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Review Article

Global health security in the post-COVID-19 era: threats, preparation, and response

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ABSTRACT

Global health security threats in the post-coronavirus disease 2019 era include dense urban populations, increased human–animal proximity, migration driven by political or economic instability, climate change, humanitarian crises, antimicrobial resistance (AMR), and the misuse of biological research—including the accidental or intentional release of high-risk pathogens. The foundational preparation for these threats is to establish a robust, resilient public health system based on universal health coverage. The World Health Organization's International Health Regulations must continue to promote global solidarity by maintaining core capacities such as surveillance, national laboratories, and epidemiological investigations of emerging infectious diseases, with timely reporting and information sharing within the global health security community. A One Health approach is essential for addressing AMR. Infection prevention and control must be enhanced to reduce healthcare-associated infections in medical facilities. Additionally, regulations concerning biosafety and biosecurity should address dual-use research of concern as well as the accidental or intentional release of high-risk pathogens from laboratories. Global health security is a collective responsibility because these threats know no borders and require coordinated action.

Keywords: Biosecurity; Climate change; Communicable disease control; COVID-19; Emerging infectious disease; Immunization

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Introduction

The scale and socioeconomic impact of the coronavirus disease 2019 (COVID-19) pandemic was unprecedented. Most countries worldwide were completely unprepared for, and failed to respond to, this emerging infectious disease. This study reviews the global health security landscape in the post-COVID-19 era, focusing on preparation for and response to forthcoming threats, and suggests countermeasures. It investigates potential global health security

threats such as emerging infectious diseases, antimicrobial resistance, and bioterrorism. The study examines human and environmental factors that influence water-borne and vector-borne diseases, as well as biosafety and biosecurity concerns that could facilitate bioterrorism. Additionally, it highlights antimicrobial resistance as a growing threat and discusses the impact of climate change on vector-borne and water-borne diseases.

Materials and Methods

The author conducted a qualitative content analysis to describe and categorize current global health security threats, preparations, and responses, both present and future. Materials were sourced from PubMed, Scopus, Web of Science, and Google Scholar using keywords such as "emerging infectious diseases," "global health security," "preparedness," "response," "AMR," "threat," and "climate change." This qualitative content analysis aimed to preserve expert perspectives while generating new research questions.

Global Health Security Threats

Background

Public health organizations worldwide conduct surveillance of emerging public health events. The World Health Organization (WHO) detects approximately 3,000 signals per month, although only a small fraction of these signals are genuine threats [1]. Public health experts can now identify potential threats more quickly than ever before. Advances in science, including gene-editing technologies such as CRISPR clustered regularly interspaced short palindromic repeats (CRISPR), enable the rapid identification of pathogen characteristics and the development of medical countermeasures. This technology facilitates the creation of new vaccines and treatments, as well as reducing vector populations [2].

The WHO supports the Global Outbreak Alert and Response Network, a worldwide network of institutions, and the US Centers for Disease Control and Prevention maintains a Global Rapid Response Team composed of over 400 public health experts to address outbreaks or public health emergencies of international concern [3]. The COVID-19 pandemic revealed that the global risk was far greater than anticipated. Furthermore, contemporary human lifestyles have outpaced significant scientific advances and the capacity of institutional surveillance and response. Globalization, economic development, crowded megacities, rapid international air travel, mass migrations, and intensified human–animal interactions have altered pathogen emergence and transmission, thereby amplifying the risk and severity of outbreaks. In conflict zones, fragile health systems and mass exoduses—as seen in Syria, Yemen, and the Democratic Republic of the Congo—further complicate responses. Additionally, the expansion of human populations into new geographic areas, along with climate change, deforestation, intensive farming, and large-scale food production, has fundamentally altered the interactions among humans, animals, and the environment. Recognizing these diverse drivers of disease is essential for effective planning and response.

