The Association of Schools of Public Health in the European Region

ASPHER Statement December 2023

The COVID-19 Pandemic as a Public Health Teacher - the lessons we must learn

ASPHER Public Health Emergencies Task Force

The COVID-19 Pandemic: why we need to pursue
the many public health lessons learned across European countries.

Part 1. Twenty priority Lessons Learned with recommendations for action during 2024-2026

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Note: Country experiences and perspectives – Part 2 report to be finalised and published later in December 2023 - in the ASPHER Public Health Task Force weblink. https://www.aspher.org/covid-19-task-force.html

1. LEARNING FROM THE PANDEMIC

Since 5th May 2023 Covid-19 is no longer considered a public health emergency of international concern (PHEIC), rather "an established and ongoing health issue".[1] But is now the time to forget about it, or the opportunity to learn the deep lessons for future pandemics and for shaping our teaching and our public health systems? The WHO DG Tedros Adhanom Ghebreyesus, recognised the end of this emergency depicted a moment to celebrate some achievements, such as the dedication of healthcare workers but also a time for reflection on the many mistakes made.[2] Globally, as of 12th October 2023, there were 6,961,014 deaths due to Covid-19 and 771,191,203 confirmed cases reported to WHO.[3] These large-scale numbers, even though they likely seriously underestimate the global burden, nevertheless signify a catastrophe for humanity and signal various global failures. Such failures include inadequate cooperation internationally, insufficient governmental examination of scientific evidence and

hesitancy to adopt effective strategies, not ensuring equitable supplies and distribution of funding, technology and tools, and lack of concerned action to face disinformation and more. Nevertheless, after acknowledging all the mistakes, it is time to learn from the past and act to take advantage of the window of opportunity that is still open before the next large-scale global health emergency. Our 20 key lessons learned and our recommendations draw from three broad sets of influences below, all of which overlap but none of which are sufficient on their own.

a) Findings from seven important international reports from other agencies - Chapter 2 below.

b) Perspectives of ASPHER Task Force members and subgroups who were part of a large number of ASPHER meetings and reviews during the pandemic - Chapter 3 below.

c) Country experiences and perspectives from ASPHER Task Force members - see ASPHER Lessons Learned Report Part 2.

2. SEVEN HELPFUL INTERNATIONAL REPORTS ON LESSONS LEARNED

1. United Nations General Assembly during the 2023 High Level Meeting (HLM) on Pandemic Prevention, Preparedness, and Response (PPPR) that led to the Political Declaration by political leaders.[4] This pivotal global meeting fostered a multisectoral environment in which a political declaration has been drafted calling for future "*timely, urgent and continued leadership, global solidarity, increased international cooperation and multilateral commitment among Member States and to implement coherent and robust national, regional and global actions, driven by science and the need to prioritize equity and the respect for human rights to strengthen pandemic prevention, preparedness and response, and fully address the direct and indirect consequences of future pandemics*".[4] Accordingly, 75 points were adopted covering key lessons learned during the pandemic emergency, for example on health inequities and inequalities, which were severely exacerbated during the pandemic, and the need to build and maintain global solidarity and trust, prioritise equity, and maximise political will to learn from the lessons learned and best practices from the Covid-19 pandemic.[4]

2. European Center for Disease Control and Prevention (ECDC) - Technical Report (2023) on "Lessons Learned from Covid-19 Pandemic".[5] Four key lesson areas were identified to strengthen preparedness and response plans: *Investment in the public health workforce, preparing for the next public health crisis, risk communication and community engagement, and collection and analysis of data and evidence.*[5] For example, building a relationship of trust between governments and their citizens is essential for an effective response to the next public

health emergency. Fostering trust can be achieved by transparent evidence-informed decision-making, which may increase community engagement.[5]

3. Long Term Covid-19 Disease Management" – World Health Organization (2023).[6] Five areas were highlighted: *collaborative surveillance, community protection, safe and scalable care, access to countermeasures, and emergency coordination,* that each need to be strengthened.[6]

4. The Lancet Commission on lessons for the future echoed many other global perspectives in its call for a 10-year global strategy.[7] These ranged from broad support for global collaborations, WHO reform with extra powers and budgets, through advocating for science based decision-making and strengthening the global public health workforce. Specific lessons include a '*dual track*' for preventing emerging infections, including seeking to prevent '*natural spillovers*' as well as increasing biosafety and biosecurity in pathogen research.[7]

