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THE COVID-19 PANDEMIC
LESSONS LEARNT AND RECOMMENDATIONS FOR FUTURE DIRECTIONS

REPORT • Adopted in November 2023

IBC International Bioethics Committee of UNESCO

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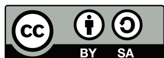

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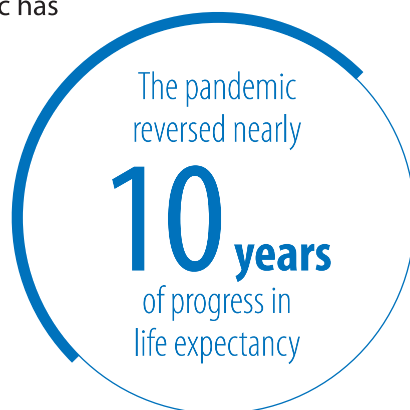
SHORT SUMMARY

From pandemic to preparedness: lessons learnt for future health emergencies

The COVID-19 pandemic has marked a turning point in global health and governance, underscoring the deep interconnection of societies, the critical role of science in public health decision-making, and the importance of strengthening global health systems and preparedness for future crises.

The multifaceted crisis brought by the pandemic has ravaged global health, reversing nearly 10 years of progress in life expectancy. This widespread disruption also exposed a wide range of ethical and human rights challenges in both national and international responses: ensuring equitable healthcare access, safeguarding privacy, understanding the impact of lockdowns, achieving a fair distribution of vaccines and securing reliable access to information can be listed among key critical concerns.



In this report, the International Bioethics Committee (IBC) offers a comprehensive assessment of the pandemic's ethical, human rights, and policy implications, providing concrete recommendations to Member States, scientists, media professionals and society at large.

It stresses the urgent need to foster global cooperation and embed bioethical principles at the core of health responses, ensuring that future crises are confronted with the strength of past lessons and a deep commitment to protect human dignity and rights.

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"Since wars begin in the minds of men and women it is in the minds of men and women that the defences of peace must be constructed"

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FOREWORD

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The COVID-19 pandemic has tested the vulnerabilities and incoherences of our global society, amplifying existing inequalities and massively reversing progress towards the achievement of the 2030 Agenda. UN Women reports that 47 million additional women and girls were pushed into extreme poverty by the pandemic, widening the gender poverty gap and reversing progress toward SDG 5 (gender equality). The pandemic has also severely impacted SDG 3 (good health and well-being), erasing nearly a decade of progress in life expectancy worldwide (UN, 2024).

Considering this colossal impact, we welcome the report prepared by our International Bioethics Committee (IBC) on the COVID-19 pandemic, which draw on lessons learned to offer forward-looking recommendations for managing future health crises. Since the possibility of another outbreak is undeniable, it is essential that we apply these insights to strengthen our preparedness, enhance global coordination, and build more resilient health systems capable of responding effectively to future emergencies.

To prevent a new pandemic, governments must look at and address the root causes of health crises, including loss of biodiversity and climate change. Members States should also invest the appropriate resources in public health infrastructure and in healthcare workers, ensuring they benefit from appropriate working conditions and material. Public health responses – such as policies that restrict the freedom of individuals – must be fully based on scientific evidence, promoting and protecting human rights and dignity whereas avoiding discrimination, excessive surveillance and arbitrary or violent enforcement. Similarly, decisions such as triage and allocation of scarce resources should be guided by the ethical values of equal concern, fairness, medical beneficence, transparency, and trustworthiness.

All actors – government and health authorities, media professionals, scientists and civil society – should cooperate to nurture public trust in science and amplify health literacy, empowering individuals to effectively access healthcare, exercise their rights, engage in public dialogue about health and make choices about their own health. Local engagement and inclusive decision-making are essential to ensure culturally sensitive and respectful policies, while scientific standards must remain uncompromised.

In a pandemic, the principle that "no one is safe until everyone is safe" becomes vital. The impressive speed with which vaccines were made available highlights the vital importance of investing in research to prepare for future outbreaks, but none of this is truly effective without equitable distribution of vaccines worldwide. This was especially evident when they first became available, where 10 countries had administered 75% of all vaccines and more than 130 countries

had not received a single dose at the beginning of 2021 (UN Security Council, 2021). Vaccines must be considered as a global common good, and new mechanisms are needed to promote the decentralization of their production and distribution.

Last but not least, we cannot address the devastating effects of the COVID-19 pandemics without addressing the infodemic that emerged alongside it, spreading as rapidly as the virus itself. Exacerbated by social media, the infodemic not only hindered efforts to control the virus, but also fueled racism and threats to democratic values. In this report, IBC reminds us of the responsibility of government, media professionals and scientists to counter disinformation and misinformation by sharing timely, precise, transparent and accurate information, accessible to all.

To advance SDG 3, we must commit to improving access to healthcare and health information for all, ensuring that no one is left behind. As we move forward, this report serves as an ethical compass that we can ill afford to ignore if we are to ensure that health and well-being are prioritized over borders, political divides, and economic interests.

Lidia Arthur Brito
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UNESCO

Within the framework of its work programme for 2022-2023, the International Bioethics Committee of UNESCO (IBC) decided to comprehensively address the lessons learnt from the COVID-19 pandemic to guide future directions.

At its meeting in December 2021, the Committee established a Working Group to formulate initial reflections on this topic and write draft sections for the Report. The IBC met in Paris in June 2022 to discuss the initial sections and expanded on the contents for the report. As a result, new sections were written and compiled into a preliminary draft report. The Report was presented and discussed further during the 29th ordinary session of the IBC and the joint session of the IBC and the Intergovernmental Bioethics Committee (IGBC) in September 2022, and discussed further. Changes were recommended and effected to improve the draft report, with further iteration in April and May 2023, during its virtual working group meetings. This is the final draft of the report, adopted by the Committee in November 2023, following its 30th session in September 2023.

This document does not necessarily represent the views of the Member States of UNESCO.

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INTRODUCTION

1. According to the definition given in the Dictionary of Epidemiology, *"A pandemic is an epidemic occurring worldwide*, *or over an extensive area*, *crossing international boundaries and usually affecting a large number of people"* (Last, 2001). The COVID-19 pandemic, which broke out in December 2019, underscored the world's fragility to infectious disease outbreaks. It has also highlighted the weakness of structures from global to in-country levels to prevent such disasters, act decisively, and deal with the issues promptly. Infectious disease outbreaks, such as AIDS, influenza, SARS, MERS, Ebola have featured prominently at an international level over the last few decades, with data suggesting that these catastrophes are increasing in frequency (Huremović, 2019).

2. Despite considerable efforts to stop the AIDS pandemic, it took two years to identify HIV as the cause (Barré-Sinoussi *et al*. 1983), two more to identify CD4 as its receptor (Dalgleish *et al*. 1984), and a decade to develop an effective antiviral strategy (Borducchi *et al*. 2016).

I.1. Rationale

3. Even with advances in science, it has not been possible to accurately predict the impact of future pandemics. This was also evident early in the COVID-19 pandemic, which resulted in an unprecedented burden on human health and wellbeing, significant disruptions in healthcare systems, and grave social and economic consequences, particularly among the vulnerable. The pandemic has affected a large part of the global population, and its effects will last several years. Changes in the twenty-first century due to, among other things, travel, trade, urbanisation, and environmental degradation increase the risk of disease outbreaks and their spread, which rapidly amplify into epidemics and pandemics (Dhai, Ballot and Veller, 2021).

4. Except for a few countries that had experienced similar epidemics in the past, e.g. SARS CoV-1 pandemic in 2003, most countries and regions were unprepared for the COVID-19 pandemic (Dabla-Norris, *et al*. 2020). Of note is the huge uncertainty about management of the pandemic. Most countries did not have adequate public health infrastructures to manage the situation, and the virus spread quickly, even in some of the best-resourced regions. Inequitable access to diagnostic, preventive, and therapeutic modalities has been the experience globally. Also causing concern were the varied political responses, with sometimes inconsistent messages and irrational decision-making. Corruption during the pandemic, including in procuring urgent personal protective equipment (PPE) and medical supplies, has also been rife in some areas. On the social front, simple preventative measures have been ineffective and without clear guidelines. Queue jumping to gain early access to vaccines outside national priority guidelines was also seen in some countries (Dhai, Ballot and Veller, 2021).

5. On the other hand, different degrees of vaccine confidence and a loud anti-vax voice have also adversely impacted efforts to contain the infection. That there may be another outbreak, which could be even more dangerous than the COVID-19 pandemic, is an inevitable reality. Therefore, we must utilize the lessons learned during this pandemic to be prepared for such an eventuality.

I.2. Aims and scope of the Report

6. This Report provides an overview of the bioethical and human rights issues of significance arising from the COVID-19 pandemic in order to understand how it occurred, evolved, was managed, and may have been prevented. Bioethical values and human rights norms and standards must be utilised for the analysis to inform the lessons learned and to provide morally sound recommendations as global, national, and sub-national pandemic preparedness plans are developed and enacted.

7. The scope of this Report draws in particular from the Joint Statements from IBC and COMEST during the pandemic, which have highlighted the importance of a global reflection and response to the pandemic that consider ethical principles and protect human rights. The main areas highlighted in the statements are summarized below:

    a. **International cooperation and solidarity.** IBC and COMEST appealed to governments and the international community to act through international cooperation in the spirit of solidarity, underlining the responsibility of high-income countries to help low- and middle-income countries. The need to institute barriers across borders to prevent transmission should not impede international collaboration.

    b. **Equity in the allocation of resources.** Allocation of resources and strong public health systems should be of paramount importance to governments. Allocation of healthcare resources, both on a macro- and microlevel, is ethically justified only when they are based on the principles of justice, beneficence, and equity. In situations of shortage, clinical need and effective treatment should be a primary consideration.

    c. **Equity in the allocation of vaccines.** Vaccines should be viewed as a "global common good" and "vaccine nationalism" should be firmly rejected. The IBC and COMEST commented that from an ethical perspective, a utilitarian approach for distributing vaccines based on the benefit of the greatest number of people should not be the sole criterion. Other ethical values for fair allocation of scarce resources, such as equality, equity, giving priority to the worse off, especially protection of people with

vulnerabilities, and rewarding the instrumental value of health care workers, must be considered. One important effect of vaccines would be reducing pressure on healthcare workers. Under the urgent conditions of the pandemic, new global mechanisms should be implemented to allow efficient development and production of vaccines; at the same time, supporting the necessary investments that would guarantee access to all under fair conditions.

d. **Recognition of vulnerability.** It is mandatory to recognize the vulnerability of those affected by poverty, discrimination, violence, gender, pre-existing illness, loss of autonomy or functionality, age, disability, racism, incarceration, migration, and the specific difficulties faced by refugees and stateless persons.

e. **Evidence-based decisions on both national and international levels.** Health and social policies should be based on solid and sound scientific evidence and knowledge, considering the uncertainties that exist during a pandemic. Therefore, an international effort should be taken to adopt possible common criteria for data collection about the pandemic spread and its impact. IBC and COMEST also stressed the importance of an open interdisciplinary dialogue with civil society.

f. **Precise and honest information.** Practical and comprehensive information on the best ways to realize everyday life activities is critical for citizens. Various channels of information may be necessary to reach out to everyone (regardless of age, life circumstances, or level of education). Information issued by politicians, scientists, authorities, and the media should be timely, accurate, clear, complete, understandable, and transparent. Messages should be honest, precise, consistent, coherent, and realistic about benefits and risks.

g. **Awareness-raising and responsibility.** Governments are responsible for ensuring public safety and raising awareness of the measures required for this purpose. The public has a responsibility to abide by rules set out to protect individuals and communities. At the same time, policymakers should be aware of the possible negative impacts of restrictions and support initiatives focusing on prevention.

h. **Open dialogue during a crisis with many unknowns.** An open dialogue that includes politics, science, diplomacy, ethics, and law is necessary. Global ethical considerations should guide the dialogue.

i. **Data collection and the use of digital technologies.** Although digital technologies such as mobile phones, social media and artificial intelligence can play a crucial role in dealing with and monitoring pandemics, addressing ethical, social, and political issues related to such technologies is crucial.

j. **International research collaboration and responsible research practices.** There is a need for international collaboration also in research. Transparency, data sharing, and benefits from research should be recognized as central values. Researchers must comply with ethical research principles and in situations such as the pandemic, be

vigilant against the dual use of research. IBC and COMEST expressed support for Open Access publishing, especially in times of public health emergencies.

k. **COVID-19 certificates.** COVID-19 certificates can play an important role in managing the global pandemic. However, any COVID-19 certificate should be introduced and implemented with great caution. The certificates should avoid discrimination and societal divides, leave no one behind, and be embedded in a system of international solidarity.

8. Some other international documents that are relevant to the scope of the present reports are included in ANNEXURE 1: Some international documents relevant to the scope.

CONTEXTUAL PERSPECTIVES

II.1. General introduction

9. This chapter provides the contextual perspectives of the scientific, social, environmental and cultural issues arising from the pandemic and how the lives of individuals and the communities were impacted. This includes issues of paramount importance, such as equitable access to healthcare in terms of access to preventive, diagnostic and therapeutic tools, the importance of timely and effective communication, and the role and response of governments to the pandemic.

II.2. Scientific perspective

II.2.1. Introduction

10. This section provides a background to the available scientific knowledge that is relevant to the discussions around the ethical aspects of the pandemic. Viruses are highly adaptive and their ability for rapid mutation can result in very diverse and dynamic variants. Alongside this, the complexity of the human immune system needs to be considered as well. This exceptionally well-developed system uses different strategies to defeat viral infection, including cellular and humoral immune responses. It is also crucial for the human immune system to be modulated in a way that does not damage the host human cells, which happens in some severe cases of COVID-19 disease. The scientific information and data presented in this chapter are based on the currently available information and may require updating as our understanding of various scientific aspects evolves over time.

II.2.2. Virology and immunology

11. Coronaviridae are medium-sized enveloped RNA viruses known for long, causing respiratory or enteric infections. For example, beta-subgenus coronaviruses caused deadly epidemics such as SARS and MERS in the first two decades of the 21st century (Chan *et al*. 2015). SARS-CoV-2[1], the causative agent of COVID-19, is another betacoronavirus closely related to SARS, albeit with lower fatality rates. However, elderly populations or individuals with underlying comorbidities, such as obesity, diabetes, and cardiovascular diseases, are particularly at a higher risk of increased disease severity. Once the pandemic status had been reached, SARS-CoV-2 rapidly mutated into different variants and sub-variants with varying degrees of virulence and distinct characteristics, such as increased transmissibility or immune evasion, affecting vaccine development efforts and disease management (Zabidi *et al*., 2023).

12. Vaccine development is the key to fighting against the pandemic, and a critical step is establishing immune correlates of protection. Multiple experimental studies revealed that both cellular and humoral immunity is essential (Feng *et al*. 2021). Nevertheless, the ability of the virus to evade immune scrutiny through mutations impacted the efficacy of vaccination campaigns even though new upgraded vaccines were relatively readily available (Dong *et al*. 2021).

II.2.3. Epidemiology and data

II.2.3.1. Epidemiology

13. The first report of COVID-19 cases from Wuhan in Hubei Province in China was made in December 2019. The WHO declared the outbreak a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020. On 5 May 2023, the WHO announced that COVID-19 was no longer a public health emergency of international concern, but stressed that this did not mean the disease was no longer a global threat[2]. At the time of finalizing this report at the end of October 2023, the total number of cases worldwide was over 771 million, with over 6.9 million deaths[3].The numbers are likely to be under-reported due to many factors, such as the efficacy of testing, the availability of contact tracing, the non-detection of asymptomatic cases and inefficient public health surveillance systems.

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1 The name SARS-CoV-2 was given by the Coronavirus Study Group of the International Committee on Taxonomy of Viruses (Gorbalenya *et al*. 2020).

2 https://news.un.org/en/story/2023/05/1136367

3 https://covid19.who.int/

II.2.3.2. Transmission

14. The primary mode of transmission is from person to person (Meyerowitz *et al*. 2021). There is currently no evidence to suggest that animal contact is an important source of infection in humans.

15. Virus particles present in the respiratory secretions are released when a person with infection coughs, sneezes, or talks. If other persons are close enough to inhale these virus particles, the latter can make direct contact with the mucous membranes in the nose or mouth and infect them. At the height of the pandemic, it was thought that this is likely to occur if the infected person is less than within two metres or six feet away. SARS-CoV-2 can also be transmitted over longer distances through the airborne route (through inhalation of particles that remain in the air over time and distance), but the extent to which this mode of transmission has contributed to the pandemic is uncertain (Bahl, Doolan & MacIntyre, 2022).

II.2.4. Prevention/Public health measures

16. During an infectious disease outbreak, public health measures are extremely important to prevent and limit the spread of infection. In the community, adherence to good personal preventive measures has been shown to be effective in reducing the transmission of COVID-19 (Enria *et al*. 2021). The importance of individuals taking the responsibility to protect themselves against infection cannot be over-emphasised. In addition to personal preventive measures, governments and health authorities have the responsibility to institute public health measures with culturally appropriate information to protect the population at large.

II.2.4.1. Personal preventive measures

17. Based on the epidemiological and scientific knowledge of the mode of transmission of COVID-19, a number of measures, such as physical distancing, wearing masks, frequent hand washing and use of hand sanitisers, were found to be effective in reducing the risk of infection. People were cautioned to avoid touching contaminated surfaces and then touching their faces, especially their eyes, nose and mouth (Honein *et al*. 2020).

18. Different types of masks with varying levels of filtration efficacy were available. Cloth masks are generally of low filtration efficacy. Medical or surgical masks or masks that are multi-layered and fluid were recommended. In certain situations such as for healthcare workers, when higher protection was required, an N95 mask or respirator was recommended (WHO, 2020b).

19. Effective ventilation of indoor spaces was found to be an important aspect of prevention, The availability of exhaust systems for the air was an added advantage. If air-conditioning was used, one with a sound filtration system was preferred.

II.2.4.2. Public health measures

20. Various public health measures were considered by governments or health authorities depending on the COVID-19 situation in the community. These measures were usually introduced based on the prevailing scientific knowledge at the time and changed as the disease evolved.

21. The most severe public health measure was the "lockdown", which prohibited people from going out except for emergency medical care or essential services. A serious consequence of prolonged lockdown was the negative impact on the economy and the disruption of supply chains which affected the global economy. Other approaches taken by many countries to reduce the risk of transmission involved the closure of schools, colleges and universities with consequential impact on teaching, learning and mental health. Closure of non-essential businesses and food and entertainment establishments or limiting the number of diners had been instituted, which impacted on the economy. Bans on large social gatherings (such as places of worship, conferences, and concerts) were implemented, negatively impacting the population's well-being. When the bans were relaxed, procedures such as pre-event testing were introduced. With the availability of vaccines, these measures were modified to allow fully vaccinated people more freedom to dine and attend large gatherings, especially in areas where the COVID-19 situation was less severe (Talic *et al*. 2021).

22. Contact tracing was another ethically sensitive but labour-intensive method of identifying potentially infected cases and isolating them until they consistently tested negative. The use of, for example, digital proximity and face detection technologies for contact tracing was introduced in some countries. This caused some concern among the citizens regarding possible violation of privacy rights and data protection regulations.

23. In the early part of the pandemic, travel restrictions were instituted by most, causing substantial economic losses to the travel industry and airlines. With the availability of vaccines, travel resumed, especially for fully vaccinated passengers. This differentiation of vaccinated travellers gave rise to ethical concerns, mainly due to the inequality of access to vaccines among the unvaccinated. This requirement was subsequently lifted in many countries that decided to "live with the virus".

II.2.4.3. Vaccination

24. One of the achievements of scientists in this pandemic has been the remarkable speed at which vaccines were made available to the public. It is worth mentioning that the Nobel Prize in Medicine 2023 was awarded to Katalin Karikó and Drew Weissman "for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19"[4]. The efficacy and safety of mRNA vaccine for COVID has confirmed the important role of this platform for other infectious diseases as

4 https://www.nobelprize.org/prizes/medicine/2023/press-release/

it offers a versatile and rapid platform for targeted vaccine development and its modular nature allows for easy adaptation to different pathogens, and their rapid production capabilities provide flexibility in responding to any infectious diseases that could emerge (Al Fayez N, *et al* 2023). This highlights the importance of fundamental and basic research to prepare for future outbreaks. Long-term investments in research enabled the finding of adapted solutions more rapidly.

25. It has been shown that vaccines have reduced the infection rate as well as reduced the number of severely infected people and deaths, especially in the vulnerable such as the elderly and those with multiple pre-existing morbidities. Many of the vaccines available today require two doses to give sufficient immunity. However, over time, protection wanes and booster doses are needed, especially for the vulnerable.

