HEALTH SYSTEMS FOR HEALTH SECURITY

A framework for developing capacities for International Health Regulations, and components in health systems and other sectors that work in synergy to meet the demands imposed by health emergencies

World Health Organization

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1. Introduction

1.1 Background

The world is increasingly interconnected and interdependent. People, goods and their related services move easily and quickly across regions and countries. This has made achieving national and global health security complex, presenting both challenges and new opportunities. Foremost of concern are public health events that can emerge locally and spread globally, as has been seen from the coronavirus disease 2019 (COVID-19) pandemic. Other recent events have also shown that current preparedness capacities are insufficient to deliver an effective response to severe and large-scale public health emergencies. Major events such as the Zika virus outbreak in Latin America, Ebola virus disease outbreak in western Africa and the COVID-19 pandemic have been brutal reminders of how important preparedness is to tackle all types of health emergencies at all levels for global health security *(1)*. Furthermore, the effect of these events can overwhelm health systems and affect many parts of society.

Improving health security is not a cost, but an investment. Evidence suggests that financing preparedness is substantially less costly than the cost of inaction, and that investments can produce cost savings in the future[1] *(2,3)*. Without increased investment, global public health emergencies will continue to be an ongoing challenge *(4)*. Despite efforts to strengthen national and global health security, countries still have varied levels of capacity to achieve health security. An analysis of the annual reporting data of the International Health Regulations (2005) (IHR) conducted in the context of the COVID-19 pandemic showed that countries differed widely in their ability to prevent, detect, respond to and recover from outbreaks *(5)*. This is a reminder that we are only as strong as the weakest health system and country in our interconnected world *(6)*.

Countries may have different needs in ensuring that they can mobilize resources to adequately respond to health emergencies on top of their routine demands for health services. For example, low- and middle-income countries may require support to rapidly scale up technically skilled and specialized human resources, given the vital role of the health workforce in health systems when responding to health emergencies[2]. On the other hand, in high-income countries with established health systems, the main challenge during health emergencies

[1] For instance, the World Bank sees the prevention and control of infectious disease as a highly effective, yet low-cost, investment target.

[2] In this regard, the Global Strategy on Human Resources for Health: Workforce 2030 was developed for better investment in the health workforce towards improving health service coverage, as well as emergency and disaster risk management. The strategy not only helps countries to build overall health system resilience, it also reduces vulnerabilities by providing human resources required for management of emergencies *(7)*.

may be capacity to manage a huge surge in demand for health services within a short period of time, as was seen in the COVID-19 pandemic. Finally, due to intense competition, all countries, regardless of income, faced difficulties in the procurement of necessary medical equipment and medicines to manage the surge in demand for such supplies during the pandemic *(8–12)*.

The recent crisis highlights the need for countries to identify upstream capacities and existing gaps in order to ensure that their health systems are prepared to withstand the increased stress caused by severe and extensive health emergencies, which can also threaten the delivery of essential health services. In this regard, effective and coordinated strengthening of health systems contributes to strengthening health security for better prevention, detection and response to public health events and threats, thus contributing to building a healthier and safer world.

Several studies highlight the overlap between efforts to strengthen and invest in health systems to ensure that they are reliable, sustainable and achieve universal health coverage (UHC) and improving national and global health security *(13–16)*. To illustrate this point, a summary of a rapid scoping review on country case studies of building health systems for health security is available in Annex 1.

Health systems for health security
This is an approach that harmoniously brings together efforts to strengthen resources and capacities required for implementation of the International Health Regulations (2005), components in health systems and those in other sectors for effective management of health emergencies, while maintaining the continuity of essential health services throughout.

Building and enhancing these links involves a complex set of conceptual and practical considerations for countries, the World Health Organization (WHO) and partners. A clear, common narrative and well defined framework are needed to build resilient and responsive health systems for these purposes. Furthermore, the messaging around investing in health security and the expected returns and outcomes needs to be strengthened *(17)*.

In particular, there is an important need to better understand: (i) what capacities are required for resilient and responsive health systems for health security; (ii) where the intersections between health systems, health security and other sectors are located; and (iii) how challenges at these intersections can be overcome and opportunities leveraged for multisectoral, and multidisciplinary effective management of health emergencies.

> "Quality health systems not only improve health outcomes in "peacetime", they're also a bulwark against outbreaks and other public health emergencies. UHC and health security are two sides of the same coin."
>
> Dr Tedros Adhanom Ghebreyesus
> Director-General of WHO
>
> Lancet Glob Health. 2018;6(11):e1140–e1141

1.2 Purpose, objectives and target audience of the framework

1.2.1 Purpose

The purpose of the health systems for health security framework is to support countries, WHO and partners in bringing together capacities required for the IHR, and components of health systems and other sectors for multisectoral, multidisciplinary and effective management of health emergencies.

The framework is an innovative approach that complements existing concepts and tools for global health security capacity-building, and covers different types of risks arising from biological and non-biological hazards and events.

1.2.2 Objectives

The objectives of the health systems for health security framework are to:

- promote a common understanding of what building health systems for health security entails and how it contributes to better national and global health security;
- delineate the essential components of health systems and other sectors that play an important role in meeting the demands imposed by health emergencies;
- explain how countries can define, prioritize and monitor actions and investments in health security, health systems and other sectors for multisectoral and multidisciplinary management of health emergencies towards better global health security;
- help partners and donors better support countries in strengthening health security by identifying where more investment in health systems is most needed, how best to achieve this, and how financing can be sustained; and
- highlight challenges in implementation of the health systems for health security framework.

1.2.3 Expected outcomes

The expected outcomes of the framework are:

- greater awareness of the importance of building health systems for health security;

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- more synergistic working relationships between health security, health systems and other sectors for multisectoral and multidisciplinary management of health emergencies; and
- increased investments in health systems for both day-to-day service delivery (thus achieving UHC) as well as longer-term health security by preventing, detecting and quickly mitigating the occurrence and impact of health emergencies.

1.2.4 Target audience

The framework was developed for the following groups of people.

- Decision-makers and public health experts in countries responsible for defining, coordinating and implementing health security strategies. This extends beyond the ministries of health to include
- stakeholders from other sectors who are involved, in one way or another, in the management of health emergencies.
- Partners and donors supporting and financing the strengthening of health security capacities or building health systems.
- Research and academic institutions interested or involved in research efforts to generate evidence for effective management of health emergencies.
- Other institutions and community leaders interested in or that could be potentially involved in management of health emergencies.

2. Guiding principles

The guiding principles of the health systems for health security framework are described below.

2.1 All-hazards approach

Management of the spectrum of emergency threats and events is based on the recognition that there are common elements (and common capacities required) in the management of different types of risks, including in responses to emergencies.

2.2 Risk-based approach

The risks that emergencies pose to communities are directly related to the exposure communities have to hazards, their vulnerabilities to these hazards and their capacity to manage them. Countries should have a good understanding of the risks to which they are exposed at local, subnational and national levels. Countries must build and strengthen their health systems for health security capacity to meet the demands imposed by the relevant risks identified. This action will contribute to minimizing health and other consequences of emergencies *(18)*.

2.3 Whole-of-society and multisectoral approach

National policies in sectors other than health have a major bearing on the risk factors for diseases, and health gains can be achieved much more readily by influencing public policies in relevant sectors (such as environment, transport, trade, taxation, education, agriculture, urban development, food and energy) than by making changes in health policy alone *(19)*. National authorities should therefore adopt an approach to the prevention and control of diseases that brings together multiple sectors and disciplines. To this end, WHO has published a multisectoral preparedness coordination framework *(20)*. At the same time, other stakeholders can make contributions and play important roles. These include individuals, families and communities, intergovernmental organizations and religious institutions, parliaments, civil society, academia, the media, voluntary associations and the private sector. Effectively anticipating, preventing and managing health emergencies requires a whole-of-society, whole-of-government, One Health, multilevel engagement approach. Many

authors describe such engagement as the best way to address health emergencies; thus weakness in any of the relevant sectors must also be accounted for in preparedness plans *(21–24)*.

2.4 National enabling environment

In order for the above-mentioned guiding principles to become an operational reality, it is imperative to create an enabling environment for effective management of health emergencies in all types of contexts[3]. This is a complex task that encompasses different structures and processes such as having appropriate legal frameworks, robust financial mechanisms and good governance structures.