5. Report from a broadly based expert consensus panel. This *comprised '..of diverse, multidisciplinary panel of 386 academic, health, non-governmental organisation, government and other experts in COVID-19 response from 112 countries and territories..'* who highlighted many issues and recommendations and the levels of agreement achieved.[8] For example ,the role of economic incentives was an area of lower-level agreement within the panel. Six broad cross-cutting themes were identified highlighting issues - such as vaccines-plus approaches, building public trust and being community centred. The lead author, with others, later looked at current international treaties and health regulations, concluding that improved accountability and enforcement mechanisms will also be needed in future.[9]

6. The Independent Panel for Pandemic Preparedness and Response (IPPPR) report of 2021 (*COVID-19 Make it the last Pandemic*) highlighted issues such as the need for rigorous and systematic use of non-pharmaceutical countermeasures and high vaccine coverage.[10] Failure to learn sufficiently from SARS and other previous infectious disease emergencies were noted. The IPPPR 2023 'Roadmap' reminds us to make better use of the outbreak and pandemic cycle, using the interpandemic phase for strong preparedness. Six broad '*essential functions for pandemic preparedness and response*' were identified, including a 'transformed 'ecosystem for rapid and equitable access' to medical countermeasures.[11]

7. The European Observatory on Health Systems and Policies (2023) covered 20 strategies to reallocate resources and not leave anyone behind[12]. The main areas for future improvement identified were: "*leading and governing the Covid-19 response, financing Covid-19 services, mobilizing and supporting the health workforce and strengthening public health interventions".*[12]

The above articles underline the importance of strengthening the healthcare workforce, increasing capacity building, implementing economic/financial measures, creating better IT systems to share the latest data and fostering multidisciplinary coordination across different sectors. The list of evidence on the lessons learned and possible improvements continues to grow worldwide.

However, often recommendations are broad, with the target groups undefined, and the extent to which Member States may implement them is difficult to assess. Member States have different priorities, budgets and possibilities to address future emergency preparedness. Therefore, there is no "*one-size fits all*" in terms of public health interventions during emergencies; however during the Pandemic many messages were shaped as if one solution would resolve all problems.[12]

It is also essential to include mention of what strategies were demonstrated to work well during the Pandemic instead of only looking at mistakes and broad recommendations. Such learning from success, can offer solutions to invest in strong evidence-based emergency preparedness plans and capabilities across Europe and globally.

3. THE ROLE OF ASPHER COVID-19 TASK FORCE

The Association of Schools of Public Health Professionals in the European Region (ASPHER) convened a Covid-19 Task Force early in 2020 to facilitate networking among public health professionals to help them face the emergency and to coordinate public health ASPHER's actions across the WHO European Region.[13] The ASPHER Task Force has involved over 60 experts, 30 member schools, and more than 20 countries across four continents. As an expert forum during the COVID-19 pandemic, ASPHER Task Force members were mutually sharing latest information, presenting and reviewing evidence on many aspects of the pandemic, including epidemiological, technical, societal, and political dimensions. By collaboration with European and national health authorities, as well as non-governmental organisations, ASPHER Task Force helped to accelerate the coordination of policy responses across WHO European region.

During the pandemic, ASPHER Task Force was consolidated as a meaningful body of work, dealing with various public health subjects related to the pandemic, and published more than 30 peer-reviewed publications, including on face masks, testing, tracking, vaccination, health inequalities, safe schools, advocacy for wider social protection and global vaccine equity. ASPHER has a pivotal role in shaping and improving future plans, for our own academic public health responsibilities, but also in advising our partner institutions across the European Region

and in each country. The Covid-19 Task Force aimed to advise and practically help professionals to stay up-to-date and invest in scientific research, which is critical in times of emergency.

Accordingly, various papers were published during the Pandemic, such as on "Covid-19 Pandemic Waves Surveillance"[14] and "The Need for Vaccine Internationalism"[15]. Moreover, the Covid-19 Task Force published a "Handbook on Basic Epidemiological Terms", aimed to provide journalists and the general public with a better understanding of epidemiological terms related to the Covid-19 pandemic.[16] The handbook was translated into multiple languages, in order to make it accessible and useful across many countries within the European region. Handbooks of basic terms were also produced for health inequalities,[17] and also covering phone-based apps for contact tracing.[18] Moreover, a statement on the "Reopening of Schools of Public Health - Rapid Review Survey" (2021) was published to highlight how public health schools in the European Region were planning to reopen campuses after the closure due to Covid-19.[19]