II.2.5. Clinical context of SARS-CoV-2 infection[5]

26. Common presenting signs and symptoms included fever, cough, fatigue, anorexia, dyspnea, loss of smell (anosmia) or taste (ageusia). The last two were most strongly associated with a positive test. While individuals with confirmed SARS-CoV-2 infection could be asymptomatic, many people experienced mild to moderate respiratory illness and recovered without specific treatment. On the other hand, a substantial number of people become seriously ill, especially those aged ≥65 years, with comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, or cancer. However, serious illness and death could affect anyone at any age (US-NIH, 2022).

27. Prolonged and often debilitating sequelae, the Post-Covid Syndrome (Long Covid) has been seen as a complication of being infected with the virus (Mehandru & Merad, 2022). Symptoms include fatigue, malaise, dyspnea, loss of memory and difficulties in concentration and neuropsychiatric syndromes.

28. With regard to diagnosis, NAAT (Nucleic Acid Amplification Test) is the preferred initial test based on reverse-transcriptase polymerase chain reaction (RT-PCR). Alternatively, rapid antigen detection tests cost less, are easy to perform and are useful when a NAAT is unavailable. Individuals who use antigen testing should be aware that the sensitivity is lower than that of NAATs. Negative antigen tests performed for symptoms or recent exposure generally warrant confirmation with additional testing (UpToDate, 2023).

29. At the beginning of the pandemic many existing drugs for other illnesses were studied in clinical trials with individuals at risk/infected by SARS-CoV-2. They included Hydroxychloroquine, Ivermectin (Lim *et al*. 2022), and Azithromycin. Results for these were negative (WHO, 2021a) and there were reports of serious side effects (Singh *et al*. 2021). Dexamethasone was an exception as it was shown to mitigate the inflammatory response that could lead to multiple organ dysfunction syndrome (US-NIH, 2022).

5 For detailed information see Annexure 2.

In addition, several Monoclonal antibodies (mabs) received Emergency Use Authorization (UpToDate, 2021, 2022).

30. As the pandemic progressed, new antivirals (Nirmatrelvir/ritonavir, molnupiravir and redemsivir were approved (Burki, 2022). They were shown to decrease the risk of hospitalization or death significantly (30% to 88%), but only if administered within a few days of onset of symptoms (US-FDA, 2020). Due to cost, access to these drugs was a problem. The patent holders permitted 35 generic manufacturers to provide these antivirals but only to 95 selected LMICs.

31. At the time of completing this Report, the virus has mutated several times together with variants within mutations giving rise to decreasing severity of infection and a general decline in death-to-hospitalization ratio since July 2021 (WHO, 2023). However, in September 2023 there was a noticeable increase in SARS-CoV-2 transmission in the European Union. Several factors contributed to this increase, including large gatherings and increased travel. Additionally, there have been reports of waning levels of immunological protection against infection, although there remained good protection against severe disease in the general population.

32. It is worth noting that SARS-CoV-2 continues to mutate enabling its circulation at unpredictable times throughout the year. The recent transmission increases have coincided with the emergence of Omicron sub-lineages, particularly the XBB.1.5-like variants. In August 2023, sporadic detection of a new highly mutated Omicron sub-lineage, BA.2.86 was reported globally. This variant is highly divergent from the current strains, raising concerns of increased re-infections and underscoring the need for continuous surveillance and of heightening access to care and vaccines for all[6].

II.2.6. Research integrity and production of science under pressure

33. The pandemic was a public health emergency with an urgent need for scientific solutions and effective preventive, diagnostic and therapeutic interventions to control the outbreak. Pressure from the political sector and the general public had a significant impact on scientific and research discourse all over the world. Significant changes had to be made in the research process, from the study design and proposal, the scientific and ethical review process, conducting the study, to finally, the peer review and publication process. In the same way, research stakeholders inside and outside the research community, such as private and public sponsors, scientists, research institutions and universities, scientific review committees, research ethics committees, scientific journals and publishers, and national regulatory bodies that approve medical products and even the health-related civil society activists had to change, accelerate or modify their usual way of working.

6 ECDC publishes epidemiological update on increased COVID-19 transmission, SARS-CoV-2 variants, and public health considerations for autumn 2023. Available at: https://www.ecdc.europa.eu/en/news-events/ecdc-publishes-epidemiological-update-increased-covid-19-transmission-sars-cov-2

34. The demand by the people and policymakers for quick solutions for the pandemic was associated with a rapid response by the scientific community to address this global concern. The peer review and publication process were expedited to ensure the shortest possible time for the publication of research results, which resulted in a noticeable decrease in peer-review time during the pandemic. The number of papers submitted to medical journals increased exponentially during the COVID-19 pandemic, and this expedited review process imposed a higher risk to the integrity of scientific publications. The same expedited review process for the scientific and ethical review of research protocols could potentially result in lower scientific and ethical standards of research activities and therefore require adequate safeguards to ensure an acceptable quality of the review.

35. This faster peer review process, on the one hand, increased the accessibility of peer-reviewed scientific data that could have helped policymakers to at least have some evidence with a higher level of reliability in comparison to non-peer-reviewed data. This is especially the case in preprint publications. The quality of peer review and, inevitably, the quality of resultant data and analysis and, logically, the quality of decisions made based on that data may be adversely affected if the research data is not properly validated. A prominent example of such impact was retraction of many scientific articles because of concerns raised by the scientific community and science journalists. The rush for publication and making the information available on open access platforms, in some cases, put the early career and improperly trained researchers at high risk of being deceived by predatory journals.

II.2.7. Biodiversity and climate crisis

36. Links between global pandemics, biodiversity and climate crisis has been shown in several studies (FAO, 2020; Lawler and Allan, 2020; Tollefson, 2020; UN, 2020a). They have established that loss of biodiversity and climate change arising from changes in land use, the expansion and intensification of agriculture and the trade and consumption of wildlife disrupt ecosystems, promote proximity between humans and wildlife, humans and livestock, and thus between humans and the pathogens carried by wildlife and livestock. This increased proximity makes it easier for the pathogens to be transferred to, and infect, human beings, enhanced by natural mutations and adaptations. The transfer may occur through direct contact, air and water, or insect vectors. Using wildlife as food is also a means for pathogens to infect humans, as demonstrated by the origins and spread of COVID-19 and AIDS. Some wild animals pose special risks since they may carry pathogens to which humans have not been previously exposed and do not have natural immunity.

37. As biodiversity is eroded, the species that remain tend to be the hardy ones, including bats, rodents and various primates (Tollefson, 2020). Unfortunately, these species are more likely than those eliminated in the erosion of biodiversity to carry new pathogens able to infect humans or pathogens which can make a switch from animals to humans as hosts. Change of landscape from rural to urban also causes replacement of flora and fauna, less rich in diversity and some of which may be the results of adaptation of the original species to become potential transmitters or causes of new human diseases.

38. Along with pandemic risk enhancement due to loss of biodiversity, pandemics also adversely affect biodiversity. The occurrence of pandemics contributes to the increased economic hardship of the population and drives them, in pursuit of livelihood, to further erode biodiversity by destroying forests and exploiting wildlife for food and other purposes. There is, therefore, a vicious cycle involving biodiversity and pandemics, one inducing aggravation of the other. The pandemic highlights the importance of the "One Health" approach, involving collaborative efforts in multiple areas involving the health of people, animals and the environment as a whole.

39. Global warming may also be an important contributor to future pandemics. Pathogen-carrying insects may be able to thrive better in warmer climates, eat more to survive and, in addition to becoming a higher pest burden, pose greater risks of spreading infection in humans. Climate change has been shown as a causal factor for the increase in tick- and mosquito-borne diseases (Ernst, 2018). An increase in global temperature may enhance the spread of pandemics or result in environmental consequences contributing to the occurrence of new pandemics and diseases in general.

40. Most efforts to contain and prevent COVID-19 are on the development of vaccines and therapeutics and means to reduce physical access of the pathogen. Important as these efforts are, they rarely go into the root causes of the pandemic. Biodiversity loss and other effects of global warming constitute one of the root causes. Control of deforestation and curbing of wildlife trade, including the sale and consumption of rare animals as food or medicine, are among the measures which need to be taken, with their potential for causing new pandemics among the main reasons.

II.3. Cultural issues, traditional medicine and the role of intercultural dialogue

41. Culture has been a very important factor underlying the response to the different public health measures implemented during the pandemic (masks, lockdowns, use of antiseptics, testing and vaccines). At the same time, the pandemic stimulated the use of different traditional/indigenous medicines. Therefore, reinforcing intercultural dialogue between public health authorities and representatives of different cultures at both national and local levels has become a fundamental tool when faced with any emergent health crisis. Mutual learning and culturally sensitive framing of public health discourses and measures are expected outcomes, among others, of this dialogue.

II.4. Differential impact on structural discriminated groups and vulnerable individuals

42. While vulnerability is an inescapable dimension of the life of individuals and the shaping of human relationships (UNESCO, 2013), individuals and communities living in poverty, especially those belonging to groups historically discriminated against, suffer a differential impact on their human rights (IACHR, 2017). They are a priori in a highly vulnerable situation in the context of pandemics where the traditional categories of vulnerability are broader, as they include not only those related to clinical risks, whether direct or indirect, but also those arising from psychosocial factors.

II.5. Role of governments

43. The COVID-19 pandemic exposed areas for improvement in governance practices in risk-related decision-making, with many governments caught off guard despite prior warnings. Unlike other crises like earthquakes and floods, pandemics develop relatively gradually, allowing governments reasonable time to set up an administrative body and intervene. However, the COVID-19 pandemic grew out of control within three months, shocking authorities and underscoring that readiness needed to be better at global and national levels. Initially, there were not even enough surgical masks for the healthcare personnel struggling to contain the overflow of patients (Kirubarajan *et al*. 2020). Governments established crisis cabinets for better coordination, but the failure to act promptly at the beginning and efforts to downplay the severity of the condition were significant drawbacks for which they should be held responsible. Unfortunately, during the height of the crisis, unorthodox treatments such as wrongfully repurposed drugs were recommended by the highest authorities to quell public discontent (Niburski and Niburski, 2020). Good governance practices in pandemic situations require transparency and accountability, including open data and meaningful regulatory policies (OECD, 2014).

44. Several independent initiatives spearheaded by universities, such as Johns Hopkins and Oxford, assembled multinational data to enable a global overview of the pandemic, thanks to the internet. Unfortunately, the number of cases and the death tolls were often much higher than officially announced, resulting in a lack of public trust (The Economist, 2021). Trust was also eroded as evidenced by the many examples where authorities themselves breached the rules at the expense of the governed masses, creating discontent and damaging their credibility (The New York Times, 2022). Furthermore, vaccine hesitancy was a significant obstacle after the vaccinations began, signifying a failure of public health policy (Dominquez *et al*. 2022). In this regard, the caustic role of social media and the many examples of lack of public trust must also be considered (The New York Times, 2022).

45. The COVID-19 pandemic also showed the weaknesses of international organizations in coordinating mitigation efforts. Some of them were criticized for not defending their institutional legitimacy and authority adequately because they did not deal with governments as efficiently as they were required to (Gostin *et al*. 2022). On the other hand, the lack of support and collaboration from states also led to the poor coordination of the pandemic response.

In the early stages of a pandemic, caused by a novel pathogen, when neither a vaccine nor specific treatment is available, governments must strengthen the public health response as a high priority, and follow the recommendations of the WHO. While there was a high level of international collaboration and cooperation from some countries in response to the pandemic, there were serious instances of isolationism from others. A Review Committee was appointed by the WHO in September 2020, to review the WHO and country response to the COVID-19 pandemic, in the light of the existing International Health Regulations (IHR) 2005. The committee found that many countries lacked adequate public health capacity and resources to deal with a pandemic. There was also no provision for the WHO to monitor the implementation of the IHR by states. (Wieler, 2021)

46. Healthcare services were most affected, with primary responders suffering casualties to a greater extent. Besides the logistic and material needs, proper regulations on using new therapeutic entities, clinical trials, and emergency authorization of new drugs became vital issues. A well-designed regulatory policy must be based on scientific evidence, inclusive, and transactional. Policy enforcement is another critical point since popular support through public trust is a must.

47. Under the pressure of increasing casualties, many countries hastily developed policies to shorten drug regulatory procedures. New clinical trial protocols that combine several phases became a rule as part of the crisis-related regulations. A great success was the development of an effective vaccine in less than a year.

48. Good crisis management aims to minimize impacts on citizens and the economy and support recovery efforts. It is necessary to maintain a delicate balance between social and economic imperatives. Prevention versus management or mitigation versus containment is a difficult choice no one desires. Such management sometimes relies on stringent measures, but it is also necessary to relax some other rules, such as home working or online education under the quarantine imperative.

49. Governments used lockdowns and travel restrictions to protect the population despite the risks associated with an economic standstill. Wealthy countries used substantial subsidies to support the economy. They helped their citizens preserve their income or employment, but such measures deepened financial hardships in the middle- or low-income countries. Studies revealed the impact of the COVID-19 pandemic on increasing poverty worldwide, reversing the 25-year-old trend in declining (Klingelhöfer *et al*. 2022). National policies can affect individuals' lives well beyond national borders, and the repercussions of these policies will continue in the coming years.

II.6. Communication: information, disinformation, misinformation

50. Within the context of seeking workable solutions for "polluted" information, researchers find it important to better start with identifying and analysing the phenomenon of *information disorder* which is a complex phenomenon[7]. Wardle and Derakhshan split information disorder into three different types: mis-, dis- and mal-information, by using the dimensions of harm and falseness. *Misinformation* is that false information that is shared with no intention to cause harm. *Dis-information* is when false information is knowingly shared to cause harm. *Mal-information* is when genuine information is shared to cause harm, often by moving information designed to stay private into the public sphere (Wardle & Derakhshan, 2017).

51. Information disorder ought to be separated also into three elements that need to be examined: the agent, the message, and the interpreter. The "agent" who creates a fabricated message might be different from the agent who "produces" that message, who might also be different from the "agent" who distributes the message. There is a need for a thorough understanding of who these agents are and what motivates them, and also for an understanding of the different types of messages being distributed by agents so that we can start estimating the scale of each and addressing them. Further, there is a need to examine how mis-, dis- and mal-information are being consumed, interpreted, and acted upon. Are they being re-shared as the original agent intended? Are they being re-shared with an oppositional message attached? Are these rumours continuing to travel online, or do they move offline into personal conversations, which are difficult to capture? (Wardle & Derakhshan, 2017).

52. A global health crisis is also a global information crisis, which makes it essential to understand information behaviours to identify appropriate responses (Montesi, 2021). The health crisis caused by the COVID-19 pandemic was marked, at least initially, by a high degree of uncertainty. The entire world's population has faced a scarcity of knowledge about the aetiology and treatment of this infectious disease. At the same time, people faced unprecedented public health measures to control the pandemic and its complex social, economic, and medical consequences. In many countries, people were confronted with a scarcity of protective materials and a lack of vaccines. With the upsurge of the COVID-19 pandemic, people gravitated to the mass media, printed or digital, to follow the news about that yet-unknown disease, its symptoms, and precautionary measures. At the same time, the curfew encouraged people to spend most of their time focused on the media.

7 The term has begun to be appropriated by politicians around the world to describe news organisations whose coverage they find disagreeable (Wardle and Derakhshan, 2017).

53. All these challenges created the fertile ground for a significant amount of misinformation on mass media and social media (Gabarron, Oyeyemi & Wynn, 2021), which helped in spreading it like wildfire. Social media[8] was the main medium in which information was sought and distributed during the pandemic[9]. Users repeatedly received information from various human and non-human (robots) sources, which served as an indirect validation of their authenticity and relevance and led users to disseminate it in turn, becoming vectors of misleading information (Gallotti *et al*. 2020; Bin Naeem & Kamel Boulos, 2021).

54. Misinformation is not a new phenomenon, but it has gained momentum in the context of the COVID-19 pandemic, generating an *infodemic* (*misinformation pandemic*), which includes false information such as conspiracy theories and scientifically unproven claims about diagnosis, treatment, and prevention of the COVID-19 (Bin Naeem & Kamel Boulos, 2021). The infodemic that accompanied the COVID-19 pandemic made it difficult to identify the correct information and implement effective measures to prevent the spread of the virus, being considered by the WHO a "global challenge for public health" (WHO, 2020h).

55. The infodemic has had a variable evolution in different stages of the pandemic. Thus, unreliable information preceded an increase in the incidence of the COVID-19 infection, exposing many people around the world to falsehoods, but as the spread of the infection progressed, people gradually began to pay attention to more credible sources, thus limiting the impact of the infodemic (Gallotti *et al*. 2020). The infodemic risk has been variable in different countries, regardless of the level of socio-economic development (Gallotti et al. 2020), and its impact was also variable in different population groups. Thus, older adults preferred traditional media and information provided by the government and general practitioners as sources of information, which protected them to some extent from online misinformation (Choudrie *et al*. 2021).

56. Low levels of health literacy contributed to the spread of misinformation (Pian, Chi & Ma, 2021) due to the inability of people with low health literacy to properly understand medical information and follow health recommendations (Bin Naeem & Kamel Boulos, 2021).

57. Misleading or manipulative information may be more appealing to some people because it is more in line with their own beliefs or because it relies on effective psychological mechanisms, such as reducing anxiety by denying or minimizing the seriousness of the threat, controlling fear and anger by placing responsibility for generating the crisis at the expense of certain individuals, groups or institutions or providing a sense of control by presenting "miraculous" remedies (Gallotti *et al*. 2020).

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8 The use of social media platforms during the COVID-19 pandemic increased to 20-87% worldwide (Bin Naeem and Kamel Boulos, 2021).

9 A study by the Bruno Kessler Foundation, which analysed 112 million public posts on social media about COVID-19 pandemic, found that 40% came from unreliable sources and almost 42% from over 178 million Twitter posts about COVID-19 were generated by robots. The Reuters Institute showed that about 1/3 of social media users reported false or misleading information about coronavirus (UNDP, 2020).

58. The reduced public trust in sources of information and the difficulty in accessing credible information have also made significant contributions to the spread of misleading information (Bin Naeem & Kamel Boulos, 2021). The accelerated process of publishing scientific articles on COVID-19 and the pre-printing option of scientific articles might also have contributed to maintaining and increasing the infodemic by launching incompletely verified scientific data in the virtual environment, some of which were subsequently proven to be erroneous (Pian, Chi & Ma, 2021).

59. The infodemic has been maintained and exacerbated by the so-called *vicious cycle of the infodemic* (Kouzy *et al*. 2020), i.e., exacerbation caused by the use of social media and through the psychological problems (such as anxiety, fear, and depression) generated/ exacerbated by the infodemic (Pian, Chi & Ma, 2021). Further, the infodemic has contributed substantially to the spread of COVID-19 (Gallotti *et al*. 2020) due to people adopting inappropriate protective behaviour, posing personal risks to others as well. For example, non-compliance with the rules of wearing a mask, keeping one's distance, and accepting vaccination were largely caused by conspiratorial beliefs and the susceptibility of the population to rumours (Gabarron, Oyeyemi & Wynn, 2021; Pian, Chi & Ma, 2021). The United Nations Development Programme stated that: "Proliferation of dangerous disinformation and misinformation threatens national pandemic responses, putting even more lives and livelihoods at risk" (UNDP, 2020).

60. The infodemic has undermined public confidence in government and medical institutions and caused social problems such as violence, misinterpretation of scientific data, racism, xenophobia, and increased alcohol and tobacco use. It has also fuelled the panic purchasing of protective or other types of products, which contributed to economic disruption (UNDP, 2020; Pian, Chi and Ma, 2021). By exposing individuals to an excess of inconsistent information, the infodemic has contributed to the generation of psychological problems such as anxiety, depression, fear, and even post-traumatic stress disorder (Pian, Chi & Ma, 2021). At the same time, perceived threat and information overload can have the opposite effect in the sense that it affects the emotional state of consumers, who will subsequently avoid exposure to information (Montesi, 2021).

61. The marked increase in activity on social media during the pandemic has made it possible to monitor the behaviour of citizens in search of health information through the so-called *infoveillance*. While infoveillance, on the one hand, allows for predictions of the evolution of the number of illness cases , the identification of information on pandemic events such as the difficulty of accessing medical services or the identification of people's preferences for various sources of information, infoveillance is a challenge to the privacy of individuals (Montesi, 2021).

62. In addressing this very important issue, the IBC and COMEST of UNESCO, in their statement of April 2020 stated that "Information issued by politicians, scientists, authorities, and the media need to be timely, accurate, clear, complete, and transparent. Different categories of information are needed so that everybody, regardless of age, life circumstances, or level of education, can appraise the situation. In the age of social media, which accommodates misinformation and 'fake news', accurate public information, and more importantly, scientific information, should play a central role in guiding the societal engagement of individuals. Concrete, practical, and comprehensible information on the best ways to realize everyday life activities is critical for citizens to not only protect their own health but also contribute to securing public health. In essence, the message needs to be honest, precise, transparent, and measured in order not to spread panic or downplay the severity of conditions, but to make citizens aware, in a critical way, of imminent or future risks" (UNESCO, 2020).

