Strategic plan for coronavirus disease threat management

Advancing integration, sustainability, and equity, 2025–2030

World Health Organization

Strategic plan for coronavirus disease threat management

Advancing integration, sustainability, and equity, 2025–2030

World Health Organization

Strategic plan for coronavirus disease threat management: Advancing integration, sustainability, and equity, 2025–2030

ISBN 978-92-4-011766-2 (electronic version)

ISBN 978-92-4-011767-9 (print version)

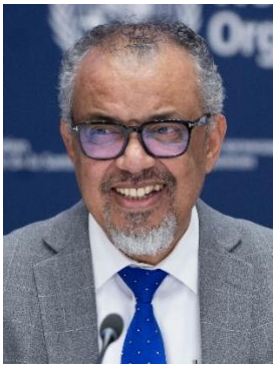
Suggested citation. Strategic plan for coronavirus disease threat management: advancing integration, sustainability, and equity, 2025–2030. Geneva: World Health Organization; 2025. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at https://iris.who.int/.

Cover photograph: © WHO / Booming - Carlos Cesar

Contents

Foreword



Dr Tedros Adhanom Ghebreyesus
Director-General,
World Health Organization

The COVID-19 pandemic was one of the greatest public health challenges of our time, leaving a profound mark on every country, community, and person. It exposed both the strengths and the fragilities of our health systems and reminded us, once again, that infectious disease threats anywhere can rapidly become a challenge everywhere.

Although I declared an end to COVID-19 as a public health emergency of international concern in May 2023, coronavirus diseases continue to place a significant burden on health systems, economies, and societies. SARS-CoV-2 still circulates widely, MERS-CoV persists as a regional threat, and the possibility of novel coronaviruses spilling over from animals remains ever-present. Together, they underscore the need for ongoing management, as well as vigilance, solidarity, and sustained investment in prevention, preparedness, and response.

This Strategic Plan for Coronavirus Disease Threat Management sets out a clear path for the years ahead. It builds on the hard-won lessons of the COVID-19 and MERS responses and earlier outbreaks, and it integrates coronavirus threat management into broader health systems and respiratory disease programmes. It emphasizes sustainability, equity, and resilience, ensuring that countries can right-size their responses to evolving risks while safeguarding the most vulnerable.

At its core, this plan is about solidarity. No country can face these threats alone. Insufficient threat management anywhere leaves every country at risk. Success will depend on collaboration across sectors, disciplines, and borders, and on governments, civil society, academia, the private sector, and communities working together with WHO to reduce risks, save lives, and build healthier, safer societies.

I call on all Member States and partners to make full use of this plan and to commit to sustained, coordinated action. Together, we can ensure that the sacrifices made during the COVID-19 pandemic are honoured by building stronger systems, protecting future generations, and preventing history from repeating itself.

Photo credit: Dr Tedros Adhanom Ghebreyesus

Acknowledgements

The World Health Organization (WHO) gratefully acknowledges the many individuals who contributed to the development of this strategic plan.

The plan was prepared under the overall leadership and technical guidance of Maria VAN KERKHOVE and Sophie VON DOBSCHUETZ. The lead writer and coordinator was Donald Joseph BROOKS.

Special thanks are due to the WHO staff members who participated in the technical elaboration and review of the plan (alphabetical):

- **Headquarters:** Ayse ACMA; Amaia ARTAZCOZ GLARIA; Madhava BALAKRISHNAN; Ismail BASHIR; Sara BARRAGAN MONTES; Supriya BEZBARUAH; Catherine KANE; Diana CHANG BLANC; Janet DIAZ; Jeffrey GILBERT; Nina GOBAT; Rebecca GRANT; Aspen HAMMOND; Siddhi HIRVE; Joachim HOMBACH; Vicky HOUSSIERE; Catherine KANE; Sandra MACHIRI; Madison MOON; Thomas MORAN; Jun ORBINA; James Richard OTIENO; Elisabeth PLUUT; Kwang RIM; Jamie RYLANCE; Lorenzo SUBISSI; Ryoko TAKAHASHI; Alba VILAJELIU; Ninglan WANG; Annelies WILDER-SMITH; Brian YAU; Wenqing ZHANG.
- **Regional offices:** Tara Rose AYNSLEY (WHO Regional Office for Europe); Ashok BASNET (WHO Regional Office for South East Asia); Samuel CHONG (WHO Regional Office for Africa); Ana Paula COUTINHO REHSE (WHO Regional Office for Europe); Paula COUTO (Pan American Health Organization); Tanya ESCAMILLA (Pan American Health Organization); Gyanendra GONGAL (WHO Regional Office for South East Asia); Lionel GRESH (Pan American Health Organization); Peter Sousa HOEJSKOV (WHO Regional Office for Europe); Md. Shafiqul HOSSAIN (WHO Regional Office for the Western Pacific); Victoria KATAWERA (WHO Regional Office for the Western Pacific); Masaya KATO (WHO Regional Office for South East Asia); Jessica KAYAMORI LOPES (WHO Regional Office for the Western Pacific); Zhao LI (WHO Regional Office for the Western Pacific); Tamano MATSUI (WHO Regional Office for the Western Pacific); Karen NAHAPETYAN (WHO Regional Office for Europe); Roberta PASTORE (WHO Regional Office for Europe); Joanna SALVI LE GARREC (WHO Regional Office for Europe); Nhu Nguyen TRAN MINH (WHO Regional Office for Europe); Lieke VISSER (WHO Regional Office for the Western Pacific); Xiaojun WANG (WHO Regional Office for the Western Pacific); Marc Alain WIDDOWSON (WHO Regional Office for Europe)

WHO also gratefully acknowledges the valuable contributions of Member States, external reviewers, technical partners, civil society, and members of the public who provided comments and feedback throughout the development of this strategy. Their input has been instrumental in shaping a global plan that is inclusive, evidence-based, and grounded in real-world experience.

WHO extends its sincere appreciation to all those who have contributed to the global response to COVID-19 since the beginning of the pandemic. This includes the countless health and care workers, researchers, policymakers, community leaders, and volunteers around the world who have worked tirelessly to prevent, detect, prepare for, and respond to COVID-19 and other emerging threats. Their dedication, service, and sacrifice have saved lives and laid the foundation for stronger and more resilient health systems.