Governments, WHO and partners all have a key role in ensuring harmonious preparedness coordination when strengthening health systems for health security, in accordance with the IHR (2005) *(25,26)*.

[3] The framework is intended to be applicable across all types of contexts, with necessary adaptations to local contexts, although some contexts are given particular attention because of their unique circumstances, such as conflict-affected settings, protracted emergency contexts, precarious economic contexts, forcibly displaced populations, megalopolises, small islands, deteriorating environmental and climatic condition context and disaster-prone areas.

3. Components of the health systems for health security framework

In implementing the health systems for health security framework the goals of UHC (all people can access good-quality health services without financial hardship) and those of health security (minimize vulnerability to acute public health events that endanger the collective health of populations, including across geographic boundaries) must be taken into account. This implies health systems that can resist, absorb, accommodate, adapt to and recover from the effects of health emergencies in a timely and efficient manner.

Health systems and emergency preparedness capacities reinforce one another *(27)*. Strengthening health systems makes them more resilient and better able to detect and control outbreaks before they spread; and improved public health functions contribute to good-quality case management and to the strong surveillance and response systems necessary for early disease detection and control. Strong health systems are thus essential for health security, and better health security is associated with health systems that are more resilient. Building health systems for health security requires developing, strengthening and maintaining IHR capacities and the components of health systems as well as other sectors on which health systems are dependent. The basis for achieving health systems for health security is having resilient communities who are involved in projects, interventions, or activities that address issues affecting their well-being, including before and during health emergencies. Figure 1 illustrates the components of the health systems for health security.

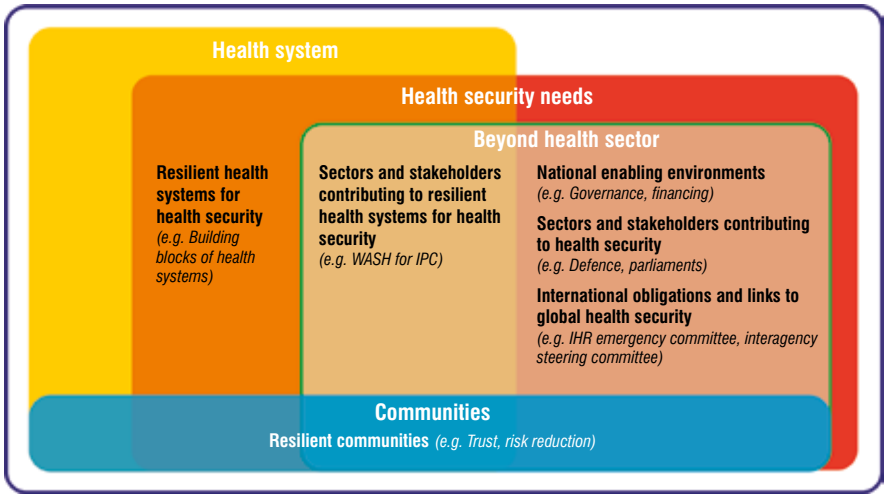

Figure 1. Components of the health systems for health security and linkages between them. Strong health systems are an important component of achieving health security

WASH: water, sanitation and hygiene; IPC: infection prevention and control; IHR: International Health Regulations.

This framework thus builds on: (i) IHR capacities *(28)*; (ii) additional components from health systems; and (iii) components of other sectors (beyond the health sector) that have critical dependencies with health and that strengthen health systems for health security[4]. Each of these components are discussed in the following sections.

3.1 Thematic areas for building country capacities towards health security

Health security relies on the effective implementation of the core capacities of the IHR (2005) *(29)*. The IHR is a binding instrument of international law. Its purpose is to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks and which avoid unnecessary interference with international traffic and trade *(30)*. At the regional level, implementation of IHR is supported by regional frameworks, such as the Integrated Disease Surveillance and Response (IDSR) in the African Region, and the Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies (APSED III).

Thematic areas for consideration in building country capacities for health security include requirements to prevent, detect, respond to and recover from health emergencies (Table 1).

Table 1. Thematic areas for consideration in building country capacities towards health security

1	**Leadership.** From the highest level of governments and along the chain of command, mechanisms and tools to facilitate decision-making, linking science to policies
2	**Advocacy.** Keeping preparedness high on political agendas and sustaining investments
3	**Legislation and policy.** To implement the IHR, laws, regulations, administrative requirements, policies and other government instruments operationalized and coherent throughout relevant sectors; regular review processes to incorporate lessons learnt
4	**Financing.** Sustainable national financing mechanisms for IHR implementation and response in emergencies

[4] For example, these include capacities within animal health sectors, agriculture, the food industry, water and sanitation, energy, urbanism, workplace, transport, communities and communication.

5	**Multilevel, multisectoral, whole-of-society coordination including One Health approach.** Involvement of civil society, parliamentarians and civil–military collaborations; coordination with subnational and local levels, cities and urban areas
6	**Coordination of IHR.** IHR national focal point functions including IHR communications and reporting; global coordination mechanisms and structure
7	**Community participation and engagement, and risk communication.** Communication systems, coordination, public communication and engagement that: addresses perceptions and misinformation; empowers citizens; leverages community capacities, community health workers and a primary health care approach, trust in governments and systems
8	**Human resource capacity.** Workforce development strategy, availability, competencies, key disciplines, geographic coverage, surge capacity, training
9	**Surveillance.** Indicators, event and community based, systems, electronic tools, sharing and analysis of data
10	**National laboratory system.** Coordination system/diagnostic network, referral, transport, testing of priority health threats, influenza surveillance, pooling of resourcing and expertise, data management, reporting, quality control
11	**Biosafety and biosecurity.** System, training, practice
12	**Points of entry.** Coordination, surveillance and routine capacities, effective response
13	**Immunization.** Coverage, access, delivery, vaccine manufacturing capacity
14	**Infection prevention and control.** Programmes and initiatives in primary to tertiary care facilities, community infection prevention and control
15	**Antimicrobial resistance.** National antimicrobial resistance strategy, stewardship, appropriate prescribing
16	**Access to and continued provision of essential health services.** Including access to primary care, support services (e.g. mental health) and safe health facilities
17	**Risk assessments, preparedness and response planning, testing.** Monitoring and evaluation of risk, resources and vulnerabilities, plans for health security including business continuity plans, functional testing including exercise management, capacity for monitoring and evaluation of preparedness status

18	**Emergency response operations.** Response coordination, operations centre, capacity to manage cases and surges, disaster management, recovery planning and coordination
19	**Medical countermeasures and personnel deployment.** Logistics and supplies, stockpiling, activating and coordinating countermeasures and reassignment of personnel
20	**Research and development/innovation.** For preparedness and emergency risk management
21	**Interventions.** For management of (i) zoonotic diseases, (ii) food safety events; (iii) chemical events; (iv) radiation emergencies; (v) deliberate events
22	**Linkages to other determinants of preparedness.** Gender considerations, climate, infrastructure, intrinsic and extrinsic determinants affecting vulnerable populations

Note: Governance would be captured under leadership, advocacy, legislation, policy, financing and coordination.

This list of thematic areas is based on existing frameworks and their associated tools to support IHR core capacity monitoring and evaluation, development and strengthening. However, it also includes lessons learnt from recent major public health emergencies, including the COVID-19 pandemic.

The development and maintenance of IHR core capacities is guided by collective and coordinated actions described in the WHO IHR monitoring and evaluation framework *(31)* and associated tools including the WHO Benchmarks for International Health Regulations (IHR) capacities *(28)*, national action plans for health security *(32)*, IHR-performance of veterinary services national bridging workshops *(33)* and the strategic tool for assessing risks *(28)*.

3.1.1 IHR monitoring and evaluation framework

This framework is a set of tools developed by WHO and partners, which comprises four components: the mandatory State Party self-assessment annual reporting and three voluntary components, namely after action reviews, simulation exercises and joint external evaluations. The IHR monitoring and evaluation framework aims to provide a comprehensive, accurate, country-level overview of the implementation of requirements under the IHR to develop and monitor capacities to detect, monitor and maintain public health capacities and functions.

