

HCFI Dr KK Aggarwal Research Fund

Minutes of an International Weekly Meeting on COVID-19 Held by HCFI Dr KK Aggarwal Research Fund

Topic: COVID update – Situation in various countries

Speaker: Dr Monica Vasudev, Allergist & Clinical Immunologist, Fellow of American Academy of Asthma, Allergy and Immunology, Advocate-Aurora Health, Wisconsin, USA

5th February, 2022 (Saturday; 9.30 am-11 am)

- Omicron sublineage BA.2, also known as the “stealth variant” was first detected in genome sequences from Philippines in November 2021. It is found in 49 countries.
- It shares many of the same mutations as its ancestor strain but with a further 28 mutations not previously seen in the original Omicron variant.
- It does not have the mutation, present in the original variant that made it easier to detect.
- BA.2 is the dominant strain in Denmark; in the US, BA.1 is still 99%.
- It may be more transmissible, but there is no evidence that it causes more severe disease.
- Those who are vaccinated and boosted are better protected.
- On February 1, Pfizer/BioNTech asked Food and Drug Administration (FDA) to approve a two-vaccine dose regimen for young children to start with.
- Children 2 to 4 years old who were given two shots were infected at a rate 57% lower than the children in the placebo group.
- Children 6 months to 2 years old who got shots were infected at a rate 50% lower than the placebo group.
- In a randomized, placebo-controlled trial published in the *NEJM*, two doses of Novavax vaccine given 21 days apart had an overall efficacy of 89.7%. The primary end point was based on the first occurrence of PCR-confirmed symptomatic coronavirus disease 2019 (COVID-19) with onset at least 7 days after the second vaccination in serologically negative adult participants at baseline.
- The Novavax vaccine has a subunit protein platform and it is formulated with an adjuvant to enhance immune response and stimulate high levels of neutralizing antibodies. The technology is the same as that used in the Flublok influenza vaccine, and is similar to other vaccines that have been around for a long time, like the hepatitis B vaccine.
- On February 3, it was accorded conditional marketing authorization by Medicines and Healthcare in UK and it has also been approved in Australia.
- Dr Pelletier on 28th January said about the Novavax vaccine, “...traditional option available for both the immunologically naïve and those hesitant to get boosted. It may provide a path forward for some who are pro-vaccine, but who drew the line at novel mRNA products...”
- The US is leading in deaths and falling behind on vaccination.
- Unvaccinated people had a greater risk of testing positive for COVID-19 and a greater risk of dying from COVID-19 than people who were fully vaccinated. Case and death rates in fully vaccinated and boosted were much lower than in the unvaccinated people.
- Unvaccinated adults aged 18 years had 13 times the risk of testing positive for COVID-19 and 68 times the risk of dying from COVID-19 in November and 5 times risk of testing positive for COVID-19 in December, compared to the fully vaccinated adults who had also taken the booster dose (CDC).
- Outpatient COVID-19 emergency use authorization (EUA) therapies are Paxlovid and Evusheld.
- In non-hospitalized patients, who have mild-to-moderate COVID-19 and are at high risk of disease progression, the therapeutic options are Paxlovid (nirmatrelvir with ritonavir), sotrovimab, remdesivir and molnupiravir.
- For those not expected to mount sufficient immune response to COVID-19 vaccine because they are on immunomodulatory therapies or those not able to receive the vaccine, there is Evusheld (tixagevimab/cilgavimab). It has been accorded EUA approval as pre-exposure prophylaxis for >12 years and >40 kg.
- Paxlovid is associated with 88% risk reduction; dose is nirmatrelvir 300 mg (2 tab) + ritonavir

100 mg twice daily within 5 days of symptoms. It is approved for ≥ 12 year olds. Children have to be >40 kg. Dose has to be reduced in patients with renal impairment where nirmatrelvir 300 mg (1 tab) + ritonavir 100 mg can be given.