Moreover, the importance of inequalities and vulnerable groups during the Covid-19 Pandemic was a primary interest among the Task Force members. Exploring hidden problems and their impacts on vulnerable groups during the Covid-19 Pandemic helped the Task Force advocate for them. Viruses do not have borders, and we have learned that low and middle-income countries and communities are those most affected due to a lack of resources, medical support and vaccination doses.[20] Moreover, the first ASPHER statement on "How the Pandemic is Amplifying Health Inequalities in Europe" included which actions could be taken was published thanks to harmonised work.[21] The need for more concrete and targeted solutions in a collaborative environment is pivotal in emergencies. Timely and broad Heath Impact Assessments could highlight population groups and interventions that need extra attention due to additional vulnerability and/or pre-existing disadvantages.[22,23]

4. COUNTRY LEVEL PERSPECTIVES

Part 2 of these ASPHER Lessons Learned reports give examples country-level perspectives from Task Force members across Europe. We also recognise that there are many lessons from countries outside Europe, including high-income countries like Canada,[24] and or as in low-income countries in Africa.[25] We recognise that there are particular lessons for each country, such as related to their populations' health needs, their cultures and vulnerabilities, their pandemic governance and responses, and the strength of their public health workforces, and the level of access to universal healthcare. We acknowledge that some countries have already concluded their formal pandemic reviews/inquiries while others are underway, as in UK and in Scotland, and also that other country reviews/inquiries may be minimal. Thus many lessons

have been learned, and are still being learned, but must be learned comprehensively across our European geography and across our public health networks. Lessons should also be learned from local public health systems within each country given the different severe pressures some localities initially experienced, such as in Northern Italy, or where vaccine hesitancy was associated with lower population coverage, such as in some Eastern European areas.

The ASPHER Task Force members are continually mindful of the future potential for emerging or re-emerging infections to pose global threats. The SARSCoV-2 virus continues to evolve and seasonal influenza also. We must be mindful of recent challenges in Europe such as with Avian Influenza. The current rise in child respiratory infection in China is still being assessed.[26] This phenomenon may be partly a rebound in China's child population who had reduced exposure to common viruses and bacteria during 2020-2023. However, it raises questions for our global epidemiological understanding and to be able to offer public reassurance of any wider threat levels, even if this surge in China has not got pandemic potential. Such challenges to surveillance and investigation makes it vital that lessons from the COVID-19 pandemic are learned and acted upon. Mistakes were made but much strong progress was made in epidemiology, healthcare and health sciences, and wider academic and scientific fields.

5. CONCLUSIONS

Four years since the alert was raised we are still learning. We are reminded below to be better prepared and foster resilience for future emerging threats and pandemics.

Lessons Learned from Public Health Experiences COVID-19 Response - Prof Mohamud Sheek Hussein October 2023.

The public health response to COVID-19 is still evolving. Lately the workforce of public health is reassessing and beginning to reconsider what lessons we learned that can be applied to improve future pandemics; moreover, in the early response to COVID-19 has revealed a major gap not only in public health but overall in the entire health care system around the world. This is how the COVID-19 pandemic quickly spread and killed indiscriminately all ages, genders, and developed and developing countries. We usually learn from our failure as well as our success; unfortunately, Aldous Huxley, 1894–1963, said, "*That men do not learn very much from the lessons of history is the most important of all the lessons that history has to teach.*" Therefore, we did not learn from the history of infectious epidemics such as the plague in 1346, smallpox in 1870, and Spanish influenza in 1918. More recent epidemic

outbreaks include SARS, MERS-CoV, Ebola, Zika, H1N1 (the swine flu), and the recently discovered Mpox (formerly 'monkeypox') virus. The COVID-19 virus has many similarities to the SARS and MERS-CoV viruses. They share the same etiology, RNA structure, and symptom presentations and are of zoonotic origin. Nevertheless, they differ in the mode of transmission, severity, and prognosis. As such, modes of prevention and control measures are different. The magnitude of the COVID-19 spread is unlike any of the past epidemics. (Sheek-Hussein et al, 2023).

Coccolini F, et al, (2021) reported that the world's population experienced a multitude of effects (physical, psychological, sociological, and often economic) from this new and aggressive virus, the Sars-Cov-2. Therefore, overcoming the public health crisis involves realizing one's own mistakes and shortcomings to respond to the ongoing crisis and constantly work on combating it, then building resilient health care systems focusing on social, economic, and health inequities. Most importantly, the public health professional must be prepared for future pandemics by performing rapid detection, risk assessment, and prompt response to any novel infectious disease outbreaks.