3.1.2 National action plans for health security

The national action plans for health security is a country-owned, multiyear, planning process that can accelerate the implementation of IHR core capacities. It is based on a One Health, all-hazards, whole-of-government approach. The plan captures national priorities for health security, brings sectors together, identifies partners and allocates resources for the development of health security capacity.

3.1.3 WHO benchmarks for IHR capacities

The WHO benchmarks guide State Parties, partners, donors and international and national organizations on suggested actions needed to improve IHR capacities for health security. This can help countries in their development of national plans, such as their action plans for IHR or health security.

3.1.4 IHR-performance of veterinary services national bridging workshop

These workshops are 3-day events facilitated by WHO and the World Organisation for Animal Health that bring together participants from public health and animal health services. The objective is to analyse and improve collaboration between the two sectors in the prevention, detection and response to zoonotic diseases and other health events at the animal–human interface (including food safety, food security and antimicrobial resistance).

3.1.5 Strategic tool for assessing risks

This tool was developed by WHO to support Member States in risk assessment using a standardized methodology. It enables countries to conduct an evidence-based assessment of a specific risk that is comparable, reproducible and defensible.

3.1.6 Strategic Partnership for Health Security and Emergency Preparedness Portal

All IHR related materials can be found on the Strategic Partnership for Health Security and Emergency Preparedness Portal *(34)*. This portal is an interactive digital platform that facilitates the sharing and exchange of information on multisector health security investments, and activities and capacities on a national, regional and global scale. It also centralizes all IHR-related frameworks and tools, data and reports. In addition, the portal provides stakeholders with documents, data and resources covering key areas for global health security, such as One Health operations, health systems, UHC, Sustainable Development Goals, pandemic influenza preparedness, disaster risk management, antimicrobial resistance, WHO Emergency Dashboard, WHO Global Health Observatory and the IHR *(34)*.

3.2 Health systems

WHO has a framework that describes six building blocks of health systems *(35,36)*. These define essential components that all health systems around the world, regardless of how they are organized, need to have to achieve their goals. The building blocks are defined below *(35)*.

1. **Service delivery.** Good health services are those which deliver effective, safe, quality personal and non-personal health interventions to those that need them, when and where needed, with minimum waste of resources.
2. **Health workforce.** A well performing health workforce is one which works in ways that is responsive, fair and efficient to achieve the best health security outcomes possible, given available resources and circumstances (i.e. there are sufficient staff, fairly distributed; they are competent, responsive and productive).
3. **Information.** A well functioning health information system is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status.
4. **Medical products, vaccines & technologies.** A well functioning health system ensures equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost–effectiveness, and their scientifically sound and cost-effective use.
5. **Financing.** A good health financing system raises adequate funds for health in ways that ensure people can use needed services and are protected from financial catastrophe or impoverishment associated with having to pay for them. It provides incentives for providers and users to be efficient.
6. **Leadership/governance.** This involves ensuring strategic policy frameworks exist and are combined with effective oversight, coalition-building, regulation, attention to system-design and accountability.

Many links and complex interactions exist between the six building blocks of health systems *(37)*. For instance, some are cross-cutting components, such as leadership and governance, and health information systems, which provide the basis for the overall policy and regulation of all the other health system blocks. Key input components to the health system include specifically, health financing and the health workforce. In addition, essential medical products, vaccines and technologies, and health services reflect the immediate outputs/outcomes of the health system, i.e. the availability and distribution of care *(36)*.

In addition to the building blocks, a number of key concepts must be taken

into account to have a full and comprehensive view of health systems capacities, notably:

- common goods for health *(2,38,39)* (Box 1),
- essential public health functions (Box 2) *(40)*, and
- primary health care (Box 3) *(41,42)*.

Despite being diverse, approaches to and frameworks for health systems are complementary in that they offer a synergistic view of the health system and place a focus on its various elements *(43)*. They can all be used to assess, plan, prioritize, implement and monitor the building and strengthening of health systems.

In particular, adopting a primary health care approach is key to building strong and resilient health systems for health security. Although prevention, detection and response to health emergencies involve all levels of the health system, these activities fundamentally begin with and involve local communities. A primary health care orientation of health systems, and the systematic integration of emergency risk management within it, can provide the essential foundations for both UHC and health security.

Box 1. Common goods for health

Common goods for health provide the critical enabling environment for personal health services provided by the health system, and more broadly are essential to building national and global health security, including preventing and mitigating epidemic and environmental threats to human societies *(37)*. These population-based functions and interventions are either public goods or have large social externalities in that they benefit society, rather than a single individual. As a result of these characteristics, market forces will never finance or establish common goods for health. The common goods for health agenda applies economic principles to public health to identify key functions that require public financing, regardless of whether they are provided by the public or private sectors *(44)*. Common goods for health fall under five categories with select examples provided:

- **Policy and coordination.** Formation of national policies, institutional capacities and coordination mechanisms
  - (e.g. planning and management of emergency preparedness and response; health security and environmental risk policies and strategies; community engagement and management; Institutional capacities and

plans; coordination platforms/systems; sector and sub-national policies and strategies);

- **Regulation and legislation.** Full range of legal instruments

  → (e.g. regulation of the safety of medicines and medical devices; legislation for IHR capacities; environmental regulations and guidelines (e.g. for biodiversity, water, and air quality); accreditation of health facilities and providers);

- **Taxes and subsidies.** Financial instruments to influence individual and market behaviour

  → (e.g. taxes on products with health impact to create market signals leading to behaviour change);

- **Information, analysis and communication.** Collect and analyse information, and monitor population-level change

  → (e.g human and animal disease, environmental, and risk (e.g. AMR, chemicals and radiation) surveillance; communication and dissemination; community behaviour change communication; research and evaluation);

- **Population services.** Services that impact all of society and are fundamental to public health

  → (e.g. sewage treatment and control, vector control, medical and solid waste management).

Common goods for health form the foundation for health security-related objectives. They provide the economic rationale for why it is critical for governments to invest in the IHR capacities, yet common goods for health extend beyond public health threats and events, to also include risk factors stemming from social determinants, environmental degradation and non-communicable diseases. All these efforts are essential for making effective progress towards universal health coverage (UHC) *(36)*.

It is important to highlight that common goods for health do not all sit within the health sector, nor are they all financed nationally. There are specific common goods for health that need to be governed and financed at regional and global levels (e.g. knowledge sharing, research and development, cross- border initiatives for health emergency preparedness and response), as COVID-19 has clearly highlighted.

Box 2. Essential public health functions

Given the broad scope and intersectoral nature of public health structures and practices, another approach that has been used to describe services that fall under the public health remit is essential public health functions. Essential public health functions have been described as a set of fundamental activities that tackle the determinants of health, protect a population's health and treat disease *(45)*. Since the first WHO list of essential public health functions was published in 1998, they have been a recurring method used by WHO regions, Member States and other global health actors to help define public health competencies and chart health system reforms.

The content of frameworks on essential public health functions can be divided into two categories *(38)*.

- **Cross-cutting (horizontal) functions.** These are based roughly on the building blocks of health systems (governance, financing, human resources, health information systems, research, social participation and health communication).
- **Service-based (vertical) functions.** These comprise the traditional public health services provided by modern health systems (health protection, health promotion, disease prevention, health care, preparedness for public health emergencies and other vertical functions).

Given these functions, there are clear links between essential public health functions and both health system building blocks and IHR capacities for health emergencies.

Box 3. Primary health care

Building, strengthening and maintaining health systems should be based on adopting a primary health care approach. These actions contribute to greater efficiency and fairness in health care and greater security in the health sector and beyond *(40)*.

The primary health care approach provides an essential foundation for health emergency and risk management, and for building community and country resilience. Primary health care has three interrelated and synergistic pillars: (i) empowered people and communities; (ii) multisectoral policies and actions for health; and (iii) strong and integrated health services, with good-quality primary care.

Through these three pillars, primary health care promotes not only an effective emergency response, but also a prepared and resilient system that can prevent, mitigate, withstand and recover from emergencies, while continuing to provide essential health services throughout *(39)*.

The importance of adopting a primary health care approach is also mentioned in a position paper on building resilient health systems for UHC and health security.

