HCFI Dr KK Aggarwal Research Fund

HCFI Dr KK Aggarwal Research Fund Round Table Environment Meet on Challenges in Implementing Climate Action Commitments Made During COP26

28th November, 5th December and 12th December, 2021 (12 noon-1 pm)

- The Conference of the Parties (COP)21 held in Paris in 2015 marked a leap in climate action. It resulted in the most comprehensive international climate agreement. Signatories to the Paris Agreement agreed to limit emissions or global warming to <2°C, ideally 1.5°C. It was also agreed that developed countries would urgently give more resources (financial aid) to climate-vulnerable countries to resolve climate change. Under the Paris agreement, governments devise and present plans for reductions in national emission called the Nationally Determined Contributions (NDC).
- Two-thirds of the global economy is now covered by net-zero targets.
- Progress has been limited and the lack of an effective reporting structure means it is unclear how much money has been contributed so far by high-income countries.
- Developing countries face a lack of funds and the developed countries have not provided aid as they had promised to.
- The Glasgow Climate Pact at COP26 was adopted by almost 200 countries after 2 intense weeks of negotiations. The UN Secretary General said at the conclusion of the conference "It is an important step, but it is not enough."
- The Glasgow Climate Pact recognizes the global climate emergency citing recent findings of Intergovernmental Panel on Climate Change (IPCC). It expressed "alarm and utmost concern that human activities have caused around 1.1°C of global warming to date and that impacts are already being felt in every region". Parties resolved to pursue efforts to keep to 1.5°C. It has urged developed countries to at least double their collective climate finance for adaptation in developing countries from 2019 levels by 2025, to ensure a balance between adaptation and mitigation. It also called on development banks, other financial institutions and private sector to enhance finance mobilization to deliver the scale of resources needed to achieve climate plans.
- COP26 also reached agreement on key provisions of the Paris Agreement Rulebook, which covers issues around market mechanisms and transparency.
- At COP26, it was agreed that the developed countries should deliver more resources to help the climate vulnerable countries.
- Most countries have adopted the target "net zero" carbon emissions by 2050; China has aimed to become carbon neutral by 2060.
- India made 5 commitments towards climate action at COP26.
- India will bring its non-fossil fuel energy capacity to 500 GW by 2030.
- By 2030, India will fulfil 50% of its energy requirement through renewable energy.
- India will cut down its net projected carbon emissions by 1 billion tonnes from now until 2030.
- By 2030, India will bring down carbon intensity of its economy by more than 45%.
- By 2070, India will achieve the target of "net zero" carbon emissions.
- As a party to international conventions, by and large, India has complied with the commitments and obligations despite political diversity.
- India is far ahead of several European countries in terms of compliance to the Minamata convention on mercury. India does not have mercury cell based caustic alkali plants, while Europe still has them despite setting a target of achieving this by 2025. We achieved this target in 2005. Compact fluorescent lamps (CFL) are being used now mainly, which has eliminated another source of mercury.
- India is on track to achieve its NDC under the Paris Agreement, which is to achieve 40% of electric power installed capacity from non-fossil fuel sources by 2030.
- Because of high population density, enough land is not available for alternative power sources such as wind or the sun. To generate 1 KW of solar power, 7-8 sq. m area is required. To generate 1 MW, more than 7000 sq. m of area, so to generate 1 GW of solar

power, lot of land would be required including wasteland and not just rooftop solar panels.