- Sotrovimab: 85% relative risk reduction; dose is 500 mg once IV infusion within 10 days of onset of symptoms. It is approved for ≥ 12 years and >40 kg. It has been shown to have activity against Omicron.
- Remdesivir has 87% relative risk reduction; needs 3 consecutive doses; 200 mg IV on Day 1 then 100 mg IV on Days 2 and 3; it is to be given within 7 days of symptoms. It is approved for ≥ 12 years and >40 kg. Patients have to be observed for an hour after infusion.
- Molnupiravir shows 30% relative risk reduction; dose is 800 mg PO twice daily for 5 days, started within 5 days of symptoms. There are associated bone/cartilage toxicity concerns. Approved only for ≥ 18 years of age. It is not recommended for pregnant women due to risk of embryo-fetal toxicity. Less effective than the aforementioned medications.
- Evusheld has 69% relative risk reduction; the dose is tixagevimab 150 mg and cilgavimab 150 mg administered as two separate consecutive intramuscular injections.

Country updates

- **South Africa:** People are too relaxed. There is a common feeling that we are out of the pandemic. Schools will now be fully reopened. There has been a slight increase in cases in the last week linked to Sports Day in schools. Families are again coming with infection. But infection is mild, not alarming. Now, there is no quarantine for people exposed to the infection. New cases ranged from 3,000 to 4,500 in the last week. In the last 24 hours, there were 2,700 cases and 221 deaths. The number of people tested so far is 32 million – 3.1 million were positive. The recovery rate is 95.5%. Total deaths till now are 95,000. Hospital admissions came down to 4,800 in both public and private hospitals. Intensive care unit (ICU) admissions are also down - there are 404 cases, 180 on ventilator; the positivity rate is 8.2%.
- **Taiwan:** The country is doing well to contain the pandemic. Recently, there was a low-grade community spread of Omicron. The country has a very good hand hygiene practice and people wear masks even outdoor. We have encouraged touch and disinfect policy to prevent fomite transmission.

In addition to face masks to block droplet and airborne transmission, the fomite transmission is also blocked. The booster coverage is around 80%.

- **Australia:** The Omicron wave has reached the peak, but deaths are still a concern with 30 to 40 deaths in each state per day; 85% deaths are in 60 to 70 years age group or older predominantly from nursing homes as many of the elderly are yet to get their booster dose; there is a crisis in the form of staff shortage; over 94% have received both vaccine doses; around 30% have taken the third dose. Vaccination for 5- to 11-year age group has started. Duration of quarantine has been reduced to 7 days. Positive persons but asymptomatic are asked to come back to work with masks.
- **India:** The curve is flattening with around 1.2 lakh daily cases; 169 crore vaccine doses given; 99% have received the first dose, while 85% have received both doses. Vaccination drive is going very strong in 15- to 18-year age group. Booster dose among high-risk persons is picking up. Regarding treatment, even Omicron is responding to monoclonal antibodies especially when given in early stages. Remdesivir continues to be in the treatment protocol. Molnupiravir, though authorized by drug regulator, is not included in government treatment protocol because of high side effects. Steroids, anticoagulants continue to be given. ICU admissions have come down to $<1\%$. Despite increase in the number of cases, the mortality remained same or only marginally high. The Indian Council of Medical Research (ICMR) studies show that vaccinated persons have mild infection. COVID-appropriate behavior is stressed upon and crowd management has been given importance. Quarantine requirement for international travel has been relaxed. The budget has provision for teleconsultation for mental health problems.
- **Bangladesh:** More than 50% people have received both doses and more than 60% have taken the first dose. Hospitalization is less. Only schools are closed. But people are not following standard operating procedures (SOPs). They are also not being strictly enforced.
- **Philippines:** In the last 24 hours, there were 8,000 new cases, a declining trend was seen from mid-January to the first week of February. 1,51,000 active cases comprising 4.2%; the total number of cases is 3.3 million; total deaths are 54,214. The vaccination for 5- to 11-year-olds (14 million population), which was to start from February 4,

has been postponed for later this month. There is a decrease in cases in the national capital region, but there is a surge in cases in the provinces.