3.3 Other sectors

Health systems and the IHR capacities alone cannot cover all that is required to ensure timely, whole-of-society and efficient prevention, detection and response to public health emergencies. Indeed, beyond the components described earlier, additional capacities from other sectors are required to ensure a true whole-of-society approach for global health security. This imperative has been demonstrated in the COVID-19 pandemic, which mainly affected vulnerable people negatively affected by preventable risk factors, economics and social determinants *(46)*. Societies form a complex adaptive system, and change in any interconnected parts of the system has reverberations throughout *(47)*.

To fully engage in sustainable health security, there is a need to go beyond the health sector *(48)* and include the full range of upstream determinants and actions needed to sustainably provide health systems for health security. This requires the involvement of other sectors that support health systems, in particular service delivery and an adequate workforce *(49)*.

For example, health services are dependent on the adequate provision of essential services and support from safe water and sanitation for infection prevention and control and continuous energy supply to operate medical devices.

Box 4. Interdependency with other sectors for antimicrobial resistance

Antimicrobial resistance (AMR) has root causes in a number of sectors such as health, water and sanitation, food safety, agriculture, environment and trade. As such, no single government department or independent organization can tackle AMR alone. Containing and controlling AMR demands coordinated action across different sectors and disciplines, with a broad range of stakeholders. In the long term, effective multisectoral collaboration requires governments to take ownership of the implementation process, and ensure it is appropriately resourced and given sufficient visibility to keep it a national priority.

The relationship between AMR and primary care is bidirectional. Good-quality primary care services, which include vaccination, the rational use of medicines, the availability of effective antibiotics, effective infection prevention and control measures and water, sanitation and hygiene (WASH) infrastructure, are one way to mitigate the risks of AMR. At the same time, reducing the risks of AMR will help to preserve the effectiveness of antibiotics, which is central to providing primary care and preventing and controlling the spread of infections *(50)*.

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Sustainable financing is also needed to ensure that these capacities in other sectors do not diminish over time. Box 4 gives an example of the relationship with other sectors for antimicrobial resistance.

Finally, community engagement is essential for health security. Participation of local people in projects, interventions or activities that address issues affecting their well-being is critical to building community resilience and local capacity to prevent, detect and respond to health emergencies, and thereby contain threats at their source *(51)*.

When a country is capable of preventing, detecting or effectively tackling a public health threat, the greatest beneficiary is society at large, given the interdependencies between health and other sectors *(13)*. Beyond the health sector, other actors benefit from a safer world where public health emergencies do not spread globally and have limited impact on international travel, trade and the economy.

The interdependencies of these three components of health systems for health security (IHR capacities, health system components, and other sectors) have been repeatedly seen in countries, examples of which are presented in Annex 1.

3.4 Bringing it all together

Instead of being distinct entities, additional components from health system building blocks and other sectors can be mapped against and added to the proposed list of technical areas of IHR capacities.

The health systems for health security approach combines health security capacities and components from health systems and other sectors that work in synergy to tackle health emergencies including severe pandemic threats. This leads to improved health security, responsive and resilient health systems, social and financial protection with improved efficiency and healthier populations (Figure 2).

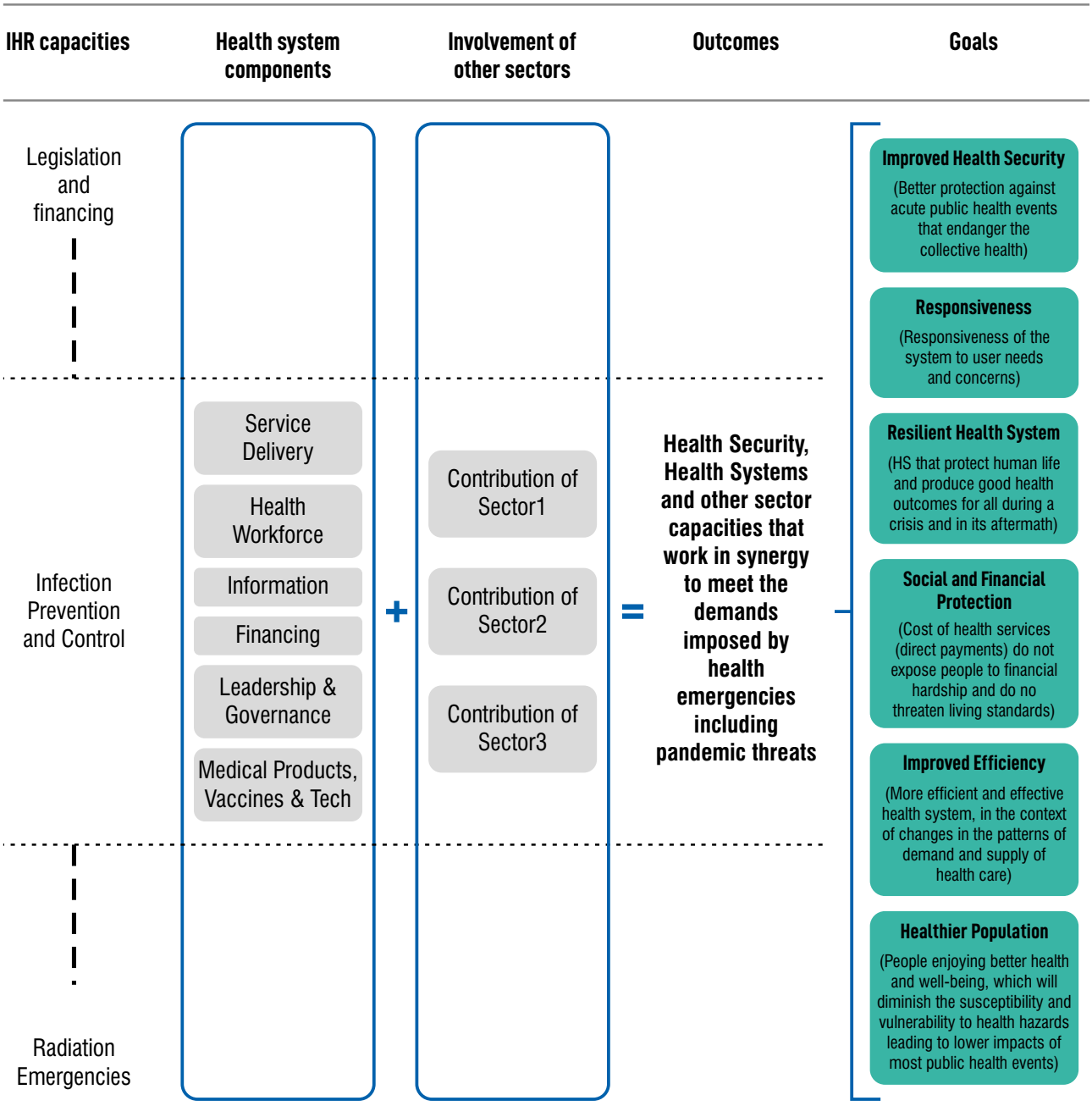

Figure 2. Building health systems for health security capacities to meet the demands imposed by health emergencies

4. From concept to action

4.1 Four steps for building health systems for health security

Countries keen to move beyond a conceptual approach to concrete actions for health systems for health security should take the following actions.

First, assess existing capacities for IHR, and the current state of key components in health systems (the six building blocks) and other sectors. This will help countries to identify existing gaps, which may hamper the management of health emergencies. The assessment of IHR capacities and health systems can be done using the tools of the IHR monitoring and evaluation framework, as well as the health systems frameworks and their associated tools such as health systems assessments.

Second, the shortcomings identified should be rectified by developing comprehensive action plans that address gaps in health systems for health security, including through action plans for IHR or health security and national health sector strategic plans. The plans should delineate actions and activities required to address essential missing components of health security, health systems and other sectors through appropriate resources, capacities and organizational systems that can work synergistically (rather than in parallel) to meet the demands imposed by health emergencies.

Third, countries should implement planned activities for developing health systems for health security capacities, resources and organizational systems, while addressing gaps identified. Activities should be prioritized based on each country's context and available resources for investment and can be derived from suggested actions in the WHO benchmarks for IHR capacities. In addition, partner agencies and donors should be engaged to support countries in implementation including allocating funds where more investment is most needed.

