

DRAFT

**Asia Pacific Health Security
Action Framework**

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Abbreviations

AAR	after-action review
AI	artificial intelligence
AMR	antimicrobial resistance
APSED	Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies
ASEAN	Association of Southeast Asian Nations
C4H	Communication for Health
CBRN	chemical, biological, radiological and nuclear
COVID-19	coronavirus disease
EMPaCT	Emerging Molecular Pathogen Characterization Technologies
EMT	emergency medical team
EOC	emergency operations centre
FAO	Food and Agriculture Organization of the United Nations
FETP	Field Epidemiology Training Programme
GDP	gross domestic product
GISRS	Global Influenza Surveillance and Response System
GLASS	Global Antimicrobial Resistance and Use Surveillance System
GOARN	Global Outbreak Alert and Response Network
HEPR	health emergency prevention, preparedness, response and resilience
IAR	intra-action review
IHR (2005)	International Health Regulations (2005)
IMS	incident management system
IMT	incident management team
INB	Intergovernmental Negotiating Body
INFOSAN	International Food Safety Authorities Network
IPC	infection prevention and control
JEE	Joint External Evaluation
JIMT	Joint Incident Management Team
MERS	Middle East respiratory syndrome
NAPHS	national action plan for health security
NRA	national regulatory authority
PHC	primary health care

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PHSMs	public health and social measures
POE	points of entry
SARS	severe acute respiratory syndrome
SARS-CoV-2	severe acute respiratory syndrome coronavirus 2
SDGs	Sustainable Development Goals
SPAR	State Party Self-Assessment Annual Report
SPC	The Pacific Community
STAR	Strategic Tool for Assessing Risks
TAG	Technical Advisory Group
UHC	universal health coverage
UNEP	United Nations Environment Programme
WASH	water, sanitation and hygiene
WGIHR	Working Group on Amendments to the International Health Regulations (2005)
WHO	World Health Organization
WOAH	World Organization for Animal Health

Glossary

Term	Definition and description
Accountability	Accountability is a human rights principle that needs to be considered when applying a human rights-based approach to health. Under international human rights law, duty-bearers are obligated to respect, protect and fulfil human rights, including the right to health and other health-related rights. Accountability compels a State to explain what it is doing and why and how it is moving, as expeditiously and effectively as possible, towards the realization of the right to health for all.
Asia Pacific region	The Asia Pacific region comprises the 48 countries, areas and territories of two regions of the World Health Organization – the South-East Asia Region and the Western Pacific Region. (APSED, 2010)
Behaviour change communication	Delivery of health programmes through health promotion, i.e. encouraging the active prevention of disease and outbreaks through positive behaviour change. It involves social mobilization. See Social and Behaviour Change.
Climate change	Any change in climate over time, whether due to natural variability or as a result of human activity.
Communication for Health (C4H)	A set of principles and practices to help ensure communication interventions are designed to inform and change attitudes and behaviours in ways that support the achievement of defined public health outcomes.
Community	A group of people that may or may not be spatially connected, but who share common interests, thoughts or identities, values, norms, ancestry or religion. These communities could be local, national or international, with specific or broad shared interests. ¹
Community engagement	The process of developing relationships and structures that engage communities as equal partners in the creation of emergency response solutions that are acceptable and workable for those they impact. The goal of community engagement is to empower communities to confidently share the leadership, planning and implementation of initiatives throughout the health emergency response cycle.
Emergency operations centre	A facility and function for preparedness planning, strategic policy and coordinated response (logistics and operations) to public health emergencies, including support to field-based responders and response agencies. (WHO Framework for a Public Health Emergency Operations Centre, 2015)
Emergency medical team	A group of health professionals, including doctors, nurses, paramedics, support workers, logisticians, who treat patients affected by an emergency or disaster. An EMT can be from both governmental (civil and military teams) and nongovernmental organizations, and their response can be national or international. EMTs work according to minimum standards agreed upon by the EMT community and its partners, and are deployed fully trained and self-sufficient so as not to burden an already stressed national system.
Emerging infectious disease	A disease that either has appeared and affected a population for the first time, or has existed previously but is rapidly spreading, either in terms of the number of people infected, or to new geographical areas possibly due to changes in existing organisms. ² The term “emerging diseases” is used interchangeably with emerging infectious diseases.
Equity	The absence of unfair, avoidable or remediable differences among groups of people. Groups may be defined socially, economically, demographically, geographically or through disability. Health equity is achieved when everyone can attain their full potential for health and well-being.

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Event-based surveillance	The organized and rapid monitoring, capture, analysis and interpretation of information about events that are a potential risk to public health. This information can be rumours and other ad hoc reports transmitted through formal or informal channels.
Field Epidemiology Training Programme	A practical training programme to build capacity of the public health workforce in field epidemiology and mainly covering data collection and analysis, managing surveillance systems, outbreak investigation and operational research.
Gender	The socially constructed characteristics of both women and men – such as norms, roles and relationships of and between groups of women and men, boys and girls. Gender varies from society to society and can be changed. While most people are born either male or female, they are taught appropriate norms and behaviours – including how they should interact with others of the same or opposite sex within households, communities and workplaces. When individuals or groups do not “fit” established gender norms, they often face stigma, discriminatory practices or social exclusion – all of which adversely affect health. (Gender mainstreaming for health managers: a practical approach, 2011)
Hazard	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. (United Nations Office for Disaster Risk Reduction, 2009)
Health-care worker	All persons engaged in the promotion, protection or improvement of the health of the population. (World Health Report, 2006)
Health security	Global public health security is defined as the activities required, both proactive and reactive, to minimize the likelihood of emergence and acquisition of a hazard, and to minimize the danger and impact of public health events that endanger people’s health and well-being. Regional public health security widens this definition to include acute public health events that endanger the collective health of populations living across the Asia Pacific region. Lack of regional health security may have an impact on economic or political stability, trade, tourism, and access to goods and services in the Asia Pacific region ³
Human rights	Legal entitlements of individuals and groups that protect fundamental freedoms and human dignity. Human rights are universal, inalienable, and interdependent and interrelated. They are enshrined in international, regional and national law. The right to the highest attainable standard of health was first enshrined in the WHO Constitution. (Health and human rights, 2015)
Indicator-based surveillance	The systematic collection and analysis of timely and reliable data on priority diseases, syndromes and conditions from formal sources. (APSED, 2010)
International Health Regulations (2005)	An international legal agreement that provides an overarching framework defining countries’ rights and obligations in handling public health events and emergencies that have the potential to cross borders. IHR is an instrument of international law that is legally binding on 196 countries, including the 194 WHO Member States.
Incident management system	An emergency management structure and set of protocols that provide an approach for guiding government agencies, the private sector, nongovernmental organizations and other actors to work in a coordinated manner, primarily to respond to and mitigate the effects of all types of emergencies. The incident management system (IMS) may also be utilized to support other aspects of emergency management, including preparedness and recovery. (Framework for a public health emergency operations centre, 2015)
Monitoring and evaluation	Monitoring refers to the process of regular supervision of the implementation of activities, seeking to ensure that input deliveries, work schedules, targeted outputs and other required actions are proceeding as planned. Evaluation refers to a process

	that attempts to determine as systematically and objectively as possible the relevance, effectiveness and impact of activities in light of their objectives.
Multisource surveillance	A surveillance approach that emphasizes the use of multiple information sources (including traditional surveillance and other sources) in combination to develop a more complete picture of the health of a population and increase the confidence with which public health decisions can be made.
National IHR Focal Point	The national centre, designated by each State Party, which shall be accessible at all times for communication with WHO IHR Contact Points under IHR (2005).
Non-discrimination	A human rights principle that needs to be considered when applying a human rights-based approach to health. Non-discrimination in health is absence of any negative judgement about a person or group made on the basis of ethnicity, sex, language, religion, national or social origin, property, birth, physical or mental disability, health status (including HIV/AIDS), sexual orientation, civil, political, social or other status or opinion which limits their access to health care or the underlying social determinants of health. Discrimination can mean poorly targeted health programmes or restricted access to services. Discrimination means that those with equal need are not treated equally. Overcoming discrimination demands objective, reasonable criteria intended to rectify inequities in health. (Health and human rights, 2015)
One Health approach	One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, and the wider environment (including ecosystems) are closely linked and interdependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air; safe and nutritious food; taking action on climate change; protecting the environment; preserving habitats; and contributing to sustainable development. ⁴
Participation	All persons and groups are entitled to active, free and meaningful participation in, contribution to and enjoyment of civil, economic, social, cultural and political development in which human rights and fundamental freedoms can be realized (United Nations Development Group, 2002). Human rights law recognizes the participation of the population in all health-related decision-making at the community, national and international levels (Committee on Economic, Social and Cultural Rights, 2000). Participation is one of the human rights principles that needs to be considered when applying a human rights-based approach to health. Adequate and sustainable financial and technical support, including investment in empowerment of rights-holders, is essential to enable meaningful participation. (UN Committee on Economic, Social and Cultural Rights, 2000 and United Nations statement of common understanding on human rights-based approaches to development cooperation and programming, 2002)
Preparedness	Capability of the public health and health-care systems, communities and individuals to prevent, protect against, quickly respond to and recover from health emergencies, particularly those whose scale, timing or unpredictability threatens to overwhelm routine capabilities. Preparedness involves a coordinated and continuous process of planning and implementation that relies on measuring performance and taking corrective action.
Prevention	Actions and measures taken to avoid or minimize the risk and impact of public health threats.
Point of entry	A passage for international entry or exit of travellers, baggage, cargo, containers, conveyance, goods and postal parcels, as well as agencies and areas providing services to them on entry or exit. It includes international airports, ports and ground crossings. (IHR, 2005)

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Public health emergency	An occurrence or imminent threat of significant illness or health condition, caused by acute exposure to hazards, including biological, chemical, radiological, natural and technological hazards. For the purpose of this document, a public health emergency mainly refers to an emergency caused by emerging diseases and/or other acute public health events that are managed by national public health authorities. If not managed quickly, it may go beyond national borders and cause a public health emergency of international concern, such as an influenza pandemic. (APSED, 2010)
Public health risk	Likelihood of an event that may adversely affect the health of human populations, with an emphasis on an event that may spread internationally or may present a serious and direct danger. (IHR, 2005)
Rapid response team	A multidisciplinary team that can be mobilized on short notice for routine and rapid investigation of and response to public health events at any level, nationally or internationally. (Adapted from APSED, 2010)
Readiness	The capacity of countries, communities and organizations to respond immediately and effectively to potential health threats and emergencies caused by any hazard. Readiness is the direct outcome of preparedness actions and the interface between preparedness and immediate response to emergencies.
Resilience	The ability of a health system exposed to a shock to resist, absorb, accommodate and recover from the effects of the shock in a timely and efficient manner, including the preservation and restoration of its essential basic structures and functions. ⁵
Risk	The likelihood of the occurrence and the likely magnitude of the consequences of an adverse event during a specified period. (Rapid risk assessment of acute public health events, 2012)
Risk assessment	An ongoing systematic process of organizing multiple sources of information within a risk management framework to determine a level of risk to guide decision-making. A risk assessment has two facets: (1) identification and characterization of threats; and (2) analysis and evaluation of risks associated with exposure to those threats, including vulnerabilities and coping capacities. (Adapted from APSED, 2010)
Risk communication	The real-time exchange of information, advice and opinions between experts or officials and people who face a hazard or threat to their survival, health, or economic or social well-being. The purpose of risk communication is to enable people at risk to make informed decisions to mitigate the effects of a threat (hazard) – such as a disease outbreak – and take protective and preventive measures. Risk communication is proven to be a critical tool in emergency preparedness and response. It is a core capacity of IHR (2005) and is one of five strategies within the Pandemic Influenza Preparedness (PIP) framework.
Siracusa Principles	Human rights law recognizes the need to limit human rights in some limited circumstances. The Siracusa Principles are narrowly defined conditions that must all be met to justify limiting the exercise or enjoyment of a human right based on public health grounds as defined in the Siracusa Principles on the limitation and derogation provisions in the international covenant on civil and political rights. (The Siracusa Principles on the limitation and derogation provisions in the international covenant on civil and political rights, 1985 and 25 questions and answers on health and human rights, 2002)
Social and behaviour change	Social and behaviour change aims to empower individuals and communities and to lower the structural barriers that prevent the adoption of positive practices and which prevent societies from achieving equity, inclusivity, coherence and peace.
Social determinants of health	The social determinants of health (SDH) are the non-medical factors that influence health outcomes. SDH refer to the conditions in which people are born, grow, live, work and age, and the wider set of forces and systems shaping the conditions of daily life, including the health system. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political

	systems. Addressing SDH is fundamental for improving health and reducing long-standing inequities in health, which requires action by all sectors and civil society. ⁶
Sustainable Development Goals (SDGs)	The 2030 Agenda for Sustainable Development provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its core are the 17 Sustainable Development Goals (SDGs), adopted by United Nations Member States in September 2015. These set out a vision of economic, social and environmental development. They recognize that ending poverty and other deprivations must go hand in hand with strategies that improve health and education, reduce inequality, and spur economic growth, while tackling climate change.
Two-tier approach	An approach to health security planning and preparedness that emphasizes the need for investments in both public health emergency planning, and in readiness to operationalize and modify plans during a response. The two-tier approach was introduced in 2010 in the second iteration of APSED.
Universal health coverage (UHC)	All people have access to the full range of quality health services they need, when and where they need them, without financial hardship. UHC covers the full continuum of essential health services, from health promotion to prevention, treatment, rehabilitation and palliative care across the life course.
Zoonosis	Any disease or infection that is naturally transmissible from animals to humans or vice versa.

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Executive summary

The Asia Pacific region – referring to the combined World Health Organization (WHO) South-East Asia Region and Western Pacific Region – is home to approximately 4 billion people living in 48 diverse countries and areas. The region experiences frequent public health emergencies caused by a range of hazards including endemic and emerging infectious diseases, antimicrobial resistance, extreme weather events, earthquakes, volcanic activity, food safety events and technological hazards. Climate change is bringing multiple challenges to the region, impacting ecosystems and health through flooding, droughts, wildfires and rising sea levels. Small island developing states are particularly vulnerable to these shocks due to factors including small population size, geographic isolation, limited economic diversification, and fragile land and marine ecosystems.

In the Asia Pacific region, collective work by countries and areas, WHO and partners have strengthened implementation of the International Health Regulations (2005), or IHR (2005), beginning with the launch in 2005 of the original *Asia Pacific Strategy for Emerging Diseases* (APSED). APSED principles and approaches have provided a common road map for countries and areas in the South-East Asia and Western Pacific regions to strengthen their health security systems, while also responding to ongoing public health emergencies, including the 2009 H1N1 pandemic; human cases of infection with avian influenza viruses including A(H3N2), A(H5N1), A(H7N9) and A(H9N2); Middle East respiratory syndrome; outbreaks of dengue, measles and polio; food safety events; chemical and environmental events; and emergencies triggered by natural hazards including typhoons, floods, heatwaves, earthquakes and volcanic eruptions.

Since December 2019, coronavirus disease (COVID-19) has had a severe impact globally and in the region, with over 265 million cases and 1.2 million deaths officially recorded as of 7 June 2023 in the Asia Pacific region alone. The COVID-19 pandemic has highlighted regional health security challenges in areas including decision-making, surveillance and data systems, surge capacity, maintenance of essential health services, regulatory preparedness, supply chain management, communication and community engagement. It also drew attention to difficulties in accessing health care for populations with vulnerabilities and emphasized the continued need to apply a gender, disability and equity lens to ensure inclusive health security efforts and to “reach the unreached”. The pandemic has also had wide-ranging social and economic impacts, which in turn have led to setbacks in broader development gains and efforts to achieve the Sustainable Development Goals (SDGs) and universal health coverage (UHC).

Despite these challenges, the Asia Pacific region was able to mount a relatively successful response to the COVID-19 pandemic. The Lancet COVID-19 Commission highlighted the comparatively lower morbidity and mortality of the Asia Pacific region compared to other regions, with the WHO Western Pacific Region performing especially well in the early phase of the pandemic. The Commission also highlighted the significant role played by APSED and its approaches and principles in providing a foundation for countries in the region to respond quickly and effectively. While APSED has supported countries and areas in the region to build a strong base of core health security capacities and systems, the COVID-19 pandemic demonstrated that more still needs to be done.

This *Asia Pacific Health Security Action Framework* builds on the achievements and approaches of APSED, as well as the experiences of the region in responding to public health emergencies over the

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past 20 years. It works towards a vision of an “Asia Pacific region that is prepared for and resilient to public health emergencies through collective action and that contributes to global health security”. It is designed to engage health and non-health sectors to support prevention, preparedness, readiness and response for multi-hazard public health emergencies, and therefore to strengthen the resilience of health security systems at subnational, national and regional levels. In doing so, the Framework is also consistent with the goals of other global and regional initiatives that advocate for strengthened health systems such as the SDGs, UHC, the *United Nations Framework Convention on Climate Change*, the *Sendai Framework for Disaster Risk Reduction 2015–2030*, and *For the Future: Towards the Healthiest and Safest Region*, the shared vision for WHO’s work with countries, areas and partners in the Western Pacific Region.

The Framework is founded on core values of equity, inclusivity and coherence to guide policy and practice. It provides a collective approach for countries and areas in the Asia Pacific region, WHO and partners to advance multisectoral health security capacities in the region, and is guided by the following approaches and principles: whole-of-government and whole-of-society; country-focused; multi-hazard; future-facing; solidarity and partnership for collective action; step-by-step, strategic system building; continuous learning for improvement; and sustained long-term investment.

The Framework identifies six interconnected and multisectoral domains of a health security system, based on the shared experiences and lessons of responding to public health emergencies in the Asia Pacific region over the past two decades. Together, the domains offer a strategic framework to conceptualize and plan the necessary elements of a comprehensive health security system. The domains are:

- Lead and coordinate
- Plan and prepare
- Assess and respond
- Readiness and resilience
- Support and enable
- Monitor, evaluate and learn.

The Framework is intended to have a flexible implementation period of five to 10 years in order to accommodate different national planning cycles and variations in existing national capacities across the region. This time frame is also intended to accommodate global health security developments that may affect regional and national planning, such as a proposed international instrument on pandemic prevention, preparedness and response and targeted amendments to IHR (2005). Furthermore, while the Framework focuses on strategic health security domains, it provides for flexible implementation by countries and areas, including small island developing states, depending on their context and national priorities.