HIGHLIGHTS

- Lessons learned from a devastating outbreak or epidemic can guide better preparation for future events.
- The next global health security threat might come from an emerging respiratory infectious disease outbreak, antimicrobial resistance, a vector-borne disease, or bioterrorism.
- We must take multisectoral, whole-of-society actions to prepare for, prevent, detect, and respond to global health security threats nationally, regionally and globally.

Rising Populations, Megacities, and the Loss of Natural Habitats

In 2017, urban populations outnumbered rural populations, with urbanization rates in Africa (48%) and Asia (51%) exceeding those of other regions [4,5]. In densely populated cities in Asia and Africa, humans and animals often live in close proximity, facilitating the transmission of novel viruses—such as COVID-19, severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and Ebola—from animals to humans, followed by human-to-human spread. Human activities like deforestation, logging, or mining force animals to abandon their natural habitats, thereby increasing the risk of vector-borne diseases such as malaria. Intensive poultry farming elevates the risk of zoonotic transmission, as seen with avian influenza H7N9, where transmission occurs between domesticated animals and wild birds along global migratory routes [6]. Zoonotic diseases account for more than 60% of emerging infectious diseases [7]. The Ebola outbreaks in West Africa were linked to deforestation and the resulting increased contact between humans and animals (Table 1) [4–8].

Table 1. Summary of global health security threats, preparations, and responses in WHO JEE

Factor	Threats	Preparation/response in WHO JEE [36]
Dense populations/urbanization/ deforestation/logging/mining [4–7]	Higher chance of a novel virus transmission	P5, P8, D2, R3, R4
Migration due to political/economic reason [9,10]	Poor sanitation, outbreak of water-borne diseases	P1, P2, P3, P5, P6, P8
International travel and trade [11,12]	Rapid transmission of infectious diseases	P1, P3, P5, D2, R1, R2, PoE
Climate change [13–16]	Vector-borne, water-borne disease outbreak	D1, D2, R3
Humanitarian crisis [18–20]	Breakdown of sanitation system, immunization programs	P1, P2, P3, P6, P7, P8, D1, D2, D3, R1, R2, R3, R5
Antimicrobial resistance [21–25]	Resistant to existing treatments	P4, R4
Healthcare-associated infections [26–29]	Increase in healthcare costs and antimicrobial resistance	P4, R4
Biological research and threats [30–33]	Dual-use research of concern accidental or intentional release of high-risk pathogens	P7, R2

WHO JEE, World Health Organization Joint External Evaluation; P, prevent; D, detect; R, respond; PoE, point of entry; P1, legal instruments; P2, financing; P3, International Health Regulation [IHR] coordination, national IHR focal point; P4, antimicrobial resistance; P5, zoonotic disease; P6, food safety; P7, biosafety and biosecurity; P8, immunization; D1, national laboratory system; D2, surveillance; D3, human resources; R1, health emergency management; R2, linking public health and security authorities; R3, health services provision; R4, infection prevention and control; R5, risk communication and community engagement.

Forced Migration in Conflict Zones, Rapid International Travel, and Trade

Humans can now travel anywhere within 24 hours at an affordable cost via air travel, allowing pathogens to spread rapidly through unknown hosts. Simultaneously, the world is experiencing a historic migration crisis as refugees cross borders from conflict zones. Approximately 20 million people are fleeing political crises in South Sudan, Syria, and Afghanistan [9]. In January 2020, China imposed a lockdown on 60 million people in Hubei Province, the origin of COVID-19; however, 5 million travelers had already departed for domestic and international destinations in the weeks preceding the lockdown (Table 1) [9,10]. In 2016, the United States reported approximately 5,500 travel-related cases of Zika originating from the Caribbean and Latin America [11]. In May 2015, a man returning from the Middle East introduced MERS to South Korea, resulting in 186 confirmed cases and 38 deaths. Additionally, Mexico reported the first cases of novel influenza A (H1N1) in April 2009, with the WHO declaring a pandemic just 9 weeks after the initial case (Table 1) [11,12].