Fourth, with implementation, the evolution of health systems for health security over time should be continuously monitored and evaluated, aligned with the same tools as used for assessment, and challenges in implementation identified and addressed for ever-improving efficient and effective management of health emergencies. Figure 3 illustrates these steps.

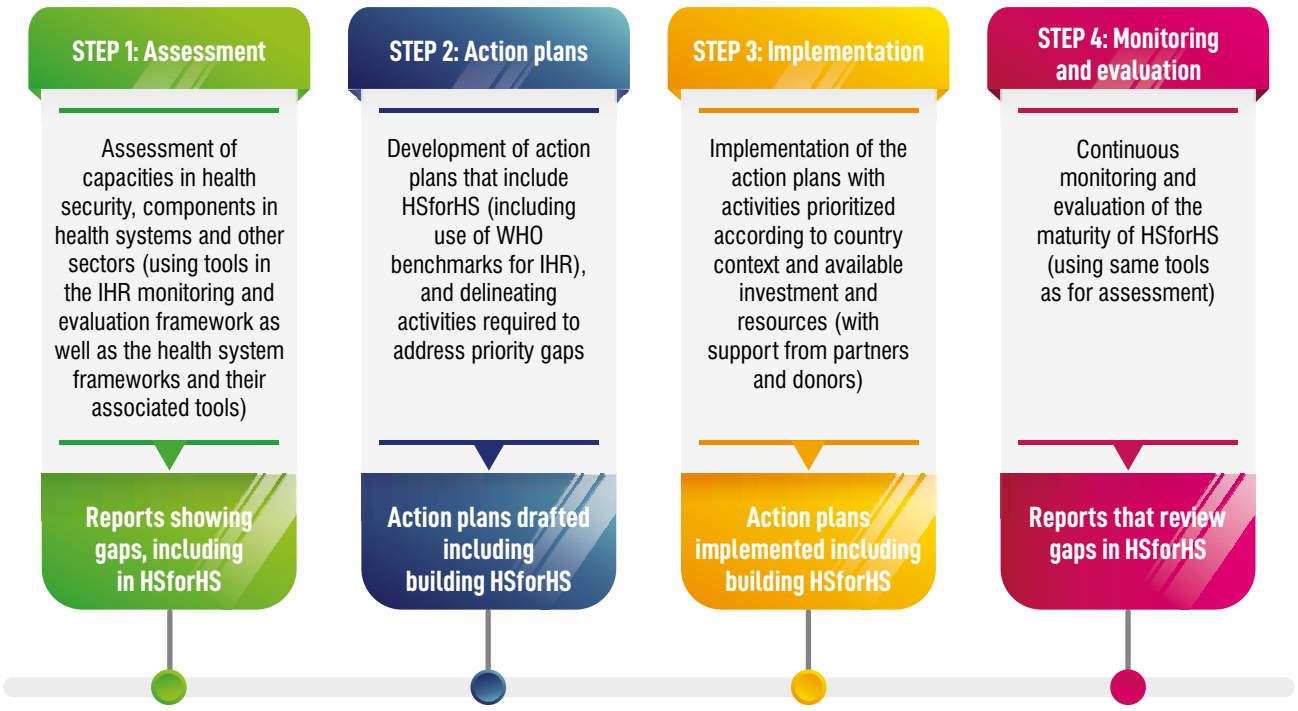

Figure 3. Four steps for building health systems for health security (HSforHS)

4.2 Prioritizing investment using a maturity model

4.2.1 Maturity model and WHO benchmarks for IHR capacities

The development of capacities for strengthening health systems for health security, while addressing the challenges identified through assessments, should be guided by a maturity model. This model offers countries a conceptual representation of graduated actions to be implemented for scaling up capacities for management of health emergencies, starting from their current status. The maturity model for health systems for health security is aligned with that presented in the WHO benchmarks for IHR capacities *(28)*. This document describes benchmark actions and attributes from all 18 technical areas on IHR capacities. It provides a roadmap of suggested actions that can be applied to build and strengthen IHR capacities, strong and resilient health system components (that can meet and adapt to the evolving demands generated by health emergencies while maintaining continuity of essential health services throughout) and capacities of other sectors (that support management of health emergencies and ensure multisectoral and multidisciplinary management of these emergencies).

These benchmarks serve three primary purposes in terms of strengthening health systems for health security and expanding investments in them. First, they provide a definition of desirable attributes – the actions required in health security, health systems and other sectors for health security at each level of the benchmark. Second, they provide a way of defining priorities for building health systems for health security for countries, development partners and WHO. Third, they provide a useful way of clarifying essential actions that require a more integrated response and recognize the interdependence of each action in the benchmarks.

Benchmarks are distributed at five levels, from no capacity to limited, developed, demonstrated and sustainable capacity *(5)*. Each capacity level has standard actions which, if all are achieved and sustained, will increase countries' health security. This will also ensure that even when a system is very advanced, it will still have the basic capacities (described at lower levels) to manage known, emerging, re-emerging and unknown risks.

The implementation of benchmarks is supported by a digital tool *(52)*. This tool provides a database of key actions, based on the benchmarks, needed to improve IHR monitoring and evaluation framework scores by one or more steps (i.e. joint external evaluations or State Party self-assessment annual reporting tool).

This tool also gives countries an opportunity to create a draft plan, customize or download it, view implementation guidance, and review and analyse actions.

4.2.2 Updating the WHO benchmarks for IHR capacities

The WHO benchmarks for IHR capacities are being updated to reflect the revised list of capacities described above, including components of health systems and other sectors. The revised benchmarks also build on existing frameworks and associated tools for capacity-building for health systems and other sectors, as well as on lessons learnt from recent major health emergencies, including the COVID-19 pandemic.

The WHO benchmarks for IHR capacities will thus also be useful for tracking the progress of efforts to build health systems for health security capacities, as the list of actions can also be used as standards and points of reference. In addition, the benchmarks facilitate the decision-making process on planning, prioritization and implementation of activities to strengthen capacities, and focus investments, to achieve a satisfactory level of health security. As an example, Annex 2 provides a sample benchmark with its corresponding actions at the different levels of capacity to implement the framework for infection prevention and control.

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Implementation of the health systems for health security framework using benchmarks is not without its challenges. Countries, partners and donors should be aware of the main challenges they may face in building health systems for health security (see Annex 3). This will help countries, partners and donors identify and anticipate challenges relevant to their context to better prevent and address them.

4.3 Implementing the health systems for health security framework at different levels in a country

The maturity of the health system and its contributions to health security can vary within the same country, with health systems at different administrative, geographical or federal levels showing different levels of maturity. As such, performance at the national level may not reflect that of remote communities or regions with very poor capacities to manage public health emergencies. Furthermore, urban settings in a country, especially capital cities, often have the highest capacities of health systems and health security, and support surrounding periurban and rural regions. It is thus essential to account for geographical and community differences including from a primary health care perspective.

Good communication and coordination between all levels is critical to ensure optimal implementation of activities for effective management of health emergencies from community to intermediate to national and supranational levels, as illustrated in Figure 4. Planning on building health systems for health security therefore needs to be done not just at the national level, but also at subnational and supranational levels, with relevant priority actions selected to address different types of gaps at each level.