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Part 1. Introduction

1.1 Background

Countries and areas of the World Health Organization (WHO) in the Asia Pacific region – which comprises the WHO South-East Asia and Western Pacific regions – face an increasing number and range of public health threats. These include endemic, epidemic and emerging infectious diseases; antimicrobial resistance (AMR); extreme weather events; earthquakes; volcanic activity; food safety events; and technological hazards (Annex 1). Some countries and areas in the Asia Pacific region, due to their location, are prone to events such as earthquakes, tsunamis or typhoons. In many cases, the risk posed by these threats is heightened by modern dynamics such as population growth, urbanization, environmental degradation and climate change.

Public health emergencies widen existing health and social inequities by disproportionately affecting communities with vulnerabilities and those with less resources and at-risk populations. They directly and indirectly impact the health status of populations and can also negatively affect the social and economic growth and development of countries. This is particularly true for small island developing states¹ that have unique socioeconomic vulnerabilities due to factors including small population size, geographic isolation, limited economic options, and fragile land and marine ecosystems.

The health impacts of emergencies disproportionately affect communities with vulnerabilities. For example, in **New Zealand**, Cyclone Gabrielle destroyed road and transport infrastructure in the eastern North Island in February 2023. This meant people with pre-existing and chronic conditions were unable to travel to receive outpatient care including dialysis and chemotherapy. Damage to transport infrastructure also impacted essential supply chains including food, water and pharmaceuticals.

First endorsed in 2005,^{7,8} the original *Asia Pacific Strategy for Emerging Diseases* (APSED) – and its more recent iterations in 2010 and 2016 as the *Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies* – have been the biregional strategic frameworks to strengthen and advance capacities to detect and respond to public health emergencies and implement the International Health Regulations (2005), or IHR (2005), in the Asia Pacific region. APSED principles and approaches have provided a common road map for countries in the WHO South-East Asia and Western Pacific regions to strengthen their health security systems, while also responding to ongoing public health emergencies including: the coronavirus disease (COVID-19) pandemic; the 2009 H1N1 pandemic (H1N1pdm09 virus); human cases of infection with avian influenza viruses A(H3N2), A(H5N1), A(H7N9) and A(H9N2); outbreaks of dengue and other arboviral diseases; measles and polio outbreaks; Middle East respiratory syndrome (MERS); food safety events; and emergencies triggered by natural hazards including typhoons, floods, droughts, heatwaves, earthquakes and volcanic eruptions.

The Lancet COVID-19 Commission recognized the significant role played by APSED approaches and principles, as well as the solidarity demonstrated in the Asia Pacific region, as providing a foundation for countries in the region to respond quickly and effectively early in the COVID-19 pandemic.⁹

¹ Small island developing states are a distinct group of 39 States and 18 Associate Members of United Nations regional commissions classified as such by the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (see full list at <https://www.un.org/ohrlls/content/list-sids>). For the purposes of this Framework, the Pitcairn Islands (United Kingdom of Great Britain and Northern Ireland), Tokelau (New Zealand) and Wallis and Futuna (France) are also considered as part of this group.

Despite this relative success, the COVID-19 pandemic has shown that existing systems require significant improvement and strengthening, particularly to respond effectively to vulnerable and hard-to-reach groups, and to manage the social and economic aspects of the pandemic.

1.2 Impacts of public health emergencies

The impact of public health emergencies extends far beyond health. Major emergencies such as the COVID-19 pandemic demonstrate the interconnectedness of health, economics and society, as well as the ability of public health crises to trigger crises in these areas as well. Health security systems that can prevent or mitigate the public health impact of emergencies therefore contribute to wider socioeconomic stability and development goals. The impacts of public health emergencies can be felt in several areas including the following:

Health: Public health emergencies directly cause physical and psychological injury, disease and death in affected populations. They can also cause indirect negative health impacts by disrupting essential and routine health-care delivery, and in extreme cases can overwhelm and cause the collapse of health-care systems. The health impacts of public health emergencies are disproportionately felt by groups with vulnerabilities, such as older people, people with disabilities, people with chronic conditions and the socioeconomically disadvantaged. Public health emergencies can consequently widen existing health inequities and lead to setbacks in health gains and efforts to achieve universal health coverage (UHC). They may also result in long-term effects such as so-called long COVID following exposure to the causative virus or the long-term health effects following chemical or radiation exposure.

Social: Diverse social impacts can occur because of public health emergencies including food insecurity, unemployment, loss of income and social isolation. For example, risks of violence, exploitation and abuse increase during emergencies – particularly for women and girls – while legal protections and social support networks are weakened. In the Asia Pacific region, evidence points to widespread and increased violence against women and girls during the COVID-19 pandemic due to factors such as anxiety from loss of income, increased drug and alcohol use, school closures and movement restrictions.¹⁰ If not properly addressed, the social crisis created by a public health emergency may increase inequalities, discrimination and unemployment in the medium and long term.

Education: Disruption to education during public health emergencies impacts learning and skill development, and over prolonged periods can negatively impact the economic prospects of individual students and society overall. School closures (including preschools, colleges and universities) can also be detrimental to students' mental health, well-being, socialization, nutrition and protection. It also poses higher risks to girls' education and well-being, as girls are less likely to return to school and are more vulnerable to violence, child marriage and adolescent pregnancy. In April 2020 at the peak of school closures during the COVID-19 pandemic, 94% of students – or 1.6 billion children – were out of school globally.¹¹ While most countries have yet to measure learning losses due to school closures, data from several high-income countries suggest significant learning losses and increases in inequality.¹²

Economic: Health emergencies often cause negative impacts on households, health systems and economies. In addition to the costs of response and lost income and productivity due to illness, public health emergencies also impact business and trade. The 2003 outbreak of severe acute respiratory syndrome (SARS) has been estimated to have cost US\$ 40 billion globally through economic shocks.

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Estimates of the cost of the 2014 West Africa Ebola outbreak range from US\$ 2.8 billion to US\$ 32.6 billion in lost gross domestic product (GDP) in the affected countries, and up to US\$ 53.2 billion when including wider economic and social costs.¹³ During the COVID-19 pandemic in 2020 alone, global GDP fell by an estimated 3.4%, or over US\$ 2 trillion.¹⁴ Restrictions on travel and trade, as well as disruptions to supply chains, during major public health emergencies also adversely affect economies, particularly those of smaller countries, such as small island developing states.

Security: Large-scale public health emergencies can threaten economic productivity, societal security and political stability. They may also exceed the ability of a country to respond effectively. In such cases governments may treat these events, or their potential occurrence, as both a public health emergency and a threat to national security. Such threats may require collaboration between public health, the military and law enforcement agencies. While this type of partnership is not new (for example, civil–military coordination has been crucial in supporting humanitarian assistance and disaster relief in the region), ensuring that it is appropriate, constructive, effective and coordinated with other actors is essential. Across the Asia Pacific region, COVID-19 has threatened national, regional and global health security. As a result, countries such as Indonesia and the Philippines employed the military and the police in their COVID-19 response for contact tracing as well as in their lockdown efforts.¹⁵ Enhanced border measures at points of entry were also put in place using a blended civilian–military approach by countries including Indonesia, the Philippines, Singapore and Viet Nam.

1.3 Vision, goal and strategic objective

This *Asia Pacific Health Security Action Framework* is intended to support and mobilize collective action to strengthen public health emergency prevention, preparedness, readiness and response capacities to protect health, lives and livelihoods. It will do this by providing a framework to envisage and plan a comprehensive health security system that encompasses IHR (2005) core capacities, as well as multisectoral health security capacities needed to strengthen resilience to the public health threats in the future. It is aimed at the subnational, national and regional levels, and has the following vision, goal and strategic objective.

Vision: An Asia Pacific region that is prepared for and resilient to public health emergencies through collective action and that contributes to global health security.

Goal: In the Asia Pacific region, countries, areas and communities have stronger and resilient systems across health and other sectors that protect the health and well-being of the population through reduction of the consequences associated with disease outbreaks and other public health emergencies.

Strategic objective: To protect the health and well-being of communities in the Asia Pacific region by strengthening, maintaining and enhancing multisectoral health security capacities and systems to prevent, prepare, respond to and increase resilience to multi-hazard public health emergencies.

1.4 Scope and target audience

Scope

The Framework builds on the 2016 iteration of APSED (APSED III) and the 2010 iteration (APSED II) and is intended to act:

- as a regional approach to implement and advance IHR (2005) core capacities;
- as a mechanism to advance the health-related SDGs and UHC, and build and strengthen health system resilience;
- as a framework to implement the thematic priority, health security (including antimicrobial resistance) in *For the Future: Towards the Healthiest and Safest Region*, the shared vision for WHO's work with countries, areas and partners in the Western Pacific Region;
- as a mechanism to maximize multisectoral collaboration at the subnational, national and regional levels, taking a One Health approach;
- as a regional mechanism to collectively monitor progress, facilitate learning for continuous improvement, and improve regional and global health security; and
- as an advocacy document to mobilize domestic and external financial and technical resources.

Target audience

This document is aimed at those involved in health security at the subnational, national and regional levels who have a role in preventing, preparing for and responding to public health emergencies. Health security requires whole-of-government approaches; therefore, this document is targeted at leaders and policy-makers across health and non-health sectors. This Framework is also relevant to international agencies, implementing partners and donors in the Asia Pacific region, many of whom have been supporting health security through APSED and other frameworks. As health security also requires a whole-of-society approach, this Framework is also intended to include and engage stakeholders from the private sector, academia, civil society and communities.

In the Asia Pacific region, small island developing states face specific challenges due to unique characteristics such as remote location, small population sizes, high infrastructure costs, limited resources and economic options, and fragile natural environments. They are highly vulnerable to external shocks, especially threats to health security posed by climate change, emerging and re-emerging infectious diseases, natural hazards and global economic volatility. This Framework is relevant for small island developing states as it considers their unique context, perspectives, experiences and lessons in managing public health emergencies over the past two decades, including COVID-19. This Framework supports the development and strengthening of appropriate health security capacities and systems in small island developing states at the subnational and national levels that are adapted to their context and requirements.

Key beneficiaries of the concepts and activities outlined in this Framework are the communities and members of the public whose health is at the core of health security, and without whose engagement and support public health interventions would not be possible.

1.5 Values and guiding principles

Values

- **Equity:** Leave no community or country behind – reach the unreached, and support and engage the most vulnerable.
- **Inclusivity:** Involving the engagement and ownership of all countries, communities and stakeholders, including participation in leadership and decision-making.

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- **Coherence:** Connect health security systems and initiatives at the subnational, national, regional and global levels, consistent with international instruments.

Guiding principles

- **Whole-of-government and whole-of-society approaches:** Engaging all government sectors and agencies and all stakeholders in health security to strengthen the resilience of communities, societies and countries by mainstreaming health security into all relevant policies and practices from the national to local level.
- **Country focused:** Putting people and countries at the centre and adapting global and regional solutions to country-specific contexts; sharing country-level experience and best practices as an opportunity for learning and contributing to regional-level decision-making.
- **Multi-hazard approach:** Investing in common systems and mechanisms that can be applied across multiple categories of public health hazards to increase efficiencies and economies of scale. These can complement specialized technical functions that may be required for specific types of hazards – for example, chemical or nuclear events.
- **Solidarity and partnerships for collective action:** Emphasizing solidarity and partnerships to mobilize collective action through national and international networks and common platforms for stakeholder engagement.
- **Step-by-step strategic approach to system building:** Improving and strengthening capacities and systems using a staged, step-by-step, action-oriented approach that facilitates strategic decision-making and considers the country context and regional and global initiatives.
- **Continuous learning for improvement:** Utilizing an ongoing cycle of reviewing feedback from assessments and exercises, as well as real-life experiences and lessons from past or current events, to adapt and revise plans, policies and procedures.
- **Sustained long-term investment:** Promoting long-term, sustained and steady financial and technical investments in strengthening health security and public health systems.
- **Future facing:** Having a forward-thinking perspective and being proactive in anticipating and adapting to upcoming opportunities and challenges – for example, climate change – through research, innovation and methodologies such as “futures thinking”, foresight and backcasting.ⁱⁱ

1.6 Moving to a domain-based approach

Experience from the Asia Pacific region and internationally has demonstrated the interaction and need for alignment among activities and technical areas that contribute to public health emergency prevention, preparedness, readiness, response and resilience. Additionally, the number and range of areas that contribute to health security are expanding as our experience and understanding of complex public health emergencies increases.

This Framework therefore does not present health security as a list of individual technical areas, as in previous versions of APSED, as this would be unmanageable. Rather, health security can be better conceptualized, planned and applied within a strategic framework using a domain-based approach. This Framework identifies six interconnected spheres of activity or domains that work together to form a

ⁱⁱ Futures thinking: systematic approaches to thinking about the future by considering what is likely to change and what is likely to stay the same. Foresight: forward-looking approaches by decision-makers to anticipate the future. Backcasting: starting with the desired outcome and considering what needs to occur to make that outcome a reality.

comprehensive health security system. In this approach, technical areas or functions can be planned together to meet the common objectives of the domain. Many technical areas and functions – for example, surveillance, information management or communication – have a place in multiple domains, reflecting their cross-cutting nature.

The six domains are based on the experiences and lessons identified from responding to public health emergencies in the Asia Pacific region over the past 20 years and reflect the shared health security history of countries and areas, WHO, partners and the people in the region. The domains encompass and build on the APSED focus areas, as well as the core capacity requirements of IHR (2005). They are multisectoral and reflect the need for whole-of-government and whole-of-society engagement in health security. The domains also take a One Health approach in recognition of the interdependence of the health of people, animals and their shared environment. The six domains and their respective subdomains are illustrated in Fig. 1 and presented with their respective purposes in Table 1.

Fig. 1. Six interconnected domains for effective health security in the Asia Pacific region

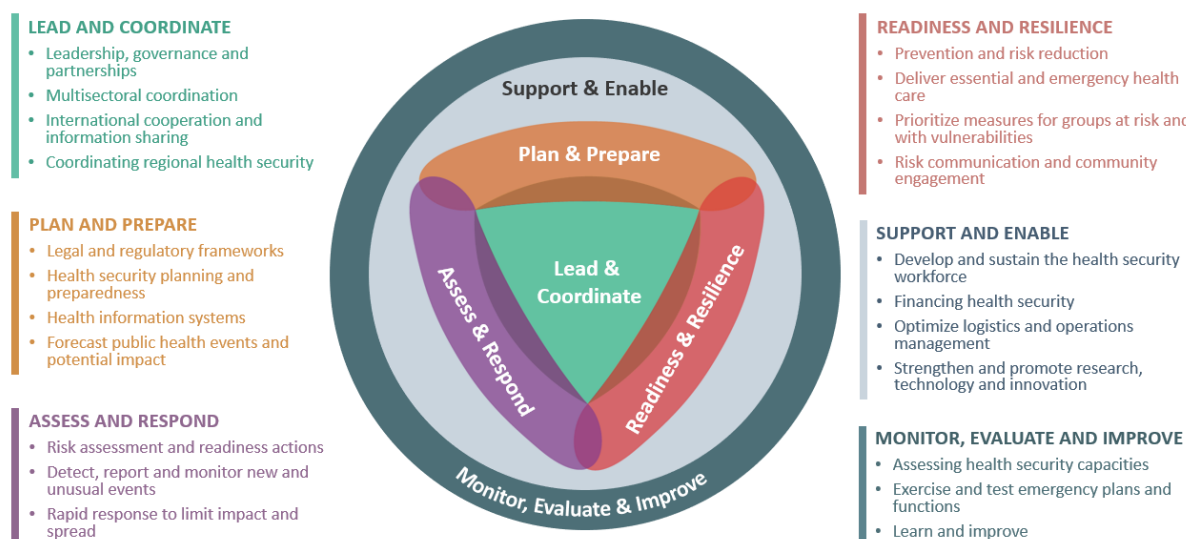


Table 1. Health security domains and purpose

Domain	Purpose
Lead and coordinate	Provide effective leadership and management for multiple health security threats.
Plan and prepare	Review, update and prepare strategies, tools, resources and capacities to prevent and respond to public health threats.
Assess and respond	Strengthen surveillance systems to enable early warning and rapid response to potential public health emergencies.
Readiness and resilience	Strengthen the readiness and resilience of communities and health systems to the public health impacts of emergencies.
Support and enable	Provide the necessary resources, expertise and infrastructure to sustain and maintain health security capacities and functions.
Monitor, evaluate and improve	Assess health security capacities, interventions and plans to adapt and improve current and future management of public health threats.

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The domains are numbered for ease of reference – not in order of priority. Countries and areas may prioritize the domains according to their context, available resources and identified needs.

1.7 Development process for the Framework

Since the 2003 outbreak of SARS, the Asia Pacific region has accumulated two decades of experience in working together on health security and responding to multi-hazard public health emergencies. The approach and principles first promoted by APSED in 2005 have successfully guided investments to strengthen capacities to prepare for and respond to multi-hazard public health emergencies and advance implementation of IHR (2005). Annual APSED Technical Advisory Group (TAG) meetings and recommendations have set regional priorities and guided early and rapid national responses to the COVID-19 pandemic.

Despite these achievements, experience has shown that more needs to be done to prepare and be ready for the next pandemic or major health security threat. At the 2021 APSED TAG Meeting, a review of existing regional and global health security reviews, strategies and frameworks was presented. The review identified a wide range of technical areas and functions relevant and necessary to health security. Participants at the same meeting concluded that while the region has been well served by APSED, there was a need to develop a new health security action framework to address areas revealed by the COVID-19 pandemic as requiring further work. The TAG meeting recommended that WHO review the identified technical areas and functions, together with lessons and experiences from past public health emergencies, and develop a new framework for discussion and presentation at the 2022 and 2023 APSED TAG Meetings.

At the 2022 APSED TAG Meeting, three options were proposed to structure a new framework that could encompass the range of identified technical areas and functions. The first and second options were structured around technical areas as identified in APSED III (eight technical areas) or the State Party Self-Assessment Annual Reports, or SPARs (15 technical areas) and Joint External Evaluations, or JEEs (19 technical areas) – the latter two of which are IHR (2005) monitoring and evaluation tools. Although familiar, these models contributed to “silos” around technical areas, were not able to encompass the wide and growing range of technical areas relevant to health security, and were focused on the health sector. The third option presented an outcomes-based model structured around major objectives of a health security system, initially identified as decision-making, detection, action and support. This option received broad interest and support from countries and areas and was expanded in the draft Framework.

