

2024 KIMUN WORKSHOP 고등 영어 위원회

Committee: WHO(World Health Organization)

Agenda: Finding measures to deal with global medical crisis

1. Committee Introduction

The World Health Organization (WHO) is an organization that (1) leads, coordinates, and researches international health and medical projects, (2) provides financial support and technical training for the development of health care in various countries, (3) conducts advisory activities, and (4) carries out various disease eradication projects, as well as (5) promotes cooperation among health organizations. The organization aims to bring all of humanity to the highest level of health and has 194 member countries under its annual assembly, the World Health Assembly (WHA). In addition to the assembly, it has an Executive Board and a Secretariat. The Executive Board consists of 32 countries chosen from the member states with a tenure of three years. It was officially established as a specialized agency of the UN in 1948, inheriting the responsibilities of pre-World War II organizations such as the Office of International Public Hygiene, the League of Nations Health Organization, and the International Relief and Rehabilitation Health Agency. According to its charter, there are six Regional Committees located in the Western Pacific, Southeast Asia, the Middle East, Europe, the Americas, and Africa. Each has a Regional Office serving as the executive body for the respective Regional Committee.

The WHO focuses on public health issues across three main areas of healthcare. First, it establishes a universal health coverage system to ensure the accessibility of everyone's quality essential health services. To achieve this, the WHO may train healthcare personnel in specific countries or advise on labor policies related to health benefits. Second, the WHO supports the enhancement of health and well-being by aiding governments and international organizations in prioritizing health when formulating policies. Third, the WHO is responsible for managing health emergencies. This involves recognizing, mitigating, and managing global health risks, such as COVID-19. Managing and safeguarding public health on an international scale through these three areas, the committee achieved a unique milestone in disease eradication. In 1966, during the 19th World Health Assembly, the WHO initiated a program to eradicate smallpox which is the first disease known to be eliminated by human effort. This culminated in the declaration of the eradication of smallpox at the 33rd World Health Assembly in 1980. The WHO is still actively putting effort in eliminating persistent diseases like polio, malaria, and AIDS, striving to establish a healthy public health environment for all.

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2. Historical Background and Status Quo

After the outbreak of COVID-19, the world faced significant changes and challenges over the past two and a half years. During this period, the international community has focused on identifying the vulnerabilities in the global healthcare system and addressing the shortcomings in responding to the pandemic. The first confirmed case of COVID-19 had occurred in Wuhan, China in December 2019. Afterwards, the WHO officially declared COVID-19 a pandemic on March 11, 2020. The virus, evolving through various mutations, infected over 600 million people worldwide and claimed the lives of 6.5 million. As societies worked towards recovery from the pandemic, it became evident that such infectious diseases lead to not just medical crises but also broader issues like economic instability,

spread of hunger and poverty, intensification of violence and discrimination, and exacerbation of socio-economic disparities. Therefore, the healthcare system has become a crucial matter for the safety and prosperity of the entire international community. Amidst the continuous threat of infectious diseases, urgent discussions on public healthcare are needed to prepare international responses to public health emergencies. In the post-COVID era, it is essential to reflect and devise strategies for international medical crisis management to prevent a global health crisis like the COVID-19 pandemic from reoccurring.

The international attention towards fundamental healthcare systems, which had been a continuous concern even before COVID-19, should be revitalized at this moment. Since the late 1980s, major developed countries have been striving to reform their health care systems to improve efficiency, equity, and quality of medical care. Efforts are needed to achieve an effective system that balances the efficiency and equity of the health sector. There are ongoing debates on emphasizing either the market function and government intervention in health care reforms. In terms of efficiency, reforms focus on reducing waiting times in countries with a salaried payment structure for hospital service usage. Conversely, in countries applying a fee-for-service system to hospitals and doctors, the emphasis of reform is on maintaining the quality of medical delivery while suppressing overall healthcare expenditures. Additionally, these countries view accessibility and equity in healthcare provision as key discussion points. After undergoing a global recession in the 1980s and subsequent restructuring, the public health sector has consistently faced challenges due to funding shortages caused by decades of tight fiscal policies. As a result, lower-middle income countries could not develop national health systems which in turn became a key cause of poverty. Furthermore, the commercialization of healthcare services in many countries inevitably led to an increase in personal expenses. The shortage of healthcare workers is a global phenomenon, but the situation is even more severe in countries that have not been able to establish a basic health care system. In particular, sub-Saharan African countries make up about 11% of the global population and 24% of high disease burden but with only 3% of the world's healthcare workforce. However, the increasing demand for medical personnel in developed countries is attracting professionals from developing countries. This exacerbates the disparity in healthcare among nations and raises the rate of overseas treatment. So the international community must strive to establish a balanced global healthcare system by fundamentally transforming and investing in the public health system.