Climate Change

Climate change can expand the geographic distribution of vector-borne diseases such as chikungunya, dengue, and Zika to previously unexposed populations, as well as water-borne diseases. Increased rainfall and rising temperatures create more breeding grounds for mosquitoes and disrupt sanitation systems [13]. Yemen experienced a cholera outbreak in 2019. Haiti has suffered from cholera since 2010, which is believed to have been introduced by United Nations relief workers [14]. Furthermore, climate change could release bacteria and viruses trapped in Arctic ice [15]. In August 2016, an anthrax outbreak occurred in the Yamal Peninsula in the Arctic after a long-dead reindeer infected with anthrax bacteria was discovered (Table 1) [13–16]. Anthrax outbreaks occur sporadically, primarily among cows, goats, and other herbivorous mammals [17].

Humanitarian Crisis with Weak Government

Recent humanitarian crises have left 20 million people facing famine in countries such as Nigeria, South Sudan, Somalia, and Yemen [9]. In regions where states collapse or are unable to govern, public health systems deteriorate, leading to the absence of proper sanitation and immunization programs [18]. Wild poliovirus has re-emerged in countries like Afghanistan, Pakistan, Syria, and Nigeria [19]. Mass population movements, driven by violence and exacerbated by congested refugee camps with poor hygiene conditions, further increase the risk of cross-border disease transmission. Standard countermeasures like social distancing and handwashing are often impractical in refugee camps. Local COVID-19 transmission was reported by 122 refugee-hosting countries in April 2020 (Table 1) [18–20].

Antimicrobial Resistance

Antimicrobial resistance (AMR) is among the most concerning threats in the modern world. AMR arises from prophylactic antibiotic use in farmed animals, indiscriminate medical prescribing, and inadequate infection control in hospitals [21]. Overused antibiotics and other antimicrobials can persist due to genetic mutations, rendering treatable infections, such as

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hospital-acquired infections (HAIs), malaria, and tuberculosis, resistant to current treatments [22]. Hundreds of thousands of people die annually from multidrug-resistant and extremely drug-resistant tuberculosis, particularly in India, South Asia, and sub-Saharan Africa, with future projections reaching millions each year [23]. AMR also affects the wealthiest countries and world-class health facilities; tens of thousands of Americans die from AMR-related infections each year [24]. Additionally, the use of falsified and substandard drugs sold at street markets, which deliver sub-therapeutic doses, further contributes to the development of resistance (Table 1) [21–25].

Healthcare-Associated Infections

Hospitalization carries the risk of healthcare-associated or HAIs, many of which are highly resistant to treatment. HAIs not only increase healthcare costs due to prolonged hospital stays, long-term disability, loss of income, and even death, but also contribute to the development of AMR [26]. Although HAIs are widespread, their burden is higher in low- and middle-income countries compared to high-income countries. In Europe and North America, serious HAIs occur in 5% to 10% of hospitalizations [27], while this proportion rises to 40% in Asia, sub-Saharan Africa, and Latin America [27]. Older adults, patients in intensive care units, and those undergoing invasive procedures are particularly susceptible. Healthcare facilities can significantly reduce the risk by modifying the physical environment and culture, such as promoting handwashing, using personal protective equipment, and ensuring the safe disposal of medical waste [28]. The WHO and UNICEF offer resources to guide health professionals [29]. Hospitals must adopt a systemic approach to ensure cleanliness and safety for all individuals, including doctors, nurses, technicians, and patients (Table 1) [26–29].