COMMUNICATION AND PUBLIC ENGAGEMENT

III.1. Introduction

63. Communication in a society is a cultural issue that can be either supported by politicians or get support from public opinion, or be impeded in other societies.

64. Communication during the COVID-19 pandemic had several objectives, such as: reassuring the public; informing about and justifying the preventive measures to combat the spread of the virus; raising awareness on issues of solidarity in the face of a pandemic that was spreading rapidly and endangering everyone without exception; informing about the evolution of the pandemic through reports, often on a daily basis; and adapting the approach and sensitization as data emerged and new knowledge shed light on a previously unknown disease.

65. The challenges with regard to communication during the COVID-19 pandemic were not only related to a lack of correct information. They were also related to problems of trust in science; in politicians' decisions; in pharmaceuticals; in the media; the lack of health literacy; the lack of a culture of public engagement in some countries; and the lack of skills by scientists to convince the public that uncertainty in science is inevitable.

66. Analysing the challenges posed by communication during the COVID-19 pandemic allows for the identification of the most appropriate strategies applicable during possible future global health crises so that correct information may be successfully promoted promptly and misinformation and disinformation can be counteracted.

67. When people are made aware of the facts of scientific advances (e.g., pandemic data), and when they are confident that public authorities will act with the utmost transparency, they are generally more willing to comply with responsible and virtuous behaviour for their own good and that of others (Chowdhury, 2016). During the pandemic, we learned that the role of information conveyed by political and health institutions, technical-scientific committees, the media, and social networks is crucial. The completeness and transparency of information strengthen citizens' trust, and the role of public institutions is crucial as they perform both an informative and a supportive task to activate interpersonal trust.

68. Despite remarkable scientific developments, there are always knowledge gaps in the various fields of biomedical sciences, giving rise to some uncertainty that the public may not fully understand. It requires effective and factual communication for the public to understand that "uncertainty" is an intrinsic component of the scientific process. Issues such as public trust, informed consent, vaccine hesitancy, mandatory vaccination, and public health measures such as social distancing and travel restrictions require greater public understanding.

69. During the COVID-19 pandemic, knowledge about the disease was limited. Although the knowledge evolved quickly, there was still uncertainty about the scientific facts. This does not represent a failure but a normal consequence - meaning that more discussion and analysis were required. In fact, uncertainty "is an inherent part of knowledge" (van der Bles *et al*. 2019). So, unless the reasons for it are communicated well, uncertainty may impede building trust in citizens.

70. The communication of uncertainties is not limited to the communication of scientific data, but also relates to the political decisions made by relevant authorities. Appropriate measures, including safety and environmental measures, were taken to prevent certain potential risks to public health. Economic interests were also taken into consideration.

71. In order to "manage uncertainty", some guidance includes transparency, explicitly communicating information about uncertainty, maintaining consistency over time and in communication among partners, and communicating the required action.

III.2. Health literacy and health communication during a pandemic

72. Health literacy, as defined by the WHO, implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. [...] By improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment (WHO, 1998, 2022d).

73. People's level of health literacy can be important for their access to healthcare, their understanding of the rationale for actions that may be taken in times of health crisis including infectious disease outbreaks and their ability to exercise rights and participate in public dialogue about health.

74. In its report on the principle of individual responsibility as related to health, the IBC pointed out that health literacy would positively impact a person's ability to make decisions and participate in matters related to their health (UNESCO, 2019). The WHO also emphasized the importance of improving health literacy especially in disadvantaged and marginalised societies since this may help to accelerate the process of reducing inequities in health (WHO, 2022d).

75. When planning communication, it is thus necessary to take special steps to reach out to those who may encounter barriers. In many societies, for example, minority ethnic communities have not enjoyed equal access to the public sphere. Some relevant sections of a population might not be offered or may not be able to find the right information sources. In some cases, this lack of opportunity can relate to their human rights, or compound existing forms of social and political exclusion (Council of Europe, 2019b).

76. Health communication must combine information and education: the goal should be to enable people to acquire critical awareness and individual and social responsibility towards health (health literacy). Health communication can also have the objective - based on information and education of citizens - of involving them in the public debate (or public engagement) or public discussion on health. Sometimes, public health communication may also work towards persuading people to act in certain ways – in their own interest or for public health purposes. However, information and persuasion can sometimes come into conflict (Oxman, 2022).

77. Being time-sensitive, communication in the context of a pandemic raises additional challenges. The US Center for Disease Control has described six principles of *Effective crisis and risk communication* (*ECRC*) in the context of infectious disease outbreaks, i.e., the need to quickly share information about a disease outbreak to help stop the spread of disease ("be first"); to be right; to be credible; to express empathy, to promote action and to show respect (US-CDC, 2014). However, applying these six principles was certainly a challenge during the COVID-19 pandemic (Dubé, 2022). The maelstrom of information made available to the public (from various sources, including social media) mixed false, uncertain, and truthful information in a way that generates confusion. False, intentionally misleading, or distorted information is extremely dangerous, and can cause misunderstandings in citizens that may lead them to make wrong choices or to behave incorrectly or inadequately. To date, however, there are no "quality certification" measures or sites accredited by health institutions that can certify the authenticity of information for citizens and individuals.

78. Such a complex topic requires "delivery with care". There is a need for "more targeted public health information within marginalized communities and for partnerships between public health authorities and trusted organizations that are internal to these communities" (van Bavel *et al*. 2020). Hence, communication should be designed to reach various communities with appropriate adaptations (Hyland-Wood *et al*. 2021) and help alleviate social disparities (rather than aggravating them by missing the target). For instance, reaching the older age group was critical during the COVID-19 crisis since the disease disproportionately affected this age group. Adapting the messages and means of communication to an elderly audience was thus essential. Unfortunately, it was observed that ageism and patronizing voices infiltrated some of the messages (Guttman & Lev, 2021; UN, 2021a), violating "Respect", one of the six fundamental CERC principles stated by the CDC (2014, updated 2018) that should guide all communication. Finally, choosing a credible and trustworthy spokesperson may help to persuade the targeted public that the message is well-founded (van Bavel *et al*. 2020) and to encourage the uptake of the

recommendations (Lowe *et al*. 2022). It should further be noted that a credible source does not necessarily need to be a medical expert.

79. In times of crisis, such as the COVID-19 pandemic, timely and responsible political communication is also essential. Although there was a scarcity of information available in the early days of the pandemic, information based on the best available scientific evidence must be provided to allay the anxieties of the public and build their trust in the political leadership. Political communication research suggests the importance of clear leadership during crises, in particular, the performance of leadership, media management and protection of the narrative within the information environment; these three concepts shape the discussion of how crisis communication can be placed into a political context suitable for understanding the dynamics of communication during the COVID-19 pandemic (Lilleker *et al*. 2021). This protection should not interfere with the rights of free expression and free speech. While it is expected that governments try to stop misinformation, disinformation and malinformation, this should not result in unjustified censorship and the restriction of free flow of authenticated information. As the pandemic evolves and more scientific data becomes available, political leadership must continue to engage the public in a timely and consistent manner to disseminate science-based decisions on the prevention, control and treatment of the infection. Trust can be built by providing clear messages, and eradicating errors, confusion or contradiction while also demonstrating empathy, honesty, timeliness, clarity and compassion through communication (Carter *et al*. 2020).

80. Media management is paramount as the media has to work *pari passu* with the political leadership to disseminate accurate information to members of the public. A uniformly shared narrative has to be developed with correct framing of the issues based on scientific evidence and statements from international organizations to guide public understanding and belief. Social media has been a challenge for its role in spreading misinformation and disinformation. Political spokespersons must be credible and must provide positive feedback on the behaviour needed to alleviate the negative effects of the crisis. The communication must be grounded in accessible science and must debunk misinformation.

III.3. (Bio)Ethics literacy

81. Responding to and preparing for crises, such as a pandemic, necessitates a strong commitment by states and governments to ensure that information and education also increases ethics and bioethics literacy. Crises such as the coronavirus pandemic pose threats that require collective actions, which are possible only through individual actions. Individuals' efforts are necessary to sustain reciprocal practices and collective responses to the virus (i.e., social distancing, mask-wearing, regular testing, etc.). A pandemic crisis thus requires that each individual is aware of the necessity to bear the same collective burdens and ethical duties.

82. Education regarding ethical virtues is helpful for cooperation. Virtues are acquired traits that involve awareness about moral duties in specific situations and internally motivate the pursuit of valued aims and guides to develop practical wisdom. Ethics awareness and virtuous character are also essential to help physicians and healthcare practitioners develop the capacities to deal with context-specific action (such as the distribution of scarce resources).

83. In UNESCO's IBC statements and the WHO's announcements, there is an explicit appeal to reciprocity and social justice with their recommendations for "mutual caring", "solidarity", "empathy", "cooperation", and the fostering of "equity, fairness, trust, and benefit sharing". The unprecedented global crisis shows the need to equip present and future global citizens with the necessary attitudes and values to tackle the challenges facing humanity in the 21st century. These challenges necessitate a renewed focus on ethics education and the cultivation of specific dispositions to solve or mitigate existing and unforeseen local and global problems.

84. This is important in crises such as a pandemic because of the interdependence of all humans and the necessity for collective action despite social inequalities. Just as the pandemic has shown us that health can be construed as a collective moral practice along with responses to other predictable crises, it requires a certain kind of moral education in order to acquire ethical awareness and develop ethical virtues.

III.4. Public trust in science and understanding of pandemic science debates

85. An objective of public health policies is to increase health literacy and people's ability to manage their own health, based on facts and scientific evidence to enable making enlightened choices and better compliance with public health strategies. Public trust in science is one of the key "drivers" in order to mobilize citizens to support evidence-based behaviours and public health measures that will protect individuals and society against health threats.

86. One of the (many) unforeseen disasters during the COVID-19 pandemic consisted of widely spread ignorance or false beliefs about the scientific underpinnings of public health recommendations and policymaking (Thagard, 2021). This lack of knowledge resulted in part from deficits in science communication and in part from the unintended or intended dissemination of wrong information. In this latter context, WHO has coined the term *infodemic* for the fast-spreading of too much information including misleading or false information in digital and physical environments during a disease outbreak, not the least via social media (WHO, 2020c; Gisondi *et al*. 2022).

87. Lack of understanding refers to the complex nature, role, and limits of scientific insights in the infection processes, their sequelae, and their malleability, e.g., by vaccination. Relevant false beliefs were among the causal factors for irrational individual behaviour or unsound collective decision-making, resulting in otherwise avoidable morbidity and mortality. Also, the differences between scientific data, science-based recommendations and political decision-making have often been blurred in recent pandemic debates. Thus, improving science communication to the public and distinguishing the role (and limits) of science in the management of a health crisis should be one of the priorities of the agenda for future health crises.

88. The importance of scientific communication of research was highlighted during the pandemic. The intrinsic difficulty of describing and conducting the research required to produce scientific knowledge and the fast dissemination of results occurred in an unprecedented way and in real-time, during the COVID-19 crisis. The uncertainty of science and the long period needed for the research process have sometimes been misunderstood by people who may expect an answer from science that is certain, valid, and effective immediately. The pandemic has highlighted the difficult relationship between the research process and society's expectations towards science to provide rapid responses about something under study.

89. The ongoing worldwide learning curve about COVID-19 throughout the pandemic, implying some 'trials and errors', has sometimes put a toll on public trust in science because of the lack of proper understanding of the research process. Furthermore, the instrumentalization of science in fragile democracies or authoritarian states, for instance (Hilhorst & Mena, 2021) or misrepresentation of science (especially in social media), were also contributing factors to the erosion of public trust in science. Finally, cases of "rushed" or "miscommunicated science" (Saitz & Schwitzer, 2020) and more rarely questionable research practices and research misconduct had, unsurprisingly, affected the trust in science (for instance, the Lancet and New England Journal of Medicine retraction of Hydroxychloroquine articles in 2020).

90. As a result, trust in science varied during the pandemic (Algan *et al.* 2021). During the pandemic, the public witnessed contradicting statements emanating from authorities, as well as discrepancies between scientists during scientific deliberation and debates. Due to the impact of social media and the fast spread of information, this information was at times dissonant and led to a cacophony between experts and politicians (Caulfield *et al*. 2021). Whether this happens naively or strategically, with or without good intentions, such confusion is prone to foster mistrust and at its worst, it might add fuel to the fire of COVID denial and conspiracy beliefs (Evanega *et al*. 2020; van Mulukom *et al*. 2022). In addition, it could confound public support for recommended preventive measures.

91. Certainly, we do not ignore the high degree of time-related scientific ignorance, dispute, and uncertainty regarding strategies to mitigate the spread of the SARS-CoV-2 virus, protect persons from infections, or cushion psycho-social damage resulting from isolation and other restrictive public health policies. However, uncertainty, as well as the pluralistic, preliminary, and probabilistic nature of many scientific insights, should themselves be openly communicated (Paek & Hove, 2020; Fleerackers *et al*. 2022).

92. The IBC concurs with the UNESCO COMEST Report on Revisiting the Relations Between Science and Society in the Light of the COVID-19 Pandemic (UNESCO, 2023b) that "The pandemic has highlighted the need for a renewed reflection on the nature and roots of trust in science to rethink the value of science for society, as well as the values driving science as a public good." Trust in science is a fundamental dimension of managing the global health crisis. From the COVID-19 crisis, we should remember that trust in science needs to be preserved not only throughout 'a given' crisis but needs to be nourished and preserved in the long run. To uphold trust in science in times of crisis, we need to have a better understanding of this complex concept. As well described in the COMEST Report, two dimensions of trust need particular attention and perhaps need to be revisited in light of its global dimension; "(1) the side of society, via the notion of credibility as the "public" or "external" face of trust; and 2) from the side of the scientific community, via the notion of trustworthiness as the "private" or "internal" face of trust".

93. Trustworthiness of science is about the reliability and quality of science and the professional quality of the experts working on its development. Although essential, reliability and quality are insufficient to build trust in science. The social dimension of science is equally important: how it is depicted by the communication tools and how it is

understood (captured) at the end of the communication spectrum. Any distorting factor in this communication scheme has a debilitating impact on trust. Fighting against false news and explaining the scientific process (increasing science literacy and participatory science) are worthy investments to build and maintain trust in science. Such communication should also take into account socio-cultural factors in order to reach various target audiences and ensure equity in the efforts deployed to reach all audiences (leaving no one behind!).

94. Even if scientific literacy cannot be augmented overnight, and even if COVID-19 denial or beliefs in fake news do not disappear with better science education, there is a mandate to improve global communication and understanding of science and its indispensable contributions to local and worldwide problem-solving. The WHO should play a leading role in fostering and feeding independent institutions and digital tools for competent and trustworthy science- (and risk-) communication, not the least in future health crises (Bin Naeem & Kamel Boulos, 2021).

III.5. Public engagement, public dialogue and public debate

95. The COVID-19 pandemic has raised ethical and human rights concerns, such as privacy, autonomy, and equity issues. The impact of the pandemic may also have long-term implications for both individuals and society.

96. In this context, public dialogue and public debate are crucial. A public dialogue will be important to explore the ethical and societal considerations of health crises and pinpoint the main challenges, as well as help build public trust and transparency in governmental policies (Nuffield Council on Bioethics, 2021).

97. Public debate can strengthen the role of citizens in the governance of their society on health issues and increases legitimacy and support for ethically difficult decision-making (Council of Europe, 2019a). Public debate is, therefore, a debate that takes place "in" public, "with" the public and "for" the public. Those promoting or organising public debate should take the necessary steps to also involve the voices of marginalized and vulnerable groups that may otherwise be overlooked[10] (Council of Europe, 2019b).

10 "Public debate needs to be inclusive and welcoming. Consideration should be given to what measures may be required to enable all participants to take part in a public debate activity on an equal footing with others. There may be a need to take specific steps to counteract insidious forms of social exclusion".

98. Existing social inequities in health could increase during health crises, both nationally and globally. Public dialogue and public debate could be valuable in this context because the involvement of the public could provide support for an approach to combat health crises that is built on solidarity, benefit sharing and equity in access to treatment, such as vaccines.

99. A prerequisite for an efficient public debate is access to balanced and factual information. Information given to the public should be built on current knowledge and facts, including areas of uncertainty. The importance of open and transparent dialogue and the importance of factual, balanced and honest communication are also underlined in the IBC-COMEST Statement of April 2020[11] (UNESCO, 2020).

III.6. Application of ethical principles in communication

100. During a crisis with many unknowns, an open dialogue which includes politics, science, diplomacy, ethics, and law is necessary. The dialogue should be guided by global ethical considerations.

101. In the context of communication during public health crises, the ethical principles in UNESCO's Declaration of Bioethics and Human Rights (UNESCO, 2005) are highly relevant, especially the principle of autonomy and individual responsibility[12] and the principle of equality, justice and equity[13].

102. Communication from professionals and governments should also be guided by the Code of Ethics and Professional Conduct (WHO, 2017a) promoted by the WHO, especially by the principles of integrity (i.e., to behave in accordance with ethical principles and act in good faith, intellectual honesty and fairness), accountability (i.e., to take responsibility for one`s actions, decisions, and their consequences) and respect (i.e., to respect the dignity, worth, equality, diversity, and privacy of all persons).

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11 "It is fundamental and necessary to institutionalize a political strategy which prioritizes the health and safety of individuals and the community, and to ensure it is effective by enacting an interdisciplinary dialogue among scientific, ethical, and political actors. During a crisis with many unknowns, an open dialogue between politics, science, ethics and law is especially necessary".

12 The autonomy of persons to make decisions, while taking responsibility for those decisions and respecting the autonomy of others, is to be respected. For persons who are not capable of exercising autonomy, special measures are to be taken to protect their rights and interests (Article 5).

13 The fundamental equality of all human beings in dignity and rights is to be respected so that they are treated justly and equitably (Article 10).

103. The IBC and COMEST have addressed important principles of communication in their responses to the COVID-19 pandemic. The committees have underlined the importance of concrete, practical, and comprehensive information for citizens. Messages should be honest, precise, consistent, coherent, and realistic about benefits and risks.

104. To reach out to everyone, regardless of age, life circumstances or level of education, various channels of information may be necessary. The committees have stressed that information issued by politicians, scientists, authorities, and the media should be timely, accurate, clear, complete, understandable, and transparent.

105. Information and communication that appreciates the above-mentioned principles will empower people to make their own decisions while taking responsibility for those decisions and respecting the autonomy of others. In their briefing on ethical tools for decision-makers addressing the response to public health threats, the Nuffield Council on Bioethics (Nuffield Council on Bioethics, 2022) have addressed similar aspects of communication: "Provide information - empower people by making sure that they have access to the information they need so that they can manage their own risk and minimise any risk they might pose to others (...)".

106. The Council of Europe Convention on Human Rights and Biomedicine (Oviedo Convention) aims to promote human rights, democracy, and the rule of law in relation to biomedical science and the practice of medicine. Promoting public debate in the light of Article 28 of the Oviedo Convention has the aims: "to raise public awareness, in particular by encouraging the circulation of information, views and opinions; to promote discussion in the public sphere between different actors, groups, and individuals, including those who may be in vulnerable or disadvantaged situations; to consult the public including target groups and thereby to consider their interests and understandings, with a view to making informed policy decisions" (Council of Europe, 2019a).

III.7. Skepticism and confidence regarding vaccines

107. About a year after the onset of the COVID-19 pandemic, several vaccines were available against the causative and previously unknown virus. This speedy vaccine development – unprecedented in medical history – was enabled by the convergence of modern virology, mRNA technology, big data management, and fast-tracking testing procedures (Cattel *et al*. 2022; Wang *et al*. 2022; Zeng *et al*. 2022; Zhang, Shen, & Chang, 2022).

108. Celebrated with relief by a vast majority inside and outside the scientific community, vaccine options were also received with mistrust and blunt rejection. There were several reasons for such scepticism, which varied greatly according to countries and situations. Among them, there were beliefs in conspiracy myths, general scepticism towards modern science or vaccination theory, unease with the specific new technology, lack of trust in pharmaceutical companies, doubt about the quality of vaccines, or fear of injection (Kafadar *et al*. 2022; Pires, 2022; Roy *et al*. 2022).

109. From what is known today, many scientists' initial hope proved false that vaccination could and would fully protect from both infection and transmission of the virus. In contrast to, for example, measles or smallpox viruses, the SARS-CoV-2 virus has proved able to partly escape the human immune system, not the least of its high mutability (Aschwanden, 2021; Mohammed *et al*. 2022). Nevertheless, and despite vaccination-deniers' claims to the contrary, vaccination was highly effective in globally preventing millions of severe infections and deaths (Huang & Kuan, 2022; Kafadar *et al*. 2022; Sadeghalvad *et al*. 2023).