3. Main Discussion Points

1) Review of the International Health Communication and the Functions of the International Health Regulations (IHR)

The International Health Regulations (IHR), established by the WHO, were designed to monitor and prevent the international spread of three severe infectious diseases: cholera, plague, and yellow fever. These sets of regulations with international law status were developed to enhance global public health security by facilitating the detection and response to public health emergencies that have the potential to cross borders. The revision of the IHR in 2007 was a significant step to enhance the WHO disease surveillance system and to strengthen the core capacities of the member states. However, this revision has been consistently criticized for lacking transparency in various aspects such as the convening of the Emergency Committee, decision-making process, selection of external experts, and publication of guidelines. The lack of clear indicators for declaring emergencies under the IHR has also diminished the incentive for member states to strengthen their national

implementation capacities. Thus, a comprehensive review of the IHR is needed. Member states are obligated to comply with and implement the IHR and should have an adequate legal framework to support and enable this compliance. However, the inadequacy of domestic policies regarding the IHR in many countries indicates a need for a change in the existing international approach to public health management. Germany, for instance, emphasizes sustainable responses to infectious diseases and actively supports developing countries in complying with the WHO's IHR. This approach highlights the crucial role in responding to emerging infectious diseases. However, the IHR is often criticized in international documents including reports published by international organizations and UN agency meetings. The IHR have a limitation in that their content is overly broad and not intuitive, leading them to serve only a symbolic role. The IHR should serve as a standard for solving international health and medical issues through a network of countries. It is urgent to implement these regulations systematically based on each country's advanced technology and industrial strengths. The content of the IHR should also be shared among member states.

2) Healthcare and the Global Supply Chain

When a medical crisis like a pandemic spreads worldwide, the balanced supply of medical goods is most crucial in the response process. As COVID-19 became a global pandemic, the sudden increase in demand for medical supplies led to disruptions in the supply of medical equipment in countries around the world. Countries restricted or distorted medical goods to bolster their own medical supplies. While restricting the export of essential medical equipment, countries increased imports by applying exceptions to import restrictions for urgently needed supplies. This led to significant difficulties in securing health and medical issues. It especially affected economically and diplomatically vulnerable developing and underdeveloped countries. Securing essential medical supplies is critical in responding to a pandemic like COVID-19. But since it is difficult for any one country to source all products domestically, the importance of trade has become increasingly significant. With the prolonged COVID-19 crisis, the imbalance in supply led to an increase in the trade volume of medical products to address the situation. According to a WTO report, in the first half of 2021, the import and export of medical products accounted for 6.1% of global trade. During this period, the total value of global trade in medical products reached \$128.6 billion, a 12.4% increase compared to the previous year. Currently, countries are importing medical products that are difficult to procure domestically while simultaneously restricting or banning the export of products in short supply. However, these trade measures limit international trade opportunities and delay the restoration of global supply chains. Thus, negatively impacting pharmaceutical trade and the global supply chain. The primary causes of fluctuations in the pharmaceutical supply chain include delays in local productions, delays in the supply of domestic and foreign raw materials, and logistics delays. These issues originate from regional imbalances in development, production, and distribution. For example, in 2019, Asia accounted for 60% of the raw pharmaceutical ingredients market, indicating a vulnerability to global supply chain disruptions. Following the pandemic, there has been an increased focus on the downsides of the global supply chain. Consequently, a growing number of countries are shifting towards a national or regional-centered production system. However, in an era where another infectious disease pandemic could arise, it is essential for countries to strengthen their pharmaceutical production and development capabilities. Moreover, it should establish an intergovernmental cooperation system to respond to potential shortages in medical supplies. In this process, it is crucial to ensure that

the supply of medicines to low-income countries is not neglected, despite the relative disadvantages in terms of medical distribution.

3) Economic Damages Due to Medical Crises

In 2013, malaria infected 214 million people worldwide and resulted in 430,000 deaths. It is commonly referred to as the “disease of poverty” because it predominantly occurs in underdeveloped areas where the low-income population resides. It also makes it difficult to eradicate the pests responsible for its spread. The African continent, where malaria occurs most frequently, suffers an annual loss of 12 billion dollars in GDP due to the disease. Among those infected with malaria, the majority are either unable to afford continuous treatment despite early diagnosis, or lack access to treatment. This situation often leads to a vicious cycle of poverty within communities. Additionally, once-infected, the anemia-inducing characteristics of malaria adversely affect labor productivity, posing a significant obstacle to the economic activities of households. The international community’s shared goals are reducing inequality between nations, sustaining economic growth, achieving full and productive employment, and enhancing the quality of jobs. To achieve these goals, the need for rapid and systematic handling of infectious diseases is crucial. This is because an increase in mortality rates due to infectious diseases can decrease the population growth rate, slow the increase of the labor force, and lead to a vulnerable labor market dominated by unskilled labor. Moreover, the changes in the population’s age structure due to infectious diseases lead to alterations in the size of the labor-eligible population, the workforce participation rate, the composition of public expenditure, and saving rates. Ultimately, the loss of skilled labor causes permanent damage to the labor capital, adversely affecting the national economy. The World Bank predicted that due to the loss of the labor force caused by a well-known infectious disease called AIDS, Zambia’s real economic growth rate would decrease by 15-28% between 1985 and 2010.