A draft structure and outline of the Framework was discussed in consultations with several stakeholder groups, including WHO collaborating centres¹⁶ (November 2022) and individual countries and areas (February – March 2023). Over this period, as the definitions and functions of a health security system and its objectives were discussed, the Framework developed into its current format of six interconnected domains.

From 26 to 28 April 2023, a biregional consultation was held with technical experts from the Asia Pacific region to review a “zero draft” of the Framework.¹⁷ Comments and feedback from the consultation were used to revise the Framework, and a revised Version 1 circulated to stakeholders in early May 2023, including countries and areas, APSED TAG Members, technical experts, United Nations agencies, partners, donors and WHO (country and regional offices from the South-East Asia

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and Western Pacific regions, headquarters and collaborating centres). Feedback on the Version 1 draft was received through a series of online stakeholder consultations and written comments.

These inputs were used to develop a revised Version 2, which was discussed at the APSED III TAG Meeting, 27–29 June 2023.

Following recommendations and review from the 2023 APSED III TAG, the final document will be presented to the WHO Regional Committee for South-East Asia and the WHO Regional Committee for the Western Pacific for endorsement in 2023.

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Part 2. The Framework

2.0 Introduction

This *Asia Pacific Health Security Action Framework* has been designed to be a “common language” that spans public health emergency preparedness and health security and that can be easily understood by people with various levels of health security knowledge and expertise. Six domains comprise the core of the Framework:

- Lead and coordinate
- Plan and prepare
- Assess and respond
- Readiness and resilience
- Support and enable
- Monitor, evaluate and learn.

Each country and area in the Asia Pacific region will have different vulnerabilities, different risks and different resources. Using the six domains, the Framework can be contextualized and implemented by countries and areas to best suit their health security risks, situations and needs at the national and subnational levels.

In the first week of March 2023, **Vanuatu** was struck by two category 4 tropical cyclones and a 6.5 magnitude earthquake and aftershocks. Although Vanuatu is regularly affected by seismic activity and cyclones, these hazards are increasingly converging and cascading in impact. The extreme winds and rainfall that accompanied the cyclones destroyed homes, contaminated water sources, and caused severe damage to agriculture, livestock and fisheries. Vanuatu is now estimated to face annual average losses of 25% of its GDP due to these cascading natural and climate-related risks.¹⁸

It is recognized that small island developing states such as those in the Pacific face a complex and unique mix of social, economic and environmental vulnerabilities. Climate change is resulting in more frequent and more destructive extreme weather events, such as in 2023 when Vanuatu experienced an earthquake and two cyclones within a week. It also poses an existential threat to low-lying islands that are greatly threatened by rising sea levels, coastal storm surges, marine heatwaves and other environmental changes.¹⁹ The COVID-19 pandemic also demonstrated the complexity of attaining health

security in small island developing states, compounded by factors that include geographic isolation, vulnerability to disruptions in transport routes, and limited human and financial capacity.

These and other challenges, such as the high prevalence of chronic diseases, means that many small island developing states require strengthened health systems to make them more resilient to the impact of public health emergencies. There is an ongoing need for technical and development partners to continue to support Pacific island countries and areas, and other small island developing states, to strengthen and sustain health security capacities through systems-building approaches, effective partnerships and collective actions.

One of the guiding principles of this Framework, and its APSED predecessors, is the step-by-step approach to developing capacities and systems. This remains applicable not only to small island

developing states, but also to other countries and areas as they seek to balance proactive prevention, preparedness, readiness and response efforts with limited resources.

The Framework provides suggested priorities under each subdomain, based on regional experiences of and lessons identified from public health emergencies over the past 20 years. Countries and areas should not use these as a checklist, but instead should adapt them to their own context to better develop, manage and enhance their preparedness, readiness and response capacities and health security systems.

2.1 Domain 1. Lead and coordinate

Provide effective leadership and management for multiple health security threats

Public health emergencies are complex and multifaceted, and managing them requires coordinated whole-of-government and whole-of-society efforts. Effective leadership and coordination are essential to provide clear direction and guidance, enable timely and evidence-informed decision-making, utilize resources efficiently, and ensure governance and accountability efforts are aligned with overall preparedness and response plans.

During public health emergencies, leadership also fulfils important roles to motivate and inspire those involved in the response efforts and to make and communicate difficult decisions in a timely, empathetic and effective manner. Effective coordination requires strong communication and collaboration among stakeholders, a shared understanding of goals and objectives, clear roles and responsibilities, and transparent frameworks for ethical decision-making and resource allocation.

In the Pacific, a Joint Incident Management Team (JIMT) led by WHO was launched in 2019 to coordinate the response to concurrent outbreaks of measles in several Pacific island countries and areas. In February 2020, soon after COVID-19 began to spread globally, the JIMT was quickly repurposed to coordinate pandemic preparedness and response efforts across 21 Pacific island countries and areas, with the support of 20 active partners in the Pacific. Working in collaboration with Pacific island health officials, the JIMT was able to streamline technical advice on COVID-19 vaccines, clinical care, infection prevention and control (IPC), testing and epidemiological surveillance; conduct training and simulation exercises for health-care workers; tailor public health measures; and strengthen public communications. The JIMT pooled procurement and coordinated distribution of critical supplies to attract vendors for countries with small populations and relatively small purchases. This enabled countries and areas to receive laboratory supplies, personal protective equipment, medical equipment and therapeutics aligned with the latest science and local needs.

2.1.1 Leadership, governance and partnerships

Effective national health security leadership and governance focuses on proactively organizing systems, structures and resources so that relevant stakeholders can collaborate to deliver the best outcomes for affected populations. Decision-making should be coordinated and inclusive, involve multiple sectors and stakeholders, and take a whole-of-government and whole-of-society approach. As well as strengthening health security leadership and governance capacities, including accountability, at the national level, fostering these capacities together with a clear assignment of roles and responsibilities at subnational levels in the health sector – and in civil servants throughout different levels of government – is important to enable agile and effective front-line emergency management.

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One of the most critical functions of leadership is maintaining trust, legitimacy and accountability during a crisis. This proved very important during the **COVID-19 pandemic** in maintaining social cohesion and engagement in the response. For example, in **Viet Nam** where higher levels of public trust were also associated with higher adherence with public health measures,²⁰ and **New Zealand** where the Government's leadership of the national population as a "team of 5 million"²¹ – in effect the national population – contributed to early and strong adherence with restrictive lockdowns.

Political leaders and representatives play important roles before and during emergencies to advocate for investment, provide leadership at the national and local levels, enact laws, pass budgets and build partnerships across sectors to support health security efforts. Particularly during major public health emergencies, high-level political support and leadership can be instrumental to enhance whole-of-government coordination and facilitate the allocation and reallocation of resources for health security. Platforms such as the Asia Pacific Parliamentary

Forum on Global Health provide opportunities for advocacy and for political representatives to be informed and build political will towards global health issues such as health security.

Priorities in this area include:

- **Establish and maintain a proactive, coordinated, whole-of-government and whole-of-society approach to health security** with clear roles and responsibilities and through mechanisms to coordinate activities among relevant multisectoral stakeholders. Mechanisms may include joint planning and policy development, interagency task forces, integrated information-sharing systems, public health emergency operations centres, community engagement and more.
- **Develop public health emergency leadership skills across sectors** through training courses, mentoring and other continuing professional development opportunities.
- **Strengthen strategic health communications** to promote response leaders as trusted and authoritative sources of information during a public health emergency. This is crucial in complex emergencies to provide clear and coherent information and reduce confusion and uncertainty.
- **Foster nonpartisan political support from political leaders and parliamentarians** to support health security investments and activities before, during and after public health emergencies.
- **Strengthen and expand subnational public health emergency operations centres and incident management systems and capacities, linked to national systems.** Emergency operations centres (EOCs) and incident management systems (IMSS) should be established at the subnational and national levels and connected to facilitate emergency management, information sharing and decision-making. This also includes resources and capacities needed to operate and maintain these systems – for example, trained staff, physical infrastructure and sustainable financing.
- **Invest in national public health agencies, centres for disease control or similar entities** to serve as national centres of excellence or hubs to support subnational areas, scale up the health workforce, provide science-based opinions, and improve health system readiness and resilience for public health emergencies.
- **Broaden and strengthen cross-border, regional and international partnerships** and collaboration on prevention, preparedness, readiness and response to public health emergencies.

2.1.2 Multisectoral coordination

Preparing for and responding to public health emergencies requires a whole-of-government and whole-of-society approach. Continual multisectoral coordination – with clear roles and responsibilities – is therefore essential in both routine and emergency times to align actors to complementary strategic goals and objectives. During a public health emergency, these can be determined by overarching emergency response goals (for example, reducing transmission or preserving health-care capacity) and supplemented by sector-specific needs. This is particularly important in designing and implementing effective public health and social measures, and in high-risk settings where multiple government agencies and sectors interact, such as aged-care facilities, camps for refugees and internally displaced people, and designated points of entry (POE), including airports, seaports and ground crossings. In major public health emergencies, collaboration between civilian and military actors may be required in areas such as support for logistics and supply chain management, providing surge medical or search and rescue personnel, support for contact tracing or vaccination, or reinforcing travel restrictions and border controls. To ensure effective, proportionate and accountable collaboration that supports health security, it is critical to identify protocols and mechanisms for civil–military health collaboration well before a response is required.

The One Health approach is a key example of a coordinated, multisectoral approach to health that seeks to unify and optimize the health of people, animals and the environment. It is particularly important in health security to address health threats at the animal–human–environment interface including AMR, climate change, food safety and zoonotic diseases. In countries including **Cambodia**, the **Lao People’s Democratic Republic**, **Mongolia** and the **Philippines**, coordinated response and communications across human and animal health sectors have been strengthened for avian influenza, AMR and rabies. In **Viet Nam**, One Health zoonoses coordination mechanisms have been enhanced for joint risk assessment and other routine and event-based activities.

Multisectoral collaboration is required to address public health threats, such as zoonotic disease threats, climate change and food safety, that have a large and growing impact in the Asia Pacific region. Addressing these threats effectively requires a One Health approach that recognizes the close links and interdependency among the health of humans, domestic and wild animals, and the wider environment, including ecosystems. Internationally, the One Health Quadripartite agencies of the Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme (UNEP), WHO and World

Organisation for Animal Health (WOAH) play a major role in promoting and coordinating multisectoral collaboration on One Health issues.

Priorities in this area include:

- **Enhance multisectoral coordination, communication and information-sharing mechanisms** such as EOCs and incident management teams (IMTs) taking a One Health multi-hazard approach.
- **Strengthen multisectoral public health emergency planning and coordination in high-risk settings where multiple sectors interact**, such as POE and mass gathering events.
- **Prevent and reduce public health risks from zoonotic diseases through the One Health approach** among the human, animal and environmental health sectors. The risks of zoonotic diseases are growing with increasing populations, demands for food and encroachment on

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natural habitats – these globally interconnected drivers must be addressed by strong multisectoral collaboration.

- **Reduce health risks from climate change.** Climate change exacerbates health threats and undermines the resilience of environmental and ecological systems. To prevent and mitigate these threats, multiple sectors need to understand these interlinkages and coordinate action taking a One Health approach.
- **Reduce health risks from food safety events.** Food safety is an important issue in the Asia Pacific region where highly diverse food cultures and production systems exist across the region. Food and the complex systems involved from production to consumption sit at the nexus of the human–animal–environment interface and require strong multisectoral collaboration to manage safety.

2.1.3 International cooperation and information sharing

IHR (2005) was created in recognition of the importance of international cooperation and information sharing for global health security. Health security threats do not respect borders, and in a global community characterized by international mobility, collaboration among countries and with international agencies is key to managing public health events in ways that are proportionate and balance public health and economic priorities.

International information sharing and cooperation through the National IHR Focal Point system supports a broad range of health security functions, including surveillance, sharing of information of possible cross-border threats and contact tracing across international borders, management of confirmed or suspected international cases, and management of public health events at international POE.

The National IHR Focal Point system also provides a channel for confidential and bilateral communications to rapidly share information and manage potentially sensitive issues, such as border-control measures.

Priorities in this area include:

- **Strengthen the mandate and capacities of National IHR Focal Points** to coordinate multisectoral information, conduct comprehensive and inclusive risk assessments, and share such information in a timely manner with WHO and other countries and areas on public health events, in line with IHR (2005).
- **Ensure National IHR Focal Point capacities are prepared and ready** to respond to public health emergencies by testing and exercising regularly through simulation exercises, such as IHR (2005) exercises Crystal and Sapphire in the Asia Pacific region.
- **Enhance communication, information sharing and coordination among countries and areas** using mechanisms such as the National IHR Focal Point system, the Event Information Site and bilateral relationships. Links should also be enhanced between the National IHR Focal

International conveyances such as cruise ships posed unique challenges during the COVID-19 pandemic. Although the public health management of events such as outbreaks of gastroenteritis and tuberculosis on international conveyances has been well addressed, there is little available guidance for other hazards such as outbreaks of respiratory infections. Quarantines and travel restrictions during the pandemic also created humanitarian challenges as passengers, crew and seafarers were isolated at sea or stranded internationally for long periods of time. Addressing and managing these issues will require international cooperation and collaboration among ship owners, operators, port authorities and other international stakeholders.

Point system and emergency contact points for other areas and sectors, such as the International Food Safety Authorities Network (INFOSAN), animal and environmental health focal points, and focal points for terrorism-related events, chemical safety, radiation safety and other hazards.

- **Strengthen multisectoral health security capacities at points of entry (POE)** in order to conduct surveillance for public health threats, prepare for and respond to public health events including management of international travellers and staff, manage international conveyances such as cruise ships, and implement appropriate and proportionate public health and border measures.
- **Support timely information sharing on food safety incidents through the International Food Safety Authorities Network.** INFOSAN has a key role in responding to large-scale food safety emergencies by communicating information on safety incidents at regional and national levels, enabling food recall processes and avoiding further distribution of contaminated or unsafe products.

2.1.4 Coordinating regional health security

Public health threats and emergencies can rapidly move across national borders, emphasizing the need for coordinated preparedness, readiness and response internationally. WHO has a central role in capacitating, supporting and coordinating Asia Pacific regional health security systems and resources including multisource surveillance, risk assessment and alert, strategic stockpiles, technical networks, and monitoring and evaluation.

WHO activates regional IMSs to support countries and areas and WHO country offices with guidance, technical support, field deployments and supplies for public health events of international concern (COVID-19, mpox and circulating vaccine-derived poliovirus type 2), as well as events such as outbreaks, earthquakes, cyclones and tsunamis. In response to an outbreak of **Zika virus** in the Federated States of Micronesia in 2017, the WHO IMS team developed a regional risk assessment and framework for action to support preparedness and response in other countries and areas.

The emergency operations centres (EOCs) of the WHO Regional Office for South-East Asia and the WHO Regional Office for Western Pacific are routinely utilized as regional hubs for a variety of hazards and emergencies, including natural disasters, foodborne disease outbreaks, chemical incidents, mass gatherings, humanitarian emergencies and disease outbreaks or pandemics. They are also used for preparedness planning, risk assessment and response coordination.

Across the region and globally, the One Health Quadripartite (FAO, UNEP, WHO and WOA) collaborate to drive initiatives to mitigate the impact of current and future health threats at the human–animal–environment interface. WHO works together with and coordinates with other multilateral, regional and subregional partners, such as the Association of Southeast Asian Nations (ASEAN) and the Pacific Community (SPC), to deliver important health security activities in the region.

Priorities for WHO in this area include:

- **Maintain and enhance regional systems for multisource surveillance, risk assessment and alert** as part of the global monitoring system for public health events of international concern, under IHR (2005) and the WHO Health Emergencies Programme.

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- **Strengthen regional emergency rapid response surge capacity** by developing and maintaining a roster of experts and teams available for rapid regional and global deployment for public health emergencies.
- **Strengthen and expand regional and global partnership coordination mechanisms and networks** by convening, engaging and coordinating with technical and operational networks such as Field Epidemiology Training Programmes (FETPs), Emerging Molecular Pathogen Characterization Technologies (EMPaCT), the Global Outbreak Alert and Response Network (GOARN), standby partners, clinical and laboratory networks, WHO collaborating centres, and nationally and internationally classified emergency medical teams (EMTs).
- **Strengthen WHO regional offices as regional health security coordination hubs** for public health emergency planning, incident management, strategic emergency stockpiling, information sharing, and development of contextualized tools and guidance for countries and areas in the Asia Pacific region.
- **Strengthen WHO regional offices as regional learning and capacity-building hubs** for training health security workforce such as FETP fellows and the WHO workforce in country offices, other regional offices and WHO headquarters, as well as secondees from key partners and countries and areas.
- **Facilitate and encourage national governments to actively communicate and collaborate with each other** including on cross-border issues utilizing the IHR Event Information Site mechanism available to National IHR Focal Points and through provision of surge capacity during public health emergencies
- **Support countries and areas to understand and apply IMS principles**, including establishment and staffing of IMTs to coordinate a response and to communicate and collaborate effectively.
- **Increase resources and capacities of WHO country offices to provide tailored technical assistance to countries** in public health emergency prevention, preparedness, readiness, resilience and response at the subnational and national levels including linkage between Member State EOCs, WHO country offices, regional office and headquarters EOCs, and other key EOCs.

2.2 Domain 2. Plan and prepare

Review, update and prepare strategies, tools, resources and capacities to prevent and respond to public health threats

“Plan and prepare” refers to the process of identifying hazards to public health, assessing the level of risk they pose, and developing strategies and capacities to prevent or mitigate public health emergencies caused by these hazards. Hazard identification, characterization, prevention and control is a shared responsibility starting with local knowledge and management. The purpose of this domain is to ensure that multisectoral authorities, health-care systems, communities and other relevant health security stakeholders have processes, systems, capacities, and legal and regulatory frameworks in place to respond quickly to multi-hazard public health emergencies, if and when they occur. Health information systems and forecasting play an important role in informing plans and preparedness and identifying risks and vulnerabilities.