110. Moreover, these preventive effects could have been greatly increased with less vaccination refusal and more vaccination equity (Bayati *et al*. 2022; Borowicz *et al*. 2022; Jecker, 2022). It is thus a deplorable double failure that, on the one hand, so many people did not benefit from vaccination due to the disbelief regarding its protective effects and, on the other hand, access to vaccines was totally insufficient – particularly in many resource-poor countries (see Chapter II, Contextual Perspectives). This reality has suggested an important global mandate for better campaigning and for providing equal access to resources during a public health crisis, such as the COVID-19 pandemic.

III.8. The Role of healthcare professionals in communicating health-related information

111. Research data suggests that physicians are one of the most trusted professional groups globally and play a critical role in health education and health literacy[14]. Consequently, information and opinions shared by healthcare providers affect patients' health decisions and their health outcomes. For instance, patients' decisions regarding vaccination can be crucial for their health, especially in the context of pandemics. Therefore, there is a clear need for accurate, scientific and evidence-based information to be provided by healthcare professionals at the individual (clinical) level and publicly (via social media, TV, radio, etc.).

14 https://www.pewresearch.org/short-reads/2020/03/13/amid-coronavirus-threat-americans-generally-have-a-high-level-of-trust-in-medical-doctors/#:~:text=In%20the%20same%20survey%2C%2074,to%20prevent%20and%20treat%20them.%E2%80%9D

112. Health professionals, especially experts in public health and epidemiology, should collaborate and coordinate with health communicators in the State Departments of Health to educate the public, including journalists, and other relevant groups, on the public health policies and guidelines, based on scientific evidence and statements from international organizations that are issued by the government. The ethical dimensions will need to be highlighted during this process.

113. According to the WHO, immunization is the most effective tool in preventing and controlling infectious diseases and is an indisputable human right. An adequate level of immunization of the population is, therefore, a key factor in halting the spread of infectious diseases and reducing the burden of diseases on people. Thus, public statements made by healthcare workers which promote immunization hesitancy within the public sphere are problematic from a professional ethics standpoint (WHO, 2020c).

114. Historically the medical profession has been subject to strict legal and ethical standards of conduct. Principles of professional ethics apply to physicians' activities not only in clinical situations but also in their public performance, e.g., communication with the media and any publicly made statements or comments. As the World Medical Association has emphasized in the International Code of Medical Ethics, "Physicians must be prudent in discussing new discoveries, technologies, or treatments in non-professional, public settings, including social media, and should ensure that their own statements are scientifically accurate and understandable" and "must indicate if their own opinions are contrary to evidence-based scientific information" (WMA, 2022).

115. Hence it is recommended for states, authorities, healthcare institutions and organizations at different levels to ground medical decisions on science and evidence-based information and for healthcare professionals to make public statements that do not raise anxiety and doubts about the efficacy and safety of evidence-based treatments and medicines, especially within the context of a public health crisis.

III.9. Roles and duties of communication professionals, journalists and the media

116. The media, professional journalists, and public broadcasters can play a "key" role in transmitting the news that comes from government bodies and technical-scientific committees to citizens. It is up to their competence and professional ethics to give

correct, accurate, authentic information, avoid sensationalisms that produce excessive and unjustified alarms or false reassurance, try to prevent panic and resignation, and raise awareness of problems and a sense of responsibility and solidarity cooperation. In this sense, the right to information of these professionals, which is a fundamental human right, can be a valuable tool for acquiring awareness of the measures adopted (e.g., for the restriction of freedom, for the distribution of scarce resources, for the research and the access to therapies and vaccines) regarding their purpose, necessity, proportionality, duration, and efficacy. Considering the role of media, it has a responsibility of disseminating only accurate news and reliable information, which is more important in times of emergency. Although the work of the media ought to have been assistance in helping to control and combat epidemics, it was not, in the case of COVID-19, as ideal as expected.

117. In times of uncertainty and the outbreak of a pandemic, people customarily rush to the media to get information, whether from the mainstream or the digital media. The media impact in mitigating the epidemic was studied after the pandemic of SARS 2003-2004, in the H1N1 influenza epidemic in the Shaanxi province of China in 2009, in the MERS outbreak in 2012, and finally in the COVID-19 pandemic. It was found that the media can help to control the spread of the disease, but on the other side, it can impede successful disease management by disseminating inaccurate news and information (Anwar *et al*. 2020). The media impact is thus a double-edged sword, which needs to be more carefully managed.

118. In short, the importance of the media lies not only in being a source of information but also stabilizing or changing certain behaviour and attitudes. This was supported by adequate and appropriate evidence: the media all over the world, especially the regulated ones, played a successful role in managing the COVID-19 disease through reaching people, giving them instructions on the symptoms of the disease, taking precautionary measures and all facets of prevention and cure. This helped in saving the lives of many people despite the millions who contracted the disease and died[15].

15 In Brazil, the mainstream media participated in the efforts to overcome the epidemic challenges (Greco, 2020). In Canada and Quebec, scientists appear in media to inform the public and advise them on issues related to the epidemic away from fake news (Deschenes, 2020). In Colombia, in spite of the limited availability for lay people of understandable certain scientific explanations related to the disease issues, the country media provided relevant and extended information about the ongoing situation (Rueda, 2020). In Egypt, the media played an important role in issues such as warning the people of the risks of not abiding by the rule of physical distance, experts on TV and the daily newspapers explaining the government's decisions on the curfew, closing or reopening certain government agencies and other decisions. A government website was launched to raise people's awareness on how to take protective measures and where to get information (Darwish, 2020). In Jordan, the media was keen to give, in a transparent manner, regular information related to the pandemic issues (Al-Attiyat, 2020). In Sri Lanka, a campaign to raise awareness was launched using radio, TV and even private phones. Regular news bulletins kept the people fully informed of the latest status (Fernando, 2020). Many governments all over the world, through their official websites, played an important part in encouraging vaccination. This appears quite well through checking the various official governmental websites in the respective countries. In spite of the role that social media played in vaccine hesitancy, the social media response to the COVID vaccination has been overwhelmingly positive (University Western Australia, 2021).

IV.
ETHICAL ASPECTS

IV.1. Introduction

119. Throughout the pandemic, the IBC and COMEST (UNESCO, 2020) highlighted the importance of global reflection and response to the pandemic in a way that ensures the application of basic ethical principles and protects human rights (see Chapter I).

120. Against this background, the present Report raises several ethical problems spanning clinical practice and research conduct to issues pertaining to public and global health as well as the main ethical issues related to the social, economic, and cultural domain.

IV.2. Ethical analysis in the clinical, public health, and research domains

IV.2.1. Clinical ethics

121. The COVID-19 pandemic has given rise to many clinical ethics dilemmas that offer insights into balancing individual rights and liberties while ensuring that vulnerable groups are protected from the devastating effects of the disease. This is especially so in developing countries that do not have the same resources as developed countries to combat the pandemic (UNESCO, 2020).

122. The classical principles of distributive justice and equity, respect for the dignity and autonomy of individuals, non-maleficence, and benevolence may not be adequate to address some of the issues encountered during the pandemic. Instead, the principle of solidarity becomes prominent (Fong & Anantham, 2021)[16].

123. Choices had to be made about the allocation of resources. Due to the surge of patients with COVID-19 that required medical treatment and hospitalization, services dedicated to people suffering from other diseases, especially non-communicable diseases, took a

16 For normative aspects, see Report of the IBC on the Principle of Solidarity and Cooperation in Global Health Challenges (UNESCO, 2023a).

back seat. As a result, the pandemic significantly and severely disrupted the accessibility of healthcare systems for other diseases in many countries. The fight against AIDS, tuberculosis and malaria was eclipsed and relegated to the background (Eike *et al*. 2022).

124. In accordance with the WMA Code of Medical Ethics (WMA, 2022), which says "The physician must engage in continuous learning throughout professional life in order to maintain and develop professional knowledge and skills", professional healthcare associations in a country have the responsibility of keeping their members up to date with the latest developments in the management of a pandemic caused by a novel pathogen, including the availability of new treatment options and vaccines. The health professionals should also improve the relevant skills such as intubation of seriously ill patients. The pandemic is a time of national need and healthcare professionals should be encouraged to engage in research and innovation, particularly in the areas of virology, immunology, epidemiology, diagnostics, and therapeutics.

IV.2.1.1 Triage and resource constraints

125. The general distribution of benefits and burdens is an essential ethical consideration, and all categories related to social justice, distributive justice and the principle of proportionality must be considered. And, fundamentally, the human right to health and life, avoiding discrimination.

126. In many countries, the COVID-19 pandemic has, at times, led to a dramatic shortage of ICU beds and devices needed to acutely treat patients with a severe course of SARS-CoV-2 infection or with a comparably desperate state resulting from other diseases or accidents. In turn, ethically difficult decisions had to be made (or at least to be anticipated) on how to allocate these potentially life-saving resources (Emanuel *et al.* 2020; Erika *et al.* 2020).

127. Alluding to other mass emergency contexts (like war battlefields) requiring criteria for allocating scarce life-saving treatment, this decision-making drama is referred to as "triage" (Yancey & O'Rourke, 2022). Obviously, its scope is determined by the quantitative mismatch between life-saving treatment like available ICU beds and patients, posing greater challenges for low-income countries compared to affluent states.

128. Also, triage decisions are ethically similar to other decisions about allocating scarce medical resources including access to diagnosis, primary care, vaccines, and anti-Covid medication. All of them should be reigned by the values of equal concern, fairness, medical beneficence, transparency, and trustworthiness. How to translate equal concern into triage decision-making can also be framed as the question of which triage decisions (best) conform to human rights and the obligations of non-discrimination.

129. Among policymakers and ethicists, there exists – rightfully in our eyes – a broad consensus that those burdensome pandemic triage decisions should not be left to the contingency of individual caretakers or institutions. Moreover, they should not be based on social status, ability to pay, nationality, religion, ethnicity, race, or sexual orientation – nor on age or disability (as such).

130. Substantial ethical disagreement, however, concerns at least three questions: (i) Does it violate human rights if patients with a significantly lower chance to profit from ICU treatment must give way to patients with a significantly better survival prognosis? (ii) If the short-term prognosis is considered a legitimate triage criterium: Should it refer only to surviving the ICU treatment as such or rather include some additional prognostic aspects like, e.g., additional terminal disease? (iii) Is it ethically legitimate to triage patients already under (relatively unpromising) ICU treatment in favour of patients with better chances (Antommaria *et al*. 2020; Kopar & Brown, 2020; Wilkinson, 2020; Basu, 2021)? All three questions touch on contested fundamental issues of ethical norms – not the least whether, why, and to what extent "saving as many lives as possible" at the cost of patients with meagre chances of survival conflicts with a coherent human rights perspective.

131. For any country with egalitarian access to health care, these questions get even further complicated by the fact that the extremely bad conditions of patients might have resulted from their disadvantages in getting diagnosed and treated early enough. But even without this additional complication, triage questions have been an issue of serious normative struggle in various countries – even up for their Constitutional Courts (Ehni, Wiesing, & Ranisch, 2021).

132. Triage answers cannot simply be found by emphasizing the primacy of individual rights and liberties over collective interests. First, there are limits to this primacy. Second, the issue in triage scenarios is the inability to satisfy every individual's needs. Thus, the central matter is one of interpreting requirements of beneficence, fairness, and equal concern/non-discrimination under circumstances of limited resources: Do they permit or even suggest prioritizing some patients over others according to their chances of (short term) survival?

133. Answers might well turn out to be pluralist and culturally determined. But in any case, retrospective analysis, detached from the urgency of decision-making in the ICU, might contribute to some ethical clarity and progress. It might also shed light on the (often implicit) criterial make-up of triage tools as they have increasingly been developed (Gilbert & Ghuysen, 2022; WHO, 2022a). Furthermore, it might sensitize us to the broader, indisputable, and avoidable, dilemmas, including aspects of discrimination related to health care – a central issue of the UN and its agencies (UN, 2015).

134. The question is complicated when taking into account the social reality of health systems function in many countries, which sometimes is significantly limited or even precarious in terms of resources. This would potentially lead to unfair and unequal systems between and within countries. Effective reflection is urgently needed to work towards diminishing the resource inequalities *inter alia* in the economic, technological, sanitary, and scientific spheres.

135. Therefore, as to the concept of equality, one can obtain the key to justice for the screening process that must go beyond the individual and reach, in an inclusive manner, the justice of equitable actions between peoples and nations. In this respect, the fundamental role of the UN and its agencies in ensuring that human rights are respected globally and ensuring that the status quo of inequality is not immutable.

136. In the decision-making process of prioritization, human rights must always be considered as the set of norms and, above all, from their spirit of protecting the interests of the person.

137. In the decision process, the ethical concepts of justice and equity must be applied to people's conditions, such as age, comorbidity, disability, or frailty, without discrimination regarding race, ethnicity, sexual orientation, origin, or social or economic conditions.

138. The reality of the functioning of health systems worldwide, the scarcity of available health resources and the unfair and unequal use of these resources cannot be used as an excuse for inequalities.

IV.2.1.2. Access to unproven interventions (off-label, compassionate use/early access programmes)

139. In the context of the pandemic emergency, the general ethical criteria of the clinical trial must be respected: the scientific justification, the balance of risks/benefits, and informed consent.

140. The experimentation has followed the path of the so-called compassionate medications due to the urgency to treat patients and the lack of knowledge about the virus. Compassionate use includes the use of off-label drugs that are out of the prescription for indications, dosage, and instructions for use but validated for efficacy, safety, and tolerability. Early access usually refers to early access to investigational drugs outside of the clinical trial space and before the commercial launch of the drug, to patients with life-threatening diseases having no treatment options available.

141. The patients have the right and freedom to choose whether they want to receive treatment, and to choose between various options that are available. Meanwhile, they also have the right not to be treated as tools to provide feedback for science and society. In the case of the COVID-19 pandemic, the ethical legitimacy of access to compassionate use depends on the urgency and emergency in life-threatening cases and the absence of available therapeutic alternatives. The ethical evaluation must be given by a committee of experts who are part of an ethics committee of the trial.

142. The right to treatment must always be balanced with 1) the economic sustainability of health care, 2) the medical responsibility of those who prescribe and manage the drug, and 3) with the awareness of the patient. Patients must be adequately informed about the uncertainties, limits and possible harmfulness or even lethality of the drug. Risk-taking should always be conscious and personal. Information to the patient, despite all the limitations due to the specificity and emergency of the situation, must aim to make the patient aware of the reasonableness of the research and the assumption of personal risk.

IV.2.1.3. Patients' separation from the close ones

143. The pandemic exacerbated the isolation of patients during their illness, especially in the final stages of life. It involved sick people, both those affected by COVID-19 and non-COVID diseases, who sometimes remained hospitalized for long periods of time. Similarly, due to the risk of contagion, many people were forced into isolation: the older and younger living in nursing homes or other residential socio-health facilities, such as institutions for people with disabilities or those in hospices. Children were also separated from their parents or caregivers. The organization of the structures was complicated due to the contagion containment measures.

144. The relevance of the care relationship and the correlated dimension of interdependence were challenged: the pandemic also took a toll on how people relate with each other. The containment measures for the risk of contagion in human contact often result in profound loneliness. At the onset of the pandemic, it was difficult for those who lost loved ones to share their grief through funerals and burials, because some countries, acting on the Precautionary Principle, had very strict regulations, regarding *inter alia* physical distancing and restriction of the numbers of mourners. With better understanding of the nature of transmission of the virus, regulations became less rigid and more compassionate.

145. The physical proximity to patients during the illness is an integral part of caring for the patient, especially in the last phase, and it is of great help in the grieving process. Patients can benefit from proximity to the people they love, particularly because they can find motivation for resilience to the disease, especially during the critical phases of burdensome treatments.

146. This is one of the lessons to be learned from the pandemic: planning future hospital networks, which must respond to all the issues by introducing technological innovations and logistics that leave room for ongoing adaptations. The organizational models of hospitals must be flexible in light of the emergence of the new needs of the patients, and due importance must be given to the aim of the humanization of care.

147. Informed consent could help ensure that the patient keeps the possibility of choosing whether to receive visits from family members. The patient may decide not to receive visits for fear of infecting others or for fear of becoming infected. Even more delicate is the case of a dying person who may wish to experience that final journey with or away from loved ones, preferring to spare them the image of their suffering. When requested, the provision of spiritual assistance should be guaranteed.

148. Virtual communication cannot replace meeting in person. In any case, patients should be guaranteed the possibility of contacting their relatives using technological devices, providing those who are not familiar with these devices with all the necessary assistance.

IV.2.2. Public health ethics

149. While clinical medicine focuses on biomedical factors to diagnose and treat patients, public health emphasizes the collective health of society and social and environmental factors to prevent diseases and promote health in populations. Public health ethics deals primarily with the tension between group-wellbeing and individual autonomy. Is it permissible to force or prohibit individuals from taking certain actions to prevent disease or promote the health of society as a whole? Is it permissible to prioritize group interests over individual interests? If so, what are the necessary conditions?

150. To reduce the number of deaths and serious illnesses and to protect non-infected persons from infection, infectious disease control measures must adopt policies that restrict individual liberties. For example, quarantine and stay-at-home orders for infected persons and people in close contact, lockdowns and waterfront measures, closure of schools and facilities with large crowds, and orders to cancel meetings and events restrict not only individual freedom of movement and action but also freedom of assembly, freedom of expression, and freedom of economic activity. Determining the route of infection also entails risks such as the invasion of the privacy of not only infected persons but also those in their vicinity, as well as fostering discrimination.

151. Following the principles of Avoiding Harm, Precautionary Principle, Least Restrictive Interventions, Reciprocity, Non-discrimination, Equality and Transparency, it would seem justifiable to prioritize the population's interests over those of the individual to implement infectious disease control measures. Applying these principles to concrete situations demands public engagement and full accountability.

152. Any decision taken to mitigate the pandemic impacts must always be based on scientific evidence, must promote and protect human rights, and cannot discriminate individuals or countries. Moreover, any restriction of accessing needed health care must be clearly disclosed in culturally sensitive language and be changed accordingly with new epidemiological data and with changes in access to vaccination and all ancillary care.

153. The efficacy of lockdowns to prevent the transmission of COVID-19 has been subjected to many studies. While some researchers showed that early lockdowns were correlated with a clear reduction of the rates of both mortality and transmission in many countries (Mégarbane, Bourasset and Scherrmann, 2021), others have suggested that the lockdown itself severely increased the losses of lives than it initially presumed (Yanovskiy and Socol, 2022). To avoid harm (*primum non nocere*) and take into account the lessons left by the pandemic, what seems better is implementing softer lockdown policies combined with comprehensive and intensive testing. Being prepared to offer extensive testing as a basis for selective confinement seems to be the more balanced measure to reduce mortality and transmission during a pandemic as well as to avoid those harms related to radical lockdowns (Chan *et al*. 2022).

154. For the sake of ethical legitimacy, the development of vaccines, even amid the pressing demand for speed in the production of vaccines, must also be subjected to the international rules of scientific validity.

155. Vaccination must be promoted broadly without threatening individual freedom to reject it. Mandatory vaccination policies must be evidence-based, proportional and with the least level of compulsion.

156. Healthcare workers and their families must also be well protected. Early in the pandemic, in some regions, healthcare workers were stigmatized as vectors of the virus and were responded to with violence. Throughout the pandemic, healthcare workers were overworked, suffered from mental and physical fatigue and lack of sleep and had to put up with a lack of personal protective equipment (PPE) (Adams & Walls, 2020). This situation should be avoided in the future.

157. Telemedicine proved to be important and must be encouraged to keep medical access to medical consultation and ensure continuity of care (Lai & Tang, 2020). Teleconsultation should also be considered in people with cognitive disorders and more vulnerable people. Under the emergent circumstances, overcoming the digital gap must be considered more urgent than ever. Since such technologies include important ethical aspects, using such methods should be compatible with ethical standards. Health authorities should develop guidelines for protecting human rights and improving the responsible use of such technologies including respecting the right for privacy and confidentiality of personal information.

IV.2.3. Global health ethics

158. The distribution of healthcare resources, which are generally scarce in the sense of not being available for all, raises ethical problems both at the levels of "macro-distribution" or decisions on how much and how to invest in the sector of health and of "micro-distribution", or decisions of patient's selection for access.

159. The aims of a fair allocation include reducing health inequities and promoting equality. Therefore, prioritization in the process of allocation must be considered from a global perspective, considering the principle of inclusiveness and fairness and on a local level based on clinical parameters (disease severity, therapeutic efficacy, proportionality) and should consider the specific needs of the patients, with particular attention to the disadvantaged.

160. Public good in healthcare requires preventing, preparing for, and mitigating situations of the scarcity of medical care, treatment, and equipment, to promote equity in health and compensate for situations of vulnerability. Strategies must be applied to minimize inequalities and promote equality and counterbalance the reasons for scarcity, including tackling social and/or health determinants and inequalities resulting from the uneven distribution of wealth. Vaccines must be key targets of those strategies.

