Medical College and Hospital	5th Floor Department of Pharmacology, College building, DR. D.Y.Patil Medical College and Hospital, Nerul Sector 5 Navi Mumbai- 400706. Mumbai	2227735999 deepak.langade@dypatil.edu
Dr Himanshu Pophale	Ace Hospital	Sr. No 32/2A, Erandawane Gulwani Maharaj Road, Near Abhishek Hotel, Pune, Mh, 411004 Pune	2025434063 himanshupophale@yahoo.co.in
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Dr Pankaj Bharadwaj	All India Institute of Medical Sciences	All India Institute of Medical Sciences, Jodhpur-342005, Rajasthan India Jodhpur	2912740741 pankajbhardwajdr@gmail.com
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Dr Venkatasubramanian	Apollo Hospitals	Greams Road No. 21, Greams Lane, Off. Greams Road, Chennai, Tamil Nadu 600006 Chennai	4428295045 idisdoc@gmail.com
Dr Ravindra Mehta	Apollo Speciality Hospitals Jayanagar	, Old Number 21/2, New Number 2, 14th Cross, 3rd Block, Jayanagar, Bengaluru, Karnataka 560011 Bangalore	8026304017 Reetesh.singh@trialguna.com
Dr Anupam Kumar	Arogya Hospital	Plot NH-1, Vaishali sector-6, Vaishali, Ghaziabad, Uttar Pradesh-201010 Ghaziabad	9811817617 aarogyaclinicalresearch@gmail.com
Dr Shrikant Deshpande	Ashirwad Hospital	Next to Jijamata Udyan, Maratha Section 32, Krishna Nagar, Ulhasnagar, Maharashtra 421004 Thane	02512587493 shrikant@rediffmail.com
Dr Sandeep Kumar Gupta	Atharva Multispeciality Hospital & Research Centre	H-4/Comm-2, construction Div-21, UP Avas Vikas Parishad, Sector E, Lucknow-226003 Lucknow	9336077839 sandeepkumr.gupta@rediffmail.com
Dr Animesh Choudhary	Balco Medical Centre	Sector 36, Atal Nagar, Uparwara,New Raipur-493661,Chhattisgarh, India	7712237575 dranimeshc@gmail.com

		Raipur	
Dr Parshottam Koradia	BAPS Pramukh Swami Hospital	Shri Pramukh Swami Maharaj Marg, Adajan char rasta. Adajan. Surat - 395 009 Gujarat, India Surat	9825312027 purushottam_koradia@yahoo.co.in
Dr Bhaskar Vilasrao Jedhe Deshmukh	Baramati Hospital Pvt. Ltd.	Behind Kavivarya Moropant Natyamandir, Ring Road, Baramati 413102 Pune	9822402772 bhaskar.jedhe@gmail.com
Dr Sanjay Lalwani	Bharati Vidyapeeth (Deemed To Be University)	Medical College and Hospital, Pune- 411043, Maharashtra, India Pune	9373314322 sanjaylalwani2007@rediffmail.com
Dr Krishna Giri	Dhadiwal Hospital Research department	4th floor, Trambakeshwar Rd, Opp. New, CBS, Matoshree Nagar, Nashik, Maharashtra 422002, India. Nashik	02532578457 drkmgiri@gmail.com
Dr Rohit Jain	DIVINE Multispecialty Hospital and Cancer Centre	DIVINE Multispecialty Hospital and Cancer Centre, Wazirabad, Delhi New Delhi	9212410444 devinehospiresearch@gmail.com
Dr Swapnav Borthakur	Downtown Hospita	Dispur, G S Road, Guwahati-781006 Kamrup	3612331003 swpnav.borthakur@gmail.com
Dr Sharad Agarkhedkar	Dr. D Y Patil Medical College	Hospital and Research Centre, Sant Tukaram Nagar, Pimpri, Pune - 411018, Maharashtra, India Pune	2067116412 ashalaka@gmail.com
Dr Mahamine Kaustubh Suryakant	Dr. Vasantrao Pawar Centre For developmental Therapeutics Translational Research	4th floor near MRD section in Medical College, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Vasantdada Nagar, Adgaon, Nashik - 422003, Maharashtra, India Nashik	0253-220500 drkastubhmahamine@gmail.com
Dr Dharmendra Kumar Gupta	Felix Hospital	A Unit Of Felix Healthcare Pvt Ltd ,NH 01 Sector 137 Noida (India) - 201305 New Delhi	9695239796 FELIXHOSPITALRESEARCH@gmail.com
Dr Manoj Kumar	Flores Hospital	NH-1, Block G, Sec-11 Pratap Vihar, Ghaziabad, Uttar Pradesh-201009 Ghaziabad	7877110499 drmanoj73kumar@gmail.com
Dr Parul Bhatt	GMERS Medical College and Civil Hospital Sola	Nr. Gujarat High Court, S. G. Highway, Sola, Ahmedabad 380060, Gujarat, India Ahmadabad	9879599595 parulbhatt30@yahoo.com
Dr Akash Khobragde	Grant Government Medical College & sir J.J Group of hospital	Grant Government Medical College & sir J.J Group of hospital, Byculla, Mumbai 400008 Mumbai	23735555 akash.khobragade@gmail.com
Dr Saurabh Agrawal	GSVM Medical	"GSVM Medical College,	5122535483

	College	Swaroop Nagar, Kanpur-208002 " Kanpur Nagar	saurabh.gsvmmed@gmail.com
Dr Shiva Narang	Guru Teg Bahadur Hospital and UCMS	Dilshad Garden, Delhi 110095 East	9899838807 shivanarang@gmail.com
Dr Rajnish Nagarkar	HCG Manavata Cancer Centre	Behind Shivang Auto, Mubai Naka, Nashik,Pin-422101,Maharashtra,India Nashik	9823061929 drraj@manavatacancercentre.com
Dr Sandeep Jain	Imperial Hospital & Research Center	Department of General Medicine, Shastri Nagar, Jaipur-302016, Rajasthan, India Jaipur	9414069583 drsandeeprjain@yahoo.co.in
Dr Monjori Mitra	Institute of Child Health	Institute of Child Health, 11, Dr Biresh Guha Street, Kolkata – 700017 Kolkata	9831075734 monjorimr@gmail.com
Dr Suresh Bhate	Jeevan Rekha Hospital,	Dr. B.R. Ambedkar Road, Opp. Civil Hospital, Belagavi (Belgaum), Karnataka – 590002 Belgaum	0831-4215593 drsureshgbhate@gmail.com
Dr Veer Bahadur Singh	JLN Medical College	Kala Bagh, Ajmer 305001 Ajmer	1452425050 vbsingh2@rediffmail.com
Dr Satyanarayan Sharma	Kasturi Das Memorial Superspeciality Hospital	Govt Colony, Block-B, Mollar Gate, Santoshpur, Kolkata, West Bengal 700142 Kolkata	3324320043 satyanarayansharma10@gmail.com
Dr Vijendra R	KIMS Medical College Hospital	Athibabbe Road, 30th Main Road, Near BDA Shopping Complex, Banashankari Stage II, Banashankari, Bengaluru, Karnataka – 560070 Bangalore	26624870 vijendra_ramaiah@yahoo.co.in
Dr Rajendra Bapusaheb Nerli	KLES Dr. Prabhakar Kore Hospital & Medical Research Centre	Department of Urology, J. N. Medical College, KLE Academy of Higher Education & Research, (Deemed-to-be-University), JNMC Campus, Belagavi-590010, Karnataka Belgaum	8312444444 rajendranerli@yahoo.in
Dr Sreedevi A	Kurnool Medical College and Governement General Hospital	Bhudawarapet Bharath Petroleum, Kisan Ghat Rd, Kurnool, Andhra Pradesh 518002 Kurnool	8518255160 sreedevispm@gmail.com
Dr Manish Kumar Jain	Maharaja Agrasen Superspeciality Hospital, Central Spine	Agrasen Aspatal Marg, Sector -7, Vidyadhar Nagar, Jaipur - 302039, Rajasthan, India Jaipur	9414414834 doctormanishjain2@gmail.com
Dr N Srinivasa Rao	Malla Reddy Narayana Multispeciality Hospital,	Suraram X Road, Jeedimetla, Suraram, Hyderabad, Telangana, 500055 Hyderabad	9440235092 drnanyam@yahoo.com