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Key themes in our 20 lessons learned below and associated recommendations, are to help improve future preparedness, and foster better collaborative public health academic teamwork across Europe. Using the learning from our Covid-19 Task Force example is crucial to building solid connections to prepare for future emergencies, including threats that are already on the horizon, such as with influenza, as well as newer Omicron variants, which are currently spreading worldwide, for which the Task Force already has begun to prepare. In this regard, the Covid-19 Task Force changed its name after three years, now called the "Public Health Emergencies Task Force". This highlights the ongoing work of its members to improve emergency preparedness using all the available tools and experiences from professionals. For example, one strategy its members highlighted is incorporating updated emergency

preparedness models and resources into public health curricula and to help develop tailored training across Europe.

Many countries are still lacking a comprehensive emergency preparedness plan.[3] Being able to start implementing the pandemic lessons learned will help being ready to change various aspects of current health systems across Europe. The Public Health Emergencies Task Force of the Association of Schools of Public Health in the European Region will be a focal point to help harmonise new approaches and learn together during the post-pandemic phases of recovery and preparedness to be better equipped and more resilient in future emergencies.

Lessons from the COVID-19 pandemic must be acted upon. Mistakes were made but strong progress was also made, such as in epidemiology, healthcare and health sciences, and wider academic and other scientific fields.

The Pandemic highlighted the urgency of developing harmonised PH competencies for epidemiology and other areas,[27] and also better global governance.[28] The ECDC-ASPHER Competency Framework for applied infectious disease epidemiology, exemplifies harmonised approaches to investigating and controlling infectious diseases and capacity building of PH workforces across Europe.[29] This updated Competency Framework for infectious disease epidemiology, carried out through ASPHER, highlights 157 competencies grouped into 6 broad subject areas.

ASPHER's Basic Terms Booklet for pandemic inequalities covered useful terminology and concepts.[17] For instance we need better recognition of newer concepts such as syndemic approaches, where multiple determinants and different health conditions interact and need to be addressed more holistically.

Newer concepts of public health errors could be helpful in openly and humbly examining mistakes or misjudgements, of commission or omission, and issues of blame and whether there was culpability or not.[30,31] The ASPHER Covid-19 Task Force, now "Public Health Emergencies Task Force" will continue work to improve emergency preparedness. This will help harmonise new approaches post-pandemic, for PH to be better equipped and more resilient in future emergencies. We identified 20 priority lessons/themes below, to guide ASPHER.

6. TWENTY PRIORITY LESSON LEARNED FOR ASPHER FROM THE PANDEMIC, WITH RECOMMENDATIONS FOR ACTION

1. Ensure ASPHER's independent and trusted voice. The Task Force and wider ASPHER systems showed independence, interdisciplinarity and high trust between members enabled

unencumbered rapid sharing of expertise, ideas, utilisation of data, insights in local languages, and access to the front-line experience of members, those in health authorities or advising national or regional governments.

Recommendation 1: The independence of ASPHER should remain a key strength that can allow it to advise and communicate widely and trustfully with partner agencies, member schools and with our populations.

2. Further our inter-country collaborative culture and mutual support. The importance of a flexible, bottom-up organisation, enabling members to pursue individual research, education, and advocacy agendas while acting in concert. The TF strengthened and deepened collaborations between ASPHER Schools of Public Health.

Recommendation 2: Participation in ASPHER rapid responses should be a key opportunity during pandemics and disasters for academics and mentors in our schools for MPH or other students/alumni to contribute to urgent responses, widen their professional networks and gain valuable early career experiences, knowledge and skills.

3. Support global collaboration and governance for pandemics and other emergencies. The pandemic challenged the robustness and preparedness of pre-existing systems such as WHO, the International Health regulations and other global bodies. Decisions were needed on when to declare a pandemic and how to escalate and mobilise funding, collaboration and population movement. It became clear in 2021 that such global plans and systems would need to be modernised or reviewed.

Recommendation 3: ASPHER should support feedback to in-depth consultation on such plans, along with providing assistance for dissemination and associated educational actions.

4. Support cross-border cooperation and consistency. ASPHER is concerned that different policies and countermeasures in various countries led to cross-country border movement of cases. We stress the need to mobilise suitable local public health operational capacity to assist in assessing risks at country exit and entry along with testing and follow up.

Recommendation 4: Each country should have pre-identified professional capacity for 'shoe leather epidemiology' and laboratory testing facilities that are vital practical early local steps in virus containment in the early parts of an epidemic arriving in Europe.