- Land should have multiple uses. Land is also required for forestation, plantation and other development activities. An example is the Canal Solar Power Project in Gujarat, i.e., setting up of solar panels over canals. This not only saved land, but also prevented water evaporation in addition to generating solar power. But this cannot be the only solution.
- Solar energy is useful for individual houses or small communities rather than in a grid, for which nuclear source of energy is suitable. Instead of producing more electricity to charge vehicles, solar panels can be put over parking lots or individual cars. Achieving the solar energy target should be made a mass movement.
- Mapping of energy consumption and requirement of urban, rural and industries will help to find out where and how much of emissions can be reduced.
- Wastage, leakage, pilferage and encroachment, which are known issues, have to be stopped.
- Carbon emission is maximum from biodegradable waste. There are many policies for management of biodegradable waste, but their implementation is poor. Wet waste can be utilized for energy generation. Kitchen waste can be used to produce biogas. If renewable energy is used in solid waste management, lot of issues need to be taken up immediately and standardized.
- Hydrogen technology is an upcoming source of renewable energy, which is still under trial.
- Taking care of soil will not only take care of the air and water pollution problems but also the problem of climate change. In the absence of humus (top soil layer), sunlight is not absorbed and is causing rise in atmospheric temperature. We must also protect the soil while protecting our total environment.
- Preventing soil erosion will also save rivers and in turn lot of biodiversity will be saved.
- There is no shift towards cleaner fuel or renewable energy yet as coal-based plants are still functioning. The dependence on coal is a matter of concern. The changeover has to be done within the next 10 to 15 years otherwise the target of net zero by 2070 might be an unachievable target.
- Forestation has to be a solution. Commercial cropping of wood should be allowed in India. Hard wood is still being imported in the country. This will prevent cutting down of trees (deforestation).
- Planting trees has been proven to reverse the impact of climate change. If we drive average 80 km/day or around 500 km/week, the CO_2 emissions will be 3.17 tonnes/year. If we buy 1 car, on an average, 400 trees need to be planted per person to offset our carbon footprint.
- Industries which use coal and are emitting particulate matter should be asked to plant equal number of trees and maintain them to offset the impact of emissions. This is being done in Delhi, but also needs to be done in other cities.
- Transitioning into electric vehicle needs to be taken up as a serious alternative to diesel or petrol, given their rising costs. There is a lot of hesitancy and apprehensions about adoption of electric vehicles. A charging infrastructure needs to be developed.
- We are dependent on other countries for many resources such as lithium for car batteries used in electric vehicles. For sustainability, dependence on other countries needs to be stopped. But these are not really sustainable solutions as thermal power plants have to work to produce electricity to charge these vehicles. Also, lithium-ion batteries are not recyclable and have limited lifespan. Batteries have to be disposed of in a very scientific manner; end-to-end management has to be worked out.
- Electric vehicles may only be a stopgap measure to what actually needs to be done for a better solution that can last us for decades.
- The recently introduced vehicle scrapping policy has considered the use of different parts of the car. At present, the necessary infrastructure for the new vehicle scrap policy is present in only few states. Hence, its implementation and how its economic value can be improved needs to be worked out. The life of a vehicle now is 10 to 15 years. A balance has to be created between this and carbon emissions.
- Unauthorized sector has to be brought into the mainstream for faster development.
- The Delhi Metro Rail Corporation (DMRC) has 8 climate change projects; 4 under Clean Development Mechanism (CDM) and 4 under Gold Standard. DMRC has till now issued 44 lakh carbon credits. One carbon credit is equal to 1 tonne of carbon dioxide. This means that 44 lakh tonnes carbon emission has been reduced by DMRC. This includes the Regenerative Braking project,

The Modal Shift project and the Energy Efficiency project and Solar Power Plant project. DMRC has to increase the share of renewable energy (solar) by 50 MW up to 2022.

- If the environmental problems are not handled today, the health problems will not be overcome.
- We must find which policies can be adopted in a traditional way. Until we work at the local level, we will not be able to resolve the global issues.
- Scientists must think about how the gap between the commitment and availability in Indian conditions can be minimized.
- Acceptability and implementation are the blocks and the challenge lies in how this gap can be reduced.
- All commitments made by developed countries should be fulfilled and they have to set an example for the developing world. Developed nations must present actions taken by them, which can be followed by the developing countries.
- The world has to realize that progress will be made by taking care of the environment and not against the environment.
- A distinction has to be made between human need and human greed.
- Focus has to be on restoration of ecology, control of emissions, use of renewable energy and sustainable economy, alternative power sources, etc.
- The commitment made at COP26 by India is tough to achieve. But the targets have to be accepted and the responsibility to achieve them is to be shared by all citizens. Any change that has to come should come from within us and we should start from our homes.
- Each and every citizen of the country has a responsibility to prevent climate change and start work from the local level for the restoration of ecology, reduction of emissions, use of natural energy for development.
- The targets set out by India in COP26 are achievable provided there is a will to do so. We have to move forward as a nation.
- Associated economic benefit, ease of doing business and betterment of public life may help achieve the target even earlier than 2070.

Participants: Dr Anil Kumar, Mr Vivek Kumar, Mr Paritosh Tyagi, Mr Ashish Gulati, Dr Dipankar Saha, Mr Ankit Sethi, Mr Neeraj Tyagi, Mr Varun Singh, Mr Vikas Singhal, Dr Ravindra Kumar, Dr Saroj Kumar, Mr VK Tyagi, Mr Pradeep Khandelwal, Dr SK Gupta, Mr Raghav Khemka, Mr Rajesh Arora, Ms Ira Gupta, Dr S Sharma

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

Topic: Post-COVID Sequelae – Hearing Loss, Tinnitus and Vertigo

Speaker: Prof Dr JM Hans, *Padma Shri Awardee, Director Dr Hans Centre for ENT, Hearing Care & Vertigo, New Delhi*

18th December, 2021 (Saturday, 9.30 am-1 am)