161. At the global level, these needs for protecting the human right to health challenge the cooperation among nations. Under situations such as a pandemic, the idea, according to "No one is safe until everyone is safe" becomes crucial. The tremendous inequalities in the global distribution of vaccines and treatments and limitations in sharing information on the virus genomes (which are necessary for following mutations and dominant variants) during the pandemic demand solidarity among Nations and regions. Vaccines must be considered as a global common good and treated accordingly.

IV.2.4. Research ethics

162. The World Health Organization has emphasized that "during an infectious disease outbreak, there is a moral obligation to learn as much as possible as quickly as possible, in order to inform the ongoing public health response, and to allow for the proper scientific evaluation of new interventions being tested" (WHO, 2021e). In other words, "health-related research should form an integral part of disaster response"(CIOMS, 2016).

163. Research in emerging infectious disease outbreaks should meet all well-established standards for ethical acceptability as set in the research ethics literature and prominent international guidelines and national regulations, in particular the World Medical Association's Declaration of Helsinki (WMA, 2013) and the Council for International Organizations of Medical Sciences (Emanuel, Wendler and Grady, 2000; Emanuel *et al*. 2004; CIOMS, 2016).

164. Conducting research in emergency disease outbreaks, especially of epidemic or global pandemic proportions, raises specific challenges. The urgent need to conduct research must be carefully balanced with the need to ensure the scientific validity of research, the need to ensure adequate protection for the interests of research participants and affected communities, and the need to maintain public trust in the research enterprise and in broader outbreak responses especially when multi-country and multi-agency collaboration is needed.

165. Many international organizations and prominent non-governmental bodies have already developed specific guidelines on the ethical research conduct and oversight in particular circumstances and contexts of the COVID-19 outbreak (PAHO, 2000a, 2000b; Nuffield Council on Bioethics, 2020; WHO, 2020d, 2020e, 2020g, 2021c, 2021e).

166. There is a growing consensus that in the case of a global emergency outbreak, national governments, international organizations, non-governmental agencies, researchers, sponsors, research ethics committees, and other relevant stakeholders should ensure that:

a. Research does not impede emergency response efforts by draining critical resources, such as personnel, equipment, and facilities, which are required for outbreak response and routine health care and public health services.

b. The social and scientific value of research must be maximized by:

i. Effective global, regional, and national coordination of research investments and efforts aimed at avoiding studies that are duplicative, wasteful, or for other reasons inconsistent with emergency response priorities.

ii. Effective collaborative research partnerships should allow partners to jointly prioritize the challenges faced in the outbreak, determine the research projects that will best address those challenges, conduct the research (including recruiting participants), and ensure that the research ultimately benefits the participating community, for instance, ensuring health systems themselves learn from research results so that they may be better prepared for future emergencies (WHO, 2020e).

iii. Fair and meaningful local community engagement and inclusive decision-making processes across the whole research lifecycle that demonstrate equal respect for involved communities and their members ensure culturally sensitive and appropriateness of study designs and procedures.

iv. The scientific value of research is not compromised by the "pandemic research exceptionalism" that allows for exceptions to high standards for quality of research design, ethics, and reporting for the sake of urgency (London & Kimmelman, 2020).

c. Implementation of rapid, flexible, and rigorous ethics oversight systems that allow for simplifying and expediting the application and ethical review of research projects without compromising the obligations of researchers and the research community to participants and societies. Such systems can allow for pre-approval of generic study protocols or pre-screening of general arrangements on data- and sample-sharing.

d. Risks and burdens of research participation are adequately identified, minimized, and reasonable in relation to the study's potential benefits for science and society and to realistically offer potential benefits to individual participants.

e. Research participants are selected fairly, i.e., inclusion and exclusion criteria are justified by the study's social and scientific goals, evidence-based considerations regarding risks and benefits for the group or population in question, or other valid ethical precepts, for example, the principles of reciprocity and helping the largest number of people that can justify prioritization of healthcare workers as participants in promising vaccine trials while preventing any form of stigmatization.

f. Voluntary and informed consent of research participants is adequately obtained under the circumstances and in a culturally appropriate manner unless the conditions for a waiver of consent are met, e.g., critically ill patient with no proxy.

g. "Research results are disseminated, data are shared, and any effective interventions developed, or knowledge generated is made available to the affected communities" (CIOMS, 2016).

h. The international community, in cooperation with national governments and other stakeholders, should develop globally acceptable ethical standards for the conduct of outbreak research as well as for rapid data sharing and publication. It should establish dedicated funding systems for emergency research and make investments to strengthen healthcare infrastructure and develop research capacities, especially in epidemic-prone regions (Sigfrid *et al*. 2020).

i. Research should be ethically designed and conducted in a culturally appropriated way, avoiding North-South inequalities in the distribution of risks and burdens between them.

j. The equitable sharing of the benefits of scientific research during a pandemic necessitates the global dissemination and sharing of new knowledge as rapidly as possible so that people all over the world can benefit from them.

IV.3. Ethical analysis in the traditional and cultural domain

IV.3.1. Cultural issues

167. The COVID-19 pandemic has evidenced differences in the behaviour of populations according to their cultural context. Due to such differences establishing uniform global strategies to face the pandemic has suffered some difficulties in both the ability to implement measures and the public acceptance of such measures. These difficulties have pointed out the importance of promoting intercultural dialogue as a fundamental basis for protecting global health. Intercultural dialogue must be understood "as an open and respectful exchange of views between individuals, groups with different ethnic, cultural, religious and linguistic backgrounds and heritage on the basis of mutual understanding and respect" (Council of Europe, 2008). The pandemic has forced us to foster this kind of dialogues. Culture means "the customary beliefs, social forms and material traits of a religious or social group"[17]. Firstly, we analyse the role of local and national cultures in the differentiated response of people to both the pandemic and the acceptance of public

17 See definition of "Culture" in Merriam-Webster Dictionary. Available at: https://www.merriam-webster.com/dictionary/culture

health measures. Secondly, we describe the ways in which indigenous cultures have understood and responded to the pandemic and the lessons that could be derived from their traditions and knowledge.

IV.3.1.1. Culturally mediated responses to the pandemic

168. Since the beginning of the pandemic, several studies highlighted the differences in the ways in which people from different parts of the world responded to it (Ali *et al*. 2021, Velamoor & Persad, 2020). These differences led to considerations of culture, not just knowledge, playing an important role in people's reactions to the pandemic and public health measures. Some cultures may manage health problems in a more holistic, collective, and adaptive way, oriented to deal with the problem on the grounds of solidarity, contrasted with the more pragmatic disposition of other cultures oriented to quickly accessible concrete individual solutions. While the distinctive reaction among the former could be, in many cases, a willingness towards both cooperation and adoption of public health measures, the predominant reaction among the latter was that of rejecting the measures that could undermine individual freedom. Adherence to public preventive measures and vaccination protocols seemed to be more common in countries where social norms are strictly followed (Gelfand & Denison, 2020).

169. However, a greater social norms-obedient national culture did not always mean a more favourable response to public health measures. Various religious communities, where individual norm-based standard behaviour is strongly demanded, often have reacted negatively to restrictive measures and vaccines. At the bottom of these responses, there are some religious-based interpretations about both the causes of the pandemic and the immorality of technical-medical solutions - mediated by experiments involving human subjects and the use of human tissues that, in their view, seem to threaten the sacredness of the body. On similar grounds, anti-science beliefs made people in many countries also reluctant to accept both science-based explanations of the pandemic and public health measures (Mugari & Obioha, 2021).

170. The diversity and power with which culture has influenced the forms of reception and response to public health measures call for situated adjustments in the processes of both defining and disseminating those measures. What seems to be needed is a situated, open, and active social appropriation of expert-based knowledge among targeted communities as well as the encouragement of intercultural dialogue as a basis for emergent knowledge regarding the best ways of fostering health care and well-being (Flood & Rohloff, 2018).

IV.3.1.2. Complementary, indigenous and traditional medicine

171. It is well known that mortality rates from COVID-19 among indigenous peoples were higher than in the general population, as has happened with other infectious diseases (PAHO, 2020; Petrov *et al*. 2021). Under such circumstances, many indigenous peoples made several efforts to get better medical attention from their governments. Unfortunately, their claims frequently did not find effective and inclusive responses (Indigenous Peoples Major Group, 2020; Sharma & Bhaskar, 2021; Waitoki & McLachlan, 2022).

172. In order to cope with the pandemic, many indigenous peoples throughout the world made use of their traditional healing knowledge. The understanding of some indigenous peoples was that their healing traditions were useful to respond to the pandemic and to provide insights into the principles that must be respected in order to protect all humankind (O'Keefe & Walls, 2021; Sharma & Bhaskar, 2021; Waitoki & McLachlan, 2022).

173. The pandemic also made very pertinent the point of view of Traditional indigenous healers about the causes and ways to address the global emergency. The Cherokee Traditional Elders, for example, have called to both "treat each other's existence as being sacred or important" (*ulisgedi detsadayelvsesdi*) and "take responsibility for one another's well-being" (*detsadaligenvdisgesdi*). Maori Elders have recalled the importance of the principles according to which people must live, namely: *aroha ki te tangata* (love and compassion for all people); the *kaitiakitanga* (leadership and resource management); the *whakapapa* (genealogical ties); the *whanaunga tanga* (relationship building); the *manaakitanga* (responsible caring); the *kotahitanga* (unity); and the *turangawaewae* (connection to place) reveal its relevance and topicality (O'Keefe & Walls, 2021; Waitoki & McLachlan, 2022). In the same way, Principles such as the *mamayu hayuning bawono* (taking care of earth's prosperity) from the Sumbanese people (Indonesia), or the *umuntu ngubuntu ngabantu* (a person is a person through other people) from the Ubuntu worldview, or the *kasiyanna* ("all will be well" by restoring balance in the world) from the native peoples of the Cordillera, Philippines, demand to reconfigure our global societies under the principles of Solidarity and Sustainability (Degawan, 2020; Maarif, 2021; Chigangaidze, Matanga and Katsuro, 2022), which are clearly lacking in our today's world. While social and intercultural dialogue among experts and indigenous communities to identify the best ways of protecting public health, promoting well-being, and making them socially effective should be encouraged, there is a need to expand the social understanding of indigenous-based traditions about the relations between human health and nature and practical ways of reordering those relations. While complementary, alternative, and traditional interventions are provided in some communities, their role during pandemics and public health emergencies must be carefully monitored to ensure that non-evidence-based claims and interventions do not counteract the public health response to infectious disease outbreaks. In particular, non-evidence-based claims that deny pandemic dangers and foster vaccine hesitancy, or refusal must call for an immediate and strong response.

IV.4. Governance and ethics

174. Governance – here understood as an umbrella term for setting rules and norms at various levels (UNESCO, 2015a) – should have played a key role in helping people to cope with the threats and uncertainties of the COVID-19 pandemic. Its multiple goals included cutting down morbidity and mortality, and also preventing wrongs and limiting harms due to, e.g., isolation, lockdowns or unequal accessibility of treatment, vaccines, or other essential resources, as well as keeping people's trust in relevant scientific expertise and in relevant policymaking (Martínez-Córdoba & García-Sánchez, 2021).

175. Any *good governance* must meet value-laden criteria like accountability, transparency, responsiveness, sustainability, and participation (UNESCO, 2015a; Katsamunska, 2016; Martínez-Córdoba & García-Sánchez, 2021). In addition, the efficiency and "goodness" of any specific governance body depend on its very context and substantive goals. Thus, when it comes to fighting a worldwide health crisis, much depends on the intrinsic ethical perspective underlying such efforts. The perspective we presuppose in line with WHO and many other bodies is one of "solidarity and equity" regarding actual or potential pandemic victims around the globe. If this is accepted, global pandemic governance must be evaluated by these benchmarks.

176. Should this ethical orientation be accepted, new multilateral contracts, appropriate institutions, and enforceable sanctions must be established. Governments must be held accountable if they delay their efforts in complying with WHO guidance for pandemic responses and preparedness, e.g., by downplaying the pandemic's seriousness, under-reporting, or lack of transparency. Coordinated efforts are needed to ensure that data and knowledge, appropriate resources, and governance expertise are whole-heartedly shared and provided wherever they lack. This applies to reactive as well as proactive responses to pandemics (Martínez-Córdoba & García-Sánchez, 2021; Sharma, Borah & Moses, 2021).

V.

HUMAN RIGHTS IN THE GLOBAL PUBLIC HEALTH EMERGENCY

V.1. Introduction

177. When reflecting on human rights in a pandemic situation, three issues are unavoidable: first, the violation and impact on human rights due to the pandemic and the measures taken to contain the pandemic effects, particularly in vulnerable communities and structurally discriminated groups. Then, the contextualization of the right to health considering the key importance of economic, social, cultural and environmental rights and their relationship with the One Health approach proposed by the WHO. Framing the COVID-19 pandemic as a syndemic allows us to account for the important impact of social determinants in health and the impact of non-communicable diseases (NCD) on mortality from an infectious disease.

178. On the other hand, we should consider the challenges and difficulties in complying with the standards of restriction of fundamental rights in the face of a global health emergency, evaluating the impact on human rights in their medium- and long-term effects. The clash between the prevalence of individual rights and the restrictions imposed for the protection of the common good, prioritizing solidarity and public health, gave rise to numerous conflicts.

179. The pandemic has not been the only cause that generated human rights violations. The measures taken to prevent, contain or mitigate the effects of the pandemic, especially in situations where they were sustained for a long time, had a devastating effect on human rights. The experience with COVID-19 should lead us to seek a reasonable and contextualized application of restrictions on human rights that, with the objective of protecting the right to life and health in the short term, do not put these rights at severe risk in the medium and long term. This requirement relates to the duration, geographical coverage and substantive basis of the state of emergency (OHCHR, 2020b).

180. Considering the experience of universal – and, in many countries, prolonged- lockdown during the pandemic, it is key to remember that: "findings suggest that personal and social measures, including handwashing, mask-wearing, and physical distancing are effective at reducing the incidence of COVID-19. More stringent measures, such as lockdowns and closures of borders, schools, and workplaces need to be carefully assessed by weighing the potential negative effects of these measures on general populations (..) Universal lockdowns are not, however, sustainable, and more tailored interventions need to be considered; the ones that maintain social lives and keep economies functional while protecting high-risk individuals"(Wild & Fitzroy, 2021).

181. UNICEF warned that in a worst-case scenario, as many as 1.2 million extra deaths among children under the age of five could occur as funds are diverted from existing health programmes in order to combat COVID-19; the United Nations Development Programme (UNDP) is forecasting an overall decline in global human development for the first time since 1990 (Garrity, 2020).

182. Under international human rights law, in the context of pandemics, states must guarantee the minimum essential levels of enjoyment of the rights to health, social protection, nutrition and food security, water and sanitation, housing and education, for all people, even in times of crisis. Related to non-pharmaceutical measures, states must consider tailored interventions that maintain social lives and keep economies functional while protecting high-risk individuals, to avoid deepened social inequalities and human rights violations.

V.2. Differential impact on structurally discriminated groups and vulnerable individuals

183. The pandemic exposed deep structural inequities - according to the World Bank, COVID-19 may have pushed 71 million people into extreme poverty (Garrity, 2020). Despite the huge efforts undertaken by states, the international response has been underfunded and poorly coordinated, given the impediments imposed by nationalist strategies (Gostin *et al*. 2022).

184. "Vulnerability is an inescapable dimension of the life of individuals and the shaping of human relationships" (UNESCO, 2013), but individuals and communities historically affected by situations of stigmatization, violence, discrimination, and poverty suffer a differentiated impact on their human rights (IACHR, 2017).

185. These communities are *a priori* in a highly vulnerable situation in the context of pandemics, especially exposed to the violation of their economic, social, cultural and environmental rights. COVID-19 made clear that vulnerability includes not only those related to clinical risks but also those arising from psychosocial factors (e.g. the social and environmental determinants of health), which influence people's ability to cope (resilience). Human dignity, solidarity and justice must come into play in these circumstances since the protection of human rights is an important component of disaster management (ten Have, 2018).

186. Structural discrimination is "the operation of a complex, interrelated system of laws, policies, practices, and attitudes in State institutions, the private sector, and societal structures that, combined, result in direct or indirect, intentional or unintentional, *de jure* or *de facto* discrimination, distinction, exclusion, restriction or preference on the basis of race, colour, descent or national or ethnic origin"(OHCHR, 2021b).

187. Increased vulnerability related to poverty, discrimination, gender, race, economic status, illness, sexual orientation, loss of autonomy or functionality, age, disability, ethnicity, prison, being homeless, undocumented migration, and the status of refugees and people without citizenship must be taken into account (UNESCO, 2020; IACHR, 2020b). Other vulnerability factors that the pandemic accentuated are linked to occupational risks and to "health literacy". Access to care and assistance can also be particularly difficult due to language barriers, poor knowledge of procedures and bureaucratic mechanisms, and lack of relational support networks.

188. Poverty as a structural problem translates into effects on the enjoyment and exercise of human rights, and that may involve violations that imply the international responsibility of the States (IACHR, 2017). Poverty and extreme poverty violate the principle of non-discrimination – one of the pillars of any democratic system and foundational of the human rights protection system. The COVID-19 pandemic generated a substantial increase in poverty and extreme poverty, particularly regarding the negative impacts it has on access to employment in decent conditions and the setback in the reduction of inequality and the fight against poverty and hunger (IACHR, 2020a).

189. Due to the economic crisis generated by COVID-19, the number of children living in multidimensional poverty – without access to education, health, housing, nutrition, sanitation or water – soared to approximately 1.2 billion in 2020, while an estimated additional 100 million children were projected to have fallen into multidimensional poverty in 2021 (UNICEF, 2021). FAO has also warned of the serious risks to the right to food and the fight against hunger.

V.2.1. Gender inequality

190. The COVID-19 pandemic has had a dramatic impact on the situation for girls and women, threatening to undo decades of progress on gender equality. COVID-19 and the measures taken to contain the pandemic have posed several risks to women's physical, social and economic security and thus affect women's rights, including: (a) 47 million additional women and girls pushed into extreme poverty, widening the gender poverty gap; (b) increased risk of being exposed to or dying from COVID-19, since women are overrepresented in frontline health jobs and care workers, the elderly and the global poor; (c) job losses and difficulties to re-enter the labour force; (d) unpaid care and domestic burdens have increased during the pandemic, further reducing women's time for paid work; (e) interruptions in critical health services affecting women, such as pre-and post-natal care and other reproductive and sexual health services; (f) a dramatic increase in sexual and gender violence. Clearly, most COVID-response plans failed to address gender-specific needs (UN Women, 2022).

191. Unpaid care work is both an important aspect of economic activity and an indispensable factor contributing to the well-being of individuals, their families and societies (Ferrant, Pesando and Nowacka, 2014), but it often goes uncounted and unrecognized. Across the world, women and girls are performing more than three-quarters of the total amount of unpaid care work (ILO, 2018).

192. COVID-19 has laid bare the negative consequences of longstanding gender gaps and norms around caregiving (OECD, 2021). Unpaid care work increased, with children out-of-school, heightened care needs of older persons and overwhelmed health services (UN, 2020d), impacting the possibility of sustaining a paid job and the health and mental health of women and girls. If not addressed properly, "current deficits in care work and its quality will create a severe and unsustainable global care crisis and further increase gender inequalities in the world of work" (ILO, 2018).

193. A pushback for women's rights everywhere and a backlash against gender equality and women's emancipation are being witnessed everywhere. This coincided with the rise in authoritarianism, populism, and fundamentalism, with its increasing trend of denying and challenging international standards on human rights promotion and protection related to gender and diversity (Newburger, 2021; Council of Europe, 2022).

194. Timely access to comprehensive care services as well as education and information on sexual and reproductive health and rights are key so that people, especially women and girls, can fully enjoy their human rights (IACHR, 2011), yet they were severely affected by the pandemic. In 114 low/middle-income countries, more than 47 million women were unable to access contraceptives (UNFPA, 2020b). It is estimated that the measures taken to face the pandemic will severely compromise the progress made towards target 3.7 of the Sustainable Development Goals, which aims to reach 2030 with zero unmet need for family planning, with an estimated setback of between 20-30 years (UNFPA, 2020a).

195. In pandemic contexts, access to quality maternal health must be guaranteed together with safe access to contraception as well as facilitating access to truthful, culturally appropriate and uncensored information. Likewise, comprehensive health care must be guaranteed for women survivors of domestic violence and sexual violence, including access to abortion and post-abortion care, and menstrual health.

V.2.2. Impact on access to health

196. COVID-19 caused the problem of access to health for all human beings in all sectors of health; ill patients experienced a delay in research, cure and care (i.e. oncological patients); people that had to postpone their regular medical checks for prevention, and implied a delay of diagnosis and therapy (ten Have, 2022). Additionally, many affected patients did not have access to a universal basis to cure and care, including denial of palliative care, especially elderly people, people with disabilities, and ethnic minorities.