2.2.1 Legal and regulatory frameworks

Legal and regulatory frameworks relevant to health security include a system of laws and regulations across sectors and at the international, national and subnational levels that interact depending on the nature and scale of a public health risk. At a basic level, laws enable and govern the exercise of essential health security functions to prevent, prepare, detect, assess and respond to public health events. They can provide clarity over multisectoral roles and responsibilities, and are critical in complex emergencies involving multiple hazards that require action under multiple laws. Legal and regulatory frameworks require consideration of laws and regulations that address issues such as public health risks, quarantine

In many countries, **key health security laws are outdated** and contain elements that are inconsistent with current context and approaches to public health. During the COVID-19 pandemic, such countries found that their laws did not provide the authority, powers, functions and support needed for a coherent multisectoral response. Countries that had invested in revising and strengthening legal frameworks in response to past outbreaks, including SARS, MERS coronavirus and influenza A(H1N1), reported better legal preparedness for COVID-19.

and immigration, structures for emergency management, medical countermeasures, collection and use of health and personal data, discrimination, social protection and finance. While full alignment may not be possible, coherence and connection will support health security goals and a whole-of-government approach.

Legal powers to respond to public health risks – particularly during a declared state of public emergency – are among the strongest available to governments and can significantly impact individual rights and interests. As such, it is critical that governments have a flexible suite of legal powers that are balanced and proportionate, and that can escalate (and de-escalate) according to risk to ensure that appropriate evidence-informed action can be enforced. Limits and accountability mechanisms can guard against misuse and overreach, protect groups with vulnerabilities, and support legitimacy and trust in response efforts. Health security laws and regulations should also promote equity and be updated to respond to technological developments, such as data collection and sharing, in ways that are consistent with community expectations and values.

Regulatory systems are necessary to facilitate access to quality-assured and safe medical products during pandemics and other public health emergencies. To prepare for public health emergencies, engaging national regulatory authorities (NRAs), supporting their regulatory preparedness plans and strengthening national systems for regulatory approval are critical to minimize delays in accessing and deploying medical products such as new vaccines.

Priorities in this area include:

- **Assess existing legal frameworks to identify options for improvement.** Legislation played an important role in supporting the COVID-19 response, leading to increased awareness and political attention on areas that may need reform.
- **Strengthen legal and regulatory preparedness** to accelerate access to medical products, devices, diagnostics, chemicals and environmental measures during emergencies. Provision should also be made for insurance for adverse events. During an emergency, regulatory and legal processes need to be rapidly accelerated to introduce or import new medical products such as therapeutics, vaccines, devices and diagnostics. Chemicals or environmental measures may also be used in ways that require guidance and regulation for public safety, such as making home formulations of hand sanitizer.

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- **Strengthen national regulatory systems** to lead and coordinate regulatory preparedness for the emergency use and safety monitoring of medicines, vaccines, medical devices and other products publicly distributed during an emergency. This includes improving the capacity of NRAs to prevent, detect and respond to substandard or falsified medical products that come to market during emergencies in response to public concern and increased demand.
- **Support NRA networks and international collaboration** to exchange best practices, share safety concerns, streamline processes, promote harmonization and enhance regulatory capacity. During health emergencies, reliance-based regulatory actions – where regulatory authorities or agencies rely on existing assessments, data or decisions made by other recognized entities – can be utilized to expedite evaluation, approval and access to medical products.
- **Utilize and strengthen available food safety policy frameworks** to address food safety incidents. International or national principles, guidelines and food standards such as the [Codex Alimentarius](#) texts and standards enable food safety incidents to be addressed through timely risk management and risk communication
- **Strategically engage leaders and stakeholders.** Strengthening legal frameworks will often involve multiple stakeholders and adequate public consultation and require strong leadership from the health sector, political actors, affected communities and other stakeholders, sometimes sustained over long periods of time.
- **Build competencies for health security legal preparedness among key institutions.** Legal preparedness includes laws and also the competency to operationalize and implement those laws. This requires a multidisciplinary approach that involves legal professionals, public health professionals, policy-makers, enforcement officials, regulators and others.
- **Advocate for strengthened legal frameworks to promote equity and support groups with vulnerabilities.** In some countries, laws or policies may need to be strengthened to ensure protection for socially marginalized groups such as undocumented migrants, and enable effective public health responses.

2.2.2 Health security planning and preparedness

Planning and preparedness are ongoing processes that involve continuous review, adaptation and revision to effectively address evolving health security threats. Multi-hazard public health emergency plans are key documents to manage, coordinate and prepare response efforts, capacities and resources. Plans should clearly set out roles and responsibilities, and how sectors and agencies – for example,

In 2015, Nepal was struck by major earthquakes in April and May, injuring more than 20 000 people and causing nearly 9000 reported deaths. The event triggered activation of emergency plans and processes, and within one hour of the first earthquake the health EOC was activated and an emergency declared. Response operations were quickly put into action including a rapid risk assessment, deployment of medical teams and field hospitals, provision of free health treatment, strengthened syndromic surveillance and daily media releases to communicate with the public.

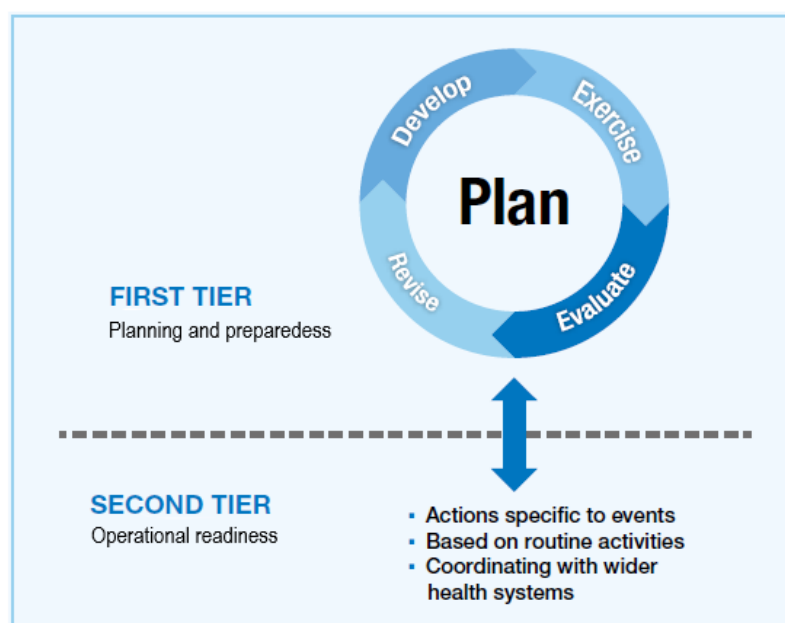
public health and disaster management authorities – work with each other. They should also provide guidance to identify and allocate surge financial, human and other resources during an emergency. Planning and preparedness should also identify clear triggers to initiate and escalate response measures, as well as triggers to de-escalate and stand down.

In addition to emergency response interventions, public health emergency planning should also prepare for the maintenance of essential health services and essential services in other core sectors during emergencies. A multi-hazard approach to planning integrates common functions

needed to manage different types of hazards, making efficient use of resources and providing greater flexibility for a single plan to provide the basis for response to multiple types of public health events. The process of developing, reviewing, adapting and revising plans should include and engage a wide range of multisectoral and community stakeholders (such as groups at risk and with vulnerabilities) to foster whole-of-government and whole-of-society ownership and collaboration.

Maintaining health security planning and preparedness has been a core part of the Asia Pacific approach to health security since the two-tier approach (Fig. 2) was introduced in 2010 in the second iteration of APSED. This emphasizes the need for targeted investments in both public health emergency planning and in readiness to operationalize these plans and modify them during the response.

Fig. 2. Two-tier approach for public health emergency planning and preparedness



APSED III established the need to supplement generic response plans with hazard-specific plans when and where practicable. These plans should address country risks and recognize that many of the capacities and systems developed and strengthened are generic and can be utilized for preparedness and response to other hazards. In the Asia Pacific region, pandemic preparedness has been the priority activity but with the knowledge that capacities and systems developed in preparation for a pandemic can also be used for other public health threats.

Priorities in this area include:

- **Develop and test public health emergency preparedness and response plans** at national and subnational levels. Plans should be costed and funded, address the continuity of essential health services and functions and be embedded in health sector strategies to ensure alignment. Plans are “living” documents and should be maintained through regular testing, review and updates.
- **Engage multisectoral participation and collaboration in public health emergency planning and preparedness** to involve comprehensive expertise, include diverse perspectives,

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increase stakeholder engagement and facilitate the interoperability of plans with other sectors and agencies.

- **Strategically build and strengthen health security capacities by developing, implementing and updating plans**, such as national action plans for health security (NAPHS) or similar. Such plans should be informed by the results of capacity assessments such as the IHR SPARs, JEEs, intra-action reviews, or other monitoring and evaluation tools.
- **Strengthen risk-based approaches to managing health emergencies and mitigating risk.** Approaches such as the [Strategic Tool for Assessing Risks](#)²² can support strategic and evidence-based assessment of public health risks to better plan and prioritize health emergency preparedness and disaster risk management activities.
- **Strengthen key systems for public health emergency management** including IMS principles, clear delegations of authority, EOCs, the National IHR Focal Point system, and systems to rapidly mobilize and allocate human and other resources.

2.2.3 Health information systems

Data and information are at the centre of evidence-based decision-making in health security – informing risk assessments, planning, response measures and other critical interventions. To generate timely and high-quality data and information, well-functioning health information systems are needed that

The importance of strong health information systems was highlighted during the COVID-19 pandemic when **defining and quantifying COVID-19 deaths and estimating excess mortality** presented a major challenge, particularly in resource-limited settings. Countries including Fiji, the Lao People's Democratic Republic, Mongolia, the Philippines and Sri Lanka invested in strengthening health information systems, including civil registration and vital statistics for birth and death registration through collaboration with non-health sectors.

integrate the collection, processing, reporting and analysis of health-related data. In addition to health security, these systems are also critical to the functioning and resilience of overall health systems and progress towards UHC.

Routine health information forms the baseline for public health emergency forecasting and detection, which should be complemented by multisectoral data from animal, environmental and other surveillance sources in a multi-hazard approach. However, particularly in low- and middle-income countries, these information systems are challenged by fragmentation and incomplete or untimely data, making it difficult to generate accurate and reliable

information and evidence for risk assessment and decision-making.

Priorities in this area include:

- **Build capacities and a culture of utilizing data, information and evidence for decision-making** including institutional policies and norms, regulations to protect data privacy and the ethical use of data, and development of a skilled workforce in areas such as health system analytics and data visualization.
- **Invest in integrated or interoperable information systems within and across sectors.** Data systems should be supported by national standards and designed to work across and integrate data from various platforms, organizations or sectors (including human, animal and environmental health). This enables agencies to assess data quickly and appropriately from multiple sources, reduce overlapping and inconsistent information, and develop comprehensive situation analyses and assessments.

- **Strengthen governance systems and data security** to manage and protect health data and information, ensuring that it is collected, used and shared in a way that complies with relevant laws and regulations and respects patient privacy and confidentiality. Increasing reliance on digital systems and tools (including artificial intelligence driven health-care solutions) will also require investments in data security to prevent unauthorized access, data breaches or other cyberattacks.
- **Support digitalization of health information systems** for routine services as well as emergency response. Digitalized health information systems can contribute to improving disease surveillance and response, enhancing information sharing and collaboration, enabling rapid or real-time tracking and management of resources, and improving service delivery and outcomes.

2.2.4 Forecast public health events and potential impact

Forecasting the likelihood, timing, health risk factors and potential impact of an event can be used to prepare for acute events, such as pre-positioning response supplies before an oncoming typhoon. Forecasting is the practice of predicting what will happen in the future by taking into consideration events in the past and present. This can allow measures to be put in place to prevent or mitigate the impact of an event, such as promoting influenza vaccinations before the influenza season, training of clinicians before predicted dengue epidemics, or relocating and/or reinforcing health-care facility infrastructure to reduce vulnerability to more extreme weather events. Pre-identifying risk factors such as health status, age, gender, socioeconomic status, geography or climate can also inform specific actions to mitigate these risks, protect at-risk populations and save lives.

In countries including **Bangladesh, Cambodia, India, the Lao People's Democratic Republic, Thailand and Viet Nam**, satellite-based **flood forecasting** systems are used to generate forecasts of seasonal and flash flooding, which can then be used for hazard mapping. Forecasting can also play an important role in risk and hazard management related to **climate change** and its impacts on extreme weather events, food security and the incidence of infectious diseases such as malaria and dengue.

Using forecasting to anticipate potential events and outcomes supports improved planning, preparedness and effective resource allocation. This is particularly important for low- and middle-income countries that are often both more vulnerable to the impacts of a public health event and hindered by a lack of resources and capacity to respond to them. Forecasting can also support responses to emerging events such as novel disease outbreaks, for which traditional surveillance mechanisms may not yet be established or sensitized to detect. In these scenarios, data sources such as disease surveillance data, environmental data, meteorological data, digital health monitoring tools, geospatial mapping and social media data can be leveraged to forecast potential impact and to inform response interventions.

Priorities in this area include:

- **Increase investments in forecasting capacity development** including research, tools and the workforce to conduct and interpret forecasts, including identifying their limitations. Investments should reinforce multisectoral collaboration and coordination and be targeted at strengthening subnational as well as national capacities.
- **Strengthen capacities to communicate forecasting results to decision-makers and stakeholders**, including the degree and nature of uncertainty. Without clear and effective

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communication, forecast results may be misinterpreted or misunderstood, leading to poor decisions and suboptimal health outcomes.

- **Improve access to and integration of accurate, rapid, open and digital data from multisectoral sources.** Because of the whole-of-government and whole-of-society nature of health emergencies, a multisectoral approach to data is important to develop forecasting analyses and models that reflect complex, real-world scenarios and inform integrated policies.
- **Expand the use of hazard mapping to identify at-risk areas and populations.** This information can be used to support the development of long-term hazard mitigation planning, community resilience and risk management options that also address inequities.

2.3 Domain 3. Assess and respond

Strengthen surveillance systems to enable early warning and rapid response to potential public health emergencies

Risk assessments trigger readiness actions and rapid response to potential emergencies that pose a risk to the health and safety of communities and populations. Collaboration between human, animal and environmental health sectors through a One Health approach is essential in this regard. Prompt assessment and response to a public health event allows authorities and stakeholders to proactively implement prevention and control measures, limit spread of the event, prevent further morbidity and mortality, and reduce broader economic and social impacts of the emergency.

2.3.1 Risk assessment

Risk assessment and monitoring is a continuous process that guides timely decision-making and action to address multi-hazard health security threats or emergencies. Risk assessment involves the systematic organization of information (hazard, vulnerability and capacity assessments) within a risk management framework to determine the level of public health risk posed by an event, and its potential impact. Robust risk assessments use data collected through a multisource surveillance approach that draws on multisectoral surveillance and information sources. Information on the local behavioural, social and environmental context is also important to include and consider in risk assessments. Together with readiness and response capacity assessments (how capable a health security system is of managing the event) and health impact assessments (effect of the proposed interventions), informed decisions can be made about scaling up actions in anticipation of an event, such as activating public health incident management structures and identifying initial response interventions and resources needed to be deployed.

Numerous countries in the Asia Pacific region including Fiji, the Lao People's Democratic Republic, Malaysia, Papua New Guinea, the Philippines, the Republic of Korea and Viet Nam strengthened multisource surveillance to make evidence-informed decisions during the COVID-19 pandemic, combining indicator- and event-based surveillance with data on health-care occupancy, hospitalizations, testing, vaccine coverage, absenteeism, surveillance at POE, environmental surveillance and other actions.

Multisource surveillance is important to assess the risk posed by all types of hazards including extreme weather events, food safety events, chemical events and others. Increasingly, the types of information included in risk assessments need to expand beyond health – especially to address social and economic costs and benefits. Risk assessment frameworks also need to be reviewed and updated over the course of a public health event in order to adapt dynamically to the decision-making needs for the event.

Priorities in this area include:

- **Develop and strengthen the capacity to perform ongoing risk assessments at national and subnational levels to inform decision-making and adapt interventions.** Since the purpose of risk assessments is to guide response decision-making, it is important to establish and strengthen risk assessment capacity at subnational levels to guide local responses. Risk assessments should also include a gender, equity and human rights lens to include marginalized groups and inform policies targeted to support groups at risk or with vulnerabilities.
- **Strengthen use of multisource surveillance in risk assessments** by investing in systems to collect, integrate and maximize the use of data from a broad range of multisectoral surveillance systems and information sources into public health emergency risk assessments.
- **Review risk management frameworks and integrate forecasting tools**, where appropriate. By reviewing risk management frameworks over the course of a public health emergency, dynamic risk assessments can be generated that meet the changing needs of the response.
- **Integrate risk assessments into operational readiness triggers** to rapidly mobilize resources in anticipation of high-priority risks and imminent threats. In addition to triggers for action and escalation, risk assessments should also be linked to triggers for de-escalation and the stand-down of emergency measures.
- **Strengthen capacities to effectively communicate findings of risk assessments to decision-makers and stakeholders in a timely way**, including the degree and nature of uncertainty. Communicating risk assessment findings should also be done with the public and wider stakeholders so that the rationale behind public health decisions is understood, trust in the response is maintained and adherence to measures is upheld.

2.3.2 Detect, report and monitor new and unusual events

A major success during the COVID-19 pandemic was the rapid expansion of **reverse transcription polymerase chain reaction** testing capacity in **Pacific island countries and areas** as well as **genomic surveillance** capacity across the Asia Pacific region to detect and monitor infections with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Genomic surveillance also enabled countries to detect, monitor and assess the genetic characterization of variants of concern and interest of SARS-CoV-2, and to tailor public health responses based on analyses of transmissibility, severity and impact of these variants.

Detecting and reporting new or unusual public health events are triggers for action and core capacities that underpin IHR (2005). Surveillance of public health events should be done using analyses of data from a range of multisectoral surveillance and information sources. This multisource surveillance approach, where data from a wide range of public health surveillance systemsⁱⁱⁱ are used in combination with other information sources, such as health-care utilization data, laboratory positivity rates, death registries, animal health surveillance, environmental surveillance or social media listening, provides a more complete picture of the situation.

Surveillance systems require support from human, animal and environmental health laboratory services and testing strategies that are adapted to surveillance goals and contexts.

Increasingly, genomic surveillance is becoming accessible as a source of information to detect and

ⁱⁱⁱ These include but are not limited to indicator-based surveillance, event-based surveillance, health-care-facility-based surveillance, notifiable disease surveillance, sentinel surveillance, laboratory surveillance, adverse events surveillance, zoonotic disease surveillance, disease registries, and disease reporting and surveys.