5. Harness new ICT and remote working skills. The work from the ASPHER COVID-19 Task Force was possible thanks to multi-sectoral collaborations among its diverse and distributed members. It helped share the latest scientific knowledge and multiple viewpoints on how countries handled the Pandemic. This was enabled through use of remote meetings and internet sharing of reports and data.

Recommendation 5: ASPHER should continue to develop its ICT capacities and technologies for rapid effective collaboration, communication/dissemination, while reducing its carbon footprint wherever possible.

6. Continue horizon scanning and alertness for future threats. ASPHER, like most public health bodies, cannot predict exactly what future pandemics and global challenges will emerge. There is a major concern about emerging and re-emerging infectious diseases that we can learn from, including those new to a country or re-emerging following previous country elimination. Examples include mPox, Zika, Ebola, and outbreaks of polio and measles.

Recommendation 6: ASPHER should continue to develop its surveillance and alerting and links to IANPHI, ECDC, WHO, and national public health agencies.

7. Promote timely, well-resourced and comprehensive Epidemiological Reporting systems. The availability of covid-19 data was often fast and detailed, with international collaborative databases of cases and deaths, supported by more advanced genomic surveillance and other opportunities such as EU wide wastewater surveillance policies and resources. However, not all 53 countries in the WHO European Region were able/willing to fully embrace such opportunities or technologies in a timely way.

Recommendation 7: ASPHER should encourage wider and continued availability of rapid global reporting systems along with continued development of new technologies for surveillance.

8. Advocate for reductions in health inequalities and protecting vulnerable population groups before and during future pandemics. The pandemic exacerbated pre-existing health inequalities and those suffering socio-economic disadvantages. More severe burdens in those with pre-existing medical conditions, older people and those from minority groups. There is still a need to summarise their full pandemic experiences and legacies for both direct and indirect impacts.

Recommendation 8: ASPHER should continue to report and advocate relating to this pandemic's health inequalities, including a comprehensive review of Burden of Disease suffered by all disadvantaged or vulnerable groups.

9. Promote universal healthcare systems and recognition of the care dividend. The severe mortality and morbidity in elderly people, that could have been prevented, will remain a deep lesson. Possibly one issue that may be seen as neglectful in some countries both during the pandemic and before that. There is an important debate to be had about the 'care dividend' and how strong elderly care models benefit and protect older people, wider society, the economy and wider healthcare systems.

Recommendation 9: ASPHER supports the development of strong modern and universal elderly care systems and will assist in assessing and promoting the wider care dividends.

10. Support more equitable vaccination systems and combat vaccine hesitancy. There was uneven access to vaccines across Europe, despite rapid technology development and EMA/other regulatory agreement to licence products. There was also recognition of the misinformation channels that fuelled vaccine hesitancy. Among the positive lessons were the quick roll out in some countries and also strong efforts by many local public health professionals to reach out and engage with their marginalised or disadvantaged population subgroups around vaccine safety and access.

Recommendation 10: ASPHER recommends that future pandemic plans should incorporate detailed mechanisms to identify, support and reach vulnerable and disadvantaged groups.

11. Strengthen capacity and combat erosion of PH workforces, particularly focussing on PH infrastructure for improving discharge of essential PH functions at local, regional and national level. The pandemic put enormous strain on already deleted public health workforce and resources in various European countries. Much of ASPHER's emphasis was on helping sustain its MPH programmes though the pandemic and introducing new Young Professionals to pandemic response. However, we should not stand by and see the next public health workforce enter a new pandemic or disaster in a weakened state in any European country.

Recommendation 11: ASPHER will continue to advocate for strong workforce capacity at national, regional and local levels that is capable of maintaining high level input and effective support for future pandemics.

12. Ensure PH competencies for future disasters and pandemics. ASPHER has contributed to new general competency frameworks (with WHO-E), and with ECDC to the updated core competencies for applied epidemiology in infectious diseases. Further work with ECDC is underway on vaccine competencies.

Recommendation 12: ASPHER would support a strategic approach with European partners such as WHO-E and ECDC, to jointly develop a suite of detailed pandemic/disaster related competency frameworks, that should also be updated regularly.