Dr K M Shivkumar	Mandya Institute of Medical Science	Bangalore-Mysore Road, Mandya, Karnataka - 571401 Mandya	8213989896 mims@gmail.com
Dr Inderjeet Godara	Marudhar Hospital	A-93-99, Singh Bhoomi Khatipura Road Jaipur Jaipur Rajasthan - 302012 India Jaipur	9829065657 inder72@gmail.com
Dr Dinesh Agrawal	Marwari Hospitals,	S.J Road, Athgaon, Guwahati, Assam-781008 Kamrup	0361-2602738 drdinesh944@gmail.com
Dr Manjunath PH	Mazumdar Shaw Medical Centre	Clinical Research Department,258/A, Hosur Road, Anekal Taluk, Bommasandra Industrial Area, Bengaluru, Karnataka 560099, India Bangalore	8071222222 Manjuph.vims@gmail.com
Dr Tanmay Banerjee	Medica Super Speciality Hospital	127 Mukundapur, E.M. Bypass, Kolkata, WB- Pin 700099 Kolkata	3366520000 tanmay.banerjee@medicasynergie.in
Dr Ramesh Revana	N R R Hospital	Janapriya Apartments, No.3&3A, Hesarghatta Main Road, Chikkasandra, Next to, Geleyara Balaga Layout, Jalahalli West, Bengaluru, Karnataka 560090 Bangalore	9341229228 ramesh2reva@yahoo.com
Dr Sanjay Kantilal Shah	Narayana Superspeciality Hospital	120/1, Andul Road, Howrah-711103, West Bengal, India. Haora	18602080208 diabetesdrshah@gmail.com
Dr Tanmay Mandal	Netaji Subhash Chandra Bose Cancer Hospital	Department of Clinical Research, 3081, Nayabad, New Garia, Kolkata-700094, West Bangal., India Kolkata	3324320043 tanmoy.nrs@gmail.com
Dr Anjan Bera	Nil Ratan Sircar Medical College and Hospital	138. Acharya Jagadish Chandra Bosce Rd, Sealdah, Kolkata-700014,WB Kolkata	03322860033 anjanbera78@gmail.com
Dr N Ravi kumar	Niloufer Hospital	Redhills, Lakdikapul, Hyderabad, Telangana-50000 Hyderabad	9490919293 ravik1961@yahoo.com
Dr Jay Soni	Parth Orthopedic & Surgical Hospital	E405-4, 411 Galaxy Arcade, Galaxy Cinema Road, Noroda, Ahmedabad, Gujarat 382330, India. Ahmadabad	9898003433 mrdrjaysoni@gmail.com
Dr Prashant Khandgave	Pulse Multispeciality Hospital	Sr. No. 51/7/B/1, Vishwa Arcade Bombay Banglore Highway, Narhe, Pune 411041, Maharashtra Pune	8048034653 prashantkhandgave@yahoo.in
Dr Manish Hathila	Sai Krupa Hospital	,F- 30 31, Satyam Status, Opp. Chandan Party Plot,Anandnagar-	07926870423 manishathila@gmail.com

		Ramdevnagar Road, Ahmedabad 380053 Ahmadabad	
Dr Raman Sharma	SMS hospital	JLN Marg, Ashok Nagar, Jaipur – 302001, Rajasthan Jaipur	1412385052 sharmarm@gmail.com
Dr Srinivasa Murthy	Sri Siddhartha Medical College	VISHVAMBARA 2nd Main, G.P Rajaratnam Road Saraswathipuram, Tumkur -572102 Tumkur	8162278867 ssmc@clinisydresearch.com
Dr A Venkateshwar Rao	St. Theresa Hospital	St. Theresa Hospital, Sanathanagar, Hyderbad-500018, Telangana Hyderabad	4023704411 drvenkateshwarraoavula@gmail.com
Dr Pravin Supe	Supe Hospital	Gharapure Ghat Rd, near Rungta High School, Ashok Stambh, Raviwar Karanja, Panchavati, Nashik, Maharashtra 422002 Nashik	02532232487 pravinsupe@yahoomail.com
Dr Kulandaivel	Thangam Hospital and Thangam Cancer Center	No.54, Dr.Sankaran Road, Namakkal, Tamil Nadu – 637001 Namakkal	9043030685 dr.r.kulandaivel@gmail.com
Dr Renuka Munshi	TN Medical College & BYL Nair Hospital	Department of Clinical Pharmacology, G building, 5th Floor, Mumbai-400008 Mumbai	02223027204 renuka.munshi@gmail.com
Dr Samir Gami	Unique Hospital-Multispecialty & Research Institute	Opp. Kiran Motor, Nr. Canal, Civil Hospital Char Rasta- Sosyo Circle Lane, Off Ring Road, Surat-395002, Gujarat, India. Surat	9925276708 samirgami.dr@gmail.com
Dr Ramakrishna Chinta	Vendanta Hospital	Near Best Price, Mangalagiri Road, Guntur, AP 522001 Guntur	7793903754 vedantahospitals1@gmail.com
Dr Hari Shankar Gupta	VIMS Hospital	Kamptee Rd, LIC Square, Mohan Nagar, Nagpur, Maharashtra 440001 Nagpur	7212811400 drhari_gupta@yahoo.com
Dr Kalpesh Talati	Zydus Hospitals and Healthcare Research Pvt Ltd	Zydus Hospitals Road, S.G. Highway, Thaltej, Ahmedabad, Gujarat 380054 Ahmadabad	9824014187 kalpeshtalati@zydushospitals.com

Details of Ethics Committee
Modification(s)

No of Ethics Committees= **59**

Name of Committee	Approval Status
"Apollo Hospital Institutional Ethics Committee- Clinical, 154/11, opp.IIM Bannerghatta Road Bengaluru, Bengaluru (Bangalore) Urban Karnataka-560076 "	Approved
"Clinical Research Ethics Committee Medica Superspecialty Hospital ,127, Mukundapur E.M.Bypass Kolkata (India) - 700099 India"	Approved
"Ethics Committee, N.R.S Medical College 138, Acharya Jagadish Chandra Bose Road, Sealdah, Kolkata, 700014, West Bengal, India"	Approved
"Ethics Committee,N.S.C.B.C. Research Institue, 3081, Nayabad, New Garia, Kolkata 700094"	Approved

