Dr KK Aggarwal
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HCFI DR KK AGGARWAL RESEARCH FUND

Update on COVID-19 Vaccine/Booster Dose and COVID-19 Update by National Medical Associations

- The US is going through its fifth wave and currently it is growing exponentially with 1,22,000 cases today. The seven-day average is now greater than 50k hospitalizations and 1,900+ deaths.
- The US Food and Drug Administration (FDA) has authorized emergency use of Pfizer-BioNTech vaccine for children aged 5 to 11 years. Immune responses in children were comparable to those aged 16 to 25 years. The vaccine was found to be 90.7% effective in preventing COVID in children. No serious side effects were observed in the ongoing study.
- An editorial in *Science* magazine has highlighted the importance of vaccinating children. COVID-19 is among the top 10 causes of death in children. No child has died of vaccination. The vaccine associated myocarditis is mild and self-limited; the incidence is less in 12- to 15-year age group than in the 16- to 25-year age group. Vaccinating children may be the most impactful public health efforts the US has seen in decades. And, it is one of the most important health decisions a parent will make.
- A *Lancet* study evaluating the effectiveness of a third dose of the Pfizer vaccine has shown that the risk of hospitalization and COVID-related mortality was higher in those who had received only two doses at least 5 months ago.
- Phase III trial data has shown high efficacy of a booster dose of the Pfizer-BioNTech vaccine. There were 5 cases of COVID in those who received the booster compared with 109 who were given a placebo. The booster trial showed a relative vaccine efficacy of 95.6% against disease during a period when Delta was the prevalent strain.
- The Centers for Disease Control and Prevention (CDC) has recommended for booster shots to include all adults ≥18 years, who received a Pfizer/Moderna vaccine at least 6 months after their second dose.
- The CDC reports that 195.9 million people are fully vaccinated and 33.5 million have received a booster dose. About 1,108,533,298 have taken the Pfizer vaccine; 71,543,150 have taken the Moderna vaccine, while 15,719,927 have taken the single dose J&J vaccine. Regarding booster dose, 19,477,683 have taken the Pfizer booster dose; 13,555,019 have taken the Moderna booster and 4,12,992 have taken the J&J booster.
- The main vaccine platforms are the mRNA vaccines (Pfizer, Moderna) and the viral vector vaccines (AstraZeneca, J&J). There are inactivated vaccines (Sinopharm, Sinovac), subunit vaccine (Novavax). Mixing and matching should be based on vaccine platform rather than individual vaccine.
- Persons who originally received the single dose J&J vaccine and then a Moderna booster had a 76-fold increase in antibodies 15 days after receiving the booster compared to before.
- Molnupiravir is the new oral antiviral drug. The 5-day course of the drug has halved the risk of hospitalization in people with mild or moderate infection. Earlier this month, UK became the first country to approve molnupiravir. It inserts a defective RNA building block when the virus uses an enzyme known as polymerase to copy its genome. Experiments suggest that it can cause mutations in human DNA as well.
- Paxlovid, the antiviral drug from Pfizer also reduced hospitalization by 89%. It inhibits the main protease

that creates other essential proteins. There should be a gap of 6 months between the second dose and the booster dose. Taking the booster dose closer to the flu season will better protect from virus if its COVID infection.

- A patient who has had COVID is likely to have some long COVID symptoms. There is some data to suggest that immunization with vaccine/booster may improve symptoms of long COVID. A person who has recovered from COVID should take the vaccine and the booster, if there are no contraindications. High-risk persons should not hesitate about taking the booster dose.
- Persons who have had AstraZeneca as the primary vaccine have done very well with Pfizer booster. A preliminary study has shown that mixing Pfizer and AstraZeneca vaccines provide strong protection. In patients with long COVID symptoms, the virus is trapped in the microthrombi, which prolong the inflammatory process in the body. Vaccination may improve symptoms by generating the B-cell and T-cell response, which attack the virus trapped in the microthrombi.
- The Moderna booster dose is half of the original dose, while the Pfizer booster dose is the regular dose. The recommended doses are three so far. There is no data yet on fourth dose or more than that.
- A person who has taken only the first dose of the vaccine should complete the initial immunization (as recommended) and then take the booster dose (mix and match). Having a variety of vaccines is much better than every citizen getting the same vaccine at the same time. Heterogeneity in the persons receiving the vaccine, the vaccine schedule and the vaccine themselves.
- Booster protection is better than natural infection. It should not be precluded because of the infection and should be timed according to the risk.

COUNTRY UPDATES

Singapore Update: Singapore is undergoing a decline in its most recent surge. The number of cases from a peak of 3,000 to 5,000 cases per day is coming down. There are 1,700 cases today; 1,003 are in hospital, 200 require oxygen supplementation, 46 in ICU, 64 patients are critically ill in the ICU. The overall ICU utilization rate is 57%.

India Update: The vaccination is proceeding at a rapid pace; 110 crore people have been vaccinated; 40-50% population has been vaccinated with both doses and around 70% population has received one dose. Door-to-door vaccination is taking place. The numbers of new infections have come down from 4 lakhs per day to around 10k per day. Now pockets of infection are present. A third wave is not expected. The Delta variant has become little less hostile as severe infections and hospitalizations have reduced considerably. The hospitalization rate is 0.8%. The monoclonal antibody cocktail is being given as an outpatient treatment. Treatment protocols have changed in that even injectables are being given as day care.

Malaysia Update: The number of daily cases is hovering between 5000 to 6000 per day for the last 1 week. Daily deaths have also declined from 200-300 to around 50-60. Ninety-four percent population has been given two doses of vaccine; 70% of adolescents have been given two doses. Booster dose with Pfizer vaccine is being administered starting with the front liners and persons older/younger than 60 years with comorbidities. People who have taken Sinovac are apprehensive about taking the Pfizer booster, so many do not turn up for their booster dose. It is compulsory to wear face mask. MySejahtera App is used to monitor COVID-19 cases and vaccination status.

South Africa Update: The infectivity rate for the last few weeks had been less than 1%. But in the last week, the infectivity rate increased to 2.6% and there has been a surge in the number of cases. This is of concern as the festive season is starting soon.

Pakistan Update: The number of new cases is decreasing. Yesterday, there were 400 cases; 45% people have received single vaccine dose; 28% have received two doses.

Australia Update: The situation is stabilizing. In Victoria, 90% of population above 12 years has been vaccinated. NSW has vaccinated 94% of its population. These two states have opened up for those who are vaccinated. The 7-day hospital quarantine has been now dropped. Vaccination for 5- to 11-year age group may start from January. Booster dose has started.

Participants - Member National Medical Associations: Dr Yeh Woei Chong, Singapore, Chair-CMAAO; Dr Ravi Naidu, Malaysia, Immediate Past President-CMAAO; Dr Marthanda Pillai, India Member-World Medical Council, Advisor-CMAAO; Dr Wasiq Qazi, Pakistan, President Elect-CMAAO; Dr Angelique Coetzee, South Africa; Dr Akhtar Hussain, South Africa; Dr Salma Kundi, Pakistan

Invitees: Dr Russell D'Souza, Australia UNESCO Chair in Bioethics; Dr Monica Vasudev, USA; Dr S Sharma, Editor-IJCP Group

Moderator: Mr Saurabh Aggarwal

Source: *Minutes of an International Weekly Meeting on COVID-19 Held by the HCFI Dr KK Aggarwal Research Fund (20th November, 2021, Saturday, 9.30 am-11 am)*