Recently, there has been growing concern that the post-pandemic development of the global supply chain could lead to long-term low economic growth. This concern arises from the possibility that production disruptions in one sector could spread to both domestic and international economies. Coupled with the decreased foreign investment and increased uncertainty in the international economy, the potential growth rate of economies are possibly weakening. In most countries, GDP has decreased and unemployment has surged due to COVID-19 containment measures. When households and businesses face financial strain, the risk of loan defaults in the financial sector increases, potentially leading to a situation where credit provision becomes challenging. Additionally, the increase in national debt and decrease in tax revenues have led to a deterioration of the financial status of the public sector. This situation inevitably weakens the ability of governments to support and stimulate the national economy. Beyond the major economic powers, countries like Turkey, Pakistan, and those in Central and South America, rely on exports, tourism, and foreign investments. These countries are also suffering significant economic losses due to the lockdown measures during the pandemic. Experts predict that even after the lifting of lockdown measures, consumption may not recover to pre-lockdown levels. Furthermore, the recovery could be uneven across different regions and industries. The financial depletion, accumulated debts of countries, and heightened tensions in trade relations due to the pandemic have made it difficult to secure facilities, manpower, medicines, and equipment. This leads to a deterioration of healthcare systems. Additionally, the economic crisis leading to reduced income can decrease the ability of individuals to afford health insurance. This situation may prevent people from accessing preventive healthcare services and receiving

necessary treatments. The burden of medical expenses would be exacerbated. Ultimately, a weakened public health system can lead to a decline in the ability to prevent and respond to infectious diseases through measures like vaccinations, infectious disease monitoring, and large-scale diagnostic testing. Therefore, efforts to minimize the impact of financial difficulties on healthcare systems are crucial. This requires collaboration among international organizations like the WHO, governments, and the entire healthcare sector. In addition to infectious diseases, support is also being extended to other medical areas. In 2022, the economic crisis in Sri Lanka reduced citizens' access to healthcare services, leading to an unprecedented health crisis. The WHO closely collaborated with donor countries to assist the Sri Lankan government in delivering essential supplies and equipment to areas most in need of medicines and medical materials. Additionally, ongoing direct financial support is being provided. In 2022, a total of 7.1 million dollars worth of pharmaceuticals and consumables were continuously supplied to enhance and maintain the availability of medical supplies.

4) Medical Crises and Social Inequality

While some advanced countries have sophisticated healthcare systems accessible to all citizens, most people in developing countries lack access to public healthcare services. This deficiency contributes to millions of deaths annually in these countries. The most severe issue is the health inequality arising from regional income disparities. This inequality results in certain social groups or classes having unequal access to healthcare services based on their economic status, education level, and place of residence. Apart from healthcare infrastructure, the sanitary environment of densely populated urban areas is a critical factor determining the burden of infectious diseases worldwide. The extent of disease exposure varies significantly depending on the availability of clean air, suitable living climate, and safe handling of chemicals. The degree of exposure to diseases significantly varies depending on the availability of clean air, a suitable climate for living, and the level of safe use and disposal of chemicals. In the current era, international interaction and integration are increasing due to financial and trade globalization. So improving living standards and environmental quality has become a top priority for the proactive prevention of medical crises.

Furthermore, medical crises generally lead to an increased demand for healthcare services, placing a greater financial burden on economically vulnerable populations. According to the World Inequality Report 2022 published by the World Inequality Lab, the top 1% holds 37.8% of the world's assets. The top 10% holds 75.6% indicating an increase in income compared to before the COVID-19 pandemic. However, there was no change in the assets of the bottom 50%. This indicates that wealth inequality has deepened and the exacerbation of wealth inequality is likely to lead to future health inequality. Furthermore, the lockdowns and social distancing measures have led to the reduction and suspension of public health initiatives in healthcare institutions. This has severely impacted healthcare services for vulnerable populations. Moreover, the challenges such as unemployment and income loss resulting from COVID-19 are primarily concentrated among vulnerable social groups, leading to an exacerbation of income inequality. Many households and businesses in developing countries were already burdened with high debt before the pandemic. However, after experiencing the pandemic, income and business earnings are even more decreasing due to the public health measures. This further exacerbated the extreme global income inequality. Countries with fiscal deficits, vaccine shortages, and low climate resilience among developing nations had significantly limited capacity to respond to the same shock of COVID-19. In developing countries, factors such as income inequality and