Biological Research and Threats: Biosecurity and Biosafety

Modern biotechnology presents potentially deadly threats. Biosecurity refers to measures taken to protect humans, animals, and the environment from the intentional release of harmful biological pathogens or substances from research laboratories [30]. Dual-use research of concern (DURC) involves studies intended to generate knowledge, products, or technologies that could, if misused, pose serious risks to public health, animal health, and the environment. There are currently no official international biosecurity norms or institutions governing DURC. However, existing international agreements—such as the Geneva Protocol (1925), the Biological Weapons Convention (1975), United Nations (UN) Security Council Resolution 1540 (2004), UN Security Council Resolution 2325 (2016), and the WHO's Responsible Life Sciences Research for Global Health Security (2010)—can help manage DURC [31]. Biosafety, in contrast, involves the secure operation of biological research facilities to prevent the accidental release of hazardous materials to laboratory workers or the public. The advent of genomic science has ushered in a new era of biosafety challenges. The widespread sharing of genetic sequencing data, advances in pathogen creation, and the democratization of biological information available online create scenarios with potentially grave consequences. This potential for misuse has led policymakers and scientists to pause or even ban certain types of biological research [32]. Concerns over biothreats have also fueled distrust among nations. For instance, during the COVID-19 pandemic, issues of biosecurity and biosafety arose regarding the origin of the SARS coronavirus 2 (SARS-CoV-2) virus, with some alleging it originated from a Chinese laboratory—either as a manmade virus or through an accidental release—although these claims were denied by scientists, epidemiologists, and intelligence agencies [33]. With proper regulations for biosecurity and biosafety, risks can be monitored, mitigated, and managed. National governments, international organizations, and scientists should engage in a regulatory process that advances biosafety and biosecurity while fostering promising scientific advancements and enhancing global health security (Table 1) [30–33].

Global Health Security Preparation and Response

Robust, Resilient, and Equitable Public Health Systems

The world requires robust, resilient, and equitable public health systems that incorporate effective risk communication with the public.

Universal health coverage

Universal health coverage is essential for global health security. Universal access to public health services enables early detection and surveillance, facilitating rapid responses to contain potential outbreaks. Newly diagnosed individuals can be isolated, and their contacts can be traced promptly. Robust health systems also prevent and manage chronic illnesses, reducing the risk of severe outcomes in individuals with underlying conditions. Furthermore, health systems must implement effective risk communication strategies to build public trust and encourage adherence to surveillance and contact tracing measures, as demonstrated by the Republic of Korea during the COVID-19 pandemic [34]. These systems should also address the needs of marginalized

populations. Health equity is critical—not only as a matter of human rights but also for early disease detection and rapid, agile responses. Access to healthcare enables timely testing, treatment, and effective contact tracing, which is key to containing outbreaks at the community level. The health system should protect both health workers and patients by ensuring robust infection prevention and control measures in healthcare settings. Moreover, systems must have surge capacity to rapidly scale up services during health emergencies, including maintaining stockpiles of personal protective equipment, essential vaccines, medicines, and ventilators. Plans should also address the supply of health workers and invest in local manufacturing capacity to mitigate global supply chain disruptions in medical resources.

WHO's International Health Regulations core capacities

The WHO's International Health Regulations (IHRs) require all member states to develop core public health capacities—including laboratories, surveillance systems, and rapid notification and response mechanisms. States are expected to submit a States Parties Self-Assessment Annual Report (SPAR) and are encouraged to participate in the voluntary Joint External Evaluation [35,36]. The development of laboratory capacities must also incorporate biosafety and biosecurity measures, including risk classification frameworks, containment protocols, and other safety measures (Figure 1) [36]. Health security extends beyond healthcare, encompassing public health services and education, which are vital for disease detection, response, and vaccine rollout. It is crucial for member states to notify the WHO of any public health event that may constitute a public health emergency of international concern [35]. Improving sanitation with access to clean water and soap is essential for protecting against water-borne diseases like cholera. Effective vector control, particularly for mosquitoes, is central to managing vector-borne diseases. Routine vaccinations protect against a wide range of infectious diseases, and food safety measures—extending from farming practices to manufacturing—are critical for early detection and recall of foodborne outbreaks.