Abbreviations

CORC	Collaborative Open Research Consortium Initiative
CSO	Civil society organization
COVID-19	Novel coronavirus disease 2019
CoViNet	WHO Coronavirus Network
EBS	Event-based surveillance
EMST	Emergency management support team
GCP	WHO Global COVID-19 and other Coronaviruses Programme
eGISRS	Expanded Global Influenza Surveillance and Response System
GISRS	Global Influenza Surveillance and Response System
GPW14	WHO General Programme of Work 14
HEPR	Health Emergency Preparedness, Response, and Resilience Framework
IA2030	Immunization Agenda 2030
IHR	International Health Regulations
IPC	Infection prevention & control
JEE	Joint External Evaluation
MCM	Medical countermeasures
MEL	Monitoring, evaluation, and learning
MERS	Middle East respiratory syndrome
NAPHS	National Action Plan for Health Security
OH-JPA	One Health Joint Plan of Action
PCC	Post-COVID-19 condition
PHC	Primary health care
PHEOC	Public health emergency operation centre
PHSM	Public Health and Social Measures
PRET	WHO Preparedness and Resilience for Emerging Threats initiative
RCCE	Risk communication and community engagement
R&D	Research and development
RSV	Respiratory syncytial virus
SAGE	Strategic Advisory Group of Experts on Immunization
SARS	Severe acute respiratory syndrome
SOP	Standard operating procedure
SPAR	State Party Self-Assessment Annual Reporting
TPP	Target product profile
WHO	World Health Organization
WHOCC	WHO Collaborating Centre

AT A GLANCE

World Health Organization

Strategic plan for coronavirus disease threat management

Advancing integration, sustainability, and equity, 2025–2030

Context

Over five years since the detection of the first COVID-19 cases, SARS-CoV-2 continues to circulate globally, causing acute illness, hospitalization, and death, alongside prolonged negative impacts on individuals, health systems, and economies, including post-COVID-19 condition (PCC or Long COVID). While global population-level immunity has increased significantly through both infection and vaccination, the virus continues to evolve, challenging control efforts and underscoring the need for long-term, sustainable disease management. Confirming earlier warnings from MERS-CoV and SARS-CoV-1, SARS-CoV-2 has demonstrated the pandemic potential of coronaviruses, which remain one of the most consequential infectious disease threats of our time.

Purpose of the strategic plan

This plan sets out WHO's strategic framework to support Member States in **the sustained, integrated, evidence-based management of coronavirus disease threats**, including COVID-19, MERS, and novel coronavirus diseases of public health importance. It emphasizes the long-term, routine management of coronavirus diseases, embedded within national healthcare and health emergency systems and aligned with broader respiratory and other infectious disease management strategies and the WHO Health Emergency Preparedness, Response and Resilience (HEPR) Framework.

The plan builds on and supersedes previous WHO strategic preparedness and response plans for COVID-19 and MERS. It is aligned with and advances WHO's 14th General Programme of Work (2025-28), the WHO Pandemic Agreement, and the IHR Standing Recommendations for COVID-19. It further interlinks with other relevant strategic frameworks, including the Quadripartite One Health Joint Plan of Action and the Immunization Agenda 2030, among others.

Strategic objectives

The plan aims to support and guide Member States and the broader global health community to:

1. **Sustain** essential, evidence-based COVID-19 and other coronavirus disease threat management activities across core public health capabilities to reduce morbidity, mortality, and socio-economic disruption, right-sized to burden.
2. **Integrate** coronavirus disease threat management into broader disease prevention and control programmes and systems, across all levels (local, national, regional, global), in particular with other respiratory diseases, like influenza and respiratory syncytial virus (RSV).
3. **Enhance** core capabilities as outlined in the HEPR Framework to identify, prioritize, and address operational gaps in coronavirus disease threat management.
4. **Generate**, share, and apply evidence to close knowledge gaps and translate research and lessons learned into improved programmes, policies, and evidence-based guidance and control tools.

Operationalizing the strategic objectives across core public health capabilities

The strategic objectives are operationalized across core public health capabilities, as organized under the five pillars of the WHO HEPR Framework:

Collaborative surveillance: Multi-source, multi-tiered surveillance systems for early detection, variant monitoring, and risk assessment of SARS-CoV-2, MERS-CoV, and novel coronaviruses, aligned with the One Health approach.

Community protection: Community-centred public health action empowering communities to make informed decisions that protect their health, including risk communication, community engagement, misinformation management, and context-driven population interventions.

Safe and scalable care: High-quality clinical management of patients with coronavirus diseases, including PCC, and other acute respiratory infections embedded within scalable clinical pathways and with infection prevention and control (IPC) standards at all levels of care.

Access to and delivery of countermeasures: Equitable, timely access to and uptake of safe and effective vaccines, diagnostics and therapeutics able to prevent, detect, characterize, and reduce the severity of coronavirus diseases.

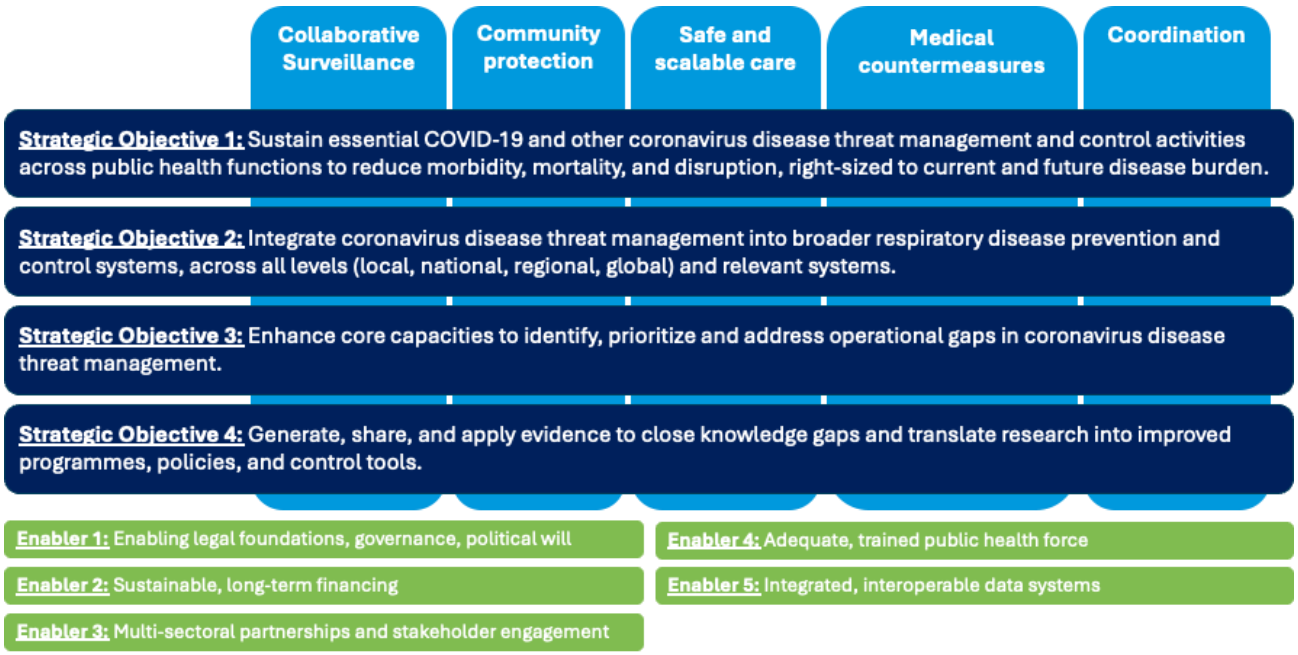
Coordination: National, regional, and global coordination mechanisms, networks, and partnerships enabling agile, multi-sectoral responses and information sharing relating to (re-)emerging coronavirus disease threats.

Implementation approach

Implementation of the plan will follow a flexible, risk-based, and Member State-driven approach, recognizing national contexts vary greatly and that Member States are at different stages of coronavirus disease threat management capacity development.

WHO will continue to convene and coordinate global and regional stakeholders, networks, and advisory groups, develop evidence-based guidance and policy recommendations, and provide tailored support to assist Member States in building and sustaining core capabilities, in collaboration with other partners.