the lack of healthcare insurance systems for low-income groups played a significant role in determining the magnitude of the shock caused by COVID-19. The healthcare crisis triggered by the pandemics exacerbated poverty and accelerated polarization in these regions. To strengthen healthcare systems in developing countries after the pandemic, it is essential to establish governance structures. It should respond swiftly and comprehensively to infectious diseases and pandemics. This requires the establishment of specialized institutions and workforce development to make this possible. Recognizing the importance of an efficient healthcare system in developing countries is the first step towards strengthening their health capacities. International organizations like the WHO can assist in providing equitable healthcare services to all segments of the population in developing and least developed countries. They have limitations in delivering universal healthcare services at the national level. Resources would be focused on strengthening healthcare infrastructure, including medical facilities, equipment, and healthcare personnel. Creating platforms based on international cooperation for vaccine distribution can enable the provision of vaccines at reasonable prices to countries with lower economic levels, especially for critical infectious diseases. By enhancing collaboration in vaccine production and distribution processes, it is possible to build a society where public health capacity is improved. Then, infectious diseases would be effectively managed, ultimately leading to a healthier society for all.

4. Past Actions and Relevant Documents

1) Report of the Global Health Crises Task Force, 2017 (A/72/113)

The system for ensuring health security continues to evolve, but the potential vulnerabilities of health security require continuous monitoring. In response, former UN Secretary-General Ban Ki Moon established the Health Security Agency in 2016. The high-level panels implement recommendations regarding global responses to health crises. The Health Security Agency monitors, coordinates, and supports these recommendations. It also proposes measures to ensure the health of both individuals and communities, including compliance with international health regulations. Moreover, they have access to healthcare services and medicines, and strengthen the healthcare workforce. The following 9 priority tasks are described regarding preparedness for health crises, prevention, and appropriate response measures.

1. Strategic support of national health systems
2. Integrating communities and civil society organizations
3. Supporting regional arrangements
4. Strengthening United Nations system capacity
5. Testing capacities and processes through simulations
6. Catalysing focused research and innovation
7. Securing sustainable financing for health security
8. Focusing attention on the gender dimensions of health crises
9. Ensuring health security remains prioritized on national global political agendas

As of 2016, significant progress has been made in many health sectors in pursuit of these tasks. They have worked on strengthening the capacity of the UN system through monitoring and evaluation of IHR. They established the WHO Health Emergencies Programme and achieved results such as activating standing committees among relevant agencies for infectious disease preparedness. Additionally, they launched the Innovation

Union for pandemic preparedness and response to promote research and innovation in the field of infectious diseases.

2) World Economic Forum: Global Health and healthcare strategic outlook: Shaping the future health and healthcare

This is a report containing the proceedings of the Davos conference in January 2023. It presents four key strategic pillars for reforming the healthcare system, with equity as a fundamental goal. These pillars include equitable access to healthcare, building resilient healthcare systems for emergencies, funding support for innovation in science and medicine, and promoting sustainability by minimizing the environmental impact of the healthcare industry. It highlights significant disruptions in healthcare capacity due to supply chain delays and high demand for medical supplies during the pandemic. These disruptions have led to concentrated interruptions in healthcare services, particularly in developing countries. It is estimated that by 2030, there will be a shortage of approximately 10 million healthcare workers, with a focus on low-income countries. Unequal distribution is attributed to doctors seeking improved working conditions and better career opportunities in high-income countries, leading to a gradual migration. However, from a research perspective, it has been noted that the pandemic has increased the use of telemedicine which improved convenience and availability of information in healthcare systems. It specifies the need for healthcare system reforms to minimize the disruptions such as pandemics, geopolitical crises, supply chain bottlenecks, and inflation in the healthcare sector. Moreover, it underscores the importance of collaboration to address interconnected social, economic, environmental threats in regions vulnerable to infectious diseases after the COVID-19 pandemic. The healthcare system including healthcare workers and medical supply providers should collaborate beyond their sectors and establish innovative funding mechanisms through public-private partnerships for the collective goal of improving public health. Not only for the industries and nations, it is an urgent issue for stakeholders within the healthcare system. Certainly, addressing the issues highlighted in the report and considering the proposed improvements is crucial for advancing the current healthcare system. It is a task that we must undertake to enhance healthcare accessibility, resilience, innovation, and sustainability while fostering collaboration among various stakeholders for the betterment of public health.

3) Inequality in Access to Essential Health and Medicine: COVID-19 Vaccines (UNDP)

In 2023, a report by the United Nations Development Programme (UNDP) was published about the medical crises such as infectious diseases and social inequality. The report claims that after each epidemic, the Gini coefficient increased by about 1.25% over a period of 5 years. Moreover, changes in the relative income share within countries were observed. The report underscores that the Asia-Pacific region had shown the highest growth in the global Human Development Index (HDI) before the pandemic. However, it now confronts health, social, and economic challenges due to limited access to vital medications. One and a half years after the start of COVID-19, high-income countries had secured contracts for vaccinations. These contracts allowed them to administer at least two doses to their citizens. Meanwhile, in many low-income countries, fewer than one in a hundred people were able to receive even one dose. The importance of a balanced distribution of vaccines and medical supplies is highlighted. This balance can speed up the management of the pandemic. Additionally, it can help alleviate the extensive inflationary pressures caused by the long-term disruption of the global supply chain. It was also pointed out that the medical

crisis exacerbates the correlation between educational and income inequality. Workers with lower-paying jobs have less capacity for remote work compared to those in higher-paying jobs. Additionally, it was stressed that workers with higher education levels are less likely to lose their jobs or stop working during the pandemic, as compared to those with lower educational attainment. It is also mentioned that the debts of small businesses have caused temporary revenue losses to impact the long-term survival of these enterprises. Thus, there has been a serious regression in the productivity of these businesses and in the formation of human capital.