13. Strengthen evidence-informed PH practice, including early Health Impact Assessments. The scale and largely unexpected nature of this pandemic inevitably led to identifying deficiencies in pandemic plans and preparedness, that were anchored in influenza response. Some countries, such as Sweden, unexpectedly deviated from mainstream public health response guidance, while others such as the UK and Ireland did not move in a sufficiently timely and strong policy towards the 3rd wave over the Christmas and New Year of 2020/21, leading to

large losses of life. The willingness to sacrifice large scale loss of life by some irregular public health advocates of the 'herd immunity theory' was thankfully not heeded in most countries, at least while wider vaccine coverage and related vaccine-derived immunity was being built up.

Recommendation 13: ASPHER advises that European experts in all 53 countries should seek to keep in step on shared policy guidance and on solid epidemiological foundations, so that governments' policies are credible and safe.

14. Prepare pandemic and epidemic recovery plans to restore reduced health status lost, including life expectancy. The Burden of Disease from COVID-19 has been studied intensively in various countries. Life expectancy fell in many European countries and many potential years of life were lost through dying and or from disability. This deficit needed to be followed up in affected countries and plans put in place to prevent long term adverse outcomes for survivors and their communities.

Recommendation 14: Those European countries most affected by the pandemic should be supported by their Schools of Public Health to develop detailed recovery plans to reduce continuing pandemic legacies.

15. Promote plans to combat syndemic deaths and illness during crises. The pandemic interacted and compounded many pre-existing health conditions, including those with multi-morbidity. The pandemic has highlighted the need to recognise syndemics, their causes and interventions that were successful during the pandemic.

Recommendation 15: Country level plans should be developed for recognising those affected by pre-existing syndemic conditions and how pandemic preparedness can lead to better protection during future pandemics.

16. Promote resilient and credible robust governmental guidance from expert groups to support future decision-making on public health policy. The initial scientific uncertainties, and high volume of demand, placed a substantial strain on regulators, expert groups and public health agencies who advised their governments. Pandemic testing, modelling, and assessing impacts were considered along with those who advised on pandemic responses and countermeasures such as testing, vaccines, and NPIs. Lessons include a robust and transparent analysis of evidence, timely advice, trusted spokespersons and communication channels, and independence from government interference.

Recommendation 16: Each country should assess the robustness of their expert advisory groups, while linking to public health professional bodies, so that they have the confidence of the population, professional groups and their governmental systems.

17. Strengthen the role of Public Health with health authorities and political decision-makers in pandemic crises situations. A major pandemic is a test of the robustness of each country's systems for acquiring independent and trusted expert public health advice from existing and pandemic-specific advisory groups. Overall there appears to have been weaknesses in public health professionals capacity, positioning and capability in some countries to influence policy and politicians.

Recommendation 17. ASPHER should support professionals and public health professional bodies each country to develop a structured process for assessing how public health capacity can be mobilised sufficiently to influence future decision-making processes successfully.

18. Improve preparedness in health crisis communications among PH professionals. A major feature of the pandemic was the need for intensive attention to communicate widely and rapidly about the constant changes in population health status, scientific developments, healthcare and pandemic countermeasures. There were also intense efforts to communicate and engage successfully through social media and with local stakeholders. All this in the midst of an infodemic with various disruptive conspiracy theories, misinformation, and failing to reach some people.

Recommendation 18: ASPHER should consider identifying communication competency skills and tools, and support training for public health academics and service professionals.

19. Support ethical and humanitarian concerns of PH professionals, including financial stability for vulnerable populations. The pandemic highlighted the severe vulnerability of disadvantaged and highly vulnerable population groups. It is vital that public health professionals at local, regional and national levels are encouraged, supported and facilitated to assess these problems. Humanitarian concerns included the need for safeguarding wellbeing and income, and recognising those who may be in precarious situations such as immigrants and migrant workers. There is a need to ensure the public health professionals can communicate freely and advocate for early action for all people who are highly vulnerable.

Recommendation 19: We recommend that each country assesses the levels of pandemic protection offered to vulnerable and disadvantaged groups and that this review informs how local and national public health teams are positioned to act in future emergencies.

20. Share knowledge, skills and resources for medical and health technologies rapidly, widely and equitably. The pandemic highlighted the need for effective European and Global alliances to share pandemic clinical innovations such as vaccines, antiviral medicines, virus testing PPE, and intensive care equipment and other devices. Partnerships with new regional leadership

and systems could be fostered, such as with the European Commission's Department for Health Emergency Preparedness and Response (HERA).

Recommendation 20: ASPHER should support European initiatives to allow rapid sharing of technological innovation and affordable manufacture and deployment of necessary medicines, laboratory surveillance tools and resources, and clinical devices, accessible in an equitable way to all vulnerable populations.

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