- **Pakistan:** The Omicron cases have plateaued for the last 3 days; it had reached 8,000 cases per day but now there are 6,000 to 6,500 cases per day with 30 to 40 deaths; 8.4 crore fully vaccinated, 10.8 crore are partially vaccinated, 2.7 lakh booster doses. Mortality in children is high, around 14%, which is worrisome. The positivity rate is decreasing. SOPs are not followed.

Participants - Member National Medical Associations: Dr Marthanda Pillai, India Member-World Medical Council, Advisor-CMAAO; Dr Angelique Coetzee, South Africa; Dr Akhtar Hussain, South Africa; Dr Salma Kundi, Pakistan; Dr Qaiser Sajjad, Pakistan; Dr Benito Atienza, Philippines; Dr Muh-Yong Yen, Taiwan

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

Moderator: Mr Saurabh Aggarwal

HCFI Round Table Environment Expert Zoom Meeting on "Union Budget 2022-23: What is for Environment, Sustainability and Climate Change?"

February 6, 2022 (12 noon-1 pm)

- The union budget was presented on February 1, 2022. It has promised to take the issues of sustainability and climate change seriously.
- Key features with respect to environment and sustainability are low carbon development strategy and climate change agenda.
- The main areas of focus are promoting technology, energy development and transition and climate action.
- The priorities are PM Gati Shakti, inclusive development, productivity enhancement and investment, sunrise opportunity and climate action and financing of investments.
- PM Gati Shakti, the National Master Plan for Multimodal Connectivity, is driven by seven engines: roads, railways, airports, ports, mass transport, waterways and logistics infrastructure.
- Green energy and clean mobility systems are featured as sunrise opportunities.
- Others include low carbon, climate resilient development, chemical-free natural farming, "panchamrit" the five commitments made at COP26, battery swapping policy, green bonds for green infrastructure, blended finance for sunrise sectors (such as climate action, deep-tech, digital economy, pharma and agri-tech), infrastructure strategy for data centers and energy strategy system, production-linked incentive (PLI).
- Rs. 19,500 Cr have been allocated to boost manufacturing of high efficiency solar photovoltaic modules within the country under the PLI scheme.
- The focus is also on climate adaptation.
- The Government of India has taken a very encouraging step towards electric vehicles, especially by coming up with a battery swapping policy. The team from Pondicherry (in an earlier meeting of the Round Table) had e-autorickshaws, which work on battery and they had a battery swapping policy, which is exchanging a discharged electric car battery with one which is already charged, a move that can decrease the long refuelling time, which is one of the major limitations of zero emission vehicles. This can result in huge reduction in air pollution, even water pollution, if people start following, because alternative energy is very easy for charging battery through solar power, etc. This can have a lot of positive effect on health.
- Any development done only for economic development will definitely disturb the environment. Sustainability is usually not considered.
- Two important points in this budget – One is encouragement of chemical-free farming within 5 km radius of rivers. This is a long-lasting effort, which will definitely improve water quality in rivers in long-term. Secondly, the emphasis on alternative energy; the combustion of fuel will be less. It will help in overall improvement in air quality.
- But ground water recharging should also have been highlighted and some allocation should have been made for this.
- Rs. 5,205 crore have been earmarked for manufacture of High Efficiency Solar PV Module to be implemented by the Ministry of New & Renewable Energy (MNRE).
- Sovereign green bonds will be issued for green infrastructure and proceeds will be deployed in public sector projects, which will help in reducing carbon intensity of economy.
- Energy transition, climate finance, inclusive growth – all these terms were mentioned multiple

times in the budget but the announcement (of funding) appeared to fall short in promoting clean energy in an accelerated manner.

