RECOMMENDATIONS

AASSA-PAS Webinar Series 2021 on 'Pandemic Preparedness: Science and Countermeasures'.

The AASSA-PAS Webinar Series 2021 on '**Pandemic Preparedness: Science and Countermeasures'** was organized jointly by the Pakistan Academy of Sciences (PAS) and the Association of Academies and Societies of Sciences in Asia (AASSA) with the support of the InterAcademy Partnership (IAP). The series consisted of four webinars, each covering a specific theme of the current pandemic scenario/situation and scheduled on 27 April 2021, 4 May 2021, 25 May 2021 and 24 June 2021. The webinars provided an opportunity to share lessons learnt among the participating countries and scientists about COVID-19 and its relation to the UN Sustainable Development Goals (SDGs); strategies for the current issues and challenges while facing pandemics; and the increasing awareness about the preparedness of the future pandemics. Use of emerging technologies like Artificial Intelligence applications in tracking health behaviours during disease epidemics and encouraging the use of ICT technologies and social media for tackling the spread of misinformation regarding different aspects of the pandemic were discussed as wel las issues of biosafety, biosecurity and ethics.

In total, 48 lectures were delivered in the AASSA-PAS Webinar series 2021 by leading experts. Of these, 18 were presented by international speakers and 30 by speakers from Pakistan. The resource persons in the webinars were leading foreign experts from different countries i.e., Australia, Bangladesh, China, Indonesia, Iran, Japan, Korea, Kyrgyzstan, Malaysia, Nepal, Pakistan, Russia, Turkey, United Arab Emirates (UAE), USA and Vietnam. More than 2,000 national and international participants registered to participate in the AASSA-PAS Webinar series 2021 (including 748 participants in Webinar I, 760 participants in Webinar II, 428 participants in Webinar III, and more than 300 in Webinar IV). At the conclusion of the AASSA-PAS Webinar Series, participants worked together to develop a list of recommendations that will further help in creating a better and more robust pandemic response. These recommendations are:

1. A global vaccination drive for COVID-19 should be considered as the top priority. However, vaccine safety should be ensured. Advanced countries with the capacity to manufacture vaccines should assist in building the capacity for vaccine manufacturing in developing countries.

2. COVID-19 vaccinations should be made available to everyone. However, governments should ethically ensure their availability and distribution. International organizations like the World Health Organization (WHO) should take the lead in providing COVID vaccines across underdeveloped and developing regions, especially the Least Developed Countries (LDCs) and Low- and Middle-Income Countries (LMICs).

3. COVID-19 passports could play an important role in reopening societies and restoring the civil

liberties that were reduced to mitigate the spread of the virus. But at the same time, they bring important ethical concerns. COVID-19 passports can bring unjust forms of exclusion that should be avoided. Given the global inequality in access to vaccines, the introduction of COVID-19 passports could lead to a deepening of global divides. Unjust travel limitations for those who did not have access to vaccines should be avoided. The unequal treatment of people based on having and not having a COVID-19 passport can cause a stigma and a social dichotomy (*Adopted from the UNESCO recommendation on COVID-19 passports*).

4. Despite impressive scientific achievements, barriers such as the vaccine cold chain and multiple forms of intellectual property (IP) protection like TRIP-WTO stand in the way of equitable access and fair allocationof vaccines and other medical technologies. These need to be relaxed especially for pandemics, which will encourage LMICs to develop their own vaccines, etc.

5. While a global vaccination drive is extremely important to build immunity for COVID-19, these vaccinations must not mask other mass vaccination programmes, for example, the routine paediatric vaccinations, as well as vaccines for polio. Suitable measures should be taken to ensure the continuity of the different vaccination drives.

6. Awareness campaigns and counselling of people regarding vaccinations should be given an equal priority as they would help in decreasing vaccine hesitancy. The use of digital forums, mainstream and social media should be encouraged for spreading public health awareness.

7. The healthcare infrastructures must be strengthened as co-pandemics can be a serious threat to vulnerable healthcare infrastructures, like those in LDCs and LMICs.

8. The environmental integrity and conservation of biodiversity should be a global priority as it is often zoonoses that are the major drivers of emerging and re-emerging infections. Therefore, concepts like "One Health" should be embraced, and organizations, NGOs and other stakeholders should be encouraged to propagate sustainable and eco-friendly paradigms.

9. A surge in the use of disposable face masks during these unprecedented times are polluting water bodies and becoming a threat to aquatic life. Research into the development of biodegradable facemasks should be supported, and the use of biodegradable facemasks promoted and adopted widely.

10. Robust biosecurity and biosafety structures must be in place. Students and policymakers must be made aware and educated regarding these concepts, which are now considered extremely important amid the pandemic. In this regard, the recently published Tianjin Guidelins for Codes of Conduct for Scientists (https://www.interacademies.org/news/iap-endorses-tianjin-biosecurity-guidelines) can be a useul resource.

11. The use of computer-based technologies, simulations and artificial intelligence, etc. are strongly recommended for the prediction of the trends in infections.

12. Existing knowledge regarding medicinal plants can be used in the search for anti-SARS-COV-

2 therapies. Such folkloric knowledge and practices could be used to develop a knowledge base that should be scientifically assessed and verified in anti-viral therapies. However, pseudo-science needs to be discouraged.

13. Tackling misinformation regarding the COVID-19 outbreak is as crucial as searching for a cure. It is critical to tackle falsified or fabricated facts. Advanced IT/computer-aided technologies are required to cope with infodemic situations.

14. Governments should prioritize research and development (R&D), especially in the health sector. Policy-making regarding areas like health, environment, science and technology, etc. should be informed by science and include input from expert scientists in the respective domains.

15. The COVID-19 pandemic has been a source of psychological burden which needs critical attention from scientists, doctors and health workers. Counselling strategies should be developed to cope with the mental health consequences of the pandemic.

16. Public and private research organizations should redouble their commitment to open access to data, knowledge and information especially in the current crisis.

17. Collaborative science between technologically less advanced countries and advanced countries should be encouraged. Such global synergies in the different STEM fields can be helpful in the creation of knowledge as well as in answering pressing healthcare challenges.

18. The COVID-19 pandemic threat is not one of health alone. SDG #2: Zero Hunger and #4: Quality Education, for example, come together when considering the needs of students from marginalized communities in LMICs who may be suffering from the burden of food insecurity while attempting to continue their learning online. Information about physical, mental and healthy coping strategies, as well on affordable, healthy food options is needed.

19. The biggest risk for food security is not considered to be food availability, but rather consumers' access to food. As lockdown measures and other COVID-19-related disruptions lead to a global recession, millions are losing their livelihoods or experiencing a severe drop in income. Social safety nets and food assistance programmes are thus essential to avoid an increase in hunger and food insecurity. Establishing regional genebanks and community seed banks, with safety duplications, can help alleviate some of these issues.

20. Considering virtual education, institutions should apply the following practices to build community and student belonging:

    - Meet students' basic needs;

    - Keep students informed using various communication platforms;

    - Use peer mentors and student leaders to cultivate a sense of community;

    - Provide students with ample opportunities to share their experiences and demonstrate that they are heard by following through with appropriate support;

- Engage parents and families, providing them with tools and resources to support their students;

- Increase collaboration to ensure that students are at the centre of all decisions; and

- Demonstrate care and compassion.