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monitor new and unusual events, to inform public health risk assessments and decision-making and to quickly understand how it can be controlled.

Priorities in this area include:

- **Coordinate multisector surveillance systems to detect and monitor events and align them to defined public health objectives.** Effective detection and assessment require public health objectives and surveillance systems that are adapted to local context, local risk assessment, policies and other decision-making needs.
- **Establish new surveillance systems where gaps in meeting surveillance objectives are identified.** These may be addressed with existing or new systems such as additional surveillance, targeted population surveillance, or special studies and investigations to estimate key epidemiological or clinical parameters.
- **Develop multisource data systems and data analysis capacities** to draw on multisectoral information systems to detect and monitor public health threats and integrate them into national health information systems.
- **Enhance multisectoral coordination among human, animal and environmental surveillance systems,** taking a One Health approach. In particular, integrating surveillance at the human–animal–environment interface and enhancing coordination between relevant authorities are important.
- **Strengthen event-based surveillance in health-care facilities** to detect and report unusual events early including emerging infectious diseases and AMR organisms, through improved collaboration between health-care providers and the public health sector.
- **Digitalize data systems and adopt appropriate technologies** to improve data accuracy, quality and timeliness, and to also enable public health entities to generate, share and link data between sectors and administrative levels. Better integration of digital systems for surveillance and laboratory data will also need to be supported by data governance, ethics and other enabling functions.
- **Strengthen investments in public laboratory networks and services** (human, animal, food and environmental at the national and subnational levels) including human resources, infrastructure, quality assurance, biosafety and biosecurity, and the adoption of new technology, where appropriate.
- **Invest in multisectoral genomic surveillance capacities and networks** such as the Emerging Molecular Pathogen Characterization Technologies (EMPaCT) surveillance network to monitor the genetic characterization of pathogens and detect new pathogens and variants as they emerge in humans, animals and the environment.
- **Enhance regional referral laboratory networks and systems** among countries and areas to provide capacity development and timely and reliable access to referral laboratory services – for example, WHO collaborating centres – for health systems without domestic capacity.
- **Strengthen capacities for safe specimen referral and transport** to ensure that specimens can be securely shipped in a timely manner to appropriate reference laboratories and internationally, with appropriate specimen and data-sharing arrangements.

2.3.3 Rapid response to limit impact and spread

The Asia Pacific region is a hotspot for zoonotic disease outbreaks. After lessons identified from outbreaks of highly pathogenic avian influenza A(H5N1) in Asia from 2003 to 2004, cases of **human infection with avian influenza** across the region are now routinely investigated by multidisciplinary, joint animal and human health **rapid response teams** to identify the source and mode of transmission, implement animal and human health measures, and control and contain outbreaks.

The initial response to a public health event is critical to limiting its impact and spread. Rapid responses depend on the type of public health hazard and the resources available. The initial response may involve multidisciplinary rapid response teams at the subnational level tasked with investigating a signal and putting initial control measures in place. First responders to chemical, biological, radiological and nuclear events may be responsible for assessment, scene management, decontamination, care of casualties and additional hazard-specific specialist support.²³ Public health responses to floods, tsunamis and earthquakes may initially involve provision of emergency medical care, provision of

water, sanitation and hygiene (WASH) resources, accommodating displaced persons and providing psychosocial support. Food safety events are likely to involve collaboration among multiple sectors and food regulatory authorities to investigate contamination sources and implement product recalls. Rapid response to infectious disease outbreaks, or a deliberate event, may involve interventions such as contact tracing, quarantine and isolation. A deliberate event is an act or threat involving the intentional release of hazardous substances to cause harm. Hazardous substances include biological agents, chemicals and radiological materials. In all cases, multisectoral coordination of the public health response and responders and efficient deployment and logistics are key.

For infectious disease events, public health and social measures (PHSMs) are a key strategy to reduce transmission and limit spread. PHSMs include non-pharmaceutical interventions that can be taken by individuals, communities and governments to slow or stop the spread of an infectious disease, reducing pressure on health-care systems and buying time to develop or introduce pharmaceutical interventions. PHSMs can have significant health, social and economic consequences and should be proportionate to the level of risk posed. Decision-makers need to have a thorough understanding of the effectiveness of measures and how they work in different contexts.

Priorities in this area include:

- **Enhance multidisciplinary and multisectoral collaboration for rapid response to public health events** including collaboration among the human, animal, food safety and environmental health sectors using a One Health approach. This can be supported by strengthening multidisciplinary rapid response teams at the subnational and national levels through ongoing training, deployment and funding.
- **Strengthen national and subnational systems to deploy rapid response teams and experts at short notice** to assess and verify reports of emerging public health emergencies or bioterrorist acts and implement initial control measures.
- **Embed risk communications and community engagement into rapid response measures** to inform and engage affected and at-risk communities. The participation of affected communities into the design and implementation of emergency measures is critical to make sure measures are acceptable and feasible.

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- **Multisectoral planning, coordination, implementation and evaluation of PHSMs** to increase acceptability, feasibility, effectiveness and impact. The involvement of stakeholders from communities and across society and government is critical to designing coordinated and contextualized PHSMs that meet public health goals, promote community engagement and equity, and also minimize social and economic disruption.
- **Strengthen public health planning and management of mass gathering events** to mitigate potential public health risks and ensure the safety of participants and the hosting community, city or country. Mass gatherings can be highly visible events attended by tens of thousands of people. Ensure that procedures are in place to provide updated health advice and guidance for visitors on topics such as safe sex, vaccinations, food and water safety, and emergency contact numbers.
- **Establish, train, verify, maintain and strengthen EMTs** that can be deployed at short notice in response to subnational, national and international public health emergencies.

2.4 Domain 4. Readiness and resilience

Strengthen the resilience of communities and health systems to the public health impacts of emergencies

Resilience and readiness are closely related concepts in health emergencies. In the context of health emergencies, readiness refers to the ability of individuals, communities and health systems to respond rapidly and effectively to health emergencies. Readiness requires plans, resources and infrastructure in place in anticipation of high-priority risks and unexpected events. The impact of investing in the readiness of health services extends beyond improving the capabilities of systems to respond to a public health emergency, but also includes enhancing the recovery and resilience of systems.

Resilience is the capacity to withstand and recover from the impact of a health emergency. It encompasses the ability of individuals, communities and health systems to adapt, recover and continue functioning during and after an emergency. The global COVID-19 pandemic demonstrated the critical importance of resilient health systems in safeguarding subnational, national and regional health security. Improving readiness within health systems can enhance the resilience of health systems to respond to crises, while also maintaining essential functions.

Health emergency readiness plays a crucial role in improving resilience in systems and communities. By integrating readiness and resilience, health systems and communities can be operationally ready for health emergencies and respond effectively to mitigate their impact, therefore improving their capability to withstand the emergency and recover more rapidly.

2.4.1 Prevention and risk reduction

All countries in the Asia Pacific region face risks and potential health threats from an increasing range of hazards, including infectious diseases, food safety events, chemical and radio-nuclear incidents, and threats of extreme weather events associated with climate change. Prevention and risk reduction play critical roles in health security by proactively addressing and mitigating potential public health threats and risks. In doing so, they contribute to strengthened resilience and achievement of UHC and the SDGs.

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The One Health approach is critical in prevention and risk reduction activities, given the interconnectedness of human, animal and environmental health systems. Mechanisms established for the One Health approach, involving collaboration with the animal health, food, livestock and environment sectors, can form the basis for broader multisectoral coordination platforms for multi-hazard prevention and risk reduction at the national and subnational levels.

Priorities in this area include:

- **Strengthen health promotion and primary prevention strategies to reduce population health risk factors.** These can include health education and promotion, immunization, and measures to create healthy physical and social environments.
- **Protect at-risk and vulnerable groups through vaccination** by communicating, implementing and monitoring vaccination campaigns, by engaging health workers, and by building vaccine acceptance and demand based on priority groups, taking into account gender and equity perspectives to leave no one behind.
- **Strengthen management of zoonotic diseases to prevent transmission from animals to humans** and reduce the risk of emerging and re-emerging zoonotic pathogens with epidemic and pandemic potential, taking a One Health approach.
- **Enhance food safety systems, policies and enforcement** to ensure safe food supplies and to protect the health of consumers.
- **Strengthen IPC structures, facilities and resources to prevent avoidable harm from infectious agents** to patients, health-care workers or health-care facility visitors.
- **Reduce antimicrobial resistance** as AMR poses a major global threat across the human, animal, food and environmental sectors, requiring a One Health coordination approach that maintains progress towards the SDGs.
- **Promote monitoring, control and surveillance of environmental risks** such as chemicals of concern, radiation sources, waste disposal methods and sites, disease vectors, environmental pollution and climate change.
- **Reduce the risk of natural, technological (for example, chemical, radiation) and other types of disasters through the use of disaster risk mapping** to assess the nature and magnitude of disasters, and the vulnerability and risks at the subnational level.
- **Promote climate-resilient and environmentally sustainable health-care facilities** to enable health-care facilities to anticipate, respond to, recover from and adapt to climate-related shocks and stresses.

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2.4.2 Deliver essential and emergency health care

Health security is underpinned by strong and resilient health systems that can continue to deliver appropriate and quality care during a public health emergency to meet both emergency and essential health-care needs. Strengthening the availability and quality of health care and improving the resilience of health systems to continue to deliver care through emergencies are also key steps in the path towards achieving national health goals, UHC and the health-related SDGs.

Digitalization of the health-care system provides opportunities to improve access to care, enhance patient outcomes, reduce errors and improve efficiencies. Digital tools such as telemedicine, electronic health records, health apps and wearable devices can make the delivery of health care more resilient to disruption and more easily scaled during emergencies.

In 2022 a **volcanic eruption in Tonga** triggered a tsunami that affected coastal areas of the main island and washed away buildings on several others, affecting 84% of the population. WHO supported the Government to respond to the disaster by providing technical advice, including on risks posed by the heavy ash fall. The WHO-trained Tonga Emergency Medical Assistance Team was dispatched within two days to Nomuka island to set up a field hospital providing essential health services and psychosocial support. The team cared for 381 patients during its presence over seven weeks and supported the complete evacuation of one of the most affected nearby islands.

Priorities in this area include:

- **Strengthen health system business continuity planning to maintain essential primary and secondary health services during emergencies**, such as chronic disease management, immunization, obstetrics, paediatric and adolescent health, mental health and trauma care. Scalable service delivery options such as telemedicine can be leveraged to provide health services in challenging contexts and support continuity of care.
- **Strengthen health system multi-hazard public health emergency planning** to deliver and rapidly scale emergency health care in different emergency scenarios. Plans should be developed at the health system and health facility levels, and may include establishing an EOC, IMTs, defining adaptable and scalable clinical pathways, stockpiling essential supplies and equipment, adapting triage, identifying isolation and quarantine facilities, managing corpses, planning surge workforce, conducting simulation exercises and identifying alternative temporary facilities – such as schools and hotels – to deliver health care.
- **Establish systems to identify, register, follow up and manage people who may have long-term effects** as a result of their exposure to a virus, radiation, chemical or other hazardous substance. Long COVID has emphasized the importance of such systems even months after initial diagnosis and apparent recovery.
- **Strengthen health-care facilities, systems and infrastructure to provide safe care** through high-quality and appropriate IPC, WASH and waste management systems.
- **Establish mechanisms to rapidly review, update and disseminate clinical standards and guidelines** to adapt to the availability of new medical products, including therapeutics, medical devices and vaccines, innovations, tools and new scientific evidence.
- **Prepare and strengthen systems to deliver and rapidly scale mental health services and psychosocial support during emergencies, and to maintain continuity of existing services.** In addition to the general public, services and support should also be targeted to response

workers and groups at risk and with vulnerabilities. In some settings, culturally appropriate pastoral care can play an important support role.

- **Invest in appropriate innovations and digital tools to increase the efficiency and flexibility of health-care delivery** such as telehealth, mobile clinics and digital health information systems. Alternative approaches and tools can enable health-care delivery to adapt more readily to disruptions caused by public health emergencies.
- **Strengthen progress towards UHC through a primary health-care approach and commitment to the SDGs.** Obtain strong and sustainable political commitment to and leadership of health system strengthening, with primary health care (PHC) at the heart of efforts to attain UHC, health security and the SDGs

2.4.3 Prioritize measures for groups at risk and with vulnerabilities

Groups at risk and with vulnerabilities are disproportionately affected by public health emergencies. Physiological factors can make some populations more susceptible to the health impact of an emergency, such as older people, pregnant women, children, and people with underlying health conditions or disabilities. Certain professions are at risk due to increased exposure to public health threats, such as health-care workers, first responders, environmental and occupational health workers, animal workers and laboratory personnel. Social determinants of health such as income, education, geographic location, social inclusion and gender identity may also limit the access of certain groups – such as the urban poor, people living in remote areas, indigenous peoples, ethnic minorities and refugees – to health, financial and social welfare resources, making it more difficult for them to cope with the emergency.

In some cases, innovations that improve access to health care for some may disadvantage others. Telemedicine, for example, can benefit many, but may also underserve groups such as older people or communities without access to digital devices, telephones or the Internet. It is important to consider how **new technologies or innovations** will impact all members of society to ensure that they do not **exacerbate inequity**, particularly during public health emergencies.

Prioritizing measures to engage and support groups at risk or with vulnerabilities is important to minimize the impact of the emergency on their health and well-being. These measures may be aimed at increasing access to health care through priority treatment or reducing financial barriers, or providing resources to support communities to implement recommended public health measures. Prioritizing these groups also prevents the emergency from reinforcing existing inequities, and can contribute to the SDGs by reducing poverty, improving health and well-being, and creating more resilient and inclusive communities. At their core, these measures must apply gender, equity and human rights-based approaches.

Small island developing states face unique social, economic and environmental vulnerabilities due to factors such as remote location, small population sizes, high transportation costs, limited resources, and fragile land and marine ecosystems. Prioritizing support to small island developing states to adapt approaches to their specific contexts is critical to support development of effective health security systems and to promote regional equity, solidarity and better health security outcomes for all.

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Priorities in this area include:

- **Strengthen regional approaches to resource sharing and coordination for small island developing states** – for example, through multilateral and multisectoral coordination, regional reference laboratory networks, specimen referral logistics, international EMTs and partner coordination.
- **Identify, map and analyse population vulnerabilities.** Trends that may increase vulnerability such as population ageing, urbanization, displaced populations and climate change should be taken into consideration, as well as issues of gender, equity and human rights.
- **Identify groups at risk and with vulnerabilities in health security planning, and involve them in developing and implementing effective interventions.** Representatives from groups at risk and with vulnerabilities must be engaged in order to develop risk reduction and health security interventions that are practical, appropriate and acceptable to their communities.
- **Prioritize access to health, social and economic protection** such as vaccines, medical treatment, food and nutrition, and economic and social welfare support for individuals, groups at risk and those with vulnerabilities. Public health emergencies amplify existing inequalities – consideration of how to mitigate them equitably by whole-of-government stakeholders should be built into all health security plans, including employment protection, social support and financial aid.
- **Incorporate behavioural science and social considerations** into engagement with groups at risk and with vulnerabilities. Expertise from fields such as anthropology and sociology, and collaboration with social welfare and education sectors can support development of integrated government policies that better address the needs and challenges faced by groups at risk and with vulnerabilities.
- **Engage in broader efforts to transform health service delivery and financing to reach groups with vulnerabilities.** Countries across the Asia Pacific region are developing health service delivery and financing models to reach groups with vulnerabilities, based on a PHC platform. Strengthened social protection may also be required to enable effective public health emergency responses and improved health outcomes for groups at risk and with vulnerabilities.
- **Enhance planning for refugees, internally displaced people and mobile or migrant populations** to anticipate health needs during public health emergencies and improve access to health-care services.

2.4.4 Risk communication and community engagement

In 2018 Papua New Guinea was hit by a 7.5 magnitude earthquake that triggered landslides, destroyed homes and infrastructure, affected water sources and damaged crops. Over half a million people were affected, and 270 000 required immediate humanitarian assistance. In the aftermath of the earthquake, measures such as wound self-care, handwashing, treating drinking-water and sheltering during aftershocks were important to protect community health. However, damage to communication infrastructure, airfields, bridges and roads made access to affected communities extremely difficult. To communicate these messages, leaflets explaining the measures were added to aid packages and airdropped to affected communities.

Individuals and communities are at the forefront of both the impact of public health emergencies and the solutions to manage them. In emergency settings, communicating with communities by providing accessible, understandable, relevant, credible, timely and actionable information can help to dispel rumours and misinformation, reduce anxiety, and increase understanding and acceptance of public health interventions.

Involving community members from the earliest stages of policy and programme development capitalizes on their local knowledge and social capital to identify needs, priorities and barriers, and to develop practical and contextualized actions.

Together, these require approaches for risk communication and community engagement to listen to and inform communities, and to involve and empower them to take actions to protect their health and that of others. In the WHO Western Pacific Region, for example, the Communication for Health (C4H) approach brings together a set of principles and practices to ensure that communication interventions are strategically designed to inform and change attitudes and behaviours in ways that support the achievement of defined public health outcomes.

Priorities in this area include:

- **Enhance national and subnational capacities for risk communication** to inform communities and individuals and enable them to make appropriate health decisions. Ensure that communications are informed by data and theory, measurable, planned, audience- and people-centred, collaborative and targeted.
- **Strengthen multisectoral coordination to achieve consensus and alignment on key information and messages** to be shared to the public and with targeted communities.
- **Strengthen engagement of communities in decision-making, planning, implementation and evaluation** to ensure that public health actions are adapted to community needs and concerns and take into consideration local culture, knowledge and experiences. This is particularly important for communities that may experience ongoing health and social inequities such as indigenous peoples, ethnic minorities and refugees.
- **Develop targeted engagement, trust and communications with priority groups and settings** such as indigenous peoples, minority ethnic groups, migrant workers and business owners, as well as schools and other educational settings, aged-care facilities, prisons and security authorities.
- **Use behavioural sciences** to understand the context in which communities live and the social and cultural reasons behind why certain behaviours occur. Behavioural sciences can also help to identify and address issues that may prevent communities from following public health advice.