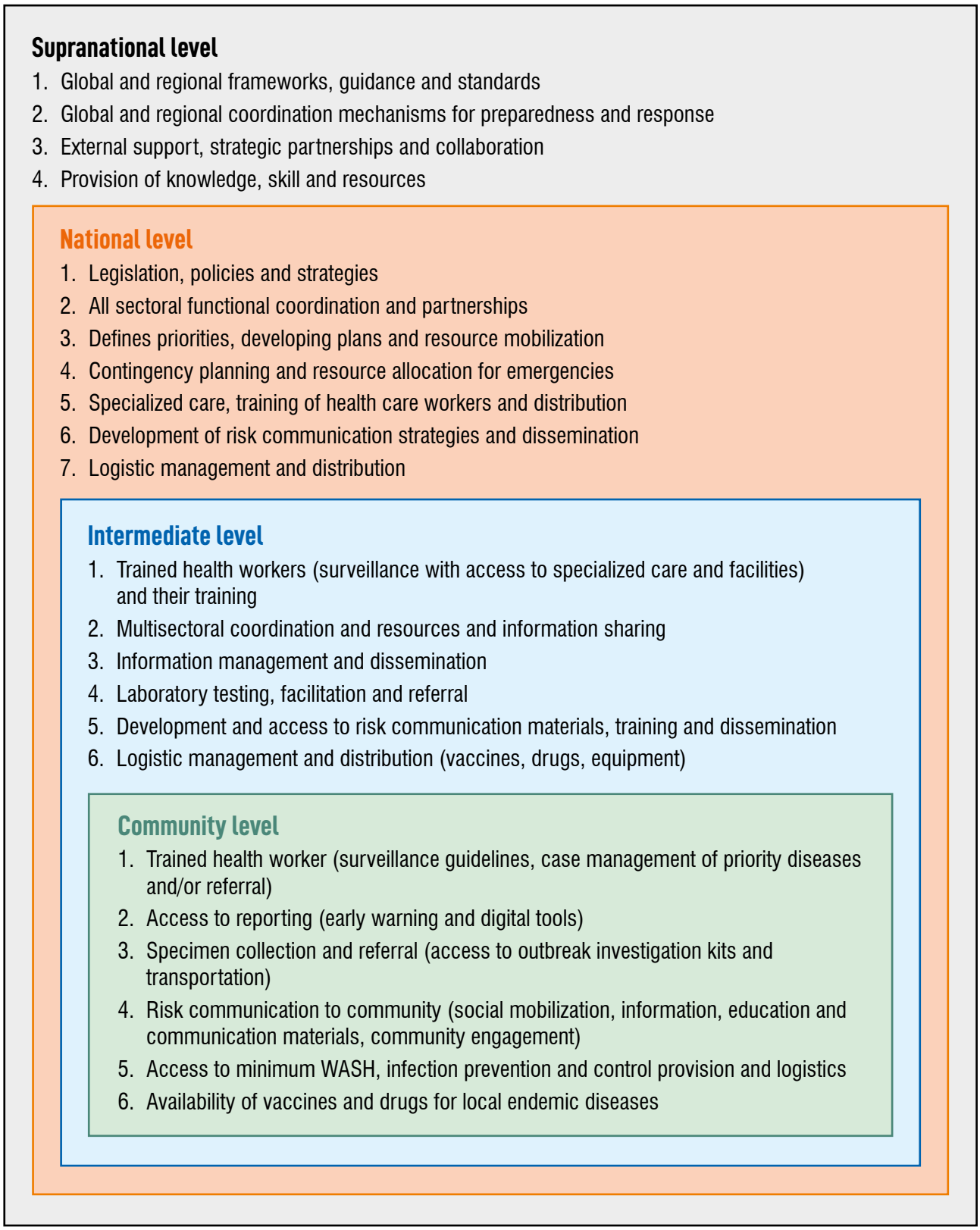

Figure 4. Levels of application of health systems for health security

5. WHO resources (in development) for building health systems for health security

For implementation, WHO will continue to support State Parties on suggested activities for the strengthening of health systems for health security, alongside partners, donors and international and national organizations. In addition to this framework and the upcoming updated WHO benchmarks for IHR capacities, many other materials and tools have been made available, with others in development, for this purpose. In particular:

- A repository of all existing tools to facilitate the implementation of benchmark actions for capacity-building (Reference Library of WHO Benchmarks for IHR Capacities)
- A dataset to assess and track country progress in building health systems for health security. The dataset gathers available data on health systems, health security and other sectors. The output of analyses will be summarized in health systems for health security country dashboards.
- Academic and inservice training on building health systems for health security is being developed and will be made free of charge to target audiences worldwide.

In the longer term, material and tools related to health systems for health security will be regularly uploaded on the Strategic Partnership for Health Security and Emergency Preparedness Portal. Other updates on activities related to health systems for health security will be regularly shared on that platform, including scientific papers, and meeting and workshop reports.

These will help countries integrate this framework into their ongoing activities around health security, break the siloes between health systems, health security and other sectors, and change the paradigm for better management of future health emergencies.

6. Conclusion

In an interconnected world, countries need to reach the highest possible level of health security and optimizing international collaboration is vital for all countries, regardless of their level of income or development. As a global community, there is a need to work together on building, strengthening and maintaining capacities for effective management of health emergencies. This global challenge in achieving health security demands further investment in health systems as well as in other sectors; COVID-19 provides an opportunity for countries to do so and building back better. As the Director-General of WHO, Dr Tedros Adhanom Ghebreyesus said at the Seventy-third World Health Assembly, "COVID-19 is not just a global health emergency, it is a vivid demonstration of the fact that there is no health security without resilient health systems, or without addressing the social, economic, commercial and environmental determinants of health." *(53)* The pandemic is a pivotal moment and opportunity for the world to break the cycle of "panic and forget" and secure the full commitment of global, national and subnational stakeholders for long-term investments in building health systems for health security through an all-of- government and all-of-society approach.

Efficient and effective emergency prevention, preparedness and response must be built on strong and resilient health systems and the support of other sectors. These health systems and sectors need to be able to meet increased demands, adapt flexibly to evolving needs, and mitigate the effects of emergencies on the provision of essential health services so as to quickly recover or transition to a new stable state, especially in the event of protracted crises. This must be done through a primary health care approach. As recent and ongoing major public health events have shown, important gaps exist in health systems worldwide and the world remains as strong as its most vulnerable setting. Challenges for efficient implementation of the health systems for health security framework in countries need to be anticipated and addressed.

By identifying components in health systems and other sectors that contribute to health security, this framework and its subsequent products will help countries and other stakeholders to better understand and more effectively invest in building health systems for health security. The returns on investment of adopting this all-hazards, multisectoral and multidisciplinary prevention and preparedness approach will be substantial across all sectors of society and will help make the world a safer place.

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Annex 1. Case studies showing the interdependence of health systems and health security

For each health system building block, interventions are available to help develop strong, agile and resilient health systems that can meet and adapt to evolving demands of health emergencies, while maintaining continuity of essential health services throughout. To illustrate this, examples of country experiences are described below which show how investing in each of the six building blocks contributes to better health security.

Service delivery

Small or focused improvements in service delivery can have important effects on health security. Interventions made by Saudi Arabia have helped public officials prevent and mitigate outbreaks of infectious diseases during the Hajj. These interventions included increased attention to vaccination programmes and travel medicine protocols, free medical care to pilgrims in hospitals (including for critical care), increased diseases monitoring, and surveillance at points of entry. In addition, health officials instituted multisectoral actions to provide safe water, food supplies, sanitation for pilgrims and to provide public conduct information as part of an education campaign. As a result of these interlinking and multisectoral improvements in services for both Saudi Arabian citizens and visitors, no major infectious disease outbreaks have occurred at the Hajj over the past decade, despite the emergence of several new coronavirus and influenza viruses *(1)*.

Similarly, improvements to health system resilience can help mitigate service delivery shocks associated with acute health emergencies. Lebanon was able to maintain the continuity of services both for citizens and refugees during the Syrian refugee crisis (2011–2013) thanks to previous reforms to reduce out-of-pocket expenditure and ensure uninterrupted financial coverage, as well as financial commitments to increase the number of primary health care centres in the national network. During the refugee crisis, routine care activities continued, beneficiaries of primary health care increased, community health workers were deployed, and epidemiological surveillance and measures were implemented at airports and seaports to detect and contain diseases outbreaks. In addition to the national primary care centres, hospitals were contracted by the United Nations High Commissioner for Refugees to provide secondary care services for refugees, highlighting the role that global health partnerships can play. Improvements were seen in service utilization, quality of services and vaccination coverage, and effective management of several outbreaks, including measles *(2)*.

Health workforce

There can be no health security without a skilled health workforce. Global health security depends on many factors but without skilled health professionals to act as the first line of defence of individual health security, efforts will be in vain *(3)*.

A programme in Uganda offers an example of health workforce development that can have an immediate return on investment to improve health security. Public Health and Field Epidemiology training programmes were rolled out nationally and resulted in enhanced workforce capacity to identify, investigate and control disease outbreaks at the source. These programmes have led to improvements in disease control and surveillance systems, which have strengthened Uganda's internal disease control capacities and contributed to broader global health security efforts *(4)*.