"IEC Columbia Asia Hospital Mysore IEC CAH columbia Asia Hospitar Mysore ,No. 85-86, Bangarore Mysore Ring Road Junction, Bannimantapa A Layout, Siddiqui Nagar, Mysuru-570015"	Approved
"Instituional Ethics Committee of Vidharba Institute of Medical Sciences, Mohan Nagar, LIC Square, Kamptee Road, Nagpur, Maharashtra 440001 "	Approved
"Institutional Ethics Committee Guru Teg Bahadur Hospital , Dilshad Garden, Delhi 110095 "	Approved
"INSTITUTIONAL ETHICS COMMITTEE Kurnool Medical College/Government General Hospital Budhawarpet, Kurnool Andhra Pradesh - 518002 India"	Approved
"Institutional Ethics Committee, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Maharashtra - 422003, India "	Approved
"Institutional Ethics Committee, GMERS Medical College and Civil Hospital Sola, Department of Pharmacy, 4th floor college building, Nr. Gujarat High Court, S. G. Highway, Sola, Ahmedabad 380061, Gujarat, India "	Approved
"Manavata Clinical Research Institute Ethics Committee Opposite Mahamarg Bus Stand, Mumbai Naka, Nashik – 422004 Maharashtra, India "	Approved
"Shree Instituional Ethics Comiittee Dhadiwal Hospital Research department. 4th floor, Trambakeshwar Rd, Opp. New, CBS, Matoshree Nagar, Nashik, Maharashtra 422002, India."	Approved
AMAI Trust ACE Hospital IEC, 8/4/1, Yashwant apt, Shop No 7, Lane No 4, Karve Nagar, Pune-411052, Maharashta, India	Approved
Ashirwad Ethics Committee, Maratha Section, Near Jijamata Udyan, Ulhasnagar, Maharashtra 421004	Approved
BAPS Pramukh Swami Hospital Ethics Committee, BAPS Pramukh Swami Hospital, Adajan Cross Road. Adajan. Surat-395009	Approved
Ethics Committee - Dr. D Y Patil Vidyapeeth, Sant Tukaram Nagar, Pimpri, Pune - 411018, Maharashtra, India.	Approved
Ethics Committee Baramati Hospital Pvt. Ltd., Baramati Hospital Pvt. Ltd., Behind Kavivarya Moropant Natyamandir, Ring Road, Baramati 413102	Approved
Ethics Committee Downtown Hospital, Dispur, G S Road, Guwahati-781006	Approved
Ethics committee of Pulse Multispeciality Hospital, Pulse Multispeciality Hospital, Sr. No. 51/7/B/1, Vishwa Arcade Bombay Banglore Highway, Narhe, Pune 411041, Maharashtra	Approved
Ethics Committee of SMS Medical College & Attached Hospital, Office of Ethics Committee, Second Floor, New Administration Block, SMS Medical College, JLN Marg, Jaipur-302004, Rajashthan	Approved
Ethics Committee Unique Hospital- Multispecialty & Research Institute, Opp. Kiran Motor, Nr. Canal, Civil Hospital Char Rasta- Sosyo Circle Lane, Off Ring Road, Surat- 395002, Gujarat, India	Approved
Ethics Committee, GSVM Medical College, Room No 125, First Floor, GSVM Medical College, Swaroop Nagar, Kanpur-208002	Approved
Ethics Committee, N.S.B.C Research Institute, 3081, Nayabad, New Garia, Kolkata-700094	Approved
Ethics Committee, Sanjeevani cancer Hospital, Sanjeevani CBCC USA Cancer Hospital in front of Jain Mandir, Dawada Colony Pachpedi Naka, Raipur-492001	Approved
Ethics Committee, St. Theresas Hospital, Sanathnagar, Hyderabad-500018, Telangana, India	Approved
IEC Maharaja Agrasen Hospital, Central Spine, Agrasen Aspatal Marg, Sector -7, Vidyadhar Nagar, Jaipur - 302039, Rajasthan, India	Approved
Instituiional Ethics Committee, Ajanta Research Centre, Ajanta Hospital & IVF Centre, 765, ABC Complex, Kanpur Road, Alambagh, Lucknow-226005	Approved
Instituiional Ethics Committee, Atharva Multispeciality Hospital & Research Centre, H-4/Comm-2, construction Div-21, UP Avas Vikas Parishad, Sector E, Lucknow-226003	Approved
Instituional Ethics Committee, Jeevan Rekha Hospital, Dr. B R Ambedkar Road Belgavi-590002	Approved
Instituional Ethics Committee, Sri Siddharta Medical College and Research Centre, B.H Road, Agalkote, Tumkur, Karnataka-572107	Approved
Instituional Ethics Committee,GGMC Mumbai, Grant Government Medical College, J.J Road, J.J Hospital Compund, Mumbai Central, Mumbai, Mumbai City, Maharashtra, Mumbai-400008.	Approved
Institutional Ethics Committee Apex Hospital Pvt. Ltd, Sp 4 & 6 MIA Malviya Nagar, near apex circle, Jaipur-302017	Approved
Institutional Ethics Committee Bharati Vidyapeeth Deemed University, Institutional Ethics Committee Office, 4th floor, Bharati Hospital and Research Centre, Pune-Satara Road, Dhankawadi, Pune - 411043, Maharashtra, India.	Approved
Institutional Ethics Committee Felix Hospital, Sector 137, Noida, Uttar Pradesh - 201305	Approved
Institutional Ethics Committee for Academic Research Projects(ECARP), G Building, 4th Floor, T N Medical College & BYL Nair, Hospital, Dr. AL Nair Road, Mumbai Central, Mumbai-400008	Approved
Institutional Ethics Committee ICH, Institute of Child Health, 11, Dr. Biresh Guha Street Kolkata Kolkata West Bengal - 700017 India	Approved
Institutional Ethics Committee, DR. D.Y.Patil Medical College,Sector 5, Nerul, Navi Mumbai-400706.	Approved
Institutional Ethics Committee, KLE University, KLES Dr. Prabhakar Kore Hospital & Medical	Approved