Research and development

COVID-19 underscored the critical role of research and development in health security. Although it is not feasible to prepare vaccines in advance for every emerging infectious disease, more investment is needed in developing medical technologies—including new antibiotics to combat resistance, universal flu vaccines, and innovative platforms for vaccine discovery. Policies such as public funding, advanced market commitments, technology transfer, and patent pooling are essential to incentivize investment in new antibiotics. Furthermore, the cost of diagnostics, therapies, and vaccines must be affordable. Policymakers should collaborate with companies to plan for rapid scaling of manufacturing in the event of a widespread outbreak, epidemic, or pandemic.

One Health

One Health—an integrated approach recognizing the interconnectedness of human, animal, and environmental health—is essential. The COVID-19 pandemic was spurred by a novel coronavirus transmitted from animals to humans, followed by human-to-human spread. Similarly, bird populations can carry novel influenza viruses during migratory flights, while mosquitoes can expand their geographic range due to climate change, facilitating the spread of diseases such as malaria, Zika, and dengue.

Climate change and biodiversity

Climate change expands the distribution of disease vectors, influences ecosystems, and creates conditions favorable for water-borne infections. Transitioning to carbon-free or

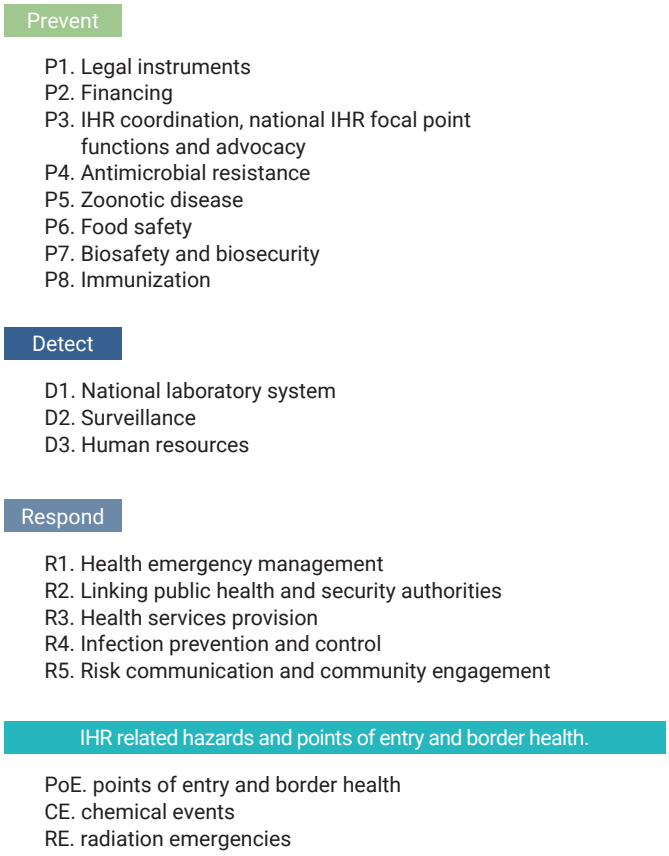

Figure 1. International Health Regulations core capacities. IHR, International Health Regulation. Based on [36].

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renewable energy using advanced technologies to reduce production costs is imperative. Securing global biodiversity—including protecting forests—is crucial for global health security, as plants and animals provide important sources of new antimicrobials and therapies. Global solidarity, exemplified by agreements such as the Paris Agreement, is essential for collective action.

Factory farms, wet markets, and animal pathogen surveillance

Farmers in factory farms use antibiotics in their animals, supplying consumers with inexpensive meat that may contain antibiotic-resistant bacteria [37]. Sustainable and humane agricultural practices are needed, which may also encourage a shift toward plant-based diets as meat prices rise. Markets selling live wildlife present additional risks [38]. The sale of live wildlife should be banned, and the wildlife trade curtailed [39]. However, a ban alone is insufficient; significant resources are required for enforcement, as the illegal wildlife trade is a multibillion-dollar criminal enterprise [39]. Furthermore, the sale of domesticated animals for consumption requires strict health and safety measures, such as physically separating live animals from people, as well as rigorous meat-handling protocols with strong enforcement [40].