- There has been a 10-15% increase in patients suffering post-COVID sequelae of hearing loss, tinnitus, vertigo. The age variants are disturbing; now these problems are seen in persons as young as 18 to 20 years.
- Viruses such as rubella, rubeola (measles), mumps, varicella zoster virus (VZV), cytomegalovirus (CMV) have a predilection for the inner ear. They directly affect any part of the inner ear like the stria vascularis, organ of Corti or nerves and indirectly they decrease immunity in the host. COVID virus behaved similarly to other respiratory viruses causing cochlear symptoms or vestibular symptoms or both. The most important part of the inner ear is the endolymph, which is formed inside the cochlea by the stria vascularis and is also absorbed by the stria vascularis. We do not know where the coronavirus is acting, but based on what we know about the earlier respiratory viruses, we know that they act at the stria vascularis and endolymphatic duct.
- The most common ear conditions seen are endolymphatic hydrops/Meniere's disease, labyrinthitis, vestibular migraine and benign paroxysmal positional vertigo (BPPV).
- The first symptoms are fullness, pain, deep seated vague burning sensation. The disease has to be picked up at this initial stage. Once the disease is established, i.e., when the endolymphatic duct is totally occluded, the condition becomes irreversible.
- Vestibular migraine can be in the vestibular nuclei. The precipitating factor is either endolymphatic (hence called the Migraine Meniere's syndrome) or working for long hours on the computer or using the mobile phone.

- BPPV is now known to be in any canal, multiple canals; it could be bilateral. Hence, the maneuvering exercises also vary. There are 15 types of BPPV and there are about 15 types of maneuvering exercises. So, it is very important to pinpoint where exactly the BPPV is.
- The virus directly damages the intracochlear structure and induces inflammatory response leading to formation of debris inside the inner ear, which block the drainage of endolymphatic system causing hydrops. It also causes immunosuppression leading to increased susceptibility to bacterial infections.
- In post-COVID stress, the plasma levels of stress-related hormones such as antidiuretic and catecholamine are raised. They alter the inner ear fluid dynamics and may cause endolymphatic hydrops. Disease may worsen the emotional state, which in turn may worsen the symptom perception.
- Predisposing factors are genetic, autoimmune state, ototoxic drugs and hormonal imbalance.
- Many people had underlying allergies, which made them vulnerable after exposure to the COVID virus. People on aspirin were more predisposed to develop endolymphatic hydrops.
- High estrogen levels cause sluggishness of blood flow in stria vascularis, which changes the fluid balance of the inner ear leading to endolymphatic hydrops. Low estrogen may weaken the otoconia and produce symptoms such as BPPV.
- The three major symptoms of Meniere's disease are episodic vertigo, fluctuating hearing loss, roaring tinnitus. But the blocked ear, which is the initial symptom, is the most important. Most blocked ears are treated as eustachian catarrh. If tympanic membrane and impedance are normal, this should raise suspicion of endolymphatic hydrops.
- Causes are genetic, vascular (stress-induced vasoconstriction), viral infection, allergic/auto-immune, environmental (increased salt and water intake). Secondary endolymphatic hydrops may occur following trauma, otitis media, otosclerosis, internal auditory canal (IAC) lesions or mass. Asians are more prone to this disease than their western counterparts.
- Etiopathogenesis is the formation or excretion of the endolymph; Radial flow where the endolymph is formed and absorbed in the stria vascularis and longitudinal flow where the endolymph is formed in the stria vascularis and absorbed in the endolymphatic duct. Debris are entangled in the endolymphatic duct, which is narrowed by mastoid hypocellularity. Other factors are hypodeveloped Trautman's triangle and anterior displacement of lateral sinus.
- Meniere's disease has to be diagnosed at the prodromic stage, where the patients come with vague symptoms like fullness in the head, etc. In stage 1a (fluctuating stage), there is fluctuating hearing loss and roaring tinnitus. This is followed by the disabling stage (stage 1b), where destruction is evident. The hearing loss further deteriorates each time there is an attack. In stage 2, the disease is stable, there is no vertigo but the disease might recur after few years. This latent period keeps on decreasing. The third stage is the contralateral ear stage.
- The disease is most damaging in the first year. Symptoms are blocked ear/deep seated ear pain/burning sensation, Tullio phenomenon (dizziness when there is loud sound), hyperacusis (irritation to the sound - one of the cardinal symptoms of endolymphatic hydrops). Once tinnitus, vertigo and hearing loss occur, this means that the destruction has already started and the disease is becoming less reversible.
- Diagnosis is based mostly on history. Audiometry shows flat curve in 60%, rising curve in 17% (low frequency hearing loss) and falling curve in 12% (high frequency hearing loss). Electrophysiological tests include Short Increment Sensitivity Index (SISI), Electrocochleography (EcocG), Vestibular Evoked Myogenic Potential (VEMP). If EcocG/VEMP is positive, it is a sure case of endolymphatic hydrops. However, a complete vestibular assessment is essential to rule out associated conditions such as BPPV, vestibular migraine.
- In BPPV, the otoliths could be in the canal called canalithiasis or in the cupula called cupulolithiasis. They are most commonly in the posterior canal but lateral or anterior canals may also be involved. There are about 15 types of BPPV, including multicanal BPPV. And there are different repositioning exercises. The Dix-Hallpike Test is to be done to pinpoint the otoliths and by which exercise they can be repositioned into the utricle so that they become ineffective. Other tests include thyroid function tests, vitamin B12 and D3, pANCA/cANCA, skin prick allergy tests, hormonal assay, HRCT (temporal bone) and MRI (IAC).