Country case studies from some other sub-Saharan countries demonstrate the great added value of investing in the health workforce through in-service workforce capacity improvement programmes that aim to enhance knowledge. The studies also highlight challenges such as the need to: train more doctors, nurses and midwives to achieve international targets (threshold) of health workforce ratios; attain a more efficient geographical distribution of the health workforce; and consider the mix of cadres to be scaled up *(5,6)*.

Information

The recent experience of the Ebola virus disease outbreak in Uganda showed that investment in community-based surveillance systems was important to ensure country preparedness and health security. In particular, a commitment to sustain health system capacities in surveillance and integrated information systems was key to improving health security. These measures should be seen as foundational to the health system and not just exceptional measures used during health emergencies *(7)*.

This provides strong evidence that small to medium improvements in health information and surveillance can significantly underwrite health security. In the Democratic Republic of the Congo, low-tech improvements in data management and training resulted in more rapid and effective response to Ebola virus disease *(8,9)*. In Cyprus, streamlining information-sharing and the use of information technologies improved emergency preparedness as well as delivery of routine services (10). Evidence also supports the health security benefits of building better networks and shared learnings between national and regional laboratory and information systems, in both low- and middle-income *(11–16)* and high-income country settings *(17)*. Improvements in these capacities in addition to more routine surveillance can have long-term benefits for population health and security.

Medical products, vaccines & technologies

Since 2014 the development of Indonesia's health system and UHC policy has been framed as both a health security and national security priority; population health is seen as connected to all aspects of the country's social and economic development. A central component of Indonesia's health system is the decentralized and contextualized application of UHC that recognizes affordable access to essential medicines as a key priority within its national health insurance system *(18)*. Significant changes to the health system were considered necessary to better reflect the diverse population (300 ethnic and 750 language groups) and geographical demands (across 17,744 islands). As with any system, inequities remain and continued reforms are underway. Yet, Indonesia has become the world's largest single-payer scheme and has created a more flexible system that seeks to accommodate and adapt to variable conditions and access needs. This has strengthened system resilience and rapid response capacities at both the national and local levels.

Financing

Thailand is pursuing a health investment strategy that combines health system building and UHC policy as part of a larger national health security agenda. In that regard, the Universal Health Coverage Scheme (2001) and the Health Security Act (2002) ensure continued investments in local health system strengthening as requisite infrastructure for UHC and more sustainable and cost-effective health security measures. These reforms were achieved by recognizing health as a means through which broader national development and security could be achieved, and that financial investments in the health sector to achieve UHC will have positive ripple effects across all sectors in the promotion of long-term national interests *(19)*.

Similar links between strengthening investment in health system building blocks, UHC and health security have been recognized at global and national levels in response to the Ebola virus disease outbreak. At the global level, communiques from the G7 and G20 meetings in 2015 stressed the important relationship between health system strengthening and security. It was argued that Ebola virus disease had been "a wake-up call", and that further investments in health systems were crucial to ensure that global health security was enhanced through a focus on national health securities *(20)*. In the West African context, there have been renewed efforts for health system investments *(5)*. Again, links between the delivery of UHC and long-term security prevention and preparedness have been deemed essential, with particular attention paid to the development of the health care workforce. Guinea and Liberia are two examples where investment plans and health

worker-to-population density targets were set. However, an important component of delivering on these commitments is reliable financing and a steady growth in health budgets. Initial reluctance to make these investments needs to be addressed by highlighting future cost savings and the longer time horizons for population health outcomes *(21)*.

Leadership/governance

Indonesia has taken important steps to improve their emergency preparedness in compliance with the IHR. Since the avian influenza A(H5N1) outbreaks in 2005, the country has established a series of plans, guidelines and committees to control avian influenza and prepare for future pandemics. These processes were developed using a whole-of-society and whole-of-government approach, which involved multisectoral stakeholders at all levels and clear distribution of roles and responsibilities for all sectors and agencies. A high political commitment to health security underwrote these activities and outcomes, including compliance with IHR implementation since 2007 and the organization of a voluntary joint external evaluations in 2017. The momentum created by this evaluation resulted in the National action plan for health security 2020–2024 (launched in January 2020). This plan integrates the country's National medium-term development plan 2020–2024 to include a focus on health system strengthening based on primary health care. As part of its governance enhancement, communication between all administrative levels was also strengthened, with the inclusion of minimum service standards for emergency preparedness at district and municipality levels *(22)*.

At local levels, governance and leadership initiatives also played a crucial role in how Mexico City and New York City responded to influenza A(H1N1) in 2009. In both cases, pre-existing emergency plans were specifically designed to facilitate intersectoral linkages and decision-making alongside enhanced surveillance protocols and training. These plans included previously developed programmes and communication tools to sustain clear and transparent communication campaigns. These measures were effective in maintaining coordination between sectors as well as fostering public trust. In addition, the ability of political leadership to learn from and adapt to health system weaknesses, mobilize resources quickly, and provide consistent management and oversight proved to be important in controlling the outbreak *(23)*.

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Annex 2. Updated IHR benchmarks for capacity-building

The WHO benchmarks for IHR capacities is a tool to guide State Parties, partners, donors and international and national organizations on suggested actions (from the IHR benchmarks, health systems and other sectors) they should plan for, prioritize and support to strengthen country health security capacity, following an all-of-society, all-of-government approach. In practice, the actions define the steps to be taken to move from one capacity level to the next. If all levels are achieved and sustained, these benchmarks can bring countries to the optimum level of health security.

For example, if a country wants to move from level 3 to level 4, it should achieve all actions listed both in level 2 (limited capacity) and level 3 (developed capacity) to progress to level 4 (demonstrated capacity) for the given benchmarks.

Table A2 1 gives is an example of a sample benchmark with its corresponding actions at the different levels of capacity to implement the framework for infection prevention and control.

Table A2 1. Sample benchmark and corresponding actions at the different capacity levels to implement the framework for infection prevention and controlrity

Benchmark 3.3	Infection prevention and control (IPC) is in place
Objective	To develop a functioning infection prevention and control system for health care facilities and farms

CAPACITY LEVEL	WHO BENCHMARKS FOR IHR	HEALTH SYSTEMS CAPACITIES	OTHER SECTORS CAPACITIES
02 LIMITED CAPACITY	• Review WHO recommendations on core components for effective IPC programmes and the national and facility practical manuals supporting their implementation. • Use IPC assessment tools (IPCAT) to assess the core components of IPC programmes at the national (IPCAT2) and facility (IPC assessment framework (IPCAF)) levels and identify precise areas/ core components requiring action. • Develop and implement an action plan, informed by assessment results and following the five-step cycle described in the practical manuals, that addresses identified priority core components at the national and facility levels (at least at major hospital centres), core component one (IPC programme) and core component eight (water, sanitation and hygiene (WASH)), according to the WHO requirements/action checklists. • Establish a national IPC committee and develop its terms of reference and local IPC committees at district and/or facility levels, if an action plan is not in place.	• Appoint at least one competent person to plan, coordinate and facilitate implementation of IPC activities. • Review the legal framework for implementation of IPC programmes at national, subnational and facility levels. • Draft evidence-based strategic documents (e.g. policies, laws, strategies and codified approaches) to reinforce responsibility and commitment of the health sector in IPC management at national, subnational and facility levels. • Disseminate the strategic documents on IPC management to all relevant stakeholders and potential domestic and external sources of funding. • Appoint a technical team of dedicated, trained infection preventionists (medical and nursing professionals) with a defined scope of responsibility. • Ensure good-quality microbiological laboratory support, with at least one national reference laboratory for surveillance. • Ensure: patient care activities are conducted in a clean and/or hygienic environment; functioning WASH infrastructures and services exist; appropriate IPC materials and equipment are available; and an adequate number of hand hygiene facilities are appropriately positioned. • Ensure standards are set for drinking water, sanitation and environmental health in health care facilities.	• Establish an official multidisciplinary group, committee or equivalent structure to interact with IPC technical teams. • Cost all the country action plan for IPC considering routine and potential special circumstances such as public health emergencies that will require some adjustments. • Maintain linkages to other national programmes and professional organizations.