Research Centre, Nehru Nagar, Belagavi, (Belgaum), Karnataka - 590010, India	
Institutional Ethics Committee, Osamania Medical College, Koti, Hyderabad, Telangana	Approved
Institutional Ethics Committee-Clinical Studies, Apollo Hospitals,No. 21, Greams Lane, Off. Greams Road, Thousands Light, Chennai, Tamil Nadu 600006	Approved
Institutional Ethis Committee for sehgal Nursing Home, A6, Panchwati, opp Azadpur New Subzi Mandi, Delhi-110033	Approved
Institutional Ethis Committee for sehgal Nursing Home, A6, Panchwati, opp Azadpur New Subzi Mandi, Delhi-110033	Approved
Institutional Ethis Committee for sehgal Nursing Home, A6, Panchwati, opp Azadpur New Subzi Mandi, Delhi-110033	Approved
INSTITUTIONAL HUMAN ETHICS COMMITTEE, All India Institute of Medical Sciences, Basni Jodhpur Jodhpur Rajasthan - 342005 India	Approved
Instiutional Ethics Committee, Jawahar Lal Nehru Medical College, Kala Bagh, Ajmer-305001, Rajashthan	Approved
KIMS Instituional Ethics Committee, Kempegowada Institute Medical Sciences, Athibabbe Road,Banashankari 2nd Stage, Banashankari, Bengaluru, Urban, Karnataka – 560070	Approved
Malla Reddy Medical College for women Ethics Committee, Suraram X Road, Jeedimetla, Suraram, Hyderabad, Telangana, 500055	Approved
Marudhar Hospital Ethics Committee Marudhar Hospital A-93-99, Singh Bhoomi Khatipura Road Jaipur Jaipur Rajasthan - 302012 India	Approved
Marudhar Hospital Ethics Committee Marudhar Hospital A-93-99, Singh Bhoomi Khatipura Road Jaipur Jaipur Rajasthan - 302012 India	Approved
Marwari Hopitals, Sati Joymati Road Athgaon Guwahati Kamrup, Metropolitan Assam - 781008 India	Approved
Naryana Health Medical ethics committee, 258/A Boomsandra Industrial Area, Hosur Road Anekal Taluk Bangalore 560099	Approved
NSH Ethics Committee, NH-Narayana Superspeciality Hospital, 120/1, Andul Road, Howrah-711103, West Bengal, India.	Approved
Parth Institutional Ethics Committee, Parth Orthopedic & Surgical Hospital, E408, Fourth Floor Galaxy Arcade, Near Galaxy Cinema, Naroda, Ahmedabad, Gujarat 382330, India.	Approved
Pranav Diabetes Center Ethics Committee, 57/1, Nanda Complex Rammurthyanagar, Mainroad, banaswadi, Bangalore, Bengaluru(Bangalore) Urban, Karnataka-5460043	Approved
Supe Hospital Ethics Committee, Opp Adhar Ashram, Near Runghta School, Gharpure, Ashok Stambh, Nashik-422002	Approved
Thangam Hospital-Institutional Ethics Committee(TH-IEC), 54, Dr. Sankaran Road, Namakkal-637001, Tamilnadu, India	Approved
Vedanta Hospital Institutional Ethics Committee, Vedanta Hospital ,Beside Vasavi Cloth Market,Mangalagiri Road Guntur (India) - 522001 India	Approved
Vrajesh Hospital Institutional Review Board, opp Rajpath Club, Cargo Motors Lane, S.G Road, 117 Boadakdev, Ahmedabad- 380015	Approved
Zydus Hospital Ethics Commitee Zydus Hospitals and Healthcare Research Pvt Ltd., Zydus Hospitals Road, S.G. Highway, Thaltej, Ahmedabad, Gujarat 380054	Approved

Regulatory Clearance Status from DCGI

Status
Approved/Obtained

Health Condition / Problems Studied

Health Type	Condition
Healthy Human Volunteers	NA

Intervention / Comparator Agent

Type	Name	Details
Intervention	Novel Corona Virus-2019-nCov Vaccine	(1)Dose:-0.2 ml (0.1ml in eacharms) with Pharmacjet (2)Site of administration:- Upper Arm (3)Frequency:-single time at day 0 day 28 and day 56. (4)Route:-Intradermal
Comparator Agent	Placebo	1)Dose:-0.2 ml (0.1ml in eacharms) with Pharmacjet (2)Site of administration:- Upper Arm (3)Frequency:-single time at day 0 day 28 and day 56. (4)Route:-Intradermal

Inclusion Criteria

Age From	12.00 Year(s)
Age To	99.00 Year(s)
Gender	Both
Details	1.Healthy subject of either gender ≥12 years of age. 2. Agrees not to take any COVID-19 licensed vaccination for the entire duration of the study. 3. Ability to provide informed consent from the adult subjects or from the parents of paediatric subjects. Additionally, assent from paediatric subjects (Audio video recording in case of

	vulnerable subject). 4. Adult subjects or parents of paediatric subjects literate enough to fill the diary card. 5. Subjects with good health or with stable medical condition for chronic disease. (Stable condition is defined as there is no change in the medication or dose of medication or severity of disease from last 3 months before enrolment.) 6. Females of childbearing potential, must agree to use one of the approved contraception methods (double barrier methods, oral or injectable hormonal contraceptives or surgical sterilization), from screening until completion of the follow-up visit and males will agree to use contraception. 7. Willing to allow storage and future use of biological samples for future research.

ExclusionCriteria	**Details**	1.Febrile illness (temperature ≥ 38°C or 100.4°F) or any acute illness or infection within 4 weeks of enrolment. 2. Laboratory confirmed SARS-CoV-2 positive. 3. History of contact with a confirmed active SARS-CoV-2 positive patient within 14 days. 4. History of SARS/ MERS infection. 5. Previous participation in any clinical trial of a SARS-CoV-2 candidate vaccine. 6. Past history of hypersensitivity reaction or any serious adverse event after any vaccination. 7. Past history of thrombocytopenia or any coagulation disorder, or subjects on anticoagulation therapy. 8. Subjects with confirmed immunosuppressive or immunodeficiency disorder; or subjects on any immunosuppressive or immunostimulant therapy. 9. Clinically significant systemic disorder such as cardiovascular, respiratory, neurologic, gastrointestinal, hepatic, renal, endocrine, haematological, psychiatric or immunological disorder. 10. Subjects administered blood, blood containing products or immunoglobulins within the last 3 months or planned administration during the study. 11. Any other vaccine administration within the last 30 days or planned to be administered during the study period. 12. Pregnant and lactating women. 13. Participation in another clinical trial in the past 3 months. 14. History of drug / alcohol abuse.

Method of Generating Random Sequence	Computer generated randomization
Method of Concealment Modification(s)	Centralized
Blinding/Masking	Participant, Investigator, Outcome Assessor and Date-entry Operator Blinded

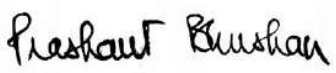
Primary Outcome Modification(s)

Outcome	TimePoints
To demonstrate the efficacy of ZyCoV-D in the prevention of virologically confirmed symptomatic COVID-19 cases as compared to placebo.	Day 84 to Day 364

Secondary Outcome Modification(s)

Outcome	TimePoints
To demonstrate the efficacy of a ZyCoV-D in the prevention of virologically confirmed mild COVID-19 cases as compared to placebo.	Day 84, Day 186, Day 252, Day 364
To demonstrate the efficacy of a ZyCoV-D in the prevention of virologically confirmed asymptomatic COVID-19 cases as compared to placebo.	Day 84, Day 186, Day 252, Day 364
To demonstrate the efficacy of a ZyCoV-D in the prevention of virologically confirmed COVID-19 death as compared to placebo.	Day 84, Day 186, Day 252, Day 364
To demonstrate the efficacy of a ZyCoV-D in the prevention of virologically confirmed moderate COVID-19 cases as compared to placebo.	Day 84, Day 186, Day 252, Day 364
To demonstrate the efficacy of a ZyCoV-D in the prevention of virologically confirmed severe COVID-19 cases as compared to placebo	Day 84, Day 186, Day 252, Day 364
To evaluate persistence of immunogenicity after first dose of ZyCoV-D.	Day 56, Day 84, Day 168, Day 252 and Day 364
To evaluate safety and tolerability of ZyCoV-D.	Day 0 to Day 364
To evaluate the immunogenicity by neutralizing antibody (nAb) assay in subset of population.	Day 0, Day 56, Day 84, Day 186, Day 252, Day 364
To evaluate the Lot-to-Lot consistency based on the IgG titer of the three consecutive lots used in the study.	At Day 84

Target Sample Size	**Total Sample Size=**"28216" **Sample Size from India=**"28216"
Phase of Trial	Phase 3
Date of First Enrollment (India)	20/01/2021
Date of First Enrollment (Global)	No Date Specified
Estimated Duration of Trial	**Years=**"1" **Months=**"8" **Days=**"0"
Recruitment Status of Trial (Global) Modification(s)	Not Applicable
Recruitment Status of Trial (India)	Closed to Recruitment of Participants
Publication Details	NIL
Brief Summary	Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in January, 2020.The virus is highly transmissible between humans and has spread rapidly, causing the COVID-19 pandemic. Patients infected with SARS-CoV-2, especially older patients and those with pre-existing respiratory or cardiovascular conditions are at greater risk for severe complications, including severe pneumonia, acute respiratory distress syndrome, multiple organ failure, and in some cases, death. In the absence of effective prevention measures, current management to control the epidemic is the enforcement of quarantine, isolation, and physical distancing. Effective vaccines against COVID-19 are urgently needed to reduce the enormous burden of mortality and morbidity associated with SARS-CoV-2 infection.