The need to increase incentives for vaccine research and development was emphasized. Agreements and price negotiations between low-income countries and pharmaceutical companies are also possible solutions. This is in line with the efforts of the COVAX Facility, a global cooperation platform that aids in pre-purchase agreements for global public goods and essential medical supplies.

5. Possible Solutions

1) Building healthcare systems in communities vulnerable to infectious diseases

The international community has realized that no one is safe from infectious diseases until everyone is safe, as demonstrated by the experience of the COVID-19 pandemic. Therefore, cooperation among nations for the sake of global health security is essential, and support is needed to establish healthcare systems in countries and communities vulnerable to infectious diseases. Major donor countries in the healthcare sector should not only recognize the spread of infectious diseases in developing countries as a threat to their well-being but also develop proactive policies and programs to address the occurrence and spread of infectious diseases. In fact, the United States has developed a government-level international health security framework. This framework is implemented in conjunction with a programmatic approach, with a primary focus on preventing the occurrence and spread of infectious diseases. It is a crucial part of the United States' pursuit of "global health security." Furthermore, Japan has formulated infectious disease response policies. It combines a horizontal approach aimed at improving the overall healthcare systems in developing countries with disease specific vertical approaches as part of its development assistance efforts. To prepare for the ongoing presence of infectious diseases, it is necessary to establish a medical infrastructure. To do so, securing specialized personnel for epidemiological investigations to research the transmission pathways, spreading patterns of infectious diseases, and developing effective response strategies is required. Additionally, there should be an increase in the workforce of researchers dedicated to developing diagnostic kits, vaccines, and treatments for infectious diseases. In addition, governments and international organizations are pursuing a team of experts in various fields such as healthcare, public health, epidemiology, etc., ready for immediate and systemic responses to infectious disease outbreaks. They should facilitate the exchange of information and experiences among these experts to enhance preparedness and response efforts. Collaboration and coordination between the government and local private healthcare institutions are also necessary, with clearly defined roles and responsibilities. While the government can enable national-scale measures and responses, private healthcare institutions can provide on-ground experience and innovative response strategies. Collaboration between the public and private sectors in strengthening the healthcare system can also contribute to preventing the spread of infectious diseases from abroad and developing international standards. Furthermore, the international community can increase the proportion of healthcare infrastructure construction targeting major infectious disease

and other emerging infectious diseases in development assistance. This comes as it has been allocating an average of 11.7% of total ODA to the healthcare sector from 2003 to 2018.

2) Enhancing healthcare standards and establishing mutually beneficial trade norms

Advanced countries should expand their high-level public health and medical support internationally. This includes educating medical professionals to raise global healthcare standards. There's a need for policy efforts to uniformly elevate healthcare levels worldwide. To achieve this, investing in medical facilities should be concentrated which will enable continuous quality improvement and the acquisition of high-level medical service capabilities. Then, the market can be expanded from these centers to surrounding communities and countries. For global health security, international agreements on the trade of medical devices and products are necessary. Health and medical issues differ from other trade discussions as they encompass social and political aspects. Therefore, trade norms related to healthcare must align with both economic logic and the goal of achieving public health. To achieve this, a mutually beneficial trade structure between advanced countries with high technological levels and developing countries must be established. Currently, advanced countries are increasing their healthcare exports through free trade agreements, especially with developing countries in rapidly expanding medical markets like Asia and Latin America. Therefore, free trade agreements with developing regions experiencing rising medical product demand, such as Latin America, China, and Southeast Asia, enable the expansion of overseas markets for medical products manufactured in advanced countries. This can create growth opportunities for domestic companies in those advanced countries. Under current trade norms, there is an issue with medical technologies held by certain advanced countries not being shared with other developing nations. This is particularly true for drugs and vaccines. To address this, it's necessary to create exceptions in international trade rules that respect intellectual property rights while allowing the sharing of knowledge and technology in urgent situations. This could involve reducing tariffs on essential medical supplies or simplifying existing export licensing procedures.