197. The human right to health is related to the right to life and personal safety, access to adequate water supply, nutritious food, adequate housing, community cooperation, sexual and reproductive health, mental health support, and integration of public health services, as well as means of preventing and responding to violence, and ensuring effective social protection, including the provision of subsidies, basic rental or other economic support measures. All these were challenged (IACHR, 2020b).

198. The pandemic made evident the existing weaknesses of health systems, particularly the access to health for historically discriminated groups. It is imperative to ensure that, when medical resources are scarce, access to healthcare is maintained – considering its basic social determinants according to the principles of adequate availability, accessibility, acceptability and quality (UNFPA, 2020a).

199. Universal access and the realization of mental health are intrinsically linked to the full enjoyment of human rights. The COVID-19 pandemic has had a severe impact on the mental health and well-being of people, as fear and confinement have generated or increased psychological, neuropsychiatric and emotional disorders, depression, disorders generated by the use of addictive substances, as well as anxiety, stress, panic or risks of suicide. This mental health crisis occurs in a scenario where the diversion of resources to respond to the physical affectations related to COVID-19 has generated serious failures in access to mental health care (for the population) (WHO, 2022e).

200. The pandemic has also seriously impacted the mental health of women, caregivers, and essential service workers – particularly health professionals and structurally discriminated groups. Mental health conditions in pandemics have also been associated with stigmatization, discrimination and lack of solidarity, scarcity, instability and uncertainty, unemployment, overload of tasks, fear of the future, restrictions on movement, isolation, difficulties of family dynamics, the increase in domestic violence, lack of access or precariousness in health care and access to food, water or housing (IACHR, 2020a).

201. States must include mental health as a right in health coverage, taking into account the principles of equality and non-discrimination; gender, diversity and intersectionality perspective; inclusion; accountability; respect for the rule of law and strengthening cooperation between States (IACHR, 2021).

202. According to the UN Guidelines Principles on Business and Human Rights (Ruggie, 2011)[18], States must demand and monitor the promotion and respect for human rights, adopt due diligence processes in this area and be accountable for possible abuses and negative impacts on the access to healthcare on public and private facilities. The objectives of the policies and measures adopted must be based on a human rights-based approach that contemplates the universality and inalienability, indivisibility, interdependence and interrelation of all rights.

18 The *UN Guiding Principles on Business and Human Rights. Implementing the United Nations "protect, respect, remedy" Framework*, was drafted by John Ruggie, Special Representative of the Secretary General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, Office of the High Commissioner for Human Rights. Available at: https://www.undp.org/laopdr/publications/guiding-principles-business-and-human-rights

V.2.3. Impact on the rights to work and education

203. The right to work is a fundamental right inseparable from human dignity. The measures taken to deal with the pandemic had devastating consequences generating more unemployment, underemployment and inactivity, causing loss of income for workers and companies, including the closure and bankruptcy of companies. As entire sectors were paralyzed or affected, the supply chain was disrupted; informality and the precariousness of work were associated with income insecurity, aggravating poverty, child labour and economic and social inequalities (ILO, 2021).

204. Global pandemic preparedness measures were largely insufficient. In the health service sectors, in addition to an increased risk of illness and death, healthcare workers, especially primary responders, have encountered widespread violations of their fundamental labour rights: long working hours, poor equipment support, and a lack of ancillary personnel. They were also affected by some governments' reluctance to consider COVID-19 as an occupational disease (Smallwood et al. 2022), resulting in a loss of employment benefits and compensations (Council of Europe, 2022). In many countries, they faced physical and verbal aggression, threats and discriminatory acts in the workplace, on public transport and in their homes. As a result, healthcare workers were frequently affected by burnout and depression, especially first responders (Lluch et al. 2022).

205. More than 70% of health and social sector workers are women. The frontline care workers may face a double burden of work: the additional demands placed on health services require longer working hours, combined with increased care work at home (UNICEF, 2020). Stress, limited mobility and disruption of livelihoods also increased the vulnerability of women and girls to violence and gender-based exploitation (UNFPA, 2020a).

206. The right to education is the main way out of poverty. The pandemic and lockdown deepened educational inequities, increasing the educational backwardness of those with restrictions on access to new technologies and depriving them of an adequate educational environment (IACHR, 2020a). The COVID-19 pandemic has further highlighted the disparities in access to high-speed connectivity and online safety issues, as many if not most adults and children on the planet in some way shifted towards remote work, learning, and communication activities; thus, the use of virtual educational platforms has deepened the inequality gap (Garrity, 2020).

207. School closures increased the risk of school dropouts and child labour (IACHR, 2020a) and also increased the difficulties in ensuring food security and other aspects of their physical and mental health. In many cases, food for students in poverty depends on school feeding programmes and may be the only food they consume for the day. High rates of depression, anxiety, sleep and eating disorders have been reported due to school closure and the reduction of socialization spaces. On the other hand, social distancing involves the use of virtual platforms to learn, and in some States, there has been an increase of up to 70% in online bullying, among children and adolescents, during school closures (IACHR, 2020a).

208. The pandemic underscores the deep inequities, structural shortcomings, and human rights erosions in the context of education. While e-learning technologies enable teaching and learning, this is only possible for the globally privileged considering the persistent digital divide. Policymakers need to address the inequitable access to e-learning and student participation. With schools being closed worldwide, it has been predicted that 100 million students across eight age groups will fail the reading proficiency test (UNESCO-UIS, 2021). There is also domestic violence, early marriages and pregnancies, lack of social connection, and growing inequalities for those without the Internet (Garrity, 2020).

209. Parents and families have also been impacted by the pandemic when children have been forced to stay at home, and parents have had to juggle their work commitments with home-schooling or oversee online schooling where this has been available. Parents may find the new teaching methods confusing, as they have not been trained to be teachers. Parents may not be tech-savvy and have difficulties with enrolling children online. Furthermore, the Internet disconnection was another issue for the parents.

210. The UN Special Rapporteur on the right to education observes that while government initiatives can help eliminate persistent gaps and build robust education systems, they cannot compensate for earlier failures (UN Special Rapporteur Education, 2020). Human rights include “prioritizing free, quality public education”. States must demonstrate a “special and ongoing commitment” to the right to education (OHCHR, 1999). State responsibilities go beyond access. They also encompass the provision of safe drinking water and sanitation at schools, trained instructors, IT, and computers. Schools, in this regard, must also be affordable, accessible, and adaptive. Furthermore, when private digital education is in place, it needs to be properly regulated (UN, 1966b, 1989; OHCHR, 1999; UN, 2006).

V.3. Global health and the importance of economic, social, cultural and environmental rights in the context of pandemics

211. Article 14 of the Universal Declaration on Bioethics and Human Rights (UNESCO, 2005) reiterates the need to place bioethics and scientific progress within the context of reflection open to the political and social world (UNESCO, 2010). Parallel economic, social, and human rights crises accompanied the public health crisis. As warned: "When the history of the COVID-19 pandemic is written, the failure of many states to live up to their human rights obligations should be a central narrative" (Gostin *et al.* 2022).

212. The right to health is linked to the realization of other human rights, such as food, housing, work, education, human dignity and life. It thus covers four interrelated elements: availability, accessibility, acceptability and quality (OHCHR, 2000). Epidemic prevention and response are core elements of the right to health under the International Covenant on Economic, Social and Cultural Rights (ICESCR) (UN, 1966b).

213. The pandemic has hurled the world into a devastating economic crisis, pushing millions of people into poverty, exacerbating pre-existing patterns of discrimination, marginalization and inequalities and exposing the dramatic consequences of chronic underinvestment in economic, social and cultural rights, including public health, social protection, food, housing, education, water and sanitation (OHCHR, 2022).

214. The living conditions of vulnerable populations were exacerbated in the pandemic: "Throughout the world, vulnerable and disadvantaged peoples have less access to health resources, get sicker and die earlier than those in more privileged social positions" (UNESCO, 2010, p. 11). Among the rights severely affected by COVID-19 and the measures taken to contain the pandemic, economic, social and cultural rights (ESCRs) stand out, including the exponential increase in poverty and domestic violence.

215. The ESCRs are basic rights that allow everyone to live with dignity and include the rights to adequate food, housing, education, health and social security, to take part in cultural life, to water and sanitation, to a healthy environment and to work. States must respect, protect and fulfil ESCRs and must take actions to develop and protect them, as well as comply with their obligations of removing obstacles and respecting and guaranteeing the realization and enjoyment of human rights.

216. ESCRs have been recognized through different declarations and conventions, such as the International Covenant on Economic, Social and Cultural Rights (ICESCR) and its Optional Protocol. Specific obligations must align according to: (a) Progressive realization, yet regardless of resource availability: States have an immediate obligation to take appropriate steps to ensure continuous and sustained improvement in the enjoyment of these rights over time; (b) Core obligations that are of immediate nature: States are required, with immediate effect, to ensure the enjoyment of minimum essential levels of each right. Related to ESCRs, there is also the prohibition of regression and the prohibition of discrimination (UN, 1966b).

217. According to the ICESCR, the gradual realization of the right to health means that States have the specific and ongoing obligation to get on track as quickly and effectively as possible towards the full realization of the highest attainable standard of health. States must formulate a time-bound plan by taking immediate action and continuing to the maximum available resources (OHCHR, 2014).

218. The "progressivity" of ESCRs does not dilute its importance. On the contrary, the universality, indivisibility, interdependence and interrelationship of all human rights increasingly appear as central elements when it comes to ensuring their effective protection, as well as the preservation of democracy and the rule of law. Human rights hold the key to shaping the pandemic response. Promoting ESCRs sets a base for recovering better from the pandemic (OHCHR, 2021c).

219. The COVID-19 pandemic showed the importance of public health preparedness and global health security through the "One Health Approach". One Health is "an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems", recognizing they are linked and interdependent (WHO, 2022a).

220. To succeed, this approach – contributing to and protecting against disease acquisition, embracing the interactions between animals, humans and the environment – must go hand-in-hand with a determined defence and protection of ESCRS and environmental rights to make it possible. To accomplish this, it is necessary to consider the social, economic, and environmental impacts of diseases and health in communities and ecosystems. This involves addressing the factors that contribute to the spread of diseases, such as poverty, social inequality, lack of access to healthcare services, and environmental degradation.

221. Some specific measures that can be taken include: (a) ensuring access to adequate healthcare services, including public health services and medical care for infectious and chronic diseases; (b) promoting gender equality and equity in access to health and other services; (c) encouraging education and awareness about health and environmental risks and how to prevent them; (d) implementing policies and practices for sustainable use of natural resources and reducing environmental pollution; (e) fostering collaboration between disciplines and sectors, including the scientific community, the health sector, the agricultural sector, the environmental sector, and others to address health challenges in an integrated manner.

222. Governments must place human rights, in particular economic and social rights, at the centre of the efforts to recover from the pandemic; "this requires the adoption of socioeconomic measures anchored in participation, accountability, equality, non-discrimination and empowerment, with a specific focus on those most at risk or disproportionately affected by the pandemic" (OHCHR, 2021c). Sustainable Development Goals (SDGs) should be understood as a global effort that is aligned with the progressive realization of economic, social, cultural and environmental rights.

223. The Surge Initiative was established in late 2019, under the leadership of the United Nations High Commissioner for Human Rights, to respond to galloping inequalities, the slow-paced implementation of the SDGs, and growing social unrest. The initiative aims to step up field engagement on economic, social and cultural rights (ESCRs), SDGs and prevention and strengthen the link between human rights and economics. The Surge Initiative, through action at the country level, "links human rights with economics, translating human rights standards and recommendations of United Nations human rights mechanisms into practical policy advice tailored to country contexts that supports countries in formulating COVID-19 emergency measures and long-term socioeconomic recovery plans" (OHCHR, 2021a).

224. Both international and national efforts are needed to mitigate the current economic, sanitary/health and especially the social crises to ensure equality during and post-pandemic. Some of the ways include: (a) tackling the social determinants of health and considering COVID-19 a Syndemic and not just a health issue (Horton, 2020); (b) the need for a global commitment to overcome worldwide disparities that underlie many health problems especially emergent and re-emergent infectious diseases (Greco, 2021); (c) UN (2020) has promoted the implementation of a basic income, mitigating adverse social determinants of health, and facilitating preventive measures (such as social isolation) including food and health care. A new global health model can be established, as happened with AIDS (Brandt, 2013; Piot & Quinn, 2013), not only to achieve universal health coverage but a truly universal public health system for all and to counteract the economic devastation which is harder in LMIC (UN, 2021b).

V.4. Human rights and the implementation of the pandemic control measures

V.4.1. Tension between individual rights and public health

225. To deal with serious threats to the health of populations and individuals posed by the COVID-19 pandemic, governments around the world introduced various emergency rules imposing direct or indirect restrictions on numerous civil, political, economic, social and cultural human rights and freedoms (WHO, 2020a). In addition, international law stipulates that – under strict conditions – public health may be invoked by a State as a ground for restricting certain (though not all) rights and freedoms or even a ground for derogating from certain human rights obligations[19].

226. The International Covenant on Civil and Political Rights (UN 1966a) allows for restricting certain rights if prescribed by law and necessary in a democratic society. In times of public emergency, a State Party may take measures derogating from some of its human rights obligations under the Covenant to the extent strictly required by the exigencies of the situation, under substantive and procedural requirements, including the obligations of the proclamation of the existence of a public emergency, notification to other States Parties, and termination of the derogation in the shortest time required (art. 4).

227. To be ethically and legally valid, human rights limitations must meet certain legal standards often referred to by an umbrella concept of the principle of proportionality. Such broadly understood proportionality can be divided into four sub-principles: legality, adequacy or expediency, necessity and proportionality in a strict sense (Cianciardo, 2010; Sieckmann, 2018), and they are contained in "The *Siracusa Principles* on the Limitation and Derogation Provisions in the International Covenant on Civil and Political Rights" (American Association for the International Commission of Jurists, 1985).

228. The sub-principle of the Siracusa Principles on legality establishes that no limitation on the exercise of human rights shall be made unless provided for by national law of general application and is in force at the time the limitation is applied (American Association for the International Commission of Jurists, 1985) (principle *15*). Laws imposing limitations on the exercise of human rights must be clear and accessible to all (principle *17*) and must not be arbitrary or unreasonable (principle *16*) or discriminatory (principle *9*).

19 Cf. Article 15 of the European Convention on Human Rights of 1950; Article 27 of the American Convention on Human Rights of 1969.

229. The requirement of adequacy means that a restriction should constitute a means capable of achieving the purpose of the limitation (cf. principle *10* a-c). The assessment of adequacy must be based on objective considerations. i.e., scientific knowledge and available evidence (*principle 10* fine).

230. The sub-principle of necessity requires that in applying a human rights limitation, the least instructive and restrictive means available to reach the purpose of limitation should be used (*principle 11*), and the means should be necessary for a democratic society (*principles 19-20*).

231. Finally, laws imposing limitations on the exercise of human rights must pass the test of proportionality sensu stricto (*principle 10d*), which refers to the balance between costs/ disadvantages and benefits/advantages of a proposed limitation (both for affected right-holders and the protected public or social interests).

232. The document of the Siracusa Principles contains a list of further safeguards applicable when a State avails of its right of derogation pursuant to Article 4 of the Covenant (part II). Restrictive measures must be directed to "an actual, clear, present, or imminent danger and may not be imposed merely because of an apprehension of potential danger" (principle *54*). And "the severity, duration, and geographic scope of any derogation measure shall be such only as are strictly necessary to deal with the threat to the life of the nation and are proportionate to its nature and extent" (principle *51*). It is stressed that the requirement of strict necessity – prescribed by Article 4 – must be applied in an objective manner.

233. The Siracusa Principles underline that every restriction on human rights in the name of pursuing a legitimate aim must be subject to review and the "possibility of a challenge to and remedy against its abusive imposition or application" (principle *8*, *18*). The Principles provide an interpretation of the limitation and derogation provisions in the International Covenant on Civil and Political Rights. However, as has been rightly noticed, since these provisions are designed so broadly, they are often difficult to operationalize in public health crises, such as the COVID-19 pandemic (Sun, 2020). There is an urgent need to develop more specific and concrete global guidance on respecting, protecting, and fulfilling human rights during outbreaks and other public health crises.

V.4.2. Discrimination and triage: between ethics and law

234. In the context of the protocols and guidelines of scientific societies of medicine, above all in the area of intensivist medicine, during COVID-19 some guidelines displayed discriminatory views. In some protocols and guidelines, there has been an explicit reference to limiting access to cures and treatments for older people and people with cognitive disabilities. In some documents, a certain age (excluding old age) and ability (specifically cognitive ability) were considered as "stringent criterion" for admission or discontinuation of treatment in triage, justifying in certain cases the selection and prioritization of young patients and patients without disabilities, and also justifying the withdrawal of proportionate treatment (i.e. ventilator).

235. This kind of discrimination of age (ageism) and of disability (ableism) was justified in triage because of the urgency and emergency of pandemics in order to allow those with the most years of life with quality to be saved. In other words, the same resources could have been occupied for a shorter time for a patient in less serious conditions, saving time and money compared to being used for older people or people with disabilities, who are considered as frail patients.

236. There has been in bioethics a reaction against the utilitarian ideation applied to the distribution of scarce health care resources, as considered incompatible with the shared fundamental value of equality among all human beings and the doctrine of fundamental human rights. According to the view that recognizes the equality of human beings regardless of age and ability, the selection of patients for access to care should apply the objective medical assessment, case by case, of the clinical condition, as urgency, the severity of the illness, and the presumed prognostic efficacy of the treatment in terms of possible recovery, according to the criteria of proportionality and appropriateness.

237. In this perspective, any deviation from this logic introduces arbitrary elements of discrimination, such as age or possession of certain abilities. Those who are most vulnerable, such as older people or people with disabilities, must not be marginalized by selective logic inspired by individualism or social convenience. This does not mean treating "at any cost" or implementing practices of clinical obstinacy, which must always be duly suspended when disproportionate, ineffective and burdensome, as well as the patient's autonomy of refusal or renunciation of treatments, with the verification of the awareness and complete information of the consequences.

238. The recognition of equality of access to cure and care, without any discrimination, is the foundation of the Universal Declaration of Human Rights (1948) Article 1 that recognizes the dignity of all human beings; Article 2 that provides that everyone is entitled to human rights and freedoms "without distinction of any kind"; also, Article 39 that recognizes the right to conditions "adequate for the health and well-being" of everyone.

239. Under the International Covenant on Economic, Social and Cultural Rights (1966a), everyone has the right to "the highest attainable standard of physical and mental health"; the right to health includes that, in relevant part, services are available in sufficient quantity; accessible to everyone without discrimination, and affordable for all, including marginalized groups. The Siracusa Principles, and general comments of the United Nations Human Rights Committee on states of emergency, require that any State measures need to be based on scientific evidence, neither arbitrary nor discriminatory in the application, and respectful of human dignity. The United Nations Convention on the Rights of Persons with Disabilities 2008 and the United Nations Independent Expert on the enjoyment of all human rights by older persons further require their States Parties to ensure non-discrimination.

240. These, along with numerous legal instruments interpreting the obligations enshrined in these conventions, create an explicit obligation for States to ensure all persons are afforded full and equal enjoyment of the right to health without any discrimination.

V.4.3. Mandatory vaccination, certificates and vaccine passports

241. Tensions between individual freedom and responsibility towards public health in the context of pandemics have been a challenge regarding several measures taken worldwide such as lockdowns, quarantines, mask use, vaccination and vaccine passports, among others. Regarding vaccination, IBC and COMEST considered that the emphasis should be based on a non-compulsory, non-punitive model based on information and education. In addition, nudges could play an interesting role in the strategy as a way to keep autonomy while promoting the most virtuous decision, which takes solidarity into consideration from an ethical perspective, as referred to in the report of the IBC on the principle of individual responsibility as related to health (2019), as well as in the Joint Statement by the IBC and COMEST on Global Vaccines, Equity and Solidarity (UNESCO, 2021b).

242. It was said that "a non-compulsory model means, among other things, that the refusal of vaccination will not have any consequences for the individual from the perspective of his or her fundamental rights and, specifically, in relation to his or her right to healthcare or to access jobs". In the IBC report on individual responsibility, we acknowledge that public health policies should not unnecessarily discriminate against individuals who choose to partake in unhealthy lifestyle behaviours. Article 5 of the Universal Declaration on Bioethics and Human Rights (UDBHR) demands that such individuals also have a right to be respected for their decisions. (UNESCO, 2021b).

243. Some positions stated that stronger coercion or restrictions on liberty might be justified in exceptional conditions of urgency and security, such as in outbreaks of particularly dangerous communicable diseases. Nevertheless, restrictions on human rights, even in the context of a pandemic, must respect international legal standards (IACHR, 2020c). States must ensure that "any and all restrictions or limitations placed on human rights to protect health in the context of the COVID-19 pandemic comply with the requirements of international human rights law. In particular, such restrictions must comply with the principle of legality, be necessary for a democratic society and therefore be strictly proportionate to achieving the legitimate purpose of protecting health" (UNESCO, 2020).