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- **Employ multisource listening approaches** through sources such as hotlines, social media, and television, radio and print news outlets, as well as surveys, focus groups and interviews, to better understand the information and opinions influencing communities.
- **Counter falsehoods and manage health misinformation and disinformation** to ensure accurate and credible information reaches and engages the public, particularly groups at risk or with vulnerabilities. Approaches include improving understanding of what communities are listening to and believe, and partnering with influential and trusted groups to deliver consistent and credible messaging.
- **Strengthen trust in public health principles, interventions and institutions** such as science, evidence-based approaches, approved medical interventions including vaccination and therapeutics, and communications from national public health agencies and government authorities.

2.5 Domain 5. Support and enable

Provide the necessary resources, expertise and infrastructure to sustain and maintain health security capacities and functions

This domain provides the resources, expertise and infrastructure to ensure that the other health security domains can operate effectively. This cross-cutting domain includes functions such as developing and sustaining the health workforce, sustainable financing, logistics and operations management, and supporting and applying research, technology and innovation to improve health security.

2.5.1 Develop and sustain the health security workforce

The health security workforce encompasses health-care workers, public health professionals, scientists and other non-health professionals who contribute to health security. Specifically in the health sector, countries globally face persistent challenges related to the availability, accessibility, quality and

In many countries in the Asia Pacific region, the **Field Epidemiology Training Programme (FETP)** has been a practical and successful approach to workforce and surge capacity development. Alumni from FETPs across the region perform key roles to support public health emergency management in their countries, the region and globally. Originally aimed at human health, many countries such as **Bangladesh, Bhutan, Cambodia, China, Indonesia, the Lao People's Democratic Republic, Malaysia, Mongolia, Nepal, the Philippines, Thailand and Viet Nam** have expanded the programme to involve animal health professionals. Building capacities of other professionals performing emergency public health functions is also essential.

geographical distribution of the workforce. These challenges arise from issues including training capacity, mismatched skills, mobility, limited capacity for health systems to absorb new professionals, increasing demands for health services and ageing workforces. During emergencies these challenges are amplified by the need to rapidly scale up the workforce across the multisectoral spectrum of health security roles to meet emergency needs, while also maintaining essential functions. Strategies to meet these increased demands have included reassigning existing staff, expanding scope of practice, rapid training and upskilling, drawing on students and recent retirees, and drawing on the workforce of other government sectors and the private sector.

In some instances, the negative health, economic and social impacts of COVID-19, coupled with the increased demand for health-care workers in high-income countries, helped trigger outward health-care worker migration from countries (for example, Pacific island countries and low-income countries) that were already suffering from low health workforce numbers.

Health security professions can also be risky, with exposure to contaminants and infectious agents, deployment to disaster areas, physical and mental fatigue, discrimination and abuse, and in some cases acts of violence resulting in injury or death. Government engagement and multisectoral support must be in place to enable the health security workforce to perform their roles effectively and safely. This encompasses provision of safe and secure working environments, occupational health and safety, health and financial insurance, and mental health services.

In order to develop the workforce for health security, attention must be paid to the entire workforce development pipeline. This includes adequate investment in education and training, forecasting future requirements, attracting students and junior staff to defined priority health security roles, and linking training programmes to appealing career pathways. Actions should be undertaken to improve human resources systems to support staff in their roles and to provide access to ongoing professional development. Plans and incentives to retain skilled staff in health security careers also require attention and may include wider plans to reduce “brain drain” to urban centres and to other countries. The development of the health security workforce should be considered as part of broader public health workforce strengthening strategies and efforts.

Priorities in this area include:

- **Define current and future priority health security functions and competency needs** for health workers, such as nurses, in field epidemiology, bioinformatics, data science, information management, laboratories, pathology, virology, incident management, financial management, logistics, risk communication, and social and behavioural sciences.
- **Increase investments in education, training and mentorship programmes linked to career pathways** for priority health security functions and competencies at the local, subnational and national levels.
- **Develop the existing health security workforce** through mechanisms such as professional accreditation, continuing education, refresher training, pre-deployment training and peer-learning, and sharing of expertise through domestic and international institutions and networks. These investments should be made at all times, not just in response to emergencies.
- **Attract and retain staff in existing and new professions and in priority locations** through mechanisms such as competitive compensation, flexible contracts, health insurance and social benefits. Staff and skills should be strategically located to serve at-risk populations, such as people living in remote areas, refugees, undocumented migrants and urban poor.
- **Promote resilience and protect the health and well-being of the health security workforce** from physical risks and psychosocial stress of participating in emergency responses. Burnout, depression, anxiety and, in some cases, discrimination and violence have all been reported by response workers.
- **Develop multisectoral emergency surge capacity strategies, plans and training packages** to rapidly mobilize, train, accredit, deploy and support staff to emergency response operations.
- **Strengthen subnational, national and regional mechanisms to mobilize and deploy multisectoral public health emergency surge support** such as rapid response teams, EMTs, FETPs, civil–military collaborations, private sector coordination, GOARN, the Global Health Cluster and the Standby Partnership Network.

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- **Promote community engagement and mobilization to support surge staffing needs**, such as through community volunteers.

2.5.2 Financing health security

Predictable and sustainable financing is needed to strengthen and maintain core public health capacities and to support prevention and preparedness activities before an emergency occurs. Securing this requires political buy-in and integration of health security into regular government budgets and financial

During the **COVID-19 pandemic**, free and subsidized COVID-19 **tests** greatly increased access to testing in many countries, and the ability of authorities to monitor epidemiological trends and for individuals and community members to understand their health status and take appropriate action. **Effective response financing** featured flexible and prompt public financial management systems that allowed funds to be mobilized and pooled from multiple sources, as well as budgets and health resources to be reallocated as needed.

planning, as well as investments in routine public health functions. During emergencies, additional financing that is flexible and timely is also needed to respond to the situation, as well as streamlined administrative and financial approval processes to enable rapid and timely release of emergency funds – both government and donor provided.

How financial resources are allocated to the health system to pay for health services also significantly influences the extent to which a population accesses health care, and the extent of the out-of-pocket costs they may face in the process.²⁴ It is particularly important during public health emergencies to encourage people to seek appropriate health care, to protect

disadvantaged populations from undue financial hardship, and to avoid exacerbating health and economic inequities.

Priorities in this area include:

- **Advocate for increased predictable and sustained domestic investment in health and health security** at all times, not just during or after emergencies. Many health security capacities must be built over time using a strategic step-by-step approach. Investments in health security prevention, preparedness, response and resilience require predictable and sustained commitment, buy-in and funding from governments, communities, development partners, the private sector and others.
- **Develop and finance national action plans for health security** to strengthen health security capacities. Plans should be based on assessments of capacities and needs, and may utilize tools such as IHR (2005) State Party Self-Assessment Reports (SPARs), Joint External Evaluations (JEEs), after- and intra-action reviews, and simulation exercises, as well as experience from previous public health emergencies.
- **Enhance governance and public financial management systems** to increase efficiency and flexibility of funding for emergency response. Policies, procedures or legislation should be in place to facilitate rapid fund distribution while upholding accountability and transparency.
- **Develop guidance and flexible mechanisms for resource allocation and expenditure** to enable implementing agencies to access and absorb new resources, and to allocate and spend funds based on priorities and needs.
- **Strengthen financial support mechanisms for individuals, communities and businesses during public health emergencies** to reduce financial hardship and support adherence to public health measures.

- **Improve health-care purchasing and policies to enhance access and utilization of health services** particularly for at-risk groups and groups with vulnerabilities.
- **Bolster engagement, coordination and regional partnerships for collaborative investments in health security**, particularly for small island developing states. Coordinated approaches to investments in regional and global health security are needed to ensure no one is left behind, for the benefit of all.

2.5.3 Optimize logistics and operations management

Timely and effective public health emergency response operations are underpinned by established systems to manage and deploy emergency supplies, equipment and human resources to the right place at the right time. Logistics support is also critical in order to deploy and rapidly scale up public health response operations – for example, in sample collection, laboratory testing, field hospitals, mass treatment sites and mass vaccination programmes.

To optimize logistics and operations management, efforts are needed to ensure availability of surge stocks of essential medical supplies and to make supply chains more resilient to disruption. As demonstrated during the COVID-19 pandemic, during a major public health emergency, disruptions to travel and trade can slow or stop the flow of raw materials and manufactured goods globally, while also dramatically increasing transport costs. Maintaining strategic stockpiles at regional, national and subnational levels is an important mechanism to provide access to surge stocks. Strengthened supply chain management systems can be used to provide timely warnings on depleting stocks, triggering procurement and replenishment before they run out. Investments can be made to increase regional and domestic production capacity. For example, during the COVID-19 response, innovation and diversification took place in several low-resource countries that began to self-manufacture new products such as surgical masks, medical aprons and alcohol-based hand rub. Countries with available resources may also choose to invest in pharmaceutical and vaccine manufacturing capacity to strengthen health security both nationally and regionally.

After anticipating and experiencing shortages of **medical oxygen** during the COVID-19 pandemic, countries in the Asia Pacific region are establishing and increasing **domestic production capacity**. Medical oxygen-generating plants have now been established in local health facilities in **Cambodia**, the **Lao People’s Democratic Republic** and **Papua New Guinea**. Plants have also been established in Pacific island countries including the **Cook Islands**, **Fiji**, **Kiribati**, the **Federated States of Micronesia**, **Niue**, **Samoa**, **Solomon Islands**, **Tonga** and **Vanuatu**.

Priorities in this area include:

- **Strengthen inventory monitoring, stock rotation and supply chain management systems** for medical supplies and equipment, including pharmaceuticals and vaccines, at health-care facilities, warehouses, and subnational and national stockpiles. Centralized inventory systems may be considered, as well as electronic systems and digital tools to increase accuracy, timeliness and efficiency.
- **Strengthen capacities for procurement and diversify supply** for key response items such as therapeutics, laboratory diagnostics and consumables. Develop contingency plans for when usual suppliers do not have available stock.

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- **Enhance multisectoral coordination and operations planning to anticipate future supply, equipment and logistics needs** through forecasting, scenario-based needs assessments, strategic stock pre-positioning and secure warehousing.
- **Strengthen multisectoral coordination, planning and partnerships with industry and the private sector** to facilitate procurement, storage, transportation, access to services and cost containment. This can include establishing emergency procurement mechanisms with reliable and established suppliers, especially for government agencies.
- **Update contingency plans to establish emergency surge facilities** such as quarantine facilities, mass treatment venues and burial sites. Contingency planning should take a whole-of-government and whole-of-society approach, including stakeholders from the private sector, security forces, civil society and local communities.
- **Strengthen bilateral, regional and global partnerships to share and access resources equitably during public health emergencies**, particularly in support of small island developing states and resource-limited countries.
- **Invest in strategic global, regional, national and subnational stockpiles of essential medical equipment and supplies.** Stockpiles should be managed by clear decision-making and accountability frameworks, with defined triggers for access, prioritization and replenishment.
- **Improve customs and immigration policies to fast-track movement of goods and personnel during public health emergencies**, especially through POE and other international entry and exit points.
- **Strengthen local capacities to manufacture emergency response supplies and equipment**, where appropriate. This can include personal protective equipment such as face masks and alcohol-based sanitizer, disaster response kits or medical countermeasures such as therapeutics and vaccines.

2.5.4 Strengthen and promote research, technology and innovation

Research is a critical source of data to inform public health responses. The evolving nature of public health threats highlights the importance of high-quality, policy-relevant research to inform evidence-based responses to new public health emergency challenges. The information generated by research should be communicated to different stakeholder and community groups using appropriate channels and formats to increase uptake and action. Part of this effort will involve global collaboration and coordination through mechanisms like the *WHO R&D Blueprint*.^{iv} It is also important for countries to develop capacities to conduct independent research in order to adapt public health interventions to their own context. Investments in research capacities – in areas such as clinical research, governance and management, financing, human and physical resources, and promoting evidence-informed decisions – may be made nationally or in collaboration across countries.

^{iv} The *WHO R&D Blueprint* is a global strategy and preparedness plan that allows the rapid activation of research-and- development (R&D) activities during epidemics. Its aim is to fast-track the availability of effective tests, vaccines and medicines that can be used to save lives and avert large-scale crises.

In addition to research, advances in technology and innovation offer the opportunity to accelerate progress in health security capacities. For example, rapid developments in artificial intelligence (AI) technologies have significant potential to enhance health security in areas such as early detection and surveillance, forecasting, resource allocation and planning, decision-support systems and more. The adoption of proactive and forward-thinking approaches such as horizon scanning and foresight are also important to anticipate and plan for new challenges.

As technology and innovations move forward, special attention should be paid to ensure that developments benefit all of society and do not leave groups behind. As much as technological advances have the capacity to create value and benefit to many, they can also generate or widen inequalities for communities that lack access to technology or digital literacy skills.

In **Australia** the impact of climate change is being felt in bigger, more frequent and more unpredictable wildfires, such as the catastrophic **2019–2020 bushfire season**. To address this threat public, private and academic stakeholders are collaborating to develop new technologies to detect and contain fires more rapidly. These include lightning-strike modelling, drone fleets to detect ignition, and water gliders to deliver water or fire suppressant to ignition points. The costs of fully developing a new-generation operational system are estimated at approximately 42 million Australian dollars – a small fraction of the economic, environmental and health costs of the 2019–2020 bushfires, which are estimated to be as high as 100 billion Australian dollars.

Priorities in this area include:

- **Strengthen research capacities, the workforce, institutions and networks** to conduct relevant, ethical and high-quality research on priority topics. This can include establishing ethics guidelines, strengthening domestic universities and research institutions, or supporting partnerships between local researchers, community representative bodies and international institutions.
- **Create policy environments to enable research and innovation.** This can include partnerships between health authorities and researchers to meet priority needs, policies to support technology/research transfers to the private sector, and regulatory frameworks to support safety and efficacy of new products and technologies. Policies are also needed to ensure that communities that are the focus of research benefit from the findings.
- **Conduct operational research to evaluate the impact, effectiveness and feasibility of health security interventions.** This can include research to demonstrate the economic impact of prevention and preparedness interventions, such as return-on-investment studies and cost–benefit analyses. The evidence generated should be used to inform and adapt plans, policies, practices and investments.
- **Support behavioural science research to inform effective public health interventions and policies.** Research into community knowledge, perceptions, intentions and behaviours is critical to inform interventions to change health-related behaviours or to improve the delivery of people-centred health services.
- **Develop ethical, regulatory, data security and risk management guidelines** to support the safe design and contextual adaptation of appropriate AI technologies in health care and health security.
- **Promote science and research to communities** so that they can understand and trust evidence-based interventions, through directly engaging and collaborating with community members and

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representatives of marginalized groups in the design and implementation of research and dissemination of research findings.

- **Promote rapid release of data and information and publication of research results in open-access, international peer-reviewed journals** such as the *Western Pacific Surveillance and Response Journal* and the *WHO South-East Asia Journal of Public Health*. This will improve the health security evidence base, expand the audience, permanently place the knowledge in a searchable platform and potentially inspire future research.
- **Harness digital transformation** to enhance efficiency, data analysis, information management and delivery of improved health services and products. Realizing these benefits will require investing in digital infrastructure, Internet connectivity and digital literacy. It will also need to strike a balance between regulation and innovation, and encouraging development of new technologies while protecting patients, consumers and their rights.
- **Use strategic foresight to inform national and regional strategies for health security.** Strategic foresight is a forward-looking and systemic planning discipline aimed at understanding, anticipating and shaping the future to better prepare for change. A foresight-driven health security approach can help anticipate trends, risks, emerging issues, and potential implications and opportunities to draw useful insights for strategic planning and policy-making.

2.6 Domain 6. Monitor, evaluate and improve

Assess health security capacities, interventions and plans to adapt and improve current and future management of public health threats

Understanding what is working and what is not is critical to making sound public health emergency decisions, and calls for continuous learning and improvement. Ongoing monitoring and evaluation provides the basis to build this understanding, and the information generated from these processes should be used to adapt and improve policies and practices. During responses to public health emergencies, all interventions should be accompanied by a monitoring and evaluation plan and feedback mechanisms to learn and improve future responses. Effective monitoring and evaluation is also critical to guide strategic investments in health security capacities and systems.

Implementing IHR (2005) is a major component of global health security. The [IHR Monitoring and Evaluation Framework](#) outlines four methods to review implementation of country core capacities under IHR (2005):

1. the [IHR State Party Self-Assessment Annual Report \(SPAR\)](#)
2. the [Joint External Evaluation \(JEE\)](#)
3. [intra- and after-action reviews](#) during and after significant public health events
4. [simulation exercises](#) to regularly practise, test and review response plans and processes

Through promoting transparent reporting and dialogue, the *IHR Monitoring and Evaluation Framework* supports the mutual accountability of IHR State Parties and the WHO Secretariat for global public health security, as well as commitments to strengthen health security in ways that are consistent with obligations under IHR (2005) or future revisions.

2.6.1 Assessing health security capacities

Health security capacity assessments provide a picture of the current state of readiness and ability to respond to a public health emergency. They support monitoring and evaluation of public health emergency prevention and preparedness across multiple sectors. They also help to measure progress made in strengthening capacities. Importantly, the information generated by assessments is also used to identify capacity gaps and areas where improvements and investments should be prioritized. This information is essential to mobilize action and allocate resources from domestic and/or international funding sources.

Many countries have established systems to monitor and evaluate their health security systems, such as routine performance and programme reviews. Internationally, the *IHR Monitoring and Evaluation Framework* includes tools to support countries to assess their health security capacities and progress in implementing IHR (2005) including the mandatory SPAR and the voluntary JEE. These offer internationally standardized and multisectoral tools to support assessment of capacity levels within countries, and are used by governments and international partners to identify priorities for improvement and resource allocation. They also play an important role in promoting international transparency and accountability in regional and global health security.

Annual submission of the **SPAR** by all State Parties to the IHR (2005) is a mandatory requirement. The SPAR is a national capacity assessment across 15 categories and 35 indicators. **JEEs** are voluntary assessments of national health security capacities involving external evaluation from a team of international experts working jointly with national authorities. JEEs are recommended to be repeated every four to five years and offer additional validation due to their external nature. They are also linked to ongoing support to countries to develop **national action plans for health security (NAPHS)** to address JEE recommendations and mobilize resources.