- Amount of funding should have been more. The increased funding under the PLI scheme, the inclusion of a 'zero fossil fuel' policy, electric vehicle policy, EV battery-swapping and coal gasification policy are all good steps. At a macro level, an increase in capex will boost economic growth; however, not much additional budgetary support or tax incentives have been provided to clean energy, both grid and off-grid, including solar rooftop, storage technologies and green hydrogen- there was an expectation that support will be provided to these technologies to improve their commercial viability.
- The government should have provided a budget allocation and reduction of duties to allow deployment of roof top solar, storage, off-shore wind, green hydrogen, etc. It did not offer support for closure of inefficient fossil fuel plants. Also, it did not deal with increasing air pollution problem. While the government had made very specific allocations to tackle air pollution in the last budget, this year, there are no additional funds to specifically address the problem.
- Allocation for climate change action plan is not adequate and is only 30 crore.
- The total budget allocation for Environment ministry is 3030 crore. Out of this, only 142 crore is for environment protection, management and sustainable development.
- Rs 960 crore is allocated for centrally sponsored schemes; the budget for National Green Mission has been increased to Rs. 361 crore this year from Rs. 290 crore in the last year.
- For integrated development of wildlife habitat, the allocation is Rs. 510 crore.
- For Commission for Air Quality Management, Rs. 17 crore has been allocated.
- The allocation for the national clean air program has remained flat.
- The LPG subsidy has been reduced from 12,000 Cr to 4,000 Cr. This would affect the shift from burning of wood fuel.
- The budget for environmental education, awareness and training was also reduced from Rs. 77.13 crore in 2021-22 to Rs. 58 crore in 2022-23.
- Some allocation should have been made towards waste management.
- No sector talks of giving incentives; tax incentives should be given to the public for environmental issues, such as waste management.
- There was a lot of focus on Green hydrogen mission, but it has been ignored in the budget - only 0.1 crore has been allocated.
- The Delhi Metro Rail Corporation (DMRC) is working on multimodal integration in green mobility. A plan is being developed to allot proper space for parking of autorickshaws, which otherwise cause traffic congestion near the metro stations.
- Some targets for departments were expected to fulfil the commitments made at COP26, but no such directions have been made in the budget.
- DMRC is holding sessions for staff to create awareness about green environment. They are also being trained for this.
- The government is expanding the scope of 'Parivesh', which is a single window portal for all environmental clearances to promote ease of doing business and transparency in the process. However, this may be a risk by diluting environment safeguards.
- There is no provision for R&D to design air pollution control systems or develop technology to reduce air pollution.
- There is nothing about waste management and air pollution in this budget.
- If we want the general public to segregate waste, recycle waste, etc., there should be tax incentives/benefits. Since, there is no encouragement, there is also no awareness or very poor awareness about environment.
- The new bill - Energy Consumption Amendment Bill 2022 will have a legal/regulatory framework for carbon trading in India.
- Budget for environment education, awareness and training has also been reduced this year.
- Manufacture and installation of solar panels in the country started from 2010 to 2011. The life of solar panels is 25 years. There is no concrete focus on their disposal. This needs to be discussed and worked out.
- Rs. 60,000 crore has been allocated to provide tap water connections under the Jal Jeevan Mission.
- Overall it's a good budget. It has focused on climate change, Atmanirbhar Bharat, Gati Shakti, renewable energy. There is need for strategic framework for India green transition.
- Public and private partnership is very important to carry forward the matter of air pollution.