CAPACITY LEVEL	WHO BENCHMARKS FOR IHR	HEALTH SYSTEMS CAPACITIES	OTHER SECTORS CAPACITIES
03 DEVELOPED CAPACITY	• Develop national IPC guidelines for human and animal health sectors (IPC in animal production). • Identify and allocate adequate resources to support selected health care facilities/farms to implement IPC action plans, including IPC guidelines. • Use IPC assessment tools at national (IPCAT2) and facility (IPCAF) levels to identify precise areas requiring additional activities to improve or put in place additional IPC core components, and to guide the development of a detailed improvement plan of action. • Implement the action plan, informed by assessment results and following the five-step cycle described in the practical manuals, according to the WHO requirements/action checklists for the priority core components identified. • Refer to the recommendations and requirements for IPC guidelines, and train adequate health care workers on issued guidelines. • Monitor IPC and WASH implementation in selected health care facilities using IPCAF, hand hygiene self-assessment framework, hand hygiene compliance observation tools (WASH FIT tool).	• Develop necessary infrastructure and supplies to enable implementation of IPC guidelines. • Ensure: human and financial resources are allocated; health care worker staffing are appropriately assigned according to patient workload; and technical teams have a protected and dedicated budget. • Develop national IPC curricula (pre- and postgraduate), new employee orientation and inservice continuous training and a national training programme for those performing surveillance. • Recruit a skilled and knowledgeable health workforce, and allot time, education and training of technical teams/health workforce. • Ensure bed occupancy does not exceed the standard capacity of facilities. • Integrate IPC with other quality improvement, safety and accreditation programmes. • Make available a sufficient quantity of personal protective equipment, hygiene and disinfection products and other IPC-related supplies for personnel in special settings such as hospitals, points of entry, plants, waste management companies and sewage systems.	• Develop mechanisms to fund the implementation of IPC and WASH programmes in routine services and mobilize additional resources either domestically or internationally for special circumstances such as public health emergencies. • Include IPC-related norms and standards in framework documents for management of special settings such as hospitals, points of entry, plants, waste management companies and sewage systems. • Develop tools for follow-up and financial audit of the implementation of IPC and WASH programmes and ensure efficient and timely implementation, and transparent and accountable management at the national, subnational and facility levels.

CAPACITY LEVEL	WHO BENCHMARKS FOR IHR	HEALTH SYSTEMS CAPACITIES	OTHER SECTORS CAPACITIES
04 DEMONSTRATED CAPACITY	• Use the national IPCAT2 to identify precise areas still requiring action and update the plan of action. • Mandate and support IPC improvement at all health care facilities, recommending the use of the IPCAF, the WASH FIT tool and antibiotic stewardship programmes. • Update and implement action plans, informed by assessment results and following the five-step cycle described in the practical manuals, which progressively cover all recommended IPC priority core components at the national and facility levels, according to the WHO requirements/action checklists for the priority core components identified. • Include in these plans specific interventions for prevention of antimicrobial resistance tailored to the local epidemiological situation. • Share the plans with national, subnational and local IPC committees and incorporate guidance from them.	• Ensure full support, engagement and funding by governments, including ministries of health, and respective authorities, for policies, regulations and tools for coordination. • Use vaccination as a way to prevent infections. • Establish a system for regular monitoring and periodic evaluation of IPC programmes, including timely feedback of hand hygiene, IPC practices, WASH services and structure of health care facilities. • Establish a system for regular monitoring, evaluation of IPC outcomes such as standards met, goals accomplished, aspects that need improvement identified, including compliance with regulations and clinical practice standards. • Measure antibiotic use and assess appropriateness. • Establish a system to ensure that regular audits are carried out and feedback submitted. • Establish a quality assurance system to ensure reliability and reproducibility of laboratory data. • Train a sufficient number of experts at national, subnational and facility levels on IPC and WASH. • Ensure that all IPC programmes/projects include components that foster surveillance of IPC for most vulnerable groups including elderly people, immunocompromised patients, and drug addicts.	• Good sanitation, hand washing, food and water safety. • Integrate IPC with other quality improvement, safety and accreditation programmes. • Ensure adequate WASH outside of health care facilities. • Ensure good hygiene and IPC measures are in place to limit spread, including efforts to prevent infections transmitted through sex or drug injection. • Make the opportunity to use (real life) or test (simulation exercise) the implementation of IPC programmes and confirm they are functional in routine systems as well as in special circumstances such as public health emergencies. • Regularly update IPC-related norms and standards in framework documents for management of special settings, such as hospitals, points of entry, plants, waste management companies and sewage systems, based on normal and special health developments in the country or globally. • Draft and update regularly the mapping of stakeholders involved in IPC and WASH at the national, subnational and facility levels. • Conduct regular financial audits to control effective resource utilization and financial transparency in the implementation of IPC projects. • Organize and support fundraising activities for implementation of IPC programmes, including drafting donor alert documents.

CAPACITY LEVEL	WHO BENCHMARKS FOR IHR	HEALTH SYSTEMS CAPACITIES	OTHER SECTORS CAPACITIES
05 SUSTAINABLE CAPACITY	• Provide effective support to health care facility IPC programmes nationwide. • Ensure that health care facilities undertake annual IPCAF and WASH FIT assessments as part of their review cycle to address long-term sustainability. • Establish a national system for continuous monitoring of progress in fulfilling IPC core components (i.e. repeat assessments at least annually), keep track of changes and scores, and develop a long-term improvement plan. • Analyse and regularly report national IPC and WASH data and support discussions on actions to incorporate lessons learnt in the long-term improvement plan. • Document the incidence of patient and health care worker infections, including Mycobacterium tuberculosis, and the effectiveness of measures to reduce their occurrence.	• Regularly monitor and periodically evaluate IPC programmes, including timely feedback on hand hygiene, IPC practices, WASH services and structure of health care facilities. • Share country experiences in IPC and WASH with other countries and play a mentoring role with other countries.	• Fund (entirely or adequately) IPC and WASH programmes/projects at the national, subnational and facility levels. • Support research programmes to generate evidence on IPC and WASH for planning, prioritization and decision-making processes.

Annex 3. Challenges for implementation of the health systems for health security framework

All countries have to cope with public health emergencies that require strong and sustainable response capacities. However, the implementation of the health systems for health security framework has several challenges in the following areas..

Leadership, coordination and governance, including strategies and policies

- Health security preparedness is not a priority for most governments worldwide. They tend to adopt a reactive approach to emergencies, especially since the outcomes of good preparedness are better mitigation and management of health emergencies.
- Coordination of management of health systems and health security activities is weak whether at international, national and sub-national levels. In particular, coordination and information management during COVID-19 has been weak.
- Coordination across various sectors and agencies in supporting the ministry of health is weak in many countries.
- There is a lack of understanding (even among stakeholders) on how strengthened health systems ensure health system resiliency and better health security.
- Gaps in interactions and cooperation between public health services and health care delivery affect overall coverage, hamper early detection and warning mechanisms, and lead to ineffective responses and late recovery.
- Health security and health system structures often function as disconnected vertical programmes within ministries of health.
- Most policies, strategies, plans, monitoring and evaluation tools related to national health systems do not, or only rudimentarily, address health security aspects, and vice versa.
- There are challenges and high transaction costs in working with other sectors. It can result in difficulties in addressing upstream health security determinants and risk factors and strengthening their supportive roles in emergency preparedness and response.

Monitoring and evaluation

- Data collection mechanisms and/or data sources for the monitoring and evaluation of health systems and health security performance are lacking.
- Research capacity is limited leading to slow generation of scientific evidence

for innovative solutions to identified gaps.

Finance

- Financial gaps in capacity-building for health systems for health security as well as for common goods for health at subnational, national and global levels. This is sometimes because health security is seen as a cost instead of an investment by governments.
- There is a need to refine costing methodologies for building health systems for health security to capture the costs (and cost–effectiveness) of: meeting IHR requirements; the broader health system contributions to health security; and the non-health system components of health security.

Human resources and advocacy

- A shortage exists of experts, leaders and policy-makers who can master both health systems and health security aspects and bring both together. This makes the effective implementation of activities for strengthening health systems for health security difficult at subnational, national and global levels.
- Decision-makers, policy-makers, communities and beyond (e.g. the media) lack awareness of and communication about the importance of health systems for health security.

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