- Earlier surgical treatment was stressed upon, but this is not the case now. Management involves Meniett's device, psychotherapy and drugs including intratympanic instillation.
- The drugs include betahistine, piracetam, diuretics (acetazolamide) and steroids. Give all four together to treat endolymphatic hydrops, then the results are very good. Betahistine increases cochlear/vestibular and cerebral blood flow; diuretics reduce formation of endolymph; piracetam reduces erythrocytes adhesion, hinders vasospasm and improves microcirculation.
- Intratympanic steroid increases vascularity, reduces inflammation in the labyrinth, restores normal functioning of stria, regulates inner ear *de novo* protein synthesis and improves excretion via longitudinal flow.
- If post-COVID acute tinnitus is not treated properly, it becomes chronic, which cannot be treated by intratympanic steroids. The phantom noise has to be treated by tinnitus matching and masking.
- Tinnitus can be matched from 50 Hz to 13,500 Hz with One Hz steps. Advanced audiometers can match till 16-18,000 but with only 500 Hz. Tinnitus masking app can be downloaded on mobile, which has 250 environmental and 250 filtered musical masking tracks.
- Acute tinnitus, which is due to the distension of the endolymphatic system and stretching of the neural element inside, can be very well treated by diuretics and intratympanic steroid.
- Medications have to be stopped as early as possible after tapering the dose and start vestibular rehabilitation.
- Cervical spondylosis is no more a cause of vestibular vertigo. It causes vertebrobasilar insufficiency and pain. The vertebrobasilar insufficiency may cause vertigo, which has a very characteristic feature that there is blurring of vision for few seconds and then it becomes alright. In vestibular vertigo, there is no blurring of vision or sinking sensation. Cervical spasm is secondary to the vertigo. The straightening of the cervical spine is due to the spasm of the muscles.

Participants – Member National Medical Associations: Dr Yeh Woei Chong, Singapore, Chair-CMAAO; Dr Alvin Yee-Shing Chan, Hong Kong, Treasurer-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; Dr Ashraf Nizami, Pakistan; Dr Qaiser Sajjad, Pakistan; Dr Md Jamaluddin Chowdhury, Bangladesh; Dr Debora Cavalcanti, Brazil

Invitees: Prof Dr JM Hans, New Delhi; Dr Monica Vasudev, USA; Dr Eng Chang Ng; Dr Ng Hwee Hin; Dr Nisha Jacob; Dr Yeo Khoonhui; Dr Patricia La'Brooyi; Dr Gaurav Chaturvedy; Dr Xinhuo Peter Liao; Dr LC Lim; Dr Ashok Gupta, India; Dr Hwee Yee Lai; Dr S Sharma, Editor-IJCP Group

Moderator: Mr Saurabh Aggarwal

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Delayed Umbilical Cord Clamping Tied to Improved Outcomes in Very Preterm Infants

Delayed umbilical cord clamping for at least 60 seconds following birth could lead to a significant reduction in death or disability in very preterm infants, suggests a new study.

Investigators randomized 767 very preterm infants to delayed cord clamping at least 60 seconds after birth, while 764 were randomized to immediate cord clamping. Death or disability at 2 years of age was the study's primary outcome.

Death or major disability was noted in 29% of infants who were randomized to delayed clamping compared to 34% of the infants subjected to immediate clamping (relative risk 0.83, p = 0.010). By 2 years of age, 8% of infants who were assigned to delayed clamping and 11% of the infants who underwent immediate clamping had died, while 23% and 26%, respectively, had major disability. The impact of clamping the cord at least 60 seconds after birth reflected a 30% reduction in relative risk of death at 2 years of age. The study is published in *The Lancet Child & Adolescent Health*… (*Source: Medscape*)