3) Efforts for the rapid development of effective vaccines and pharmaceuticals

The WHO should function as a platform for cooperation between member countries and international organizations in preventing, monitoring, and responding to global health crises like the COVID-19 pandemic. One of the core principles emphasized by WHO throughout the fight against COVID-19, 'showing greater solidarity among nations, institutions, communities, and individuals and bridging the gaps in humanity's defense against the virus,' needs to be put into practice. Part of this involves establishing biobanks for sharing pathogen materials and clinical samples to expedite the development of safe and effective vaccines and medicines. In fact, the Foundation for Innovative New Diagnostics (FIND), a non-profit international organization based in Geneva, Switzerland, is taking a significant step. It is using a virtual biobank platform. This platform is designed to facilitate the sharing of diagnostic development research and clinical samples. Most samples available from commercial biobanks are from patients in Europe and North America, while the primary need for diagnostic kits lies in low and middle-income countries. This creates challenges in developing localized diagnostic kits, suggesting a need for improvement in this area. Moreover, to achieve the goal of overcoming global medical crises, research data obtained through collaboration should be shared with countries not involved in the research,

on humanitarian grounds. Governments should support a global research framework, enabling global pharmaceutical companies to collaborate in continuous scientific innovation and research and development. Additionally, global pharmaceutical companies need to set up contract manufacturing facilities worldwide. This would enhance access to treatments for infectious diseases in low and middle-income countries and ensure stable vaccine production and supply.

The International Vaccine Institute (IVI), established in 1997 under the leadership of UNDP, requires increased international attention and financial support for its activities. Currently receiving operational budget support from the governments of South Korea, Sweden, India, and Finland, the IVI not only develops new vaccines but also conducts extensive research in public health, clinical trials, and efficacy studies. To reduce the global disease burden, additional funding is necessary. The IVI is working towards global health security by intensifying cholera and typhoid prevention projects that impact the world's poorest populations and forming international coalitions aimed at developing vaccines against Group A Streptococcus. As the institute focuses on developing and distributing vaccines for infectious diseases that are crucial for public health but have low commercial profitability, active support for the IVI's efforts is essential.

4) Establishment of a comprehensive data analysis and integrated surveillance system for early infectious disease alerts and a system for mobilizing emergency personnel

As highlighted in the international health regulations mentioned earlier, the importance of enhancing member countries' capacity to monitor public health events has been consistently emphasized, particularly in light of globalization and the increased risk of infectious disease spread. The most crucial response to infectious disease proliferation is to predict and manage risk factors in situations where large populations are concentrated. This is especially challenging during international events like the Olympics, where short-term mass movements of people make it difficult to monitor public health risks using traditional indicator-based surveillance systems. These systems monitor the occurrence and spread of infectious diseases using indicators generated at regular intervals. Consequently, an integrated surveillance system that comprehensively analyzes various data, including zoonotic monitoring, health insurance, and population movements, is essential for early warning of infectious disease outbreaks. Developing simulation programs to predict the spread of infectious diseases is crucial. Analyzing the effectiveness of existing quarantine policies to control this spread is also important. Through cooperation between domestic and international research institutions, this can lead to the creation of internationally recognized early warning techniques for infectious diseases. Utilizing various channels, such as the WHO's web-based EpidemioWorld Health Organization's web-based Epidemic Intelligence from Open Sources (EIOS) system, can enable early detection of infectious disease outbreaks. This approach necessitates the formulation of plans to prepare for potential pandemics of new infectious diseases. An event-based surveillance system operates by quickly collecting and analyzing information about 'events' that could potentially lead to a public health crisis, and then gathering the results. Unlike indicator-based systems, this method offers a significant advantage. It can rapidly detect the emergence of infectious diseases that have considerable epidemic potential. This includes new or unidentified diseases that could cause public health events. To achieve this, a comprehensive intelligent platform is required. This platform should enable the sharing of information from various fields, such as monitoring

population movements in the air traffic sector, systematic management of sewage for zoonotic monitoring, and health insurance data in the healthcare sector.

In conjunction with building an integrated surveillance system, it's worth considering the creation of a phased emergency personnel mobilization system to enhance response capabilities in small regional areas. This would involve organizing regional joint response teams within the country in case of cluster infections. These teams would be capable of performing segmented functions like quarantine measures and facility supervision. It's also important for local governments to establish epidemiological investigators and dedicated teams for infectious disease response to ensure a constant workforce. It's essential to form epidemiological investigation officers and dedicated teams in local governments to ensure a constant workforce for infectious disease response. To expand the workforce in infectious disease wards, it's important to increase the number of faculty and residency positions in essential medical fields like infectious medicine. Additionally, bolstering the staff of nurses dedicated to severe patients is crucial. The use of private medical personnel for short-term deployment support can also be considered. Expanding the workforce through international networks is also crucial for the rapid and innovative development of pharmaceuticals. As part of international research collaboration on vaccines for infectious diseases with high health risks, South Korea's National Institute of Infectious Diseases has signed a joint research cooperation agreement with the United States' National Institute of Allergy and Infectious Diseases (NIAID) and Moderna. This collaboration signifies the importance of global partnerships in advancing medical research and development.