244. During the pandemic, several countries were working on the introduction of so-called "vaccine passports" or similar certificates – vaccine certificates (functioning as proof of vaccination), recovery certificates (registering if someone has recovered recently from COVID-19), test certificates (providing evidence of a recent negative COVID-19 test), or a combination thereof. Such documents enable people to demonstrate that they are unlikely to transmit the virus, either because they are significantly protected through vaccination or past infection or because they have proof of a recent negative test for the presence of the virus. Moreover, such digital or physical documents might either function as an international "passport" that enables people to travel between countries or as a broader "license" to participate in specific societal activities like attending events, entering buildings, or even going to work (UNESCO, 2021a).

245. The recommendation, considering the respect for the rights of those who do not have access to vaccines, who cannot be vaccinated for medical reasons, or who refuse vaccination, is "to equalize proof of vaccination with proof of not being infected or proof of recent recovery from infection". For such a goal, the solution will involve moving away from "vaccination passports" and having "COVID-19 certificates" that also may register recent infections and/or recent negative test results reinforced with other types of protection in order "to make sure that such certificates only show that people are unlikely to transmit the virus, without revealing the basis of this diagnosis (recent vaccination, recovery from a recent infection, or a recent negative test result), except when there are urgent and legitimate reasons" (UNESCO, 2021a) and, thus, securing civil rights and freedoms.

246. In the same statement, it is also stressed that "although the introduction of these certificates might serve as an incentive for vaccination, they must not be designed, implemented nor used as a privilege for those who have access to vaccines, tests, and digital technologies, but rather as a way to create *an epidemiologically safer environment for everyone*". To this end, international cooperation and a multilateral approach are required. Such certificates should not infringe *freedom of choice* regarding vaccination, "while also emphasizing the importance of high vaccination rates to achieve herd immunity" as well as they need "to deal responsibly with the *uncertainties* regarding the degree of protection provided by specific vaccines and past infections, and the reliability of negative COVID-19 test results" (UNESCO, 2021a).

247. The introduction of all those exceptional measures on sanitary or passport certificates calls for great caution in all aspects, including that these should not work against sustainable development and, consequently, it is recommended that a research programme to assess their impact on society and public health, and the risks they might bring should be developed (UNESCO, 2021a).

V.5. Access to novel interventions

248. One of the challenges posed by the pandemic of COVID-19 was equitable access to vaccines and other treatments under IP rights in the context of scarcity and logistical challenges, as well as the "vaccine nationalism" and the failure of international solidarity and cooperation mechanisms. This discussion is addressed in the IBC Report on the Principle of Solidarity and Cooperation in Global Health Challenges.

249. The rights to health, to enjoy the benefits of scientific progress, access to information and the principle of equality and non-discrimination is closely related to the decisions that States must make around vaccines to prevent COVID-19. Vaccines are health goods and services that must comply with the standards of availability, accessibility, acceptability and quality related to the right to health (IACHR, 2021b).

250. In accordance with the Doha Declaration of the World Trade Organization on the Agreement on Related Aspects of Intellectual Property Rights Trade (TRIPS) and public health (2001), the intellectual property regime must be interpreted and implemented in a manner that supports the duty of States to "protect public health". Intellectual property "is a social product and therefore has a social function, so the recognition of intellectual property, patents and trade secrets cannot constitute an impediment to human rights, and in particular the right to health in a pandemic context" (IACHR, 2021b).

251. Besides the intellectual property debate, there are other factors that may function as barriers to equitable access to health technologies, such as access to materials and their distribution, facilities and production that impact the availability of medical technologies, etc. States must demand from private actors health-related respect for human rights and the adoption of human rights diligence in the execution of its operations. According to the UN Guidelines Principles on Business and Human Rights (OHCHR, 2011), governments must protect everyone within their jurisdiction from environmental and social impacts caused by business practices, and businesses have a responsibility to avoid environmental and social impacts wherever they operate and whatever their size or industry and address any impact that does occur.

V.5.1. Intellectual property rights

252. Equitable access to new vaccines and other treatments was undoubtedly a problem encountered during the pandemic, firstly due to the scarcity of vaccines, which posed the question of how to manage scarce resources; and secondly their distribution to all. The latter became a real challenge creating serious gaps among those who could or could not access these new products and therapies. This issue is not new and is similar to the discussion that began with the HIV/AIDS cases in the first decade of this century.

253. The current pandemic of COVID-19, from which we are trying to recover, has forced us to face some problems of today's world that require re-examination and a new look at this reality and the future realities that we foresee we will face. Innovation in medical technologies is unstoppable and represents an immeasurable factor of progress that must be shared globally, making the review of the ethical and legal dimensions of health research necessary.

254. Equal access to current and new treatments certainly questions whether the traditional legal constructs are sufficient or adequate to put into practice the principles advocated. The building of intellectual property rights has been one of the most questioned. Although it is a legal structure that can be considered traditional, the truth is that throughout almost a few centuries of intellectual property rights, this branch of the law has most modernized and adapted to the new challenges of the evolution of science and technology. The main justification is that it is the legal area that most protect the creative activity, invention and, concomitantly, creators, inventors and all those who invest intellectually and economically in scientific progress and new technologies.

255. To what extent are the interests and rights of those who create knowledge and legitimately want to protect it compatible with the global sharing of such knowledge and access for all who need it? Do intellectual property rights create barriers to equally sharing access to knowledge? And if so, how can all rights and interests be balanced in a way that encourages and rewards those who contribute to knowledge and progress with the need to distribute that knowledge and the goods derived from it equally to all?

256. The usual justification for IPR protection is the incentive and reward for inventors, resulting in benefits for society, fostering innovation and societal impact. The need "*to maintain a balance between the rights of authors and the larger public interest*, *particularly in education*, *research and access to information*, *and to consider the scope*, *extent and application of intellectual property rights* (*IPR*) *in relation to the equitable production*, *distribution and use of knowledge*" is well recognized (European Commission, 2022). It is argued that legal restrictions imposed by IPR should be overcome in times of health emergencies, and equally exceptional legislative measures should be found based on the principles of solidarity and cooperation.

257. Nevertheless, as noted, it is recognized that not everything is just about intellectual property rights and the protections it imposes and that there are many factors that contribute to the creation of barriers preventing equitable access to health technologies, which have proved to be just as relevant in this pandemic, including the complex case of access to materials and their distribution. There are, therefore, many factors and, therefore, many responses that must be taken into consideration.

258. WHO, WIPO and WTO identified some of the driving factors of new challenges in future health technologies (WHO, WIPO and WTO, 2021), which include rising global spending on prescription drugs, increasing payer scrutiny of prescription drug prices in high-income markets, the progress of non-profit initiatives engaged in medical research and product development, new research tools and platform technologies, increased industry focus on personalized medicines, and the greater share of global demand from large middle income-country markets at the same time it is recognized that providing adequate incentives to absorb the high cost and associated risks and liabilities is a central policy challenge. A balance between all the legitimate interests at stake is required – the need for equal access to medicines and therapy, as well as the need for research into novel interventions.

V.6. Privacy, biodata and data collection technologies

259. Rapid sharing of data is critical to the management of a pandemic. High quality and timely collection and access to data are pivotal tools in the fight against any public health threat. While monitoring disease outbreaks and circulation is part of a routine public health strategy, a public health emergency triggers the application of more active (and real-time) surveillance mechanisms to protect people's health and prevent the dissemination of the virus. Some of these mechanisms are mandated by public health legislations and include contact tracking, reporting and surveillance.

260. Contact tracing involves tracking the contacts an infected person has had and reaching those persons to inform and support them, and allows stopping or restraining the chain of transmission of the virus in the community, enabling quick responses. This contact can be enhanced with the use of apps and smartphones (based on voluntary participation).

261. Surveillance involves tracking people in order to verify compliance with measures to curtail the spread of the disease, such as keeping social distance or complying with a quarantine order. Traditional methods of surveillance (through public health or other authorities and citizen collaboration) are now complemented by the use of technologies such as mobile phones, facial recognition, AI, and body temperature monitors.

262. These mechanisms, some recording and transmitting personal health information, can be found in various digital technologies, including mobile devices, and can make use of big data and artificial intelligence. Thanks to these technologies, this pandemic has seen a spectacular increase in: the capacity (and ease) to share high volume of data; the velocity of data sharing and; the potential dataflow worldwide. This technological context underscores the deepening importance of appropriate use of personal information and protection of privacy during a pandemic.

263. The pressure to share private health information about affected individuals – to protect other individuals and society – creates tensions between the right to privacy and the various human rights related to health and security. It builds tensions between the right to keep one's health status private versus the public welfare and common good. These tensions were rendered more acute during this pandemic because of the high capacity of technologies to easily collect and share information. Also, the fact that COVID-19 could be transmitted even while asymptomatic only added pressure to these tensions. Any individual was a "potentially infected" individual, until proven otherwise through the sharing of health information. Finally, until we were able to better understand the pathogenic mechanisms of COVID-19, the extent of the health data collection tended to spread over a wide number of variables (for lack of a clear target), which was potentially quite intrusive.

Crisis management involves the circulation and, often, the processing of health data, not only by public health authorities but by other "interested" parties requesting access to this information, such as employers, schools, travel agents, transportation providers, etc. Digital technologies being the pillar of our everyday life relations from social to business, this information can circulate at a global level. While solidarity calls for actions based on the common good, a pandemic should not be treated as a general permit to any and all "interested persons" (travel agent, employer, restaurant, etc.) or groups in the society to infringe privacy lightly, without properly balancing the rights at stake (and the burden, risks and benefits involved). For instance, in the case of employers, the requirement to provide information about one's contamination status – to ensure the health and safety of others – has to be balanced (and planned) taking into account the employee's right to privacy.

264. Privacy is nowadays regulated in many countries, either with the implementation of the GDPR or by treaties/national legislations. In general terms, the process of personal data is lawful under certain circumstances specified by law[20].

265. On the one hand, health data is considered a special category of personal data under data protection laws which means that a higher degree of protection is given due to its sensitive nature, as the context of their processing could create significant risks to fundamental rights and freedoms. In general, consent is required for their collection and use. On the other hand, public health legislations often include special powers to access private information (even without consent) in order to manage the health crisis efficiently and conduct research. However, these powers need to be exercised with caution and should not be extended to all socially motivated use. The exercise of such special powers should be guided by ethics and public good, and subject to limits and proper accountability (amongst other considerations).

266. The COVID-19 pandemic is a clear reminder that information is an essential tool in the fight against pandemics, and such information includes information about individuals and their health. This pandemic occurred in a context where technologies could provide unprecedented access to (and circulation of) private information. Thus, "the threat resulting from the COVID-19 pandemic [has to be addressed] in respect of democracy, the rule of law and human rights, including the rights to privacy and data protection"[21].

20 For instance, in EU regulation (Reg 2016/679) the general rule for lawfulness for processing personal data refers, among others, to the data being subject to specific consent (subject to certain conditions) or if it is carried out in the public interest (article 6, 1 a), e)). In what concerns sensitive data, such as health data, its processing is also prohibited and the derogations to the principle are obviously more restrictive and specified by law (art. 9, 1): explicit consent by the data subject is one of them as well as if processing is necessary for reasons of public interest in the area of public health (art. 9, 2 a), h), i))..

21 As underlined in the Joint Statement on the right to data protection in the context of the COVID-19 pandemic by the Chair of the Committee on Convention 1081 and the Data Protection Commissioner of the Council of Europe.

267. UNESCO recognized the importance of the role of digital technologies during pandemics and the need to balance the values at stake: "It is of crucial importance to make sure that the ethical, social and political issues related to the use of these technologies are adequately addressed. Human rights should always be respected, and values of privacy and autonomy should be carefully balanced with values of safety and security" (UNESCO, 2020). Ultimately, it is possible to do both: protection of the public welfare and privacy. Technologies can serve both objectives, provided they are ethically designed.

V.7. Accountability to international health regulations

268. The global health crisis needs global legal responses. For international health law, WHO is the international institution with a core mandate in issues of global health. Moreover, the International Health Regulations (IHR), which entered into force in 2007, is the main legally binding instrument (in 194 countries, including all WHO Member States) laying down rules for the cross-border spread of contagious diseases. The IHR define their "purpose and scope" as: "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade".

269. These activities are implemented in ways that are consistent with other international laws and agreements; their implementation must "be with full respect for the dignity, human rights and fundamental freedom of persons" and "guided by the goal of their universal application for the protection of all people of the world from the international spread of disease". The Regulations aim to provide a legal framework for the prevention, detection, and containment of public health risks at source before they spread across borders through the collaborative actions of States Parties and WHO (WHO, 2014).

270. The responsibility for implementing the IHR rests jointly with States Parties and WHO. In order to be able to notify events or respond to public health risks and emergencies, States Parties must have the capacity to detect such events through a well-established national surveillance and response infrastructure. In addition, States Parties are required to collaborate actively with each other, together with WHO, to mobilize the financial resources to facilitate the implementation of their obligations under the IHR.

271. However, this legal system is referred to as being ineffective since it is based on cooperation among the States with no sanction system for non-compliance. On the other hand, it is noted that "inequality of health resources between developed and developing States remains unresolved"; "relevant early warning systems depend on States' expectations of global health governance", and "the current mechanisms for infectious disease control are still fragmented"(Qin & Luo, 2020).

272. Since it is recognized that WHO is the legitimate institution with opportunities for global health coordination, it is of utmost importance to establish binding conditions for the countries in order to comply with IHR; it is necessary to put into practice its mandate as stated in art. 2 b) of its Constitution *to establish and maintain effective collaboration with the United Nations*, *specialized agencies*, *governmental health administrations*, *professional groups and such other organizations as may be deemed appropriate* (WHO, 1946).

273. Without a sanctioning system, the WHO should use all its prestige and influence to make States accountable and voluntarily commit themselves to comply with existing standards.

274. The failure of global health governance mechanisms and the non-compliance of existing IHR by some States were partly responsible for the prolongation of the pandemic. In an attempt to better respond to pandemics in the future, and improve compliance of IHR, States are now working together with the WHO to develop an international pandemic treaty, on pandemic prevention, preparedness and response, to better protect future generations (Kavanagh *et al.*, 2023). This pandemic treaty is expected to be finalized by May 2024.

V.7.1. Impact on democracy

275. With the onset of COVID-19, the adoption of multiple preventive measures to contain the spread of COVID-19 tested the countries' resilience in their democratic institutions and processes. In certain countries, the application of these measures had adverse consequences on human rights, the rule of law and governance processes as protected by international and regional human rights instruments such as the Universal Declaration of Human Rights, the UN International Covenant on Civil and Political Rights, the UN International Covenant on Economic, Social and Cultural Rights and its Optional Protocol.

276. Various studies assessing the impact of COVID-19 on democracy have indicated varied trends toward the erosion of human rights in various countries in the world (Edgell, 2020; Grogan, 2020; Kolvani, 2020; Freedom House, 2021). These violations include excessive use of emergency powers, limitations on media freedom, postponement of elections, discriminatory restriction of election campaigns, limiting the powers of legislatures and disinformation.

277. According to Freedom House, "As COVID-19 spread during the year, governments across the democratic spectrum repeatedly resorted to excessive surveillance, discriminatory restrictions on freedoms like movement and assembly, and arbitrary or violent enforcement of such restrictions by police and non-State actors"(Freedom House, 2021). Indeed, it is reported that State oppression increased globally by approximately 30% during the pandemic (Mustasilta, 2020).

278. It is this state of affairs that prompted the UN Secretary-General, António Guterres, to refer to the pandemic as a human rights crisis and call for preventive measures that are proportionate to immediate threats while protecting human rights and the rule of law; any emergency measures should be legal, proportionate, necessary and non-discriminatory (UN, 2020a).

V.7.2. Censorship and freedom of speech

279. Freedom of speech is a fundamental right that has been undermined during the COVID-19 pandemic. While international conventions recognize that public health crisis management and protection of public safety can be legitimate motives for limiting such a freedom (e.g., International Covenant on Civil and Political Rights, art. 4; EU Convention on Human Rights, art. 10), reports made during the peak of the crisis and during its aftermath show that these limits were sometimes stretched if not abused in many parts of the world (OHCHR, 2020a; Amnesty International, 2021; Human Rights Watch, 2021). Whistle blowers from the medical corpus, who alerted the world against a new disease, might have been amongst the first to feel the effect of censorship and suffer retaliation (Noorlander, 2020).

280. Focussing and controlling communication to gain public attention and allow individuals to make enlightened choices, mobilize the population engaging in specific actions and offer a more effective public health response could justify the recourse to censorship (provided a number of conditions are met). In times of rapid circulation – through social media – of "fake news" and misinformation, it may be necessary to sort and highlight information that will save lives. As was pointed out, "The success of efforts to contain the spread of the virus is largely dependent on access to accurate, reliable, diverse and timely information by all – public authorities, media, medical and other technical staff and, equally important, the population." (Noorlander, 2020).

281. However, discerning "the" truth has proven difficult at times, given our evolving understanding of the virus and the complex impacts the crisis had on individuals and communities. Furthermore, decisions to limit freedom of speech should not be taken lightly, as they can erode public trust and produce counter effects, especially if they are perceived as arbitrary and poorly justified. Moreover, abuse or misappropriation of public health emergency powers to serve other purposes (including political power, repression of opponents, etc.) only contributed to feeding scepticism, confusion and even civil disobedience to public health authorities' instructions (OHCHR, 2020a).

282. Freedom of speech offers important counterbalances to exceptional powers exercised during a public health crisis and avoids overreach of powers from various governmental authorities. Through transparency, discussion and debates, the public can better discern what actions are taken in the public interest and empower them to make informed decisions. Thus, in times of crisis, freedom of speech cannot be brushed aside as soon as dissenting voices emerge. To be legitimate, limitation to freedom of speech must meet certain criteria usually embedded in the rule of law. Amongst other things, such limitation must be proportionate, limited strictly to the extent of the emergency and what is required to achieve public health aims, and should not be discriminatory (UN, 1966a).

VI.
RECOMMENDATIONS

General recommendations

283. It is clear that, overall, there was a failure to effectively manage the COVID-19 pandemic. However, it is evident from the report that we cannot just leave it at this. Given the inevitability of another outbreak that could be more dangerous, we must be realistically prepared for such an eventuality. Lives must be saved, livelihoods need to be protected, and the trajectories of future pandemics should be altered. When the fires start, they must be put out before conflagration, and public health interests must always trump other vested interests.

284. Moreover, we must also continue to find, stop and prevent. Pivotal in the prevention and management of pandemics is meaningful and honest communication. It is key not only to legitimize any implementation strategies but to ensure respect for people at large. It is important that communication during a pandemic achieves all its objectives: reassuring the public; advising on preventive measures; raising awareness and enhancing solidarity on the issue; providing timely and regular information as the threat evolves; and adapting the approach as new knowledge emerges. Further, the best information available at the time must be communicated in a timely manner to mitigate misinformation and disinformation.

285. A number of recommendations have emerged based on the analysis in this report and are presented below.

Recommendations of the IBC to international organizations

286. The view of vaccines as a "global common good" must be adopted globally.

287. New global mechanisms should be implemented to encourage the efficient and decentralized development and production of vaccines while promoting global equity.

288. Global initiatives to prevent loss of biodiversity and climate change are important measures and are critical to prevent future pandemics. These initiatives include those from organizations which are concerned with biodiversity conservation, such as UN Environment Programme, International Union for Conservation of Nature and World Wildlife Fund, and those which are concerned with climate change, such as UN Framework Convention on Climate Change, which has some 200 parties (countries) and has the Conference of the Parties (COP) as its supreme decision-making body. They need to work together and with the World Health Organization and member countries on plans to prevent future pandemics.

Recommendations of the IBC to Member States

General recommendations

289. States need to invest in public health systems to respond to pandemics. They must secure appropriate resources to maintain, expand and strengthen facilities for diagnosis and prevention so that they can be activated and widely distributed at short notice. States should follow the recommendations established in the Joint Statements of the IBC and COMEST so as not to leave anyone behind and should also take into consideration ethical guidelines provided by national ethics and bioethics bodies when making decisions on their response to pandemics. Intergovernmental coordination and cooperation with the help of international organizations such as WHO will be essential.

Recommendations for public health responses

290. States should, in the context of pandemics or public health emergencies, have a crisis committee that should be interdisciplinary and include bioethicists and members of the public. During a crisis situation with many unknowns, an open dialogue between politics, science, ethics and law is especially necessary.

291. Public health responses to pandemics must be informed on the best scientific evidence available globally. Decisions on the management of future pandemics, including preventive and public health measures, medications and vaccines, must be made based on the best available scientific evidence and promptly communicated to the public to prevent misinformation and disinformation resulting in poor compliance. The principles of Avoiding Harm, Least Restrictive Interventions, Reciprocity, Non-discrimination, Equality, Transparency, as well as Precautionary Principle must be the rule in any decision-making process related to the distribution of benefits and burdens worldwide when facing a pandemic.