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World Health Organization

English version last updated on 14 July 2021.

COVID-19 advice for the public: Getting vaccinated

Coronavirus disease (COVID-19): Vaccines

Coronavirus disease (COVID-19): Vaccines safety

The world is in the midst of a COVID-19 pandemic. As WHO and partners work together on the response -- tracking the pandemic, advising on critical interventions, distributing vital medical supplies to those in need--- they are racing to develop and deploy safe and effective vaccines.

Vaccines save millions of lives each year. Vaccines work by training and preparing the body's natural defences – the immune system – to recognize and fight off the viruses and bacteria they target. After vaccination, if the body is later exposed to those disease-causing germs, the body is immediately ready to destroy them, preventing illness.

There are several safe and effective vaccines that prevent people from getting seriously ill or dying from COVID-19. This is one part of managing COVID-19, in addition to the main preventive measures of staying at least 1 metre away from others, covering a cough or sneeze in your elbow, frequently cleaning your hands, wearing a mask and avoiding poorly ventilated rooms or opening a window.

As of 3 June 2021, WHO has evaluated that the following vaccines against COVID-19 have met the necessary criteria for safety and efficacy:

- AstraZeneca/Oxford vaccine

- Johnson and Johnson
- Moderna
- Pfizer/BionTech
- Sinopharm
- Sinovac

Read our Q&A on the Emergency Use Listing process to find out more about how WHO assesses the quality, safety and efficacy of COVID-19 vaccines.

Some national regulators have also assessed other COVID-19 vaccine products for use in their countries.

Take whatever vaccine is made available to you first, even if you have already had COVID-19. It is important to be vaccinated as soon as possible once it's your turn and not wait. Approved COVID-19 vaccines provide a high degree of protection against getting seriously ill and dying from the disease, although no vaccine is 100% protective.

WHO SHOULD GET VACCINATED

The COVID-19 vaccines are safe for most people 18 years and older, including those with pre-existing conditions of any kind, including auto-immune disorders. These conditions include: hypertension, diabetes, asthma, pulmonary, liver and kidney disease, as well as chronic infections that are stable and controlled.

If supplies are limited in your area, discuss your situation with your care provider if you:

- **Have a compromised immune system**
- **Are pregnant (if you are already breastfeeding, you should continue after vaccination)**
- **Have a history of severe allergies, particularly to a vaccine (or any of the ingredients in the vaccine)**
- **Are severely frail**

Children and adolescents tend to have milder disease compared to adults, so unless they are part of a group at higher risk of severe COVID-19, it is less urgent to vaccinate them than older people, those with chronic health conditions and health workers.

More evidence is needed on the use of the different COVID-19 vaccines in children to be able to make general recommendations on vaccinating children against COVID-19.

WHO's Strategic Advisory Group of Experts (SAGE) has concluded that the Pfizer/BionTech vaccine is suitable for use by people aged 12 years and above. Children aged between 12 and 15 who are at high risk may be offered this vaccine alongside other priority groups for vaccination. Vaccine trials for children are ongoing and WHO will update its recommendations when the evidence or epidemiological situation warrants a change in policy.

It's important for children to continue to have the recommended childhood vaccines.

WHAT SHOULD I DO AND EXPECT AFTER GETTING VACCINATED

Stay at the place where you get vaccinated for at least 15 minutes afterwards, just in case you have an unusual reaction, so health workers can help you.

Check when you should come in for a second dose – if needed. Most of the vaccines available are two-dose vaccines. Check with your care provider whether you need to get a second dose and when you should get it. Second doses help boost the immune response and strengthen immunity.

In most cases, minor side effects are normal. Common side effects after vaccination, which indicate that a person's body is building protection to COVID-19 infection include:

- Arm soreness
- Mild fever
- Tiredness
- Headaches
- Muscle or joint aches

Contact your care provider if there is redness or tenderness (pain) where you got the shot that increases after 24 hours, or if side effects do not go away after a few days.

If you experience an immediate severe allergic reaction to a first dose of the COVID-19 vaccine, you should not receive additional doses of the vaccine. It’s extremely rare for severe health reactions to be directly caused by vaccines.

Taking painkillers such as paracetamol before receiving the COVID-19 vaccine to prevent side effects is not recommended. This is because it is not known how painkillers may affect how well the vaccine works. However, you may take paracetamol or other painkillers if you do develop side effects such as pain, fever, headache or muscle aches after vaccination.

Even after you’re vaccinated, keep taking precautions

While a COVID-19 vaccine will prevent serious illness and death, we still don’t know the extent to which it keeps you from being infected and passing the virus on to others. The more we allow the virus to spread, the more opportunity the virus has to change.

Continue to take actions to slow and eventually stop the spread of the virus:

- Keep at least 1 metre from others
- Wear a mask, especially in crowded, closed and poorly ventilated settings.
- Clean your hands frequently
- Cover any cough or sneeze in your bent elbow
- When indoors with others, ensure good ventilation, such as by opening a window

Doing it all protects us all.

Vaccines explained series

Read our Vaccines Explained series

Learn more about vaccines from the earliest of research stages to their rollout in countries through our illustrated series of articles on vaccine development and distribution.

Science in 5

Vaccine Equity

Vaccine Equity

Safe and effective COVID-19 vaccines were developed in record time. But the virus is moving faster than the global distribution of vaccines. The vast majority have been administered in high- and upper-middle-income countries, mostly in 10 countries alone. If these doses had been distributed equitably, they would have been enough to cover all health workers and older people globally.

Prashant Bhushan
(TRUE COPY)

ANNEXURE: P70

THE HINDU

NTAGI to soon chalk out roadmap to introduce Zydus Cadila's vaccine in Covid inoculation drive

PTINEW DELHI, AUGUST 25, 2021 18:25 IST
UPDATED: AUGUST 25, 2021 18:25 IST

The National Technical Advisory Group on Immunisation (NTAGI) will soon hold a meeting to devise a roadmap for introducing Zydus Cadila's Covid vaccine in the inoculation drive and prioritising beneficiaries focusing on those aged 12-18 years with comorbidities.

The indigenously developed world's first DNA-based needle-free COVID-19 vaccine ZyCoV-D received Emergency Use Authorisation from the drug regulator on August 20 making it the first vaccine to be administered in the age group of 12-18 years in the country.

NTAGI Chairman Dr. N.K. Arora said it is estimated that there are around 12 crore adolescents in the age group of 12-18 years in India and less than 1 % of them may have comorbidities.