5) Effort for the rapid development of effective vaccines and pharmaceuticals

During the initial spread of the pandemic, there was a surge in global demand for essential medicines, which are critical for saving patients' lives. However, this period also saw a shortage of raw materials and production capacity, coupled with trade restrictions. These factors were considered the main causes for the disruption of the global supply chain, leading to a widespread shortage of pharmaceuticals. Countries are currently preparing for the threat of an unknown infectious disease, often referred to as "Disease X." They are doing this by restructuring their supply chains and adapting to market changes, with a focus on national interests. This preparation is aimed at addressing potential shortages of pharmaceuticals in the future, with each country prioritizing its own needs. This individualistic approach of nations is leading to a structural problem known as 'beggar-thy-neighbor' in economics. It refers to a situation where countries attempt to recover their own economies at the expense of other nations. Adopting self-sufficiency policies in medical supplies with the aim of minimizing the impact of infectious diseases can lead to a decrease in the growth rate of the pharmaceutical industry in developing and underdeveloped countries. This results in a deepening imbalance in the supply of medicines and vaccines. Trade in the health and medical sector is an issue that cannot be left solely to a market system based on economic power, nor can it solely rely on the independent actions of individual countries. This necessitates multilateral cooperation based on adherence to the principal rules of international trade norms. There is a need for efforts to improve the overall efficiency of the international public health system and to develop effective responses to medical crises caused by shortages in the supply of medicines. Structural changes are required to allow developing countries and emerging markets to participate in the process where the global pharmaceutical value chain is replaced by regional ones, under the trend of national prioritization. The lack of a comprehensive government cooperation system to lead these

changes is a matter of concern. Additionally, the pharmaceutical industry must work towards increasing the efficiency of drug manufacturing by enhancing the visibility of the entire smart manufacturing process. Simultaneously, it should strive to expand its global drug supply capabilities, particularly targeting low and middle-income countries.

6. Key Terms

Global Value Chain: Global corporate networks refer to a series of processes that encompass the development of products or services, procurement of raw materials, and manufacturing of intermediates. This sequence facilitates businesses in multiple countries and regions to supply, distribute, and sell to consumers. Companies are increasingly making efforts to distribute various production stages across different countries in order to optimize and streamline their product manufacturing processes.

Epidemic Intelligence from Open Sources (EIOS): The system is developed for early detection and rapid response to infectious diseases such as Ebola, MERS, and COVID-19. The goal is to quickly share information from public health-related websites and coordinate responses at national, regional, and international levels. Taking the lead of the WHO, international organizations and health departments from the United States, Canada, Japan, Mexico, and the United Kingdom have collaborated. It was constructed through a web-based infectious disease reporting platform and has been in use since 2019, with an expansion of member countries.

The EIOS system collects relevant articles in real time and allows users to check the content. This enables faster access to information compared to other event-based surveillance systems such as the International Health Regulations, where information is shared after internal discussions and document work. These features allow the system to be used in large-scale public events where rapid surveillance is required over a short period. Additionally, it is highly useful for monitoring various international events due to its ability to collect articles in various languages and display them on a dashboard. In fact, during the 2022 Qatar World Cup, 11 public health threat signals were detected through EIOS and shared with various governments for preparation against potential public health risks.

Disease X: Disease X refers to a future infectious disease, whose identity is unknown, but which has the potential to cause a large-scale epidemic similar to COVID-19.

Zoonotic Diseases: Zoonotic Diseases refers to an infectious disease caused by pathogens that are transmitted between animals and humans. The typical transmission routes include air or moisture and media such as saliva.

Potential Growth Rate: The development of global supply chains in the post-pandemic period led to production disruptions in one sector, which then spread to both the domestic and international economies. This resulted in reduced investment and increased economic uncertainty. The potential growth rate mentioned in the context refers to the rate of increase in potential GDP levels. Also, potential GDP represents the maximum production capacity a country can achieve while maintaining stable price levels. If production increases excessively above the potential growth rate in a short period of time, inflation may occur, leading to the possibility of rapid contraction in the economy. In other words, the sustainable rate of economic growth rate that does not burden the economy is referred to as the potential growth rate. It guides the economic policy authorities in considering the

implementation of macroeconomic policies such as monetary and fiscal policies. Thus, it is one of the most crucial economic indicators in pursuing recovery from global economic downturns like the pandemic and their aftermath.

7. Associated Organizations

1) International Vaccine Institute(IVI)

The International Vaccine Institute is a vaccine development international organization composed of biomedical, infectious disease, healthcare experts, and humanitarian aid specialists. It facilitates the research and development of essential vaccines to help people in underdeveloped countries for a healthy and productive life. It is also making efforts to enhance the sustainability and accessibility of vaccines and immunization in low and middle income countries. Unlike typical pharmaceutical companies, its marketability may be limited. However, the institute tries to focus on developing and distributing vaccines for critical infectious diseases such as cholera, typhoid, dengue fever, MERS, and others that are vital to global health. The aim was to accelerate the development of safe and effective vaccines during the COVID-19 situation. So instead of developing its own vaccines, it established a system to collaborate with vaccine pharmaceutical companies and developers to conduct epidemiological research and early clinical trials for evaluation.