292. In exceptional cases, mandatory public health measures such as mandatory vaccination, and mask-wearing, could be justifiably introduced by the public health authorities. IBC recommends that such decisions should be based on a careful risk-benefit analysis informed by the best available scientific evidence and be made in a transparent way by the inclusion of public and civil society. The burden of proof for the necessity, and proportionality of such measures should be on the authorities. Mandating vaccines for groups that do not directly benefit from vaccines to reach the herd (public) immunity level requires specific deliberations.

293. States must be prepared to share their resources, such as masks, vaccines and medications, with other States in need in order to alleviate suffering and death and shorten the course of the pandemic.

294. States must develop and implement strategies to address biodiversity and climate change challenges.

295. States must undertake the responsibility of implementing International Health Regulations (IHR) and follow recommendations issued by the World Health Organization (WHO).

Recommendations for communication and dissemination of information

296. States should work with all relevant civil groups within its society to effectively disseminate the requisite health information about the pandemic and recommendations for actions at a level that everyone can understand regardless of age, life circumstances, or level of education. This should incorporate strategies adopted at the local level to address deficits in the understanding of science, explaining the concept of "uncertainty" in scientific research and the relatively long time required to ascertain safety for research interventions, and all efforts to minimize the spread of false beliefs about the scientific underpinnings of public health recommendations.

297. States must ensure that their population has access to the necessary tools and information to help them build competence about pandemic threats, employ bioethical approaches and critical thinking, and understand actions taken to alleviate the pandemic threats. Furthermore, States should promote health literacy, public dialogue and discussion and encourage all individuals to participate.

298. States must arrange the appropriate procedures to provide timely, accurate, clear, complete, understandable, and transparent information to all individuals. Public communication about the risks and benefits of different measures should be honest, precise, consistent, coherent, and transparent regarding the uncertainties involved. On the grounds of a precautionary approach, preventive measures must be prioritized from the very beginning of the pandemic. Ethical, social, and political issues related to the use of information and communication technologies must be considered carefully for current and future uses in the context of pandemics.

Recommendations for access to healthcare

299. Telemedicine proved to be very helpful and must be encouraged to keep medical access to medical consultation and ensure the continuity of care during a pandemic. Teleconsultation should also be considered in people with cognitive disorders and other vulnerabilities. Therefore, overcoming the digital gap must be considered urgent on every scale.

300. Allocation of scarce medical resources must be balanced and based on the requirements of beneficence, fairness, and ensuring non-discrimination under such circumstances, and must be done in an accountable and participative way. Clinical need and effectiveness of treatment should be of primary consideration.

301. Fair allocation of resources includes reducing health inequities and promoting equality. Therefore, in the process of allocation, particular attention must be given to disadvantaged people. The kind, scope and procedures of international collaboration to ensure adequate attention to the global disadvantaged under emergencies must be urgently addressed by international agencies and organizations worldwide.

Recommendations for research

302. Since the nature of research will sometimes engender differences and discrepancies between scientists, politicians and State, agents should always refer to the pertinent statements on the issue by the respected worldwide health authorities (e.g., the World Health Organization; UNESCO) for persons to follow for their guidance and critical thinking regularly.

303. Research and development of new vaccines and drugs must be adequately supported by government funding agencies so that the products that are safe and efficacious can be made freely available to all.

304. Scientific evidence must be mandatory for any public health and healthcare decision-making. Defining standard criteria for data collection about the pandemic as well as ensuring open dialogue that includes life, social and human sciences, politics, law, and civil society becomes crucial for ensuring good science and evidence-based decision-making.

305. Decisions that allow the use of unproven interventions must be based on the balance of several factors, namely, the economic sustainability of the health care system, the medical responsibility involved in that use, the scientific evidence-based reasonability of proposed treatment, and the consent of the patient, who must be adequately informed about uncertainties regarding the therapeutic value and potential side effects (even lethality) of the unproven drug.

306. States must improve solidarity-based and transparent international collaboration so that, *inter alia*, data sharing and sharing of benefits from research could be materialized. These are central ethical imperatives in national and international research governance, in particular under emergency situations. This necessitates global dissemination of new high-quality knowledge of scientific research as rapidly as possible.

Recommendations considering culture, tradition and alternative medical interventions

307. States must encourage social and intercultural dialogue among experts and indigenous peoples to identify the best ways of protecting public health, promoting well-being, and making them socially effective.

308. There is a need to expand the social understanding of indigenous traditions about the relations between human health and nature and the practical ways of reordering those relations. IBC invites Member States to initiate a constructive dialogue with such groups and facilitate the evaluation of their claims by scientifically sound methodologies.

309. While complementary, alternative, and traditional interventions are provided in some communities, their role during pandemics and public health emergencies must be carefully monitored to be sure that non-evidence-based claims and interventions do not counteract the public health response to infectious disease outbreaks. In particular, non-evidence-based claims that deny pandemic dangers and foster vaccine hesitancy or refusal must call for immediate and strong response.

Recommendations on respecting human rights

310. States have a duty to respect, protect and fulfil economic, social and cultural rights and must take actions to develop and protect them, removing obstacles in the realization and enjoyment of human rights, addressing the burden and increased vulnerability and structural discrimination. In particular, in the context of pandemic or heath emergencies, the right to health and mental health, work, education, access to water and adequate food must be guaranteed.

311. States must ensure that restrictions or limitations on human rights in the context of pandemics comply with the principle of legality, be necessary for a democratic society and therefore be strictly proportionate to achieving the legitimate purpose of protecting health.

312. If restrictions on human rights are needed to contain a disease outbreak, States must seek a reasonable, proportionate and contextualized application of such restrictions that does not put these rights at severe risk in the medium and long term. States must consider tailored non pharmaceutical measures that maintain social lives and keep economies functional while protecting high-risk individuals, to avoid deepened social inequalities and human rights violations. More stringent measures, such as lockdowns and closures of borders, schools, and workplaces, need to be carefully assessed by weighing the potential negative effects of these measures on general populations.

313. States, according to the UN Guidelines Principles on Business and Human Rights must prevent negative impacts on the access to healthcare, demanding private actors' health-related respect for human rights and the adoption of human rights diligence in the execution of its operations.

314. In the context of pandemics, States and civil society must confront threats to democratic values, such as excessive use of emergency powers, limitations on media freedom, discriminatory restriction of election campaigns, limitations on the powers of legislatures, disinformation, excessive surveillance, discriminatory restrictions on freedoms such as movement and assembly, and arbitrary or violent enforcement of such restrictions by police and non-State actors.

Recommendations of the IBC to the scientific community

315. Research data and results should be collected and made freely available, be reviewed expeditiously, shared through open-access publications, respecting privacy and its limitations, in line with the UNESCO Recommendation on Open Science (2021) and the Wellcome Trust call for sharing research data and findings during pandemics (2020).

316. In responding to a problem, the demand for a quick solution cannot be an excuse for violating the ethical standards required for responsible research.

Recommendations of the IBC to healthcare and media professionals

317. Healthcare professionals must always provide timely and accurate information publicly and to individuals based on the best available scientific evidence.

318. Media, professional journalists and public broadcasters should avoid sensationalism in seeking to raise awareness among the local population. They should only transmit news about pandemics that are coming from trusted sources, which could include international bodies, proven reliable government bodies, and technical-scientific committees to all individuals of the country, and in a way and manner that promotes responsibility and fosters cooperation and solidarity.

319. Educational programmes on scientific issues should be available for journalists, and communication should be available for health professionals.

Recommendations of the IBC for national bioethics bodies and research ethics committees

320. The IBC recommends that national ethics and bioethics bodies discuss, adopt and conduct educational activities with their local populations that underscore the main issues raised in this report. They should also seek to disseminate widely all the recommendations made within this report.

321. Conducting research in emergency disease outbreaks, especially of epidemic or global pandemic proportions, raises specific challenges. The urgency of the situation demands reinforcing oversight of the procedures to assess the scientific validity of research projects as well as to protect the rights of human research subjects, estimating the social value of research proposals and making the research enterprise publicly accountable. When multi-country and multi-agency collaboration is involved, and efficacy becomes especially crucial, research exceptionalism must not be understood as ethical exceptionalism.

Recommendations of the IBC for society at large and individuals within communities

322. The IBC recommends that each individual, social group and community organization make firm commitments to learn and employ not only medical but also bioethical approaches and critical thinking about pandemic threats. Further, civic groups and non-governmental organizations (NGOs) should promote public dialogue and discussion on pertinent issues to improve understanding, build public trust, and foster solidarity on the issues.

323. All relevant stakeholders are recommended to improve their health literacy. This will help them make better decisions in matters related to their health, and in addition to reduce inequity in health.

Recommendations of the IBC to scientific journals

324. During a pandemic, scientific journals should make it a priority to make new research results accessible, in line with the protocol proposed by WHO during the Zika crisis (2016).

325. To promote public access to relevant new knowledge about the pandemic, waiver policies focused on low and middle-income countries should be expanded to prevent researchers from having to pay out-of-pocket fees for their articles to be published.

ANNEXURE I:
Some international documents relevant to the scope

326. The scope of this document derives from several Articles enunciated in the *Universal Declaration on Bioethics and Human Rights* (UNESCO, 2005), some of which have already been elaborated in previous reports of the UNESCO IBC. The IBC *Report on Social Responsibility and Health* (UNESCO, 2010) is based on Article 14 of the Declaration, which clearly states that promoting health and social development is "a central purpose of Governments." Furthermore, the report emphasizes that the responsibilities of States should extend beyond national boundaries in matters concerning global health security. Article 14 also states that "the highest attainable standard of health" is a fundamental right of every human being. In the context of the COVID-19 pandemic, this would mean access to the highest available healthcare.

327. The *Report of the IBC on the Principle of the Sharing of Benefits* (UNESCO, 2015b) is an elaboration of Article 15 (Sharing of Benefits) of the *Universal Declaration on Bioethics and Human Rights* (UNESCO, 2005), linked to Article 27 (right to share in scientific advancement and its benefits) of the *Universal Declaration of Human Rights* (UDHR) (UN, 1948) and Article 15 (the right to enjoy the benefits of scientific progress and its applications) of the *International Covenant on Economic*, *Social and Cultural Rights* (*ICESCR*) (UN, 1966b). The report has pertinence to the lessons learned during the COVID-19 pandemic. Another IBC report of similar relevance is the IBC *Report on the Principle of Respect for Human Vulnerability and Personal Integrity* (UNESCO, 2013), based on Article 8 of the UNESCO Declaration, which refers to the protection of vulnerable groups in the application of scientific knowledge and advancements. This is especially relevant in pandemics when the race to develop new therapies and vaccines should ensure that no one is left behind.

328. The IBC *Report on the Principle of Non-Discrimination and Non-Stigmatization* (UNESCO, 2014) and the *Report on the Principle of Individual Responsibility as Related to Health* (UNESCO, 2019) provide additional impetus for the recognition of our individual and collective responsibilities towards others as well as ourselves and the necessity to prevent discrimination and stigmatization, in responding to the COVID-*19* pandemic.

329. The *UNESCO Recommendation on Open Science* (UNESCO, 2021c) builds an additional foundation for this Report. The COVID-19 pandemic has demonstrated the crucial importance of free access to research data and results and general openness of science: "[..] more open, transparent, collaborative and inclusive scientific practices, coupled with more accessible and verifiable scientific knowledge subject to scrutiny and critique, is a more efficient enterprise that improves the quality, reproducibility, and impact of science, and thereby the reliability of the evidence needed for robust decision making and policy and increased trust in science".

330. The United Nations quickly responded to the pandemic by issuing several statements. The United Nations Comprehensive Response to COVID-19 (UN, 2020e) is a policy document from the UN Secretary-General outlining the global response to reduce vulnerability to future pandemics, build resilience, and address inequalities exposed and worsened by the pandemic. The recommendations include delivering a coordinated and comprehensive response to the health issues, adopting policies to address adverse human rights and socioeconomic factors, and establishing a recovery process. In addition, resolutions adopted by the UN General Assembly include *Global solidarity to fight the coronavirus disease 2019 (COVID-19)* (UN, 2020b) and *International cooperation to ensure global access to medicines, vaccines, and medical equipment to face COVID-19* (UN, 2020c).

331. The role of the World Health Organization (WHO) in responding to the COVID-19 pandemic is pre-eminent. WHO guidance on ethical issues related to infectious diseases and public health already existed at the onset of the pandemic, e.g., *Research Ethics in International Epidemic Response* (WHO, 2010), *Guidance for Managing Ethical Issues in Infectious Disease Outbreaks* (WHO, 2016) and *Guidelines on Ethical Issues in Public Health Surveillance* (WHO, 2017b). The onset of the pandemic in December 2019 saw the World Health Organization (WHO) producing several publications in the form of guidelines and policy documents pertaining to various aspects of the COVID-19 pandemic.

332. One of the earliest WHO documents was the *COVID-19 Strategic Preparedness and Response Plan*, first published on February 4, 2020, four days after the Director-General of WHO declared the novel SARS CoV-2 coronavirus outbreak a public health emergency of international concern (PHEIC). As the pandemic evolved, the document was updated in April 2020. This document "set out the key actions at national, regional and global levels, needed to suppress transmission, protect the vulnerable, reduce mortality and morbidity, and accelerate the development of the tools the world needs to turn the tide against the disease". A revised version of this document was produced in 2021 (WHO, 2021b). Specifically dealing with ethical aspects are the guidance documents *Ethics and COVID-19: resource allocation and priority setting* (WHO, 2020h) and Ethical Framework for WHO's work in the ACT- Accelerator (WHO, 2021). The Access to COVID-19 Tools (ACT) Accelerator was developed to assist stakeholders to arrive at value-based decisions when responding to the pandemic using the "COVID-19 tools": diagnostics, therapeutics, vaccines and health systems.

333. The WHO has also issued ethical guidance specifically related to COVID-19 in the important areas of research, the use of emergency drugs, and vaccines. They are *Ethical standards for research during public health emergencies: Distilling existing guidance to support COVID-19 R and D* (WHO, 2020e); *Guidance for research ethics committees for rapid review of research during public health emergencies* (WHO, 2020g); *Emergency Use Designation of COVID-19 candidate vaccines: Ethical considerations for current and future COVID-19 placebo-controlled vaccine trials and trial un-blinding policy brief* (WHO, 2020d); *Guidance on the Ethical Conduct of Controlled Human Infection Studies* (WHO, 2021e); *COVID-19 and mandatory vaccination: Ethical considerations: Policy brief* (WHO, 2022b); and *COVID-19 vaccine trial designs in the context of authorized COVID-19 vaccines and expanding global access: ethical considerations*. (WHO, 2021c); *Key criteria for the ethical acceptability of COVID-19 human challenge studies*

(WHO,2020h); and *Emergency use of unproven clinical interventions outside clinical trials: ethical considerations* (WHO, 2022c). In December 2021, at the World Health Assembly, 194 WHO Member States agreed to draft an international treaty on pandemic prevention, preparedness, and response, to be finalized by May 2024.

ANNEXURE II: Clinical Spectrum of SARS-CoV-2 infection (II.2.5)

334. Common presenting signs and symptoms included fever, cough, fatigue, anorexia, dyspnea, loss of smell (anosmia) or taste (ageusia). The last two were most strongly associated with a positive test.

I. Clinical features

335. In general, adults with a confirmed SARS-CoV-2 infection can be:

a. *Asymptomatic or Paucisymptomatic*: without symptoms consistent with COVID-19.

b. *Symptomatic*:

i. *Mild*: may include fever, cough, sore throat, malaise, headache, myalgia, nausea, vomiting, diarrhoea, loss of taste and smell but without shortness of breath, dyspnoea, or abnormal chest imaging.

ii. *Moderate*: evidence of lower respiratory disease, with normal (≥94%) oxygen saturation (SpO2).

iii. *Severe*: SpO2 <94%, a ratio of arterial partial pressure of O2 to a fraction of inspired O2 <300 mm Hg, respiratory rate >30/min, or lung infiltrates >50%.

iv. *Critical Illness*: respiratory failure, septic shock, and/or multiple organ dysfunction.

c. *Multisystem inflammatory syndrome in children* (*MIS-C*): A severe inflammatory condition may occur in children and young adults, with prominent cardiovascular involvement, including shock and coronary-artery aneurysms (Son *et al*. 2021).

d. *Post-COVID Syndrome* (*Long COVID*): A prolonged and often debilitating sequelae may occur (Mehandru & Merad, 2022), including fatigue, malaise, dyspnea, loss of memory and difficulties in concentration and neuropsychiatric syndromes.

336. Most people experience mild to moderate respiratory illness and recover without special treatment, but some may become seriously ill, especially those aged ≥65 years, with comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, or cancer. However, anyone can become seriously ill or die at any age (US-NIH, 2022).

II. Diagnostic approach

337. NAAT (Nucleic Acid Amplification Test) is the preferred initial test based on reverse-transcriptase polymerase chain reaction (RT-PCR). Alternatively, rapid antigen detection tests have lower costs and are easy to perform, being useful when a NAAT is unavailable. If negative may warrant confirmation with additional testing (UpToDate, 2023). II.2.5.7. Drugs

338. At the pandemic's beginning, many existing drugs for other illnesses were studied in clinical trials with individuals at risk/infected by SARS-CoV-2. They included Hydroxychloroquine, Ivermectin (Lim *et al*. 2022), and Azithromycin. Results were negative and can cause serious side effects (Singh *et al*. 2021; WHO, 2021a).

339. Exceptions were:

a. Dexamethasone mitigates the inflammatory response that may lead to multiple organ dysfunction syndrome (US-NIH, 2022).

b. Monoclonal antibodies (mabs) – several mabs received a EUA. They include Tocilizumab, Bebtelovimab, Sotrovimab, Tixagevimab-cilgavimab, Casirivimab-imdevimab, Bamlanivimab-etesevimab. In the references below, they are thoroughly reviewed (UpToDate, 2021, 2022).

340. New antivirals developed (Burki, 2022):

a. Nirmatrelvir/Ritonavir (Paxlovid): lowers by 88% risk of hospitalization or death for high-risk patients, compared with placebo, if given within five days of symptom onset.

b. Molnupiravir: 30% reduction in hospitalization or death compared with placebo if given within three days of symptom onset. Both drugs are given orally, simplifying their use.

c. Remdesivir: approved by the US FDA in 2020 for adult and paediatric patients (≥12 years) requiring hospitalization (US-FDA, 2020) and in 2022 for non-hospitalized patients at high risk of severe disease (US-FDA, 2022). Given within seven days of symptom onset, 87% fewer chances of hospitalization or death compared with a placebo. Intravenous administration limits its utility.

III. Access to Nirmatrelvir/Ritonavir and Molnupiravir:

341. The United States Government is paying around $530/course of Nirmatrelvir/ritonavir and $700 for Molnupiravir (Beasly, 2022). Generic molnupiravir produced in India costs 2,400 rupees per course (US $29.35)[22]. The patent holder qualified 35 generic manufacturers to provide Nirmatrelvir/ritonavir to 95 selected LMIC.

342. In an agreement with the Medicines Patent Pool (MPP), the patent holder expanded access to Molnupiravir, but only to 105 LMICs (Merck, 2021).

IV. Adverse effects and drug interactions

343. Nirmatrelvir/Ritonavir has several drug-drug interactions, and there are reports of COVID-19 rebound a few days post-treatment, with mild symptoms and not needing additional treatment (US-CDC, 2022).

344. Molnupiravir could potentially affect bone and cartilage growth, preventing its use for patients younger than 18 years.

22 See product page of generic molnupiravir on IndiaMART at https://www.indiamart.com/proddetail/movfor-200mg-capsule-molnupiravir-200mg-capsule-by-hetero-24451090233.html. Accessed in June 2023.

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COMPOSITION OF THE IBC (2022-2023)

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- ABAKAR Dr (Mr) Mahamat Fayiz (Chad)
- ACOSTA SARIEGO Prof. (Mr) José Ramón (Cuba)
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THE COVID-19 PANDEMIC: LESSONS LEARNT AND RECOMMENDATIONS FOR FUTURE DIRECTIONS

Marking our era with unprecedented challenges, the COVID-19 pandemic has irrevocably altered the fabric of our global society, demonstrating the interconnectedness and vulnerabilities of our modern world and highlighting deep-seated inequalities.

In the wake of the pandemic, the International Bioethics Committee of UNESCO presents a comprehensive analysis and forward-looking guidance, encapsulating lessons learned from the pandemic for future public health crises. Through a meticulous examination of ethical, scientific, and human rights perspectives, it explores how to foster resilience, equity and preparedness in global health governance.

Addressing the multifaceted impacts of the pandemic, the report puts forth recommendations to stakeholders at various levels, calling upon Member States, the research community, the health industry and the general public to build a more ethical and fair global health system.

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