Understanding animal pathogens is critical for identifying and responding to zoonotic diseases, including the development of vaccines and therapies. Increased investment in virus surveillance is needed to track the movement of zoonotic pathogens among species and toward human populations [41]. This information is valuable for preventing human diseases and developing effective interventions. Zoonotic pathogen research must adhere to strict biosafety and biosecurity standards to prevent accidental or intentional releases.

Equity

No one is safe from infectious diseases unless everyone is safe. In an interconnected world, equity in health security is paramount. Every country and population plays a role in preventing and responding to infectious diseases. Equal access to health benefits and the equitable distribution of burdens must be achieved both domestically and internationally [42]. Global health security should ensure that vaccines and treatments are affordable and available to everyone [43]. Poor and vulnerable populations, including low-paid workers, foreign migrants, and refugees, must be adequately supported in terms of health and hygiene during epidemics or pandemics.

WHO Governance Reform

Reforming the governance of the WHO must begin by providing it with sufficient funding to fulfill its global mandate and the flexibility to allocate resources toward the most urgent global health security issues. With increased funding and flexibility, the WHO can assist low- and middle-income countries in meeting IHR obligations, thereby enhancing their capacities to detect, report, and respond to novel infections. This support would enable all member states to detect, report, and rapidly respond to public health events that may constitute a public health emergency of international concern. Currently, there are no penalties for member states that do not comply with WHO recommendations on travel, trade, and quarantine, and most have not developed the IHR-required core capacities. The WHO should be granted stronger enforcement powers, which might include withdrawing voting rights from non-compliant member states, developing an inspection system with enforcement authority, and establishing global norms for AMR in collaboration with the World Organisation for Animal Health (WOAH) and for biosafety/biosecurity. Additionally, WHO should lead and coordinate global health security efforts alongside international partners such as WOAH and the Food and Agriculture Organization. Enhancing WHO's global governance could also involve establishing health accountability among member states through a new treaty backed by feasible funding [44].

Preparing for the Next Pandemic

Healthier and more resilient cities

More than half of the world's population currently lives in urban areas, and this is projected to increase to two-thirds by 2050 [45]. Densely populated cities have proven to be hotspots for contagions like SARS-CoV-2, as viruses can easily spread in crowded apartment buildings, subways, and buses, and on busy sidewalks. Constant human-to-human contact amplifies pandemic risks, and during outbreaks, dense populations hinder social distancing—making it nearly impossible to maintain safe practices without causing major social and economic disruptions. COVID-19 forced unprecedented changes in major metropolitan areas. In the post-COVID-19 era, cities could re-emerge as more resilient, healthier—both physically and mentally—and more sustainable, with increased green spaces, walking paths, and bike lanes.

The new mode of consumerism

During COVID-19, online shopping increased by 75% [46], with online grocery shopping becoming a primary source of purchases [47]. Rather than dining in restaurants, people

preferred take-out or delivery. Additionally, healthcare has shifted toward remote access; 76% of US hospitals now use telehealth technologies to contact, diagnose, and treat patients [48].

Schools and workplaces in a virtual world

At all levels of education, instruction has moved online, with teachers and professors delivering lectures virtually and evaluating assignments and exams remotely. Similarly, many workplaces have adopted telework arrangements.

Sanitary social behaviors

During the COVID-19 era, common social behaviors—such as shaking hands, hugging, and large gatherings—nearly vanished, replaced by new habits like frequent hand hygiene, proper cough etiquette, and mask wearing. In the post-COVID-19 world, these sanitary behaviors may reduce the transmission of many common respiratory diseases, such as colds and flu. However, they may also alter human intimacy by limiting the expression of facial emotions, physical touch, and social interaction.

International travel

Air travel and tourism are expected to rebound in the post-COVID-19 era; approximately 1.1 billion tourists traveled internationally in the first 9 months of 2024 [49]. However, we continue to face the potential for rapid international disease transmission and the challenges of climate change. It remains uncertain whether future travel will be more environmentally sustainable.