2) COVAX Facility

The COVAX Facility is a global vaccine sharing project established to provide equitable distribution of COVID-19 vaccines worldwide. It is led by the Global Alliance for Vaccines and Immunization (GAVI), UNICEF, and WHO. COVAX coordinates international resources to enable COVID-19 testing, treatment, and vaccination in low-income countries. It plays the role of coordinating and mediating vaccine joint purchase contracts between countries intending to purchase vaccines and pharmaceutical companies. However, during the actual pandemic, advanced and vaccine-producing countries prioritized securing vaccines for their own citizens and restricted vaccine exports. Consequently, the COVAX facility had to rely on donations of surplus vaccines from developed countries. This led to inconsistent vaccine supplies in low-income countries awaiting vaccines. Ultimately, fatality rates kept increasing as they had to wait for the completion of vaccination programs in developed countries. This situation underscores the need for a coordinated global effort to combat infectious diseases, acknowledging that defeating a virus is impossible without worldwide collaboration. To prevent a repeat of the early pandemic situation, where vaccines were inaccessible despite having the funds, it is also crucial for discussions on new strategies to secure vaccine supplies. This highlights the importance of proactive and inclusive planning in global health management.

3) World Trade Organization(WTO)

The World Trade Organization (WTO) is an institution for managing and supervising a large number of agreements that define trade relationships among member countries. It emerged to replace the General Agreement on Tariffs and Trade(GATT) system that began in 1947, with the aim of reducing or eliminating global trade barriers. Following the spread of COVID-19, various countries have prioritized their own interests under the guise of health security. These include direct subsidies to domestic companies, implementation of export permits for pharmaceuticals, and the compulsory enforcement of vaccine patents. In this situation, there has been an urgent need to understand the interrelated interests and develop strategies to facilitate a cooperative health industry. Notably, countries were urged

to restrain from imposing export restrictions on medical supplies, and a system of compulsory licensing was allowed. This system enabled developing countries to practice patents related to vaccines without the consent of the patent holder, under more relaxed conditions compared to the existing trade agreements.

4) World Bank(WB)

The World Bank (WB), founded on the principles of the Bretton Woods Agreement, is an international financial institution aimed at providing long-term development funding. Its primary purpose was to facilitate post-World War II reconstruction and to support the economic development of developing countries. The WB primarily focuses on providing development funding to its member developing countries. It also offers technical support for the formulation and implementation of development policies, plays a coordinating role in the transfer of resources and technology to developing countries, and conducts training programs for economic development officials. The International Monetary Fund (IMF) is an international organization that automatically includes its member countries as members. The General Assembly of the IMF is held annually. The World Bank Group is referred to as a collective term for five institutions: the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), and two other organizations.

The WB is actively working towards its founding goal of 'ending poverty sustainably and promoting shared prosperity', particularly in response to COVID-19. Key efforts include supporting the establishment of epidemic surveillance systems in developing countries and increasing employment in the private health sector to strengthen the response to the pandemic. In consideration of the impact of COVID-19 on health, economies, and societies worldwide, the WB provided tailored funds of \$160 billion in 2021. Additionally, it supported developing countries with \$12 billion for the purchase of vaccines. Through the Global Health Value Chain Platform, the WB attracted private investment to reduce the gap in health service delivery faced by developing countries. The platform facilitated funding for manufacturers, suppliers, and service providers of medical products, thereby enhancing access to affordable healthcare in developing nations. As a result, the WB was able to increase the supply of affordable medical products and services in these countries.

5) The Global Health Crises Task Force

The Task Force was established to solve pediatric immunization issues in public health problems. The organization was originally named as "The Task Force for Child Survival". It focused primarily on the health issues affecting children worldwide. Over time, the scope expanded to address a broader range of health needs for the global population. This change also led to the organization being renamed as "The Task Force For Global Health." It is currently engaged in a program that addresses various global health issues through a collaboration with partner organizations. In this case, global health issues include tropical diseases, infectious diseases, vaccines, public health informatics, health workforce development, and international health ethics. The Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) provides standardized training to epidemiologists who play a central role in the defense against infectious disease outbreaks from the frontline of their occurrence. It further enabled information exchange among them. Additionally, the USAID has provided funding support to research projects proposed by African researchers on tropical diseases which contributed to the equitable public health

research across the continent. They also carried out financial support for the smooth supply of vaccines to populations that were relatively vulnerable to infectious diseases.

8. Questions to Consider

- 1) What values and actions should the international community prioritize for responding to the international medical crises?
- 2) Developing countries have inadequate health systems due to international medical crises. How should the international community address the social issues arising in these developing countries?
- 3) What are the limits of the current healthcare system in preventing diseases like pandemics, and how can these be improved?

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