Priorities in this area include:

- **Conduct regular assessments of health security capacities** to support monitoring and evaluation, planning, and resource mobilization and allocation at national and subnational levels. At the international level, countries are encouraged to submit annual mandatory SPAR assessments of health security capacities to the IHR (2005) Secretariat. These assessments require a coordinated multisectoral approach involving sectors beyond health.
- **Review and update existing national and subnational assessment tools** to reflect new knowledge and identified lessons. This can be supported through research to refine existing tools and develop new ones, if needed.
- **Undertake systematic evaluations of health security capacity**, such as JEEs or similar actions, to identify health security system needs, prioritize opportunities for improvement, and contribute to global transparency and accountability for health security. Results of these evaluations can be used by countries to inform the development of NAPHS and to engage with partners and donors.
- **Engage whole-of-government and whole-of-society stakeholders in health security assessments** including stakeholders from non-health sectors, the private sector, local government, communities, indigenous peoples, ethnic minorities and groups with vulnerabilities, and share results with them.
- **Contribute to peer-review processes in other countries and areas** to support learning and the exchange of expertise, and to increase transparency and accountability in reporting.

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2.6.2 Exercises and test emergency plans and functions

Regular exercises and tests are important to ensure that plans and functions are ready to perform as needed during a real emergency. Simulation exercises including tabletop, drill, functional, field and full-scale exercises serve as practice sessions to test how well response plans or functions will perform during an emergency, and to identify strengths, weaknesses and improvements. Exercises also provide realistic but safe environments where public health staff, health-care workers, emergency responders and other health security stakeholders can be familiarized and trained in emergency response plans, roles and functions. This is particularly important given the whole-of-government and whole-of-society nature of public health emergencies, where a wide range of multisectoral stakeholders must work together using common plans to achieve common goals.

In the Asia Pacific region, regular **simulation exercises** are held to test IHR (2005) communications via the **National IHR Focal Point mechanism**. Starting in 2008 with **IHR Exercise Crystal** in the Western Pacific Region, and in 2023 with **IHR Exercise Sapphire** in the South-East Asia Region, these exercises are valuable opportunities to test IHR (2005) communication channels and familiarize National IHR Focal Points and WHO staff with the system.

Simulation exercises are also part of the *IHR Monitoring and Evaluation Framework* and should be conducted regularly and routinely. When embedded as a routine programme in health security systems, exercises contribute to a strong culture of evaluation and continuous learning to improve public health emergency preparedness, readiness, response and resilience.

Priorities in this area include:

- **Conduct regular simulation exercises** to test emergency response plans and key functions, identify areas for improvement, train staff and familiarize multisectoral stakeholders with emergency response mechanisms.
- **Develop generic and hazard-specific simulation exercise packages** that can be shared, edited and adapted for use by other health security stakeholders to test emergency plans and functions. Packages can include exercise designs, scenarios, injects and supporting materials.
- **Develop multisectoral simulation exercise capacities and programmes** at subnational and national levels – including human resources – to develop and conduct regular exercises, and to follow up recommendations for improvement. Exercises should utilize a range of scenarios that address locally prioritized hazards such as typhoons, earthquakes, outbreaks of avian influenza, chemical events or other events.
- **Strengthen engagement in cross-border and regional simulation exercises** such as cross-border threat exercises, WHO IHR (2005) communication exercises and ASEAN emergency simulation exercises.
- **Carry out post-exercise activities to share results and implement recommendations and lessons.** Results and recommendations should be shared with exercise participants and other multisectoral stakeholders, and processes put in place to monitor progress on recommendations.
- **Resource and utilize public health EOCs to coordinate simulation exercises** and test functional capacities to manage a public health emergency.

2.6.3 Learn and improve

In the context of health security systems, learning and improving involves acquiring new knowledge, for example, through experience, research or training, and translating it into enhanced capacities or performance. Health security systems that are able to do this are more resilient and better able to adapt to the disruption and changing circumstances caused by a public health emergency.

At regional level, WHO supports **learning and improving** through relationships and mechanisms for information sharing among countries and areas, WHO country offices and WHO regional offices. During the **COVID-19 pandemic**, these were used to identify and analyse common challenges among countries²⁵,²⁶. This analysis led to the development of regional solutions and contextualized guidance for countries and areas. Furthermore, feedback on experiences in implementing recommendations also enabled guidance to be adapted and improved in a cycle of positive reinforcement.

Several key tools exist to facilitate health security learning and improvement. Reviews of past emergency response actions are valuable processes to learn from past experience. Within the *IHR Monitoring and Evaluation Framework*, tools for intra-action reviews (IARs) and after-action reviews (AARs) offer structured processes to evaluate the effectiveness of a response activity during or after implementation. These serve as a feedback loop to document successes and challenges, and to identify strengths, weaknesses and areas where current (or future) responses can be improved. Similar to the APSED II two-tier approach, IARs have the added benefit of enabling real-time adjustments to improve an ongoing response. Both IARs and AARs contribute

to fostering a culture of learning and continuous improvement. IARs and AARs have been used by many countries in the Asia Pacific region at national and subnational levels to identify lessons and areas to improve preparedness and response for outbreaks or surges of COVID-19, Zika virus and measles.

At the global level, a Universal Health and Preparedness Review process is being developed as a platform for high multisectoral political engagement in health security and peer-review of health emergency preparedness and health systems by other countries. The process has been piloted in several countries and will be developed further.

Priorities in this area include:

- **Foster a culture of continuous learning and improvement** by integrating monitoring, evaluation and learning systems such as regular feedback, community surveys, IARs and AARs into all interventions and activities and at all stages of the emergency management cycle.
- **Translate lessons identified into improved health emergency plans and systems** through accountable plans of action and follow-up. Continuous learning and improvement may also be supported by appropriate national and regional policies.
- **Enhance regional knowledge exchange and collaborative learning and improvement.** Regional mechanisms such as annual TAG meetings, One Health meetings, health security meetings, National IHR Focal Point networks, WHO collaborating centres and regional and country offices are important platforms for countries and areas in the Asia Pacific region to learn from others.

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- **Adopt new tools, methods and innovations to improve learning** and make it more participatory and accessible, using both quantitative and qualitative methods to measure system preparedness and readiness.
- **Support international transparency and accountability in health security** through engagement in global health security initiatives, such as the Universal Health and Preparedness Review process.

Part 3. Connecting with other strategies and initiatives

This part of this *Asia Pacific Health Security Action Framework* provides a brief description of key strategies and initiatives that contribute to the wider context of health security and health systems in which the Framework is embedded. These include specific tools to support capacity development in many technical areas included in the Framework, as well as hazard-specific tools that support the Framework's multi-hazard approach. The Framework also contributes to broader health and social goals through synergies with initiatives such as the SDGs and UHC.

In addition to these initiatives, the Framework may be connected to future initiatives that contribute to strengthening health security and resilient health systems to support its implementation and contribute to a coordinated all-of-society, all-of-government and multi-stakeholder approach to health security.

3.1 Global and regional health security initiatives

This Framework takes into consideration the ongoing global health security initiatives including the work of the Intergovernmental Negotiating Body (INB) to draft and negotiate a WHO convention, agreement or other international instrument on pandemic prevention, preparedness and response, and the Working Group on Amendments to the International Health Regulations (2005) (WGIHR). WHO recently released the global *Strategic preparedness and response plan: April 2023–April 2025*,²⁷ which advocates for sustaining gains made during the COVID-19 pandemic through collaborative surveillance, community protection, safe and scalable care, access to countermeasures, and emergency coordination.

The WHO South-East Asia Region has also developed a *Regional Strategic Roadmap on Health Security and Health System Resilience for Emergencies 2023–2027*²⁸ and *South-East Asia Regional Roadmap for Diagnostic Preparedness, Integrated Laboratory Networking and Genomic Surveillance (2023–2027)*.²⁹ These road maps and this Framework are complementary tools to strengthen health security systems and capacities in the Asia Pacific region.

Health emergency prevention, preparedness, response and resilience (HEPR): The impact of the COVID-19 pandemic has brought together concerted efforts to strengthen the global mechanisms and platforms to prevent, prepare for, detect and respond to public health emergencies. In 2022, initiatives to strengthen this global architecture were proposed under thematic headings of governance, financing and systems in the WHO white paper *10 proposals to build a safer world together: Strengthening the Global Architecture for Health Emergency Preparedness, Response and Resilience*³⁰ and expanded on the following year in *Strengthening the global architecture for health emergency prevention, preparedness, response and resilience*.³¹ These have been based on a recognition that national, regional and global efforts must be coordinated and coherent, inclusive of all stakeholders, and have equity at their centre. This Framework takes up these values and translates the global initiatives into priority actions at the country and regional levels. In particular, the domains outlined in this Framework complement and strengthen HEPR systems to support countries to prevent, prepare for, respond to and increase resilience to public health emergencies.

Civil–military collaboration: Under the multisectoral response, various mechanisms and partnerships are being explored and developed including civil–military health collaborations. These are aimed at supporting public health emergency interventions, particularly for emergencies triggered by natural

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hazards; chemical, biological, radiological or nuclear incidents; and disease outbreaks. This Framework aligns with the WHO guidance document *National civil–military health collaboration framework for strengthening health emergency preparedness*.³²

Communication for Health: Risk communication, managing misinformation and disinformation, and infodemic management are vital public health interventions for preparedness and response to health hazards, as exemplified in promoting vaccination in the COVID-19 response. Communication for Health (C4H) is a priority for the implementation of *For the Future* and the WHO guidance document *Communication for Health in the WHO Western Pacific Region*.³³ WHO is working with countries and areas in the Western Pacific to build their C4H capacity.

One Health: One Health is an integrated, unifying approach that recognizes that the health of humans, animals, plants and the wider environment (including ecosystems) are linked and interdependent. Climate change, biodiversity loss and ecosystem degradation are increasingly linked to zoonotic and vector-borne diseases and cross-species transmission of pathogens between humans and animals. While the health, food, water, energy and environment sectors all have specific concerns, collaboration across sectors and disciplines is needed to address health challenges such as the emergence of infectious diseases, AMR and ecosystem integrity, and to contribute to global health security. Through advocating for One Health approaches to address these challenges, the Framework supports initiatives such as the *One Health Joint Plan of Action (2022–2026)*³⁴ and efforts of the One Health Quadripartite – FAO, UNEP, WHO and WOA – to enhance collaboration and commitment in order to translate the One Health approach into policy action.

Regulatory system strengthening: Strengthening regulatory systems is fundamental to improving safe access to quality-assured, safe and effective medicines, vaccines and medical devices. WHO, mandated by World Health Assembly resolution *WHA 67.20*, plays a pivotal role in supporting countries and areas to strengthen regulatory systems by building regulatory capacity consistent with good regulatory practices and promoting regulatory cooperation, convergence and transparency through networking, work sharing and reliance. The WHO Regional Office for the Western Pacific acts as a secretariat for the Western Pacific Regional Alliance of National Regulatory Authorities for Medical Products to strive to promote and support strategies to strengthen regulatory systems, providing an effective platform for regulatory convergence and cooperation in the Western Pacific Region.

Research and innovation: Research into medical countermeasures such as vaccines and antivirals, diagnostics, the effectiveness of public health measures and operational research is required to develop and implement evidence-guided measures to respond to a public health threat. The WHO *R&D Blueprint* initiative targets research on diseases of greatest epidemic and pandemic threat and has developed a list of priority pathogens.³⁵ The WHO Regional Office for the Western Pacific is making efforts to promote innovation and is working to empower countries through an initiative – The Innovation Challenge – to source and select innovators to develop sustainable, cost-effective and inclusive solutions that can be applied to multiple countries.³⁶ This Framework also supports the aims of the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity*³⁷ to promote fair and equitable access to and sharing of benefits arising from the utilization of genetic resources.

Urban preparedness: Urban settings and cities have unique vulnerabilities that need to be addressed and accounted for in health emergency preparedness, as outlined in the *Framework for strengthening*

health emergency preparedness in cities and urban settings.³⁸ This is particularly crucial to health security in many countries, especially smaller ones where medical facilities tend to concentrate around urban centres and cities. This *Asia Pacific Health Security Action Framework* supports urban preparedness through its emphasis on subnational capacity strengthening and promotion of research to address emerging health risks, including environmental health and climate change in the context of urban settings.³⁹

3.2 Specific hazards

The *Asia Pacific Health Security Action Framework* takes a multi-hazard approach to public health emergencies by focusing on strengthening common generic capacities needed to prepare for and respond to a wide range of public health threats. This approach is complemented by other hazard-specific approaches including those detailed below and others.

Antimicrobial resistance: AMR represents a major threat to human health with significant global health, economic and security implications. Systematic misuse and overuse of antimicrobials in humans, animals and food production threaten the sustainability of effective public health responses to infectious bacterial diseases globally. Addressing AMR requires collaboration among human, animal and environmental health sectors through One Health approaches on issues such as surveillance and research, appropriate use of antimicrobials, and effective sanitation, hygiene and IPC. Through its emphasis on strengthening these links, this Framework also supports the efforts of global initiatives including the *Global Antimicrobial Resistance and Use Surveillance System* (GLASS) and the WHO *Global Action Plan on Antimicrobial Resistance*⁴⁰ and regional frameworks such as the *Framework for Accelerating Action to Fight Antimicrobial Resistance in the Western Pacific Region*,⁴¹ the South-East Asia *Regional strategy on prevention and containment of antimicrobial resistance*⁴² and the One Health Quadripartite *Strategic Framework for collaboration on antimicrobial resistance*.⁴³

Chemical, biological, radiological and nuclear (CBRN): CBRN refers to deliberate or accidental situations in which a threat is caused by the use or presence of a CBRN agent. Any CBRN event would require the health sector to work closely with threat-specific industrial experts, as well as law enforcement and security authorities. This *Asia Pacific Health Security Action Framework* complements hazard-specific planning for these threats with strengthened core capacities to manage their public health impact – particularly in areas such as multisectoral coordination, incident management, risk assessment, access to health care, and logistics and operations management.

Climate change: Climate change, together with biodiversity loss and ecosystem degradation, is reshaping public health. Roles and capacities in relation to health and the environment must evolve if new realities are to be addressed. Climate change exacerbates and worsens environmental conditions, with all countries in the Asia Pacific region facing rising temperatures, increased frequency of extreme weather events, worsening air pollution and variable rainfall patterns. Climate change also affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter. Through addressing preparedness, resilience and response to climate-related hazards and adaptive measures to protect health and well-being from environmental threats, the Health Security Action Framework supports the efforts of global initiatives including the *United Nations Framework Convention on Climate Change*⁴⁴ and SDG 13: Climate Action, including Target 13.1 to “strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries”.⁴⁵ The *Asia Pacific Health Security Action Framework* also contributes to the *Western Pacific Regional*

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*Framework for Action on Health and Environment on a Changing Planet*⁴⁶ that calls for, among other actions, stronger leadership by the health sector to advocate adaptive measures, policies and actions to protect health and well-being from environmental threats and emergencies. The WHO initiative, *A Strategic Roadmap to promote healthier populations through clean and sustainable energy*,⁴⁷ advocates building climate-resilient health services with implementation of modern clean energy solutions and provision of electricity at health-care facilities to reduce air pollution.

The increasing impact of natural hazards such as wildfires, floods and earthquakes also increases the risk of technological accidents caused by natural hazards – known as “Natech” events – as exemplified during the 2011 Fukushima nuclear disaster in Japan. The addendum by the Organisation for Economic Co-operation and Development to the *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*⁴⁸ advocates the establishment of emergency planning activities/programmes for accidents involving hazardous substances, risk assessment, capabilities to detect and assess a hazard, undertaking regular simulation exercises, and effective risk communication.

Disaster risk reduction: This Framework supports global and regional disaster risk management initiatives through its emphasis on investments in preparedness, resilience and emergency response management. This approach supports international disaster risk reduction and management frameworks including the *Sendai Framework for Disaster Risk Reduction 2015–2030* and the *ASEAN Framework on Anticipatory Action in Disaster Management*,⁴⁹ as well as frameworks that focus on the health impacts of disasters such as the *Health Emergency Disaster Risk Management Framework*⁵⁰ and the *Western Pacific Regional Framework for Action for Disaster Risk Management for Health*.

Food safety: Through strengthening capacities to detect, assess and manage foodborne disease outbreaks and One Health collaborations with animal, environment and food-production sectors, this Framework also supports the objectives of global and regional strategies for food safety, including the *Global Strategy for Food Safety 2022–2030*,⁵¹ the *Framework for Action on Food Safety in the WHO South-East Asia Region*⁵² and the *Regional Framework for Action on Food Safety in the Western Pacific*.⁵³ One Health collaborations are also critical to reduce the risk at animal–human–environment interfaces in the food chain, such as animal production facilities and traditional food markets, that can give rise to new and emerging disease threats. This Framework also supports collaborations between National IHR Focal Points and INFOSAN Focal Points on issues of food safety events that fall under IHR (2005).

Respiratory pathogens: Pandemic influenza planning has strongly influenced the development of health security concepts, and mechanisms developed for pandemic influenza have provided models of collaboration for wider health security that are consistent with this Framework. Initiatives such as the *Global Influenza Surveillance and Response System* (GISRS) and the *Pandemic Influenza Preparedness (PIP) Framework* have established mechanisms for international collaboration covering surveillance, laboratories, risk assessment, response, virus sharing, access to vaccines and other benefits. These hazard-specific mechanisms have provided ready platforms that can be quickly leveraged for other respiratory pathogen emergencies – such as during the COVID-19 pandemic when GISRS was also used to monitor community circulation of SARS-CoV-2. In 2022, WHO published the *Global genomic surveillance strategy for pathogens with pandemic and epidemic potential 2022–2032*⁵⁴ to provide a unifying framework to leverage existing capacities, address barriers and strengthen the use of genomic surveillance in the detection, monitoring and response to public health

threats. In 2023, WHO also launched the [Preparedness and Resilience for Emerging Threats](#) initiative that focuses on improving pandemic preparedness for groups of pathogens based on their mode of transmission, with technical actions aligned with the IHR (2005) core capacities.⁵⁵

Vector-borne diseases: Vector-borne diseases such dengue, malaria and chikungunya are major public health threats in the Asia Pacific region. With its focus on strengthening core public health security capacities, the Framework also supports implementation of initiatives such as the [Global Arbovirus Initiative](#), the [Western Pacific Regional Action Plan for Dengue Prevention and Control \(2016\)](#),⁵⁶ the [Global strategy for dengue prevention and control](#),⁵⁷ the [Global technical strategy for malaria 2016-2020, 2021 update](#),⁵⁸ and the [Global vector control response 2017–2030](#).⁵⁹

Vaccine-preventable diseases: This Framework supports the control and elimination of vaccine-preventable disease through strengthening preparedness and the capacity to detect, assess and respond to outbreaks of diseases such as measles, diphtheria and circulating vaccine-derived poliovirus. As such, it contributes to initiatives such as the [South-East Asia Regional Vaccine Action Plan 2016–2020](#),⁶⁰ the [Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific 2021–2030](#)⁶¹ and the [Immunization Agenda 2030: A global strategy to leave no one behind](#).⁶² Through its focus on maintaining essential health services – including immunization – during public health emergencies, this *Asia Pacific Health Security Action Framework* also supports routine vaccination programmes and reduces the risk of vaccine-preventable disease outbreaks as a result of disrupted health services.