A safer and more equitable society

The COVID-19 pandemic exposed significant health inequities both domestically and internationally, particularly in access to healthcare services and social safety nets. Poor populations and low-income countries experienced disproportionately high hospitalization and death rates. In the post-COVID-19 era, addressing health inequalities stemming from disparities in wealth and political power is essential to creating a more equitable society.

Discussion

How Failures of the IHR Implementation Have Impacted Pandemic Response: Lessons Learned from Previous Emerging Infectious Diseases such as SARS and MERS

The 2015 MERS outbreak in the Republic of Korea led to improvements in the country's national emergency system for emerging infectious diseases [50]. Similarly, Hong Kong, Singapore, and Taiwan—having experienced the 2003 SARS outbreak—responded effectively during the early stages of the COVID-19 pandemic, strengthening their emerging infectious disease response systems [51].

Between 2018 and 2020, the Republic of Korea achieved high WHO SPAR scores of 94 compared to the global average of 61 following reforms to its national public health emergency system (Figure 2) [35]. For emerging infectious diseases, early detection and rapid response were key to containing outbreaks (Figure 2) [35]. However, the world was largely unprepared to detect and respond to emerging infectious diseases, with only a few countries having effective management systems in place [51]. The roles of health authorities and relevant ministries must be clearly defined [52]. Moreover, effective information-sharing systems for the public were lacking, and communication, cooperation, and collaboration between different levels of government were insufficient [50]. Additionally, there was a shortage of well-trained healthcare workers and epidemiologists [50].

How the WHO Should Be Reformed

The WHO has struggled to fulfill its mandate to guide and coordinate its member states, resulting in uncoordinated responses. Three key points should be considered for reform: (1) Sanctions: Although the IHR mandates that member states notify the WHO of any potential public health emergencies of international concern and cooperate accordingly, the WHO currently lacks legal enforcement power. The IHR should include sanctions against non-compliant member states, similar to the World Trade Organization, which can impose sanctions on member states that violate its rules [52]. (2) Innovative Funding Mechanisms: The WHO requires more innovative financing mechanisms, such as those employed by Gavi, the Vaccine Alliance, the Global Fund, or UNITAID [52]. (3) Public-Private Partnership Governance: The governance structure of the WHO should incorporate alternative voices, including those from civil society and private philanthropists, as seen with the Global Fund [25].

Implementing these reforms will require strong commitment and extensive coordination among member states. The WHO must be empowered with greater authority and coordination capacity to effectively combat the next pandemic.

Conclusion

The world must prepare for all health security threats, including emerging respiratory infectious diseases, such as novel coronaviruses, avian influenza, or Ebola virus. Lessons learned from devastating outbreaks or epidemics can help us better prepare for future events,