"The NTAGI's meeting will be held soon to chalk out a roadmap for introducing the three-dose ZyCoV-D vaccine in the ongoing COVID-19 vaccination drive. The meeting will also focus on prioritisation of beneficiaries as this vaccine is approved for both adolescents and adults," he said.

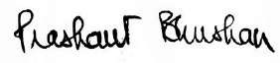
"The aim is to develop a priority list with the focus being on adolescents aged 12-18 years with comorbidities," Dr. Arora said.
The NTAGI will provide the protocol and framework for the introduction of this vaccine in the COVID-19 immunisation drive.
Covishield, Covaxin and Sputnik V vaccines are being given to only those above 18 years and unlike ZyCoV-D, which is three-dose, these are administered in two doses.

The Department of Biotechnology (DBT) has said that ZyCoV-D is the world's first DNA-based vaccine against the coronavirus and when injected produces the spike protein of the SARS-CoV-2 virus and elicits an immune response, which plays a vital role in protection from the disease as well as viral clearance.

It said that interim results from Phase-III clinical trials in over 28,000 volunteers showed primary efficacy of 66.6 % for symptomatic RT-PCR positive cases. This has been the largest vaccine trial so far in India for COVID-19, the DBT said.

The vaccine had already exhibited robust immunogenicity and tolerability and safety profile in the adaptive Phase one and two clinical trials. Both Phase one/two and Phase three clinical trials have been monitored by an independent data safety monitoring board, it added.

Link:https://www.thehindu.com/news/national/ntagi-to-soon-chalk-out-roadmap-to-introduce-zydus-cadilas-vaccine-in-covid-inoculation-drive/article36099524.ece



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ANNEXURE: P71

Hindustan Times

5 of private lab in Noida detained for 'unauthorised' Covid vaccine

Currently, only two Covid-19 vaccines are approved for use in India -- the Covidshield vaccine manufactured by Serum Institute of India, and the Covaxin, developed by Bharat Biotech.

By Shafaque Alam, Greater Noida

UPDATED ON FEB 17, 2021 03:41 AM IST

The premises were also sealed after it was ascertained that 18 people were administered the unauthorised vaccine, said the district health department.(Getty Images/ Representative)

The Gautam Budh Nagar health department on Tuesday conducted a search at a pathology laboratory in Greater Noida's Dadri after it received reports that an unauthorised Covid-19 vaccine was being administered to people in that town.

Five persons were detained from the path lab, Gopal Pathology Lab, on GT Road, and the premises sealed after it was ascertained that 18 people were administered the unauthorised vaccine, said the district health department. The health department is yet to ascertain whether those who received the unapproved vaccine are fine.

Currently, only two Covid-19 vaccines are approved for use in India -- the Covidshield vaccine manufactured by Serum Institute of India, and the Covaxin, developed by Bharat Biotech.

Later, the lab management informed the health department that they were conducting the third phase clinical trial of a Covid vaccine, developed by private pharma company, Zydus Cadila Healthcare Limited.

The health department said the vaccine manufacturer had authorised Flores Hospital in Ghaziabad to conduct the clinical trial. "The hospital was supposed to conduct the trial, but it shared the vaccine vials with the Dadri lab. We have seized 275 vials and initiated action against the hospital and the lab," chief medical officer Deepak Ohri said.

Dr Manoj Kumar, owner of Flores Hospital, said he had permission from the competent authority of the Union government to conduct the clinical trial. "We were supposed to conduct trials on 1,000 people. We signed an agreement with Dadri lab as a satellite centre on Monday to share the work. We had no idea that the local district health department's permission was needed to conduct the clinical trial," he said.

A Zydus Cadila spokesperson said the company's Covid vaccine is at present in the trial stage and people are not being vaccinated. The spokesperson said they would release more details in this matter soon

Dr Sanjeev Kumar, the in-charge of the Community Health Centre, Dadri, said the laboratory was administering a new Covid vaccine to people on Tuesday. "They had placed a banner informing people about the free Covid vaccination drive in collaboration with Nari Raksha Dal. Some locals took a photo of the vaccination drive and that went viral on social media," he said.

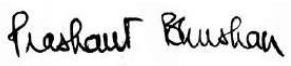
Kumar said when he received the information about the illegal drive, he informed his seniors about the matter. "I was directed to go and verify the matter. The lab management told me that they were conducting a clinical trial of a Covid vaccine, developed by Cadila Healthcare Limited. They had by then administered the vaccine to 18 persons," he said.

"They showed us some documents having the approval from the Drugs Controller General of India, for the clinical trial, but they had not informed the health department or the district administration about this exercise," he said.

Dr Ohri said the health department was not informed about this exercise. "The vaccination drive or a clinical trial can't take place in such a lab. The government has notified certain sites for such clinical trials. They (the lab) had no permission from the health department or the district administration. We have sealed the premises and also arrested five persons from the lab," he said. Ohri said a police complaint has also been filed against them.

Rajveer Singh Chauhan, SHO Dadri police station, said a case will be registered based on the complaint. "The health department and the police team are questioning the lab employees. The FIR may be registered once the primary investigation is over," he said.

Link: https://www.hindustantimes.com/cities/noida-news/five-of-private-lab-in-greater-noida-detained-for-administering-unauthorised-covid-vaccine-to-18-people-101613499298195-amp.html?s=0813



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GAHC030001062020

THE GAUHATI HIGH COURT
(HIGH COURT OF ASSAM, NAGALAND, MIZORAM AND ARUNACHAL PRADESH)

Case No. : WP(C)/37/2020

In Re Dinthar Incident
Aizawl

VERSUS

State of Mizoram and 11 Ors
Aizawl

Advocate for the Petitioner : Mr Zochhuana (Amicus Curiae)

Advocate for the Respondent : Mr C Zoramchhana

BEFORE
HONOURABLE MR. JUSTICE MICHAEL ZOTHANKHUMA
HONOURABLE MR. JUSTICE NELSON SAILO
ORDER

Date : 02.07.2021

The proceeding is conducted via remote Video Conference.

2. Heard Mr. Zochhuana, the learned Amicus Curiae and Mr. C. Zoramchhana, learned Additional Advocate General for the State of Mizoram.

3. The case has been listed today as opportunity had been given to the learned Additional Advocate General to obtain instructions with regard to Clause 5(2), 6(1) and 6(5) of the Standard Operating Procedure (SOP) dated 29.06.2021.The above clauses requires all persons in the State of Mizoram to be vaccinated or else they would not be allowed to leave their houses to procure/obtain essential items/goods or earn their livelihood by working in

shops/stores, driving public/commercial transport vehicles etc. The other issue to be taken up today is with regard to the requirement of obtaining a pass or permit from the Deputy Commissioner, Aizawl for travelling outside Mizoram in terms of the notice No.C.16011/298/2020-DC(A)/PT-II dated 26.06.2021.

4. With regard to the requirement of obtaining a pass or permit from the Deputy Commissioner, Aizawl for travelling outside Mizoram in terms of the notice No.C.16011/298/2020-DC(A)/PT-II dated 26.06.2021, the learned Additional Advocate General has submitted Notice No.C.16011/298/2020-DC(A)/Misc dated 01.07.2021 issued by the Deputy Commissioner, Aizawl, the content of which is as follows:-

"***NOTICE***

Movement of vehicles have been restricted in some parts of Assam due to the area being declared as a containment zone/area. And it is learnt that due to this restriction some people used to have difficulties moving around. Therefore, in an effort to facilitate easy movement of travelers passing through Assam from Mizoram (by road) to Exit Permit may be issued on being applied as stated below.