Participants: Dr Anil Kumar, Mr Vivek Kumar, Mr Neeraj Tyagi, Dr SK Gupta, Mr Vikas Singhal, Mr Ankit Sethi, Dr BC Sabat, Mr Varun Singh, Ms Ira Gupta, Dr S Sharma

Coronavirus Updates

Famotidine in mild-to-moderate COVID-19

Results of a phase II trial reported in the journal *Gut* have shown that in patients with mild-to-moderate COVID-19, there was early resolution of symptoms and inflammation after treatment with famotidine without any decrease in anti-SARS-CoV-2 immunity. Fourteen of 16 symptoms evaluated, such as loss of smell and taste, shortness of breath and abdominal pain, recovered. Fifty percent relief in symptoms was noted in 8.2 days in the famotidine-treated patients compared to 11.4 days in the placebo group. Very few patients on famotidine showed detectable plasma levels of interferon alpha... (Source: *Gut*, February 10, 2022)

Ivermectin does not stop progression of mild-to-moderate COVID-19 to severe disease

The Malaysian Ivermectin Treatment Efficacy in COVID-19 High Risk Patients (I-TECH) study, reported in *JAMA Internal Medicine*, has not shown favorable results with ivermectin for mild-to-moderate COVID-19. The study was conducted between May 31 and October 25, 2021. In these patients, ivermectin did not stop disease progression to severe disease (21.6% vs. 17.3%, respectively with relative risk of 1.25). Patients treated with ivermectin also required mechanical ventilation (1.7% vs. 4.0%) and intensive care (2.4% vs. 3.2%, respectively)... (Source: *Medscape*, February 18, 2022)

Mental health outcomes in COVID patients

COVID survivors were at a 60% higher risk of being diagnosed with a new mental health condition up to 1 year compared with those who were never infected, according to a *BMJ* study. They were 1.35 times at higher risk of developing anxiety disorder and 1.39 times the risk for depressive disorder. Stress, both acute and PTSD, adjustment disorders and sleep disorders were also prevalent in them. Mental health-related drug prescriptions also increased by 86% and they were more likely to be prescribed an antidepressant, selective serotonin reuptake inhibitors (SSRIs), benzodiazepenes, serotonin-norepinephrine reuptake inhibitors (SNRIs)... (Source: *Medpage Today*, February 16, 2022)

WHO recommends reducing quarantine period in places with huge number of cases

The World Health Organization (WHO) has recommended reducing the quarantine period in countries with high number of cases that are overwhelming the resources in its interim guidance. It suggests shortening the quarantine period from 14 days to 10 days without a test and to 7 days with a negative test, if the person should not develop any symptoms. If testing is not possible, then absence of symptoms could be used as a marker in place of testing... (Source: *Medscape*, February 18, 2022)

Booster effectiveness decreases after 4 months

CDC's report in *Morbidity and Mortality Weekly Report (MMWR)* states that the effectiveness of the booster dose against COVID-19-associated emergency department/urgent care visits and hospitalizations was higher after the third dose than after the second dose but the effectiveness declined after some time. During the Omicron-predominant period, the vaccine effectiveness against COVID-19-associated ED/UC visits was 87% during the first 2 months after the booster but declined to 66% after the fourth month. Similarly, vaccine effectiveness against hospitalizations, which was 91% initially decreased to 78% by the fourth month after a third dose. These findings call for being up to date with the recommended vaccination program in respective countries... (Source: *MMWR*, February 18, 2022).

Study finds vagus nerve dysfunction as the cause of post-COVID symptoms

Research from Spain has suggested that many symptoms of long COVID could be due to the effect of SARS-CoV-2 on the vagus nerve, which performs several functions in the body. Nearly 66% of the 348 patients had at least one symptom suggesting dysfunction of the vagus nerve, such as diarrhea, low blood pressure, tachycardia, dizziness, dysphagia and voice problems. Six patients showed vagus nerve thickening and increased echogenicity on ultrasound, indicative of inflammation. Many of these patients had "structural and/or functional alterations in their vagus nerve, including nerve thickening, trouble swallowing and symptoms of impaired breathing" which point to "vagus nerve dysfunction as a central pathophysiological feature of long COVID", state the authors... (Source: *Medscape*, February 15, 2022).