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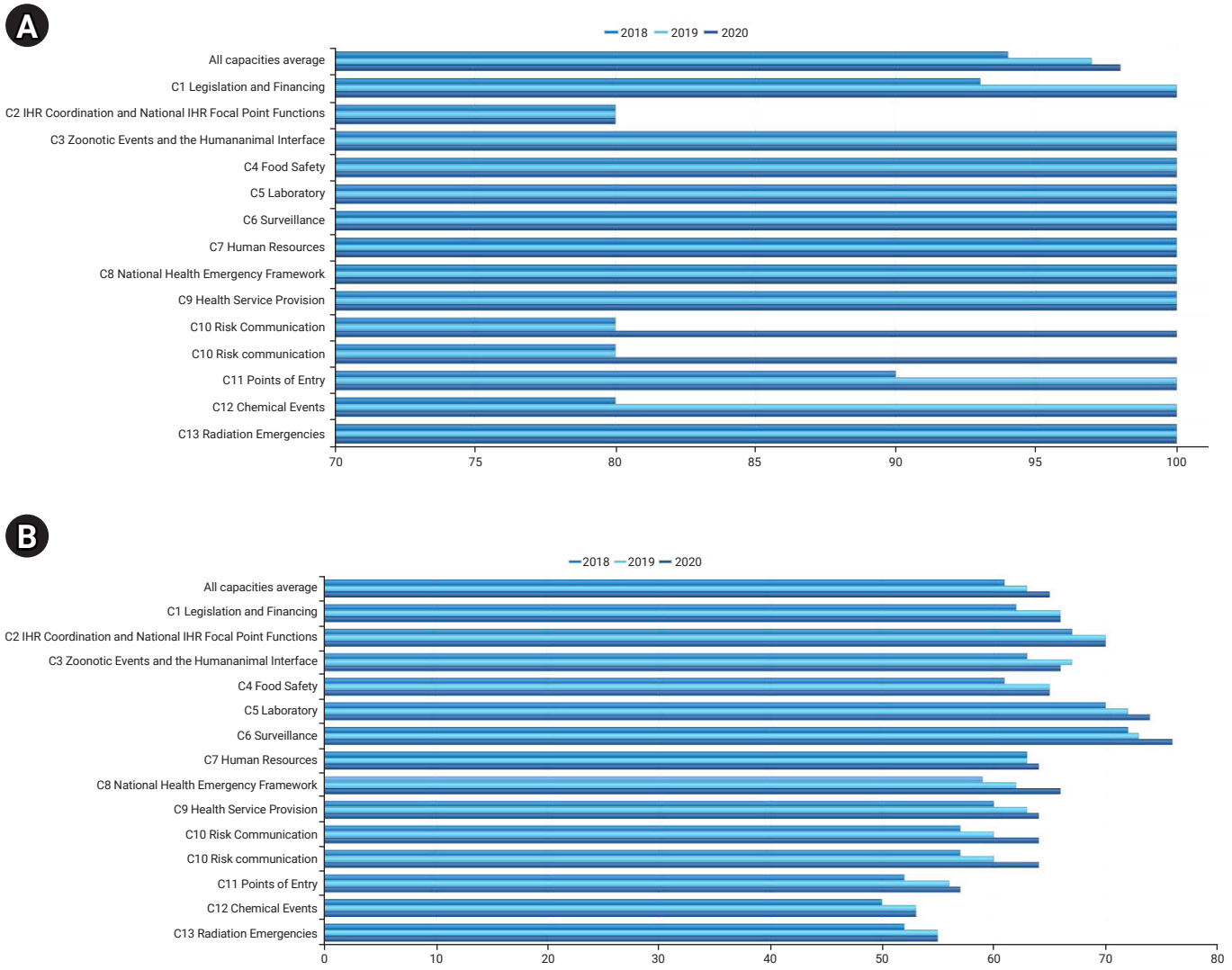

Figure 2. International Health Regulations capacity progress from the states parties' self-assessment annual report in 2018–2020 (Republic of Korea) (A) and all the countries (B). IHR, International Health Regulation. Based on [35].

as evidenced by the responses to COVID-19 in countries that had previously experienced SARS or MERS. The next global health security threat may arise from an emerging respiratory infectious disease outbreak, AMR, a vector-borne disease, or bioterrorism. Additionally, slower but increasingly significant threats, such as cholera outbreaks in refugee camps within conflict zones, continue to pose risks. To address these potential threats, multisectoral, whole-of-society actions are necessary to prepare for, prevent, detect, and respond at national, regional, and global levels. By applying the lessons learned from COVID-19—in particular, the insight that the pandemic was largely preventable with better preparedness—we can achieve global health security with justice for all.

Notes

Ethics Approval

The informed consent was waived because of the retrospective nature of this study.

Conflicts of Interest

Chaeshin Chu has been a managing editor of *Osong Public Health and Perspectives* since 2011.

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None.

Availability of Data

All data generated or analyzed during this study are included in this published article. Other data may be requested through the corresponding author.

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