This will supersede the earlier Notification issued vide No.C.16011/298/2020-DC(A)/Pt-II Dt. 26.06.2021.

1. The application may be submitted to the Deputy Commissioner, Aizawl through mcovid19.mizoram.gov.in (mPASS Exit Permit)

2. The applicant shall specify his/her name, address, phone number, final destination and the date and time of his/her proposed journey along with the reason for his/her journey and vehicle Registration number as prescribed in the Permit application form."

5. On perusal of the above Notice dated 01.07.2021 issued by the Deputy Commissioner, Aizawl, which has been made in supercession of the earlier notification dated 26.06.2021, we are of the view that the Notice dated 01.07.2021 has clarified the earlier notification dated 26.06.2021, besides showing that Exit Permit is not a mandatory requirement for people wanting to leave the State. Accordingly, the said issue is closed. However, the State respondents will ensure that if similar notifications, like the earlier notification dated 26.06.2021, has been issued by other Deputy Commissioners from other Districts, the Deputy Commissioners in the other Districts should also issue a similar Notice dated 01.07.2021, which is reproduced above.

6. For a better understanding of the other issue involved, i.e. the legality of Clause 5(2), 6(1) and 6(5) of the Standard Operating Procedure (SOP) dated 29.06.2021, the Order dated 01.07.2021 passed by this Court is reproduced below:-

> "*The proceeding is conducted via remote Video Conference.*
>
> ***2.*** *Heard Mr. Zochhuana, the learned Amicus Curiae as well as Mr. C. Zoramchhana, learned Additional Advocate General.*
>
> ***3.*** *The learned Additional Advocate General submits that though he has received some instructions from the Deputy Commissioner, Aizawl with regard to the Notice dated 26.06.2021, he needs further instruction on the matter and in this regard, he will be communicating with the concerned Deputy Commissioner today.*
>
> ***4.*** *In view of the partial opening up of the current restrictions in place in the State, the Chief Secretary, Mizoram has issued Order dated 29.06.2021 along with the Standard Operating Procedure (SOP) to be implemented w.e.f. 4:00 AM of 30.06.2021 till midnight of 15.07.2021. The specific restrictions that had been brought to the notice of this Court is with respect to Clause 5(2) which in effect does not allow non-vaccinated individuals to go outside their house/compound. Clause 6(1) and 6(5) restricts non-vaccinated individuals from manning shops, stores, undertaking any works and driving of public transports and commercial vehicles.*
>
> ***5.*** *Clause 5(2), 6(1) and 6(5) of the latest SOP dated 29.06.2021 are reproduced below:-*
>
> "***5.*** *Other restrictions*
>
> ***2)*** *Persons going outside shall mandatorily cover their faces (with face mask or other materials).* ***In case of compelling circumstances, only vaccinated individuals of the family members may be detailed for errands within and around localities having significant COVID-19 active cases.***
>
> ***6. Permitted And Regulated Activities***
>
> *1)* ***Only vaccinated individuals should be engaged for manning shops and stores or undertaking any works. Shop/stores attendants and other employees should be able to produce proof of vaccination, which will be regularly checked by the police/LLTF/VLTF/COVID-19***

executive duty.

5) ***Commercial passenger vehicles (city bus, taxi and two wheeler taxi) allowed to resume operation shall mandatorily provide hand-sanitizer for their passenger and they shall not exceed their seating capacity. Only Drivers and conductors who had been vaccinated should be allowed to operate public transports."***

6. *A perusal of the above clauses implies that all persons would require to be vaccinated or else they cannot leave their houses or earn their livelihood with regard to activities mentioned in the said clauses.*

7. *The question that would arise for consideration with regard to the above clauses is whether a person can be vaccinated against his will and whether the non-vaccination of the said individual can debar him from earning his livelihood, keeping in mind the fundamental right of a person to practice any profession, or to carry on any occupation or trade or business under Article 19(1)(g) and his right to livelihood in terms of Article 21 of the Constitution. Though the State can make a law imposing reasonable restrictions in the exercise of any of the rights conferred under Article 19, so long as the said restriction is a reasonable restriction, no such law has been made by the Government and in any event, the above mentioned clauses do not appear to be reasonable.*

8. *In the case* ***Registrar General, High Court of Meghalaya Vs. State of Meghalaya****, PIL No. 6/2021, the Division Bench was seized of a matter, wherein the State of Meghalaya, through various orders of the Deputy Commissioners, had made it mandatory for shopkeepers, vendors, local taxi drivers and others to get themselves vaccinated before they could resume their businesses. The Division Bench of the Meghalaya High Court in its Order dated 23.06.2021 in PIL No. 6/2021 held that vaccination cannot be mandatory and non-vaccination can never affect a major fundamental right, i.e. right to life, personal liberty and livelihood, especially when there exists no reasonable nexus between vaccination and prohibition of continuance of occupation and/or profession.*

9. *In the meantime, it has also been brought to our notice that a notification was*

issued by one association which allows the participation of only vaccinated individuals to participate in a particular sport. The said instructions seem to have been made in pursuance to the SOP dated 29.06.2021. There being a possibility of many interpretations of the above mentioned clauses being made by various Local Level Task Force/ Village Level Task Force (LLTFs/VLTFs) or associations etc, while issuing guidelines, directions and orders, it would be prudent to reconsider them, lest it causes chaos. Though the above mentioned clauses of the SOP have been made for the greater good, the authorities shall have to bear in mind the fact that executive instructions have to be issued in consonance with the fundamental rights of the citizens and the Constitution.

10. *Though we are prima facie inclined to stay the above clauses, the learned Additional Advocate General has submitted that he will take up the matter with the authorities today itself so that necessary amendments are made to the SOP issued on 29.06.2021.*

11. *In view of the undertaking given by the learned Additional Advocate General, the case be listed again tomorrow i.e., 02.07.2021."*

7. With respect to the validity of Clause 5(2), 6(1) and 6(5) of the SOP dated 29.06.2021, the learned Additional Advocate General has submitted a letter dated 01.07.2021 issued by the Under Secretary to the Government of Mizoram, Disaster Management & Rehabilitation Department, which is to the effect that the State Government can make restrictions under the Disaster Management Act, 2005,curtailing the fundamental rights of a citizen, for the purpose of preventing the spread of Covid-19 and for mitigation of disaster. It is also stated in the said letter dated 01.07.2021 that unless shopkeepers, drivers and their employees have been vaccinated, they could become a super spreader of the covid virus.

8. The learned Additional Advocate General also submits that the State Government has made arrangements for mass vaccination of the people of the State free of cost and the said vaccination process is under way. He submits that the first dose of Covishield vaccination has been given to 5,19,452 persons (i.e. 67% of the eligible persons) as on date. He submits that the target for Covishield vaccination (first dose) is 7,75,106 persons. However, he

submits that he cannot say as to how many more months would be required for completion of the first dose of the vaccine on the targeted eligible persons.

9. The learned Additional Advocate General submits that as the restrictions imposed are reasonable restrictions made in larger public interest, the State Government would like to retain the above clauses in question in the SOP dated 29.06.2021.