Water safety: Water safety and quality are fundamental to human development and well-being. Providing access to safe water for both consumption and hygiene is one of the most effective instruments to promote health and reduce poverty. Health hazards recognized in water today include infectious microorganisms (for example, bacteria, viruses and protozoa causing gastrointestinal diseases), geogenic substances (for example, arsenic, fluoride, uranium), industrial and agricultural chemicals (for example, perfluorinated chemicals and pesticides) and toxins produced by cyanobacteria. Ensuring appropriate WASH standards for communities and also in health-care facilities is important for population health, and to ensure safe delivery of health care during normal times and during public health emergencies.

3.3 Health systems strengthening

Digital health: There is a growing consensus in the global health community that the strategic and innovative use of digital and cutting-edge information and communications technologies will be an essential enabling factor in sustainable development and in meeting the SDGs. This Framework supports the adoption of appropriate digital health technologies to support health security in countries and areas, in line with the [Global strategy on digital health 2020–2025](#).⁶³

Health systems: Health security and health systems capacities reinforce each other. Improved health security increases the resilience of health systems to public health threats, while strong underlying capacities in core public health functions, such as disease surveillance, decision-making, and health-care delivery and financing, are all fundamental to preparedness and response to public health emergencies. The Framework advocates a system approach towards further strengthening resilient health systems through a focus on public health emergency preparedness. In advancing both health

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security and health systems strengthening objectives, it supports and shares common principles with global health systems frameworks, such as *Health Systems for Health Security*.⁶⁴

Human resources for health: Following consensus in the *G20 Rome Leaders' Declaration*⁶⁵ of 2021, the *Declaration of the G20 Health Ministers* and a series of World Health Assembly resolutions, WHO developed a road map for development of multidisciplinary workforce to undertake the essential public health functions including emergency preparedness and response⁶⁶ and developed the *Global strategy on human resources for health: Workforce 2030*.⁶⁷ The WHO South-East Asia Region through its Regional Committee adopted Resolution SEA/RC67/R6 to strengthen health workforce education and training in the Region and committed to a decade of strengthening human resources of health 2015–2024.⁶⁸ The WHO Western Pacific Region is also developing the draft *Regional Framework to Shape a Health Workforce for the Future of the Western Pacific*.

Legislation: Countries and areas continue to amend current regulations, acts and laws to support implementation of IHR (2005). This Framework also addresses the issue of strong legislation as part of *Better Laws for Better Health: Western Pacific Regional Action Agenda on Strengthening Legal Frameworks for Health in the Sustainable Development Goals*.⁶⁹

Primary health care: PHC enhances health security by effectively and equitably limiting disease spread through essential public health functions. Integration between public health and primary care as components of the PHC approach are a strong defence against current and future public health threats. The WHO position paper *Building health systems resilience for universal health coverage and health security during the COVID-19 pandemic and beyond*⁷⁰ and the *Regional Framework on the Future of Primary Health Care in the Western Pacific*⁷¹ advocate building a strong PHC foundation at the heart of efforts to attain UHC, health security and the SDGs.

Universal health coverage: UHC is a vision of all people obtaining quality health services without suffering financial hardship. As a goal of health sector development, UHC is one of the targets of the SDGs, and it contributes to both health and non-health SDGs as a pathway to equitable and sustainable health outcomes and resilient health systems. Past public health emergencies – including COVID-19 – have highlighted the importance of ensuring that everyone, everywhere – including the most vulnerable and hard to reach – can access the health services they need without facing financial hardship. With clear links between health security and UHC, implementing this Framework will also support wider initiatives to achieve UHC, including the *Universal Health Coverage Partnership*, the South-East Asia Regional *UHC Flagship Programme* and the Western Pacific Region UHC action framework *Universal Health Coverage: Moving Towards Better Health*.⁷²

3.4 Development initiatives and goals

Gender, equity and human rights: Gender, equity and human rights are key issues in sustainable development. Gender and socioeconomic inequities can affect exposure and vulnerability to hazards, access to resources including health care, monitoring of health risks and outcomes, and health literacy and behaviours. Other inequities include those created by social marginalization and geography that make communities and individuals hard to reach and make it difficult for them to engage in the health system. A human rights-based approach to health targets discriminatory practices and unjust power relations that are at the heart of inequitable health outcomes. Rights-based approaches to health explicitly design strategies and programmes to improve the enjoyment of all people to the right to

health, with a focus on supporting those being left behind. There are also important human rights considerations, based on normative guidance such as the *Siracusa Principles*,⁷³ which need to be balanced with public health actions that can at times infringe on individual rights, such as movement restrictions or quarantines.

National and subnational authorities are encouraged to consider factors related to gender, equity and human rights when planning, implementing, monitoring and evaluating health security activities. Mainstreaming gender in health programmes continues to be a key recommendation of WHO.

The WHO *Thirteenth General Programme of Work* emphasizes the inclusion of gender in health delivery planning, and *Mainstreaming gender within the WHO Health Emergencies Programme 2022–2026 strategy* provides guidance to enable WHO's work in emergencies to contribute to gender equity and equality.⁷⁴ Within the United Nations system, the High-level Committee on Programmes is the principal mechanism for forging policy coherence and programme coordination on strategic policy issues. The High-level Committee examined inequalities during the COVID-19 response and advocates for building stronger, equity-focused health systems, addressing violence against women, advocating for gender-responsive economic policies and strengthening social protection systems that build community resilience.⁷⁵

Reaching the unreached: The COVID-19 pandemic has shown that the systems that cannot efficiently reach the unreached compromise health responses at all levels. In the Western Pacific Region, the *Regional Framework for Reaching the Unreached in the Western Pacific (2022–2030)*⁷⁶ aims to support transformed health-care delivery and health systems across the Region. It calls on countries and areas, partners and stakeholders to transform health systems to reach everyone, everywhere and support equitable health outcomes as important contributors to health security.

Sustainable Development Goals: *The 2030 Agenda for Sustainable Development* provides a shared global blueprint for peace and prosperity. At its heart are 17 SDGs that recognize that this effort must go hand in hand with strategies that improve health and education, reduce inequality and spur economic growth – while at the same time addressing climate change and preserving our environment. The social and economic factors addressed by the SDGs are key in reducing the risk of public health threats and enabling resilient response and recovery. This *Asia Pacific Health Security Action Framework* is consistent with this approach, and in particular SDG Target 3.d which aims to “strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks”.⁷⁷ Through its emphasis on increasing the resilience of health systems to maintain essential and response functions during public health emergencies, this Framework also contributes directly and indirectly to other SDGs related to social and economic development. It also contributes to enhancing collaboration among global organizations engaged in health, development and humanitarian response to accelerate country progress on the health-related SDGs, as advocated in the *Stronger Collaboration, Better Health: Global Action Plan for Health Lives and Well-being for All*.⁷⁸

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Part 4. Implementation

4.1 Overview

The Asia Pacific region has been working since 2005 to strengthen health security capacities through the implementation of APSED. While this new *Asia Pacific Health Security Action Framework* has the similar goal of strengthening and advancing health security systems across the Asia Pacific region, the structure of this new Framework does not reflect an obvious progression from APSED III; in lieu of the characteristic technical areas of APSED, this new Framework presents a shift to six domains to offer a strategic approach to the broad range of capacities required to comprehensively support health security systems.

Successful implementation of this Framework will require a multi-pronged approach to include and coordinate stakeholders and partners at the subnational, national, regional and global levels. Implementation will need to focus on the fundamental capacities required for health security, considering the values and principles described in the Framework. Countries have unique risks and are also at various stages of capacity development. Implementation plans therefore need to be country-specific and tailored according to the national and local context, while keeping in line with IHR (2005) core capacity requirements.

The involvement of diverse and representative partners and stakeholders at all levels in developing and implementing plans is important to foster inclusivity, ownership and commitment to health security goals.

This Framework is intended to have a flexible implementation period of five to 10 years and to accommodate different national planning cycles and variations in existing national capacities across the region.

After endorsement by the WHO Regional Committee for South-East Asia and the WHO Regional Committee for the Western Pacific, WHO proposes to develop an implementation guide to support countries with technical guidance and suggested priority actions for the domains outlined in this Framework. The implementation guide will take a step-by-step approach towards capacity development in each domain and will comprise suggested time-bound indicators to allow for annual reviews.

4.2 Country implementation

Authorities at the national and subnational levels may wish to consider this Framework when developing or reviewing their approaches and plans for strengthening health security. Implementation plans should reference existing complementary health systems, emergency management or other relevant action plans to avoid duplication.

For example, this can be done through processes to develop national action plans for health security (NAPHS) that capture and advance national health security priorities as identified through assessments such as reviews of past or ongoing emergency responses, simulation exercises, SPARs or JEEs. NAPHS are part of a country-owned, WHO-supported multi-year planning process based on One Health, multi-hazard and whole-of-government approaches to bring sectors together, identify partners and allocate resources for health security capacity development.

4.3 Implementation factors

The following factors may facilitate successful implementation of this Framework:

APSED TAG: The legacy and strength of APSED within the Asia Pacific region is acknowledged. The annual APSED TAG meetings, which provide an opportunity to share experiences and discuss progress and priorities for the coming 12 months, provide a comfortable, familiar environment for stakeholders, and the continuation of TAG meetings will positively assist implementation of this Framework across the region. The dedicated sessions for partners and donors have been observed to be a notable strength and these will continue.

One Health approach: The Quadripartite call to action for One Health (FAO, UNEP, WHO and WOA) will facilitate the implementation of this Framework through national One Health governance and multisectoral coordinated mechanisms, and the strengthening of the One Health workforce, among other actions.

Advocacy and communication: The priority afforded to public health issues rests with senior government officials. An effective communication strategy targeted at senior government officials at the annual sessions of the Regional Committee, for example, may be one advocacy approach. An effective communication strategy to raise awareness among health officials in countries and areas and staff in WHO country offices will aid implementation.

Consideration of existing frameworks, priorities and forums: The Framework complements existing regional and global frameworks and priorities, including IHR (2005), the SDGs, UHC and One Health. Implementation will also need to consider new and future international health initiatives, including proposed amendments to IHR (2005) and an international instrument on pandemic prevention, preparedness and response. Utilizing partnerships with existing forums and regional bodies, such as ASEAN and SPC, may facilitate implementation in relevant countries.

4.4 Adaptation of the Framework

This *Asia Pacific Health Security Action Framework* has been developed at the same time as ongoing work of the INB to develop and negotiate a WHO convention, agreement or other international instrument on pandemic prevention, preparedness and response; and work of WGIHR to propose amendments to the IHR (2005). The outcomes of both processes are anticipated to be presented to the Seventy-seventh World Health Assembly in 2024. After this point, countries and areas, WHO and partners may wish to adapt their implementation of this Framework in order to take into consideration new obligations as mandated by these instruments when they come into force.

4.5 Role of countries and areas

Effective mechanisms are needed for national-level management and coordination for planning, implementation, monitoring and evaluation of this Framework. Actions identified in the Framework consistent with national priorities may be incorporated into existing NAPHS or other public health emergency plans or broader national health plans for implementation.

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4.6 Role of WHO

Through its country offices, regional offices and headquarters, WHO will work with countries, areas and partners to strengthen the health security domains outlined in this Framework. WHO collaborating centres have a significant role in supporting countries and areas and WHO to implement the Framework. WHO will provide technical support as required to support countries and areas to contextualize, implement and monitor Framework activities. WHO will also continuously monitor its support to countries and areas to implement the Framework and regularly seek feedback to improve the quality of support provided.

4.7 Role of partners

Numerous partner organizations have worked collectively with countries and areas and WHO to strengthen prevention, preparedness, readiness and response capacities for emerging diseases and public health emergencies. In keeping with APSED III, this new Framework provides a common regional approach for health security and IHR (2005) implementation in the Asia Pacific region and offers a platform for coordinated partner collaboration.

Appendix 1. WHO Classification of Hazards⁷⁹

Generic Group	Groups	Subgroups, main types		
1. Natural	1.1 Geophysical	<ul style="list-style-type: none"> • Earthquake • Tsunami • Volcanic activity 	<ul style="list-style-type: none"> • Liquefaction • Mass movement (geophysical trigger) 	
	1.2 Hydro-meteorological	Hydrological	<ul style="list-style-type: none"> • Flood • Wave action 	<ul style="list-style-type: none"> • Mass movement (hydro-meteorological trigger)
		Meteorological	<ul style="list-style-type: none"> • Storm 	<ul style="list-style-type: none"> • Extreme temperature • Fog
		Climatological	<ul style="list-style-type: none"> • Drought 	<ul style="list-style-type: none"> • Wildfire • Glacial lake outburst
1.3 Biological	<ul style="list-style-type: none"> • Airborne diseases • Waterborne diseases • Vector-borne diseases • Foodborne outbreaks • Insect infestation 	<ul style="list-style-type: none"> • Animal diseases • Plant diseases • Aeroallergens • Antimicrobial resistant microorganisms • Animal–human contact 		
1.4 Extraterrestrial	<ul style="list-style-type: none"> • Impact 	<ul style="list-style-type: none"> • Space weather 		
2. Human-induced	2.1 Technological	<ul style="list-style-type: none"> • Industrial hazards • Structural collapse • Occupational hazards • Transportation • Explosions • Fire 	<ul style="list-style-type: none"> • Air pollution • Infrastructure disruption • Cybersecurity • Hazardous materials in air, soil, water • Food contamination 	
	2.2 Societal	<ul style="list-style-type: none"> • Acts of violence • Armed conflicts • Civil unrest 	<ul style="list-style-type: none"> • Stampede • Terrorism • Financial crises 	
3. Environmental	3.1 Environmental degradation	<ul style="list-style-type: none"> • Erosion • Deforestation • Salinization • Sea-level rise 	<ul style="list-style-type: none"> • Desertification • Wetland loss/degradation • Glacier retreat/melting • Sand encroachment 	

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Appendix 2. Recent developments in global health security

During the COVID-19 pandemic, a range of international expert reviews^v were conducted to assess the global response and propose recommendations to improve the systems that govern international collaboration on health security. In 2022 at the Seventy-fifth World Health Assembly, a series of ongoing and new initiatives were presented to strengthen the global “architecture” for HEPR (health emergency prevention, preparedness, response and resilience) – under three thematic headings of governance, financing and systems. This Framework has been developed with these initiatives in mind and is intended to serve as a platform through which global solutions such as these can be translated and adapted to the priorities and context of the Asia Pacific region. Key initiatives that will impact health security in the Asia Pacific region are described below.

WHO convention, agreement or other international instrument on pandemic prevention, preparedness and response

Several reviews of the COVID-19 response recommended more robust international governance for pandemic preparedness and response, supported by the establishment of a pandemic treaty or accord. In December 2021 at its second special session, the World Health Assembly established an Intergovernmental Negotiating Body⁸⁰ (INB) to draft and negotiate a convention, agreement or other international instrument on pandemic prevention, preparedness and response. The INB is composed of Member State representatives and will submit its outcome to the Seventy-seventh World Health Assembly in 2024 for consideration. The INB’s proposed instrument will address several key themes that have emerged from the COVID-19 pandemic including equity, transparency, trust, sovereignty, collaboration and assistance.

Targeted amendments to IHR (2005)

IHR (2005) is the international legally binding framework that defines the rights and obligations of its 196 State Parties and the WHO Secretariat in managing international public health emergencies. Ensuring that IHR (2005) can accommodate evolving global health requirements is key to its continued relevance and effectiveness as a global health legal instrument. Areas for improvement were identified during the COVID-19 pandemic in interpretation and application of the regulations, and in adherence. In 2022, the Seventy-fifth World Health Assembly established a Working Group on Amendments to the International Health Regulations (2005)⁸¹ (WGIHR) to consider a range of proposed amendments to IHR (2005) submitted by Member States. WGIHR was provided with the report of the Review Committee regarding amendments to IHR (2005) and has started its consideration of the proposed amendments. WGIHR will present its proposed amendments for consideration before the Seventy-seventh World Health Assembly in May 2024. Areas of focus may include improved adherence and accountability; more specificity in relation to notification, verification and information sharing; capacity-building and technical support; changes to the convening and functioning of the Emergency Committee; and international public health response.

^v These include the [Report of the Review Committee on the Functioning of the International Health Regulations \(2005\) during the COVID-19 response](#); [Report of the Independent Oversight and Advisory Committee for the WHO Health Emergencies Programme](#); and the main report of the Independent Panel on Pandemic Preparedness and Response, [COVID-19: Make it the Last Pandemic](#).

The Pandemic Fund

A new financial intermediary fund focused solely on pandemic prevention, preparedness and response – the Pandemic Fund – was established in September 2022 with broad support from members of the Group of 20 and beyond. The Fund is hosted by the World Bank and is intended to finance investments in pandemic preparedness and response capacities at national, regional and global levels, with a focus on low- and middle-income countries. At its launch in November 2022, the Pandemic Fund had mobilized over US\$ 1.6 billion in financial contributions from World Bank member countries and intergovernmental and nongovernmental entities. The Fund’s first funding round of US\$ 300 million closed in May 2023, prioritizing applications focused on surveillance and early warning, laboratory systems, and public health and the community workforce.

Strengthening clinical trials

During the COVID-19 Pandemic, well-designed and well-implemented clinical trials were critical in generating clinical evidence to assess the safety and efficacy of health interventions. However, many trials of therapeutics for COVID-19 did not yield useful or actionable information, and many trials duplicated the efforts of others by studying similar interventions in similar populations.⁸² In May 2022, the Seventy-fifth World Health Assembly adopted resolution [WHA75.8](#) to improve the quality of evidence generated in clinical trials and their coordination. Currently under development are new guidance for clinical trials quality and ecosystem strengthening, together with a self-assessment tool for the maturity of the clinical trial ecosystem at national and international levels.

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