Figure E1. Operationalizing the strategic objectives across core public health capabilities



1. Introduction

Context

Five years after the emergence of the first cases, COVID-19 continues to place considerable and often unrecognized burden on health systems globally. While the acute emergency phase has ended, SARS-CoV-2 still circulates widely, affecting all regions, and causing acute illness, hospitalization, and death, particularly among older adults and other vulnerable groups. Post-COVID-19 condition (PCC or Long COVID) compounds this burden, prolonging health impacts that affect individuals, their communities and the systems that support them. While global population-level immunity has increased significantly through both infection and vaccination, the ongoing circulation of SARS-CoV-2 further enables it to continue evolving, permitting the emergence of new variants capable of evading existing immunity. This poses challenges to its effective control and management. As it becomes an endemically circulating respiratory disease, COVID-19 remains a persistent global health concern requiring sustained and comprehensive management, in line and integrated with, where appropriate, other respiratory and other infectious disease management programmes.

COVID-19 has been the latest demonstration of the potential of coronavirus diseases to cause consequential global public health emergencies. It follows earlier warnings from severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), both of which underscored the epidemic and pandemic potential of the coronavirus family. SARS-CoV-1 emerged abruptly in 2002, spreading to over two dozen countries before being contained through intensive public health measures. As well, since its emergence in 2012, MERS-CoV has caused multiple outbreaks with high mortality rates and economic consequences, with concerns remaining about it acquiring mutations that would allow for sustained human-to-human transmission. With their zoonotic reservoirs, capacity for rapid evolution, and potential to transmit between humans, coronaviruses have repeatedly proven capable of rapidly causing widespread illness, overwhelming health systems, and disrupting economies and societies worldwide. Coronaviruses remain one of the most consequential infectious disease threats of the present and future.

Recognizing the evolving burden of COVID-19 and the ongoing pandemic threat posed by coronaviruses, sustained, integrated approaches to coronavirus disease management are essential. Comprehensive management of coronavirus diseases requires moving beyond emergency response models to longer-term strategies embedded within and contributing to the

resilience of national healthcare, health emergency, and other relevant systems critical to the One Health approach. It is essential for all Member States to maintain and further develop essential capabilities for coronavirus disease threat management, notably for collaborative surveillance, for mitigating zoonotic spillover risks, for protecting communities from infection and severe outcomes, for equitably accessing and deploying medical countermeasures (MCMs), and for the effective clinical management of diagnosed cases. As coronaviruses share key features, it is important these capabilities are designed to integrate across the viral family, while remaining adaptable to the specific ecological, epidemiological, and clinical characteristics of each coronavirus disease.

Coronaviruses also share important characteristics with other respiratory pathogens, offering powerful opportunities to further increase programmatic efficiency through integrated management approaches. Member States are at different stages of incorporating COVID-19 and MERS into broader respiratory and other infectious disease management programmes, often alongside programmes for influenza and respiratory syncytial virus (RSV). Member States are integrating respiratory disease management in recognition of their shared modes of transmission, similar clinical impacts, and often overlapping high-risk populations. These commonalities support the consolidated implementation of core public health activities, including integrated surveillance platforms, harmonized risk communication, clinical management protocols, and public health and social measures (PHSM), including joint vaccination strategies, among others. As health systems face increasingly constrained resources, both in terms of financing and workforce, and a growing number of competing priorities, such integration is pragmatic and necessary.

WHO remains committed to supporting Member States in managing COVID-19, MERS, and other coronavirus disease threats, and in integrating the prevention, preparedness, and response to these threats into broader respiratory and other infectious disease management strategies. WHO continues to provide evidence-based technical guidance, promote equitable access to and delivery of MCMs, facilitate and accelerate research and development (R&D) efforts, and support Member States in the development and maintenance of integrated surveillance, preparedness, prevention, and response systems. WHO is further working to ensure that lessons learned and capacities built during the acute COVID-19 response are documented, institutionalized and leveraged to strengthen health systems, particularly in low- and middle-income settings. Through ongoing collaboration, investment, and innovation, WHO and its partners ensure country, regional, and global systems are better equipped to prevent, detect, and respond to all coronavirus disease threats, wherever and whenever they arise.

To support the sustained and integrated management of coronavirus disease threats, WHO is releasing the Strategic Plan for Coronavirus Disease Threat Management. This plan consolidates, builds on, and succeeds previous response plans for COVID-19 and MERS and supports the implementation of the Standing Recommendations for COVID-19 under the International Health Regulations (IHR) and the WHO Pandemic Agreement *(1, 2)*. This plan aims to reflect the evolving nature of current coronavirus disease threats and their management, providing strategic direction to Member States for the prevention and control of coronaviruses diseases over the 2025-2030 period.

Purpose of this document

The purpose of this strategic plan is to guide and support Member States and partners in developing and implementing sustainable, comprehensive approaches to coronavirus disease threat management, including their integration into broader respiratory and other infectious disease prevention and control programmes. The plan consolidates available published guidance

from WHO to inform policy and programme development and implementation, system investments, and stakeholder coordination across all levels of health systems.

Specifically, this plan aims to support national public health authorities to:

- Define strategic objectives for sustained coronavirus disease prevention, preparedness, response, and recovery;
- Apply these objectives across core public health capabilities, aligned with WHO's Health Emergency Preparedness, Response, and Resilience (HEPR) Framework *(3)*;
- Identify and prioritize key actions and investments to strengthen national and subnational systems, including those related to public health, animal health, environmental health, and other sectors integral to the One Health approach, to achieve the strategic objectives;
- Leverage lessons identified from the COVID-19 pandemic and responses to MERS and SARS to inform more effective, equitable, and resilient prevention and control approaches; and,
- Coordinate efforts across sectors and partners through a cohesive, multi-sectoral approach.

This strategic plan will be accompanied by additional technical and operational annexes, including a monitoring and evaluation indicator framework and implementation plans that detail activities to operationalize priority actions.

Box 1 Defining disease threat management

Coronavirus *disease threat management* is used throughout this plan to refer to the full spectrum of actions undertaken to address the risks posed by coronavirus diseases to human health. This concept is intentionally broad, encompassing all efforts to prevent, prepare for, monitor, respond to, and reduce the impact of coronavirus diseases across all settings, time periods, and in all populations.

Disease threat management includes activities across the entire continuum of disease dynamics, including:

In the early stages of emergence or spillover:

- During localized outbreaks, epidemics or global pandemics;
- Throughout the recovery and learning processes that follow the above; and,
- During interepidemic periods or periods when endemic circulation is at a baseline level, when risks may seem low.

The term encompasses activities across human health, animal health, environmental, and related sectors, spanning both routine programmatic functions and emergency response efforts, including their scale-up and scale-down phases.

Target audience

This strategic plan is intended for national health authorities, irrespective of income level or health system capacity, responsible for the management of coronavirus disease threats. It also serves as a reference for WHO headquarters, regional, and country teams, multilateral agencies, donors, and other partners supporting Member States in integrated respiratory and other infectious disease prevention and control.

Scope

This strategic plan applies to all coronavirus diseases of public health importance, including notably COVID-19, MERS, and any novel coronavirus disease (i.e. a coronavirus Disease X) with confirmed or potential public health implications. It takes a pan-coronavirus perspective by focusing on capacities and systems that are relevant for disease threat management across the coronavirus family, while also setting out actions tailored to the specific characteristics and needs of individual diseases.

This plan focuses primarily on the public health management of coronavirus diseases in humans, including prevention, preparedness, response, and recovery across epidemiological contexts. While it recognizes the role of animal reservoirs and environmental factors in the emergence and re-emergence of coronaviruses, the management of zoonotic coronaviruses and spillover prevention are addressed through broader One Health initiatives, including the Quadripartite One Health Joint Plan of Action (OH-JPA)*(4)*. This strategic plan complements those efforts by focusing on the capacities and systems needed to manage coronavirus diseases once risks to human health emerge or intensify.

This plan is intended for application in all countries, regardless of income level, epidemiological context, or existing health system capacities. While the overall priorities and approaches are universal, their implementation will necessarily be adapted to the realities of each national and subnational context. Tailoring strategies to local health systems, resources, and vulnerabilities is essential, and the plan's implementation approach section provides initial considerations on how to achieve this in practice, to be deepened in subsequent implementation guides.

Document structure

This strategic plan is designed to support Member States and partners in taking a coherent, action-oriented approach to managing coronavirus disease threats within broader respiratory and other infectious disease prevention and control programmes. The document is structured as follows:

1. **Goal**
   The overarching goal of the plan articulates the long-term vision for coronavirus disease threat management. It provides the foundation upon which all other elements of the plan are built.

2. **Strategic objectives**
   These high-level objectives define what must be achieved to realize the overarching goal. They cut across all areas of public health action and establish the key priorities for national programmes and international cooperation. The objectives are intentionally broad, allowing for flexibility in their application while still providing necessary direction.

3. **Operational pillars (core public health capabilities)**
   Based on WHO's HEPR Framework, the five operational pillars represent the core capabilities required to manage coronavirus disease threats effectively: collaborative

surveillance, community protection, safe and scalable care, access to and delivery of MCMs, and coordination. These pillars serve as the organizational backbone for the plan's implementation.

4. **Priority actions**
   Under each operational pillar, the document outlines specific priority actions that Member States and implementing partners can take to operationalize the strategic objectives. These actions are evidence-based, adaptable to local contexts, and designed to address critical system gaps and opportunities for impact. They are pulled from existing available WHO technical guidance and standards.

5. **Cross-cutting enablers**
   The plan identifies a set of enabling conditions to ensure its effectiveness and sustainability in the context of broader national health priorities. These enablers cut across all operational pillars and strategic objectives and must ideally be in place to support successful implementation.

Together, these components provide a comprehensive approach that links strategic planning to action and supports Member States in adapting and applying the plan based on their specific epidemiological, health system, and broader national contexts. The methodology used to develop the strategic plan is included as an annex to this document.

2. Strategic objectives

The main aim of the strategic plan is to **enable the sustainable, comprehensive, evidence-based management of coronavirus disease threats, integrated with broader respiratory and other infectious disease prevention and control programmes** in all Member States. This aim will be achieved through the strategic objectives described below, presented at a general level in this section. Each strategic objective is to be applied to each core public health capability, as elaborated in the "Operationalizing the strategic objectives across core public health capabilities" section.

The Strategic Plan for Coronavirus Disease Threat Management is aligned with and advances WHO's 14th General Programme of Work (2025-28) (GPW14) and a number of other strategic frameworks, as described in the "Interlinkages with other strategic documents" section *(5)*. WHO's contribution to achieving the strategic objectives is briefly noted here and further detailed in the "Implementation approach" section.

Strategic Objective 1: ***Sustain*** *essential, evidence-based COVID-19 and other coronavirus disease threat management activities across core public health capabilities to reduce morbidity, mortality, and socio-economic disruption, right-sized to burden*

Sustaining essential coronavirus disease threat management capabilities is critical to avoiding preventable illness and health system strain, even as disease patterns evolve. These capabilities, including surveillance, human-animal-environment interface management, clinical care, vaccination, risk communication and community engagement (RCCE), occupational health and safety, and laboratory capacity, among others, must be maintained at levels proportionate to risk and tailored to national and regional contexts. This requires institutionalizing these capabilities into routine health programmes and systems, while retaining the flexibility to scale them up during emergencies.

Member States need to define and finance an appropriate level of coronavirus disease threat management as part of broader health programmes and systems, ensuring the continued delivery of core capabilities even in periods of perceived low risk or low transmission. WHO supports this by providing normative guidance, technical assistance, risk assessments and tools to help Member States assess, maintain, and adapt essential capabilities.

Strategic Objective 2: ***Integrate*** *coronavirus disease threat management into broader disease prevention and control programmes and systems, across all levels (local, national, regional, global), in particular with other respiratory diseases, like influenza and respiratory syncytial virus (RSV)*

Given shared modes of transmission, symptomology, groups at risk of severe outcomes, available multiplex diagnostics, and prevention and control measures, integrating coronavirus disease threat management into broader respiratory disease strategies increases programme efficiency, sustainability, and resilience, as outlined in WHO's Preparedness and Resilience for Emerging Threats (PRET) initiative *(6)*. This approach reduces programmatic siloes and supports joint surveillance platforms, integrated service delivery, and a life-course immunization approach, among other key integration points.

Member States should, wherever possible and feasible, work to embed coronavirus disease threat management into their broader respiratory and other infectious disease, primary health care (PHC), and health emergency systems, while working to improve service reach to actively address existing access gaps. WHO facilitates this by providing integrated planning tools, normative guidance, and tailored technical support to facilitate effective integration, where relevant.

Strategic Objective 3: ***Enhance*** *core capabilities as outlined in the HEPR Framework to identify, prioritize, and address operational gaps in coronavirus disease threat management*

Strong and resilient public health systems must be capable of continuously identifying and addressing the gaps that allow coronavirus disease threats to (re-) emerge and persist. This includes strengthening core public health capabilities (as explained subsequently) to ensure that programmes are prepared to adapt to shifting coronavirus epidemiology. Persistent circulation of SARS-CoV-2 and sporadic MERS-CoV outbreaks highlight that key coronavirus disease threat management capabilities remain a priority. Further, the repeated emergence of novel coronaviruses of public health importance demonstrates persistent global gaps in preventing zoonotic spillover, underscoring the urgent need to enhance early detection and monitoring, risk assessment, RCCE efforts, and early mitigation capacities at the human–animal–environment interface. Improving these core capabilities is essential to reducing the risk of outbreaks and epidemics, health system strain, and preventable severe disease and death.

Member States must regularly assess and close capacity gaps in coronavirus disease threat management using structured approaches, real-time data, and operational reviews. WHO provides support to do so through Joint External Evaluations (JEEs), IHR States Parties Self-Assessment Annual Reporting (SPAR), intra-action reviews, operational readiness assessments, and targeted technical assistance *(7, 8)*.

Strategic Objective 4: ***Generate****, share, and apply evidence to close knowledge gaps and translate research and lessons learned into improved programmes, policies, and evidence-based guidance and control tools*

Robust and timely evidence is essential for developing effective policies, informing and right-sizing public health interventions, and prioritizing resource allocation for coronavirus disease threat management. This includes high-quality virologic, genetic, clinical, and epidemiologic evidence, as well as real-world programme evaluation and operational research data. Evidence generation should also encompass broader foundational research across disciplines that enhances our

understanding of the ecological, social, behavioural, and structural drivers of coronavirus disease emergence and transmission, including links with environmental change, occupational exposure, mobility patterns, and health literacy. Evidence and investment are also required to support R&D for novel and next-generation vaccines, diagnostics, and therapeutics, including those with transmission-blocking potential.

Member States should establish systems for evidence generation, transparent sharing, and effective translation into decision-making, participate in global research networks, and develop partnerships, including public–private partnerships, to expand capacity and accelerate innovation, while aligning efforts with WHO-endorsed research priorities. This may include establishing or strengthening sentinel surveillance systems, national research platforms, or clinical and virological data integration systems. WHO supports this by offering technical guidance on translating evidence to action, issuing target product profiles (TPPs), managing networks like the Global Influenza Surveillance and Response System (GISRS) and the WHO Coronavirus Network (CoViNet), and coordinating global research agendas through the WHO R&D Blueprint for Epidemics and the Collaborative Open Research Consortium (CORC) Initiative *(9, 10, 11)*.

Box 2 Leveraging lessons from COVID-19

The COVID-19 pandemic has yielded a wealth of insights on what enables, and impedes, effective disease threat management. While the specific experiences and lessons identified vary across countries and contexts, they represent an essential resource for strengthening public health systems and disease threat management approaches moving forward. Many of these lessons have been captured in recent years through retrospective 'lessons learned' activities conducted at country, regional, and global levels. While not specifically detailed in this document, these lessons have informed the development of this longer-term plan.

Member States are encouraged to continue to systematically identify, document, and reflect on lessons from their COVID-19 responses, in particular those related to the core pillars of the HEPR framework. Member States should use these reflections to inform updates to policies, programmes, and operational plans to strengthen routine programmatic and emergency disease threat management capabilities, including those for coronavirus and other respiratory diseases.

WHO continues to synthesize emerging lessons and best practices to support Member States in applying context-appropriate improvements. This includes promoting flexible, adaptable frameworks that allow countries to tailor coronavirus disease threat management to their evolving needs while building on their COVID-19 response experiences. Several global-level summative learnings resources are included for reference.

The aim is not to replicate past approaches, but to build on and improve them, ensuring that the hard-won experience of the COVID-19 pandemic translates into stronger, more resilient health systems worldwide.

Box 2 Leveraging lessons from COVID-19 *(continued)*

More resources:

- Learnings from COVID-19 for future respiratory pathogen pandemic preparedness: a summary of the literature *(12)*
- Drawing light from the pandemic: A new strategy for health and sustainable development *(13)*
- End-to-end integration of SARS-CoV-2 and influenza sentinel surveillance: compendium of country approaches *(14)*
- Deliver, Together: partnerships to deliver vaccines in a pandemic learning from COVID-19 vaccine delivery *(15)*
- The COVID-19 Vaccination Response: Country experiences, best practices, and lessons *(16)*

3.
Operationalizing the strategic objectives

The strategic objectives of this plan are to be operationalized across core public health capabilities, aligned under the pillars of WHO's HEPR Framework, in support of achieving the overall goal *(3)*. The HEPR Framework defines five core pillars: Collaborative Surveillance, Community Protection, Safe and Scalable Care, Access to and Delivery of Countermeasures, and Coordination, which serve as the organizing structure for the implementation of this plan. Each HEPR pillar is described briefly here in the context of its application to coronavirus disease threat management.

Collaborative surveillance: Multi-source, multi-tiered surveillance systems for early detection, variant monitoring, and risk assessment of SARS-CoV-2, MERS-CoV, and novel coronaviruses, aligned with the One Health approach.

Community protection: Community-centred public health action empowering communities to make informed decisions that protect their health, including risk communication, community engagement, misinformation management, and context-driven population interventions.

Safe and scalable care: High-quality clinical management of patients with coronavirus diseases, including PCC, and other acute respiratory infections embedded within scalable clinical pathways and with IPC standards at all levels of care.

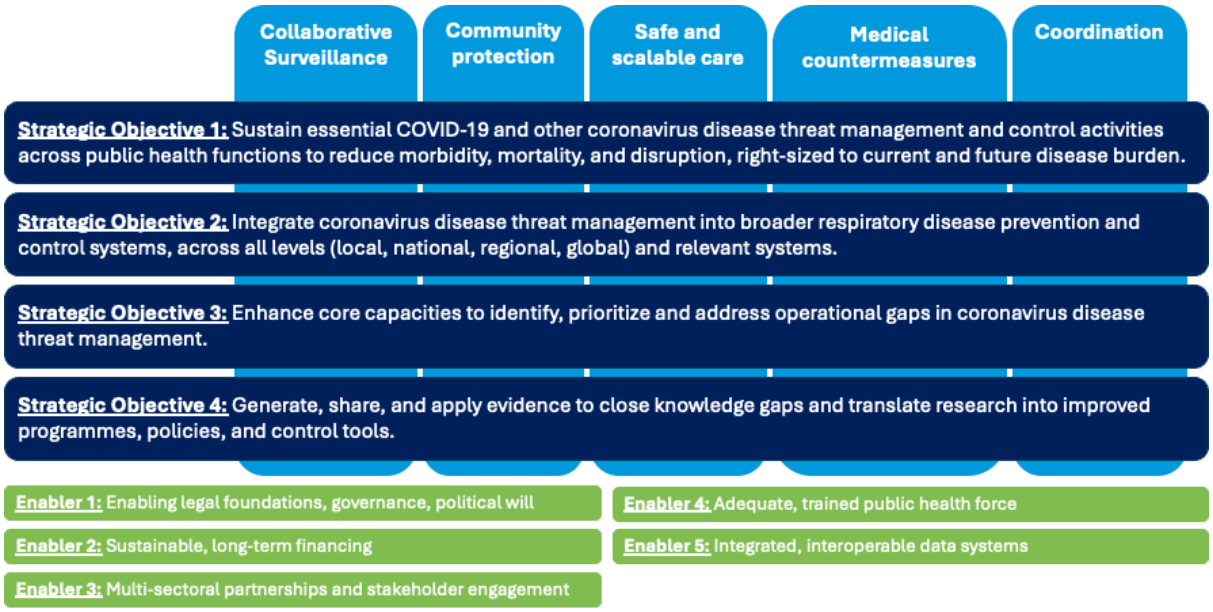
Access to and delivery of countermeasures: Equitable, timely access to and uptake of safe and effective vaccines, diagnostics and therapeutics able to prevent, detect, characterize, and reduce the severity of coronavirus diseases.

Coordination: National, regional, and global coordination mechanisms, networks, and partnerships enabling agile, multi-sectoral responses and information sharing relating to (re-)emerging coronavirus disease threats.

The core public health capabilities represented by these pillars form the backbone of effective coronavirus disease threat management programmes. Looking across core public health capabilities ensures that programmes are comprehensive.

For each core public health capability, several priority actions are defined. While the strategic objectives should be applied holistically to each capability, the priority actions below serve to guide Member States in identifying and addressing critical gaps, prioritizing investments, and ensuring coherent, integrated approaches to coronavirus disease threat management across all levels of the health system. For readability, relevant, published WHO guidance is included as a box beneath each priority action.

Figure 1: Operationalizing the strategic objectives across core public health capabilities



C1. Collaborative surveillance

C1.1 Strengthen integrated core surveillance and testing systems and strategies for coronaviruses

Develop and sustain national core surveillance and testing strategies and systems for SARS-CoV-2, MERS-CoV and novel coronaviruses of public health importance, embedded within broader respiratory surveillance and detection platforms and aligned with their current epidemiological profiles. These strategies and systems should support early detection of novel viruses or emerging variants, continuous monitoring of disease trends and variant circulation, and where feasible, enable estimation of disease burden and evaluation of intervention effectiveness (e.g., vaccination, PHSM). Core surveillance systems should:

- Integrate SARS-CoV-2 and MERS-CoV (where relevant) into national surveillance structures, such as Integrated Disease Surveillance and Response, event- or case-based systems, and respiratory sentinel platforms, with strong virological and epidemiological linkages *(17)*;
- Maintain genomic surveillance capacity within integrated virological surveillance systems, ensuring timely detection and phenotypic assessment of variants or novel viruses; and,
- Participate actively in regional and global surveillance networks, particularly expanded GISRS (eGISRS) and CoViNet, and share timely data with global, publicly accessible genomic databases, like GISAID and GenBank, among others, to both contribute to and

benefit from global and regional analyses on virus spillover, circulation, evolution, and risk assessment.

Countries should further remain prepared to rapidly expand testing in the event of surges caused by new SARS-CoV-2 variants or (re-)emerging coronaviruses of public health importance that may strain health system capacities.

WHO's COVID-19 Surveillance Policy Brief, Implementing the integrated sentinel surveillance of influenza and other respiratory viruses of epidemic and pandemic potential by GISRS guidance document, WHO guiding principles for pathogen genome data sharing, and other resources from eGISRS and CoViNet provide standards for integrated, multi-pathogen respiratory surveillance, including laboratory-based virological surveillance and genomic sequencing (18, 19, 20). *These frameworks can help Member States align national surveillance with international recommendations and support continuous risk assessment.*

C1.2 Use multiple complementary surveillance systems

Implement a comprehensive set of surveillance methods to complement core surveillance of SARS-CoV-2, MERS-CoV and novel coronaviruses of public health importance, supporting broader public health objectives using the One Health approach. The Mosaic Framework for Respiratory Disease Surveillance provides a structured approach to achieve this by integrating multiple surveillance systems, including sentinel, laboratory, and syndromic surveillance, tailored to national capacities, needs, and epidemiological contexts *(21)*. Additional systems, including wastewater surveillance and surveillance in animal populations, can round out the epidemiological picture by linking environmental and zoonotic data with human health trends. Overall, comprehensive, complementary surveillance in addition to core surveillance can support early detection of novel coronaviruses and emerging variants of known coronaviruses, early warning of case surges, assessment of disease burden and evaluation of the impact of interventions, such as vaccination and PHSM.

Complementary surveillance systems can include:

- Event-based surveillance (EBS) within communities and health care facilities to detect unusual events or outbreaks;
- Virological surveillance to enable genomic and antigenic characterization to monitor virus evolution and ensure the effectiveness of available MCMs, including verifying diagnostic accuracy and informing updates to vaccine composition, as needed;
- Wastewater and environmental surveillance providing early signals of increased pathogen circulation and supporting a multi-pathogen approach;
- Serosurveillance monitoring to measure population level immunity to guide vaccination strategies, investigate zoonotic exposure risk, and understand immunity waning over time; and,
- Innovative systems such as participatory, digitally enabled, and open-source surveillance for enhanced community engagement and situational awareness beyond traditional healthcare-based systems

WHO's Mosaic Respiratory Surveillance Framework, Unity study protocols, and related global influenza and COVID-19 surveillance guidance offer methods to harmonize sentinel, event-based, syndromic, and wastewater surveillance systems (18, 21, 22, 23). These references provide clear pathways for Member States to diversify surveillance approaches and integrate them with routine disease monitoring and pandemic preparedness.

C1.3 Strengthen multisectoral coronavirus surveillance platforms to support preparedness, routine management, and response at national, regional, and global levels

Strengthen formal collaboration mechanisms between relevant sectors that capture the human-animal-environment interface to strengthen the One Health approach for coronavirus surveillance. These mechanisms should facilitate rapid exchange of data and information, as well as joint investigations across sectors, enabling timely risk assessment, and quick public health action. Efforts should align with the IHR (2005), the WHO Pandemic Agreement Articles 4 and 5, the Quadripartite OH-JPA, the Tripartite Zoonoses Guide (TZG) and its Operational Tools, and regional strategies while actively engaging in regional and global surveillance initiatives and networks *(2, 4, 24, 25)*.

In addition, multisectoral collaboration should support the generation and application of evidence by integrating diverse data sources, joint risk assessment and response, operational research, and translating findings into improved public health programmes and policies. Partnerships with academia, research institutions and the private sector should be leveraged to address knowledge gaps through enhanced epidemiological studies, innovation in surveillance tools, and real-time data and analytics.

The Quadripartite OH-JPA, IHR (2005) Monitoring and Evaluation Framework, the TZG and its operational tools, and the WHO Pandemic Agreement support multisector collaboration and integration of human, animal, and environment data systems (2, 4, 25, 26). These references help Member States coordinate data-sharing, risk assessment, and joint investigations to strengthen surveillance capacities for coronavirus disease threats.

C2. Community protection

C2.1 Increase trust through consistent, strategic risk communication, community engagement and management of misinformation

Clear, consistent, and evidence-based communication is essential for building and sustaining public understanding and trust in coronavirus disease threat management efforts. Countries should adopt proactive and transparent messaging about disease risks, the benefits and safety of interventions (including vaccines, PHSM, and clinical care), and the rationale for public health guidance. Communication should be data- and behavioural insight-driven, adapted to local contexts, targeted to different audiences and their concerns, delivered by trusted sources like health and care workers, and transparent about uncertainties, sharing what is known, what is unknown, and what is being done to learn more.

Alongside this, countries should establish or strengthen systems to identify and counter harmful misinformation through infodemic management. Meaningful, regular, two-way engagement with communities, including participatory dialogue, community feedback, and other mechanisms outlined in the IHR core capacities, is critical to foster ownership and trust. Countries should prioritize co-developing solutions with communities and local actors, ensuring that interventions reflect local values, needs, and knowledge and are supported by those they aim to serve. Investing in partnerships with trusted messengers, civil society, media, and digital platforms is also vital to promote informed decision-making.

WHO provides guidance through its COVID-19 RCCE-IM policy brief, associated technical guidance, the Framework for civil society organization engagement in health emergencies, and the Engaging with communities in health emergencies guidance document, which together outline best practices for data-driven, transparent, and participatory communication (27, 28, 29). *Additional resources, including the WHO Infodemic Management Course Series, are also available* (30).

C2.2 Develop local capacities for early detection and response to unusual public health events related to coronavirus disease threats

Communities are often the first to observe and be affected by unusual health events, including zoonotic disease outbreaks like SARS-CoV-2 and MERS-CoV. Strengthening community-level capacities for early detection and reporting is critical. This includes training and equipping community health workers, volunteers, and local actors to recognize, report, and respond to signals of novel or re-emerging coronavirus disease threats, supported by culturally relevant community case definitions and participatory tools. Our duty of care also requires that these workers are provided with appropriate occupational health and safety measures, including relevant training and personal protective equipment, to safeguard them as they carry out detection and response activities.

Collaboration across human health, animal health, and environmental services, supported by One Health platforms, is key to identifying and containing zoonotic spillovers before they escalate. Communities living in border regions or areas with strong cross-border ties should be integrated into surveillance and preparedness plans, including through cross-border community engagement, joint exercises, and data-sharing initiatives.

WHO recommends strengthening community surveillance and engagement using community event-based surveillance, participatory approaches, and One Health risk communication frameworks to ensure that early warning and rapid response systems are robust and inclusive.

The Quadripartite OH-JPA, IHR (2005) Monitoring and Evaluation Framework, and technical guidance from IFRC on community event-based surveillance provide standards for strengthening community-level early warning, risk detection, and response, as well as for fostering multisectoral collaboration to address zoonotic and other emerging threats (4, 26, 31).

C2.3 Ensure effective implementation of appropriate population and environmental interventions for coronavirus disease threats

Population and environmental interventions, both medical (such as vaccination) and non-medical (such as human-animal-environment interface management measures, handwashing, and improved indoor air quality and ventilation), play a critical role in community protection from coronavirus disease threats.

Vaccination efforts should focus on achieving and maintaining high uptake in high priority-use groups based on the latest WHO recommendations. In the case of COVID-19, this includes older adults and people with underlying conditions, among others. Access to both initial and periodic re-vaccination is important to maintaining protection against severe disease, especially in the context of waning immunity and evolving variants. Member States should apply evidence-based, behaviourally informed strategies to promote vaccination uptake, using local data on behavioural and social drivers to tailor outreach and delivery approaches. Trusted messengers, improved ease of and equity in access, and strengthened confidence among health and care workers in recommending vaccines are key elements.

Gatherings of any size and type (religious, sporting, political, cultural) continue to pose risks for infectious disease amplification, including of coronavirus diseases. Member States should apply a risk-based approach to planning and monitoring such events, including all-hazards risk assessments and implementing mitigation and robust risk communication measures.

Member States should work to improve indoor ventilation and air quality in public and shared spaces such as schools, workplaces, transport hubs, and healthcare facilities, aligned with WHO guidance. Investments in long-term air quality improvements not only mitigate coronavirus transmission but support overall respiratory health resilience.

Preparedness for future coronavirus disease outbreaks should also address the timely and balanced use of PHSM, recognizing their critical role in reducing disease transmission, hospitalizations, and deaths. Anticipating and managing secondary consequences of PHSM, such as economic disruption or impacts on education, is essential to ensure they are implemented in a fair, proportionate, and equitable way.

WHO provides detailed normative guidance through the WHO Strategic Advisory Group of Experts on Immunization (SAGE) Roadmap for prioritizing uses of COVID-19 vaccines, the Behavioural and Social Drivers (BeSD) of Vaccination Framework, and operational tools outlined in the COVID-19 Vaccination and COVID-19 RCCE-IM policy briefs (27, 32, 33, 34). *Together with WHO's guidance on mass gathering risk assessments, mass gathering RCCE toolkit, Roadmap on improving indoor ventilation, and the PHSM decision framework and other PHSM policy tools, these references support Member States in balancing pharmaceutical (e.g. vaccination) and non-pharmaceutical interventions, applying a risk-based and equitable approach to gatherings and community-level* (35, 36, 37, 38, 39).

C3. Safe and scalable Care

C3.1 Integrate coronavirus disease-related case identification and clinical care pathways into primary health care systems, with attention to populations with limited access to care and those at highest risk of severe disease

Sustainable access to quality clinical care for COVID-19 and other coronavirus diseases requires that care pathways be embedded within resilient PHC systems. Care protocols should be adapted to country contexts and regularly updated in line with evolving clinical evidence. Special attention should be given to ensuring equitable access for populations at highest risk of severe disease and systemic disadvantage, such as older adults, those with comorbidities, and those in fragile settings, among others.

Access to quality care further depends on quick diagnosis. It is important to maintain laboratory capabilities for timely case identification, allowing patients to be efficiently linked to appropriate care pathways. Member States are encouraged to integrate coronavirus testing into respiratory surveillance platforms, including influenza-like illness and severe acute respiratory infections (SARI) testing programmes, and to align testing strategies with the most recent WHO guidance on SARS-CoV-2, MERS-CoV, and novel coronaviruses, including recommendations on diagnostic platforms, laboratory workflows, and genomic sequencing.

WHO's COVID-19 Clinical Management and COVID-19 Testing Policy Briefs, clinical guidelines for COVID-19 management and MERS management, guidance on Laboratory testing for MERS-CoV, and Primary Health Care Operational Framework offer practical tools to embed coronavirus disease management into PHC (40, 41, 42, 43, 44, 45)*. These documents guide Member States in aligning care pathways, referral systems, and case identification with essential PHC services.*

C3.2 Provide access to evidence-based follow-up care for post-COVID-19 condition (PCC, also known as Long COVID) and other post-coronavirus disease sequelae

Many individuals continue to experience health issues long after acute SARS-CoV-2 infection. Health systems must recognize, diagnose, and support people with PCC through integrated care models, including PHC. This includes building capacity for early identification, referral, and multidisciplinary care, while minimizing stigma. Similar approaches may be needed for other post-coronavirus disease sequelae, such as prolonged recovery or complications arising from novel coronavirus infections, underscoring the importance of adaptable, evidence-based follow-up care.

WHO has developed a clinical case definition for post-COVID-19 condition and provides guidance through its living clinical guidelines on COVID-19 management, which include recommendations for rehabilitation and follow-up care (42, 46)*. These resources can support Member States in strengthening PCC service planning and integration within routine health systems.*

C3.3 Maintain outbreak readiness and response capacities for both clinical management and infection prevention and control

SARI outbreaks, including those caused by coronavirus diseases, demand that clinical care systems be prepared for rapid surge response. This includes maintaining readiness of critical care and triage infrastructure, ensuring adequate stocks of essential supplies (including personal protective equipment), and training the health workforce. Infection prevention and control (IPC) capacities should be maintained throughout the clinical pathway and in all care settings through standardized protocols, continuous staff training, administrative and engineering controls, including ventilation and air filtration systems, and personal protective measures. These include the appropriate and context-specific use of PPE, such as medical masks, respirators, gowns, gloves, and eye protection, based on transmission risk and care setting.

Member States are encouraged to maintain and monitor strong IPC practices in health-care facilities to reduce the burden of health care-associated and occupational infections, with particular emphasis on patient screening, facility infrastructure and ventilation, appropriate PPE use and supply chain management, and the detection and management of outbreaks. These efforts should align with the latest WHO guidance on IPC for COVID-19 and broader IPC standards, as well as the IHR (2005) core capacity requirements.

WHO's Infection Prevention and Control Guideline in the context of COVID-19 and Infection prevention and control during health care for probable or confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection, related COVID-19 Policy Brief and related outbreak readiness tools provide countries with standards for critical care surge capacity, IPC measures, and readiness plans for rapid response to coronavirus disease events (47, 48, 49).

C4. Access to and delivery of Countermeasures

C4.1 Integrate coronavirus disease-related countermeasures into existing delivery platforms, including primary health care, and reinforce them for both routine and surge use

Delivering safe, effective and quality-assured MCMs through routine health service delivery systems ensures sustainability and equity while allowing rapid scale-up during outbreaks. Member States should aim to institutionalize access to and delivery of safe, effective and quality-assured vaccines, diagnostics, and therapeutics within PHC and other relevant services, ensuring that delivery platforms are adapted to meet the needs of high-priority populations. This integration should include governance and funding mechanisms, supply chain plans, clinical care protocols, information systems, and health workforce training programmes, as captured in other priority actions. During periods of elevated transmission of existing threats or emergence of new ones, these systems should be leveraged for the timely scale-up existing MCM delivery or the introduction of potential new ones, guided by risk assessments.

With regards to COVID-19, vaccination should be integrated into routine immunization programmes as part of PHC services and co-administered with other recommended vaccines based on national immunization schedules, as informed by WHO SAGE recommendations. This can improve quality of services and programme efficiency. Co-administered vaccines may include those for seasonal influenza and RSV, among others. Generally, strengthening vaccine delivery platforms for high-risk groups through routine services can reinforce broader adult immunization and pandemic preparedness capacities.

WHO provides recommendations on prioritizing COVID-19 vaccination for high-risk populations and co-administration strategies through the SAGE Roadmap for COVID-19 Vaccine Prioritization and *COVID-19 Vaccination Policy Brief* (32, 34, 50). *WHO has issued the living Therapeutics and COVID-19 guideline, providing up-to-date recommendations on the use of antiviral and other therapeutic products* (51). *WHO further provides guidance and tools including on COVID-19 vaccination integration into immunization programmes and primary health care, the COVID-19 vaccine delivery toolkit* and *COVID-19 and MERS clinical care materials to support integration of MCMs into delivery platforms* (42, 43, 52, 53). *WHO works through mechanisms such as the interim Medical Countermeasures Network (i-MCM-Net) to facilitate coordination and knowledge exchange across countries and partners in the deployment of existing and newly introduced MCMs* (54).

C4.2 Strengthen MCM (post-)introduction monitoring to track implementation progress, product safety, effectiveness, and learnings, interlinked with surveillance systems

Post-introduction monitoring is critical for evaluating the real-world performance of coronavirus disease MCMs. Member States should establish or strengthen systems to monitor vaccine and therapeutic safety (pharmacovigilance), effectiveness (e.g., through observational studies), and uptake and coverage across priority-use groups. These systems should be interoperable with disease surveillance systems and designed to capture disaggregated data to support equity analyses.

Where possible, countries should participate in global post-introduction monitoring initiatives and use WHO resources, including the COVID-19 vaccine effectiveness evaluation guidance, manual on vaccine safety monitoring, and guidance on coverage estimation and reporting. Member States should continue to report COVID-19 vaccination data as part of regional and global vaccination data collection mechanisms, notably the annual WHO-UNICEF electronic Joint Reporting Form on Immunization and WHO's VigiBase *(55, 56)*. WHO will continue to provide technical support and capacity building to improve data quality, analysis and the programmatic use of findings, as well as facilitate collective learning and peer-sharing opportunities for Member States.

WHO's interim guidance on monitoring COVID-19 vaccination, the guidance on measuring COVID-19 vaccine effectiveness, and the COVID-19 vaccine safety surveillance manual support Member States in implementing post-introduction monitoring, including recommended indicators, reporting systems, and methods to generate quality data for continuous programme improvement (57, 58, 59).

C4.3 Accelerate research related to and development of novel and improved vaccines, diagnostics, and therapeutics

Continue to invest in and support R&D efforts aimed at producing new and next-generation coronavirus disease MCMs, including vaccines, diagnostics, and therapeutics. This includes both advancing improved generations of existing tools and developing first-time products for coronaviruses where no licensed tools currently exist, as is the case for MERS-CoV. Priority should be given to tools with attributes that address current limitations, such as vaccines that reduce transmission and offer broader and more durable protection across multiple coronaviruses.

Programmatic suitability and equity should remain central considerations, ensuring they are suitable for WHO prequalification and improve equity. Efforts should also extend to animal MCMs, where appropriate (e.g. for MERS-CoV), to help mitigate zoonotic transmission risks at the human–animal interface.

This can include:

- Funding or facilitating research partnerships across public, academic, and private sectors to drive innovation targeting coronavirus disease threats;
- Developing and using harmonized research protocols, including for clinical trials, laboratory methods, and data standards, to enable comparability of results and accelerate collective progress;
- Participating in and contributing to global R&D coordination platforms and applying WHO guidance, such as TPPs and vaccine composition recommendations, to ensure alignment with public health needs.

Where strong national R&D ecosystems exist, efforts should be directed to accelerate coronavirus-specific innovation within these structures. In countries with limited R&D capacity, collaboration with regional and global initiatives and partners can help strengthen research infrastructure and ensure equitable access to emerging tools.

The specific research agenda and detailed coronavirus disease-related R&D needs are not defined within this plan, as these are addressed in complementary WHO and partner research and product development roadmaps.

WHO's CORC for coronaviruses is coordinating the development of a coronavirus R&D Roadmap to identify research gaps and priorities, while Target Product Profiles for COVID-19 and MERS vaccines and other MCMs, together with the Unity study protocols for COVID-19 and MERS, guide countries in aligning their national R&D efforts with global priorities and ensuring equitable access to future tools (60, 61, 62, 63). *WHO further publishes criteria for assessing the programmatic suitability of vaccine candidates for pre-qualification* (64).

C4.4 Strengthen regulatory processes and readiness for coronavirus disease MCMs

Robust, efficient, and trusted regulatory processes are essential to ensuring timely access to safe, effective, and quality-assured coronavirus disease MCMs, particularly for new products. Member States should work to strengthen national regulatory authorities and participate in regional and global regulatory networks to accelerate product evaluation, while maintaining rigorous standards of safety and efficacy. WHO mechanisms such as prequalification, Emergency Use Listing (EUL), and collaborative registration procedures provide platforms to support rapid but reliable review of new coronavirus disease-targeted products and should be leveraged to ensure equitable introduction across countries.

These coronavirus-focused efforts should complement and remain aligned with broader ongoing initiatives to harmonize regulatory standards, strengthen reliance mechanisms, and build regulatory science capacity across health products. In this way, advances in coronavirus disease MCM regulation can reinforce, and be reinforced by, global progress in regulatory preparedness and convergence.

WHO's EUL procedure, prequalification programme, and collaborative registration mechanisms provide pathways to accelerate access to safe, effective, and quality-assured coronavirus disease MCMs (65, 66, 67). *In addition, WHO's Good Regulatory Practices and Good Reliance Practices guidance, along with support from the WHO Listed Authorities framework and regional regulatory networks, assist Member States in strengthening regulatory capacity, promoting reliance on shared assessments, and advancing convergence with international standards* (