10. Mr. Zochhuana, the learned Amicus Curiae submits that restrictions made under Disaster Management Act, 2005 cannot be said to be reasonable restrictions, as provided under Article 19(2) of the Constitution. Further, the restrictions imposed in the SOP discriminates between vaccinated and un-vaccinated persons, thereby violating Article 14 of the Constitution. He further submits that the restrictions that are imposed against un-vaccinated persons in the above mentioned three clauses, being in violation of the fundamental right to life and livelihood, the said clauses should be set aside or modified. He further submits that besides the above three clauses, Serial Nos. 31 & 42 of Annexure-3 of the SOP dated 29.06.2021 would also have to be set aside or modified as un-vaccinated persons are being discriminated against.

11. We have heard the learned counsels for the parties.

12. As per Clause 5(2) of the SOP dated 29.06.2021,un-vaccinated persons cannot leave their houses vis-à-vis vaccinated persons (first dose). The submission made by the learned Additional Advocate General clearly shows that 33% of the targeted persons are still to be vaccinated. There can be any number of reasons for a person to leave their house, for example, it could be for the purpose of procuring essential supplies, like food-stuff, medicines, attending to their near and dear/sick ones etc. However, the said clause has virtually put them under house arrest in violation of Article 21 of the Constitution of India, while persons who have been given the first dose of vaccine are allowed to leave their houses/compounds. Thus, on the ground of discrimination alone, Clause 5(2) is arbitrary. When the SOP requires all persons to cover their faces and to adhere to covid protocols as mentioned in the above SOP, there should not be any discrimination against un-vaccinated persons, as the Covid protocols are also applicable to un-vaccinated persons.

13. With respect to Clause 6(1) and 6(5) of the SOP, there is discrimination at large, as persons who have been vaccinated with the first dose of the vaccine are allowed to earn their

livelihood, but not the un-vaccinated persons. There is nothing to show that vaccinated persons (first dose) cannot be infected with the corona virus or that they cannot be spreaders. If the vaccinated person and un-vaccinated person cover their face with a mask, as per the covid behavior protocols laid down by the State respondents, there is no reason to discriminate only against un-vaccinated persons.

14. It has been brought to our notice that even persons who have been vaccinated can still be infected with the covid virus, which would in turn imply that vaccinated persons who are covid positive, can also spread the said virus to others. It is not the case of the State respondents that vaccinated persons cannot be infected with the covid virus or are incapable of spreading the virus. Thus, even a vaccinated infected covid person can be a super-spreader. If vaccinated and un-vaccinated persons can be infected by the covid virus and if they can both be spreaders of the virus, the restriction placed only upon the un-vaccinated persons, debarring them from earning their livelihood or leaving their houses to obtain essential items is unjustified, grossly unreasonable and arbitrary. As such, the submission made by the learned Additional Advocate General that the restrictions made against the un-vaccinated persons vis-à-vis the vaccinated persons is reasonable does not hold any water. As the vaccinated and un-vaccinated persons would have to follow the covid proper behavior protocols as per the SOP, there is no justification for discrimination.

15. Due to the above reasons, we find that Clause 6(1) and 6(5) of the SOP are also violative of Article 14 of the Constitution, especially when achieving the target for vaccinating the targeted population may take many more months, in which case unvaccinated persons would be deprived of their right to livelihood, which would in turn violate their right to life, which are guaranteed under Article 21 of the Constitution. The above mentioned clauses in the SOP basically implies that all individuals should be vaccinated, thereby giving rise to an inference that an individual cannot be allowed to opt out from being vaccinated. As can be seen from the earlier Order dated 01.07.2021 which has been reproduced, the Division Bench of the Meghalaya High Court in ***Registrar General, High Court of Meghalaya Vs. State of Meghalaya***, PIL No. 6/2021 held that though vaccination is an absolute necessity, "a harmonious and purposive construction of the provisions of law and the principles of equity, good conscience and justice reveals that mandatory or forceful vaccination does not find any

force in law leading to such acts being liable to be declared *ultra vires ab initio.*

16. The issue at hand is the embargo placed against un-vaccinated individuals from being employed in shops and driving public/commercials vehicles. The fact that the State Government has not achieved its target of vaccinating all the eligible persons as stated by the learned Additional Advocate General, the State respondents cannot debar un-vaccinated persons from being employed in shops or driving commercial/public transport vehicles. The un-vaccinated citizens of the State cannot be faulted, due to the States' failure in not completing the vaccination of the targeted population.

17. With regard to the contention of the learned Additional Advocate General that the State Government can make restrictions curtailing the Fundamental Rights of the citizens under the Disaster Management Act, 2005 (hereinafter referred to as the "Act"), by way of the SOP, the same in our considered view is clearly not sustainable, as the said clauses in the SOP which are in issue in the present case cannot be said to be reasonable restrictions made in terms of Article 19(6). A restriction cannot be arbitrary or of a nature that goes beyond the requirement of the interest of the general public. Though no general pattern or a fixed principle can be laid down so as to be universal in application, as conditions may vary from case to case, keeping in view the prevailing conditions and surroundings circumstances, the requirement of Article 19(6) of the Constitution is that the restriction has to be made in the form of a law and not by way of an executive instruction. The preamble of the Act clearly states that it is an Act to provide an effective management of the disasters and for matters connected therewith or incidental thereto. There is nothing discernible in the Act, to show that the said Act has been made for imposing any restriction on the exercise of the rights conferred by Article 19 of the Constitution. Further, the SOP dated 29.06.2021 is only an executive instructions allegedly made under Section 22(2)(h) & Section 24(1) of the Act and not a law. The provisions of Sections 22 & 24 only provides for the functions and powers of the State Executive Committee in the event of threatening disaster situation or disaster. It does not give any power to the State Executive Committee to issue executive instructions discriminating persons with regard to their right to liberty, livelihood and life and violating the fundamental rights of the citizens, which is protected by the Constitution.

18. The SOP provides that vaccinated persons who are employed in shops/stores and

to drive transport/commercial vehicles should wear mask and adhere to all proper covid protocols. If an un-vaccinated person is to be made to adhere to the same protocols, there can be no difference in the work of a vaccinated or un-vaccinated person. As such, the restriction placed upon un-vaccinated persons only due to non-vaccination is unreasonable and arbitrary.

19. In view of the reasons stated above, we hold that the restrictions placed upon un-vaccinated individuals vis-à-vis vaccinated individuals in terms of Clause 5(2), 6(1), 6(5), Serial No. 31 & 42 of Annexure-3 of the SOP dated 29.06.2021 are arbitrary and not in consonance with the provisions of Article 14,19 & 21 of the Constitution. The said impugned clauses are interfered with, to the extent that the allowances available and given to vaccinated persons in the above clauses shall also be made equally applicable to un-vaccinated persons. The State respondents are accordingly directed to issue a corrigendum of the SOP dated 29.06.2021 at the earliest incorporating the above directions.

20. The Order dated 29.06.2021 issued by the Chief Secretary Mizoram with the enclosed SOP dated 29.06.2021, the letter dated 01.07.2021 issued by the Under Secretary to the Government of Mizoram, Disaster Management & Rehabilitation Department and the Notice dated 01.07.2021 issued by the Deputy Commissioner, Aizawl are made a part of the record and marked as Annexure-X, Y & Z respectively.

21. List the matter again on 14.07.2021.

JUDGE **JUDGE**

Comparing Assistant

Prashant Bhushan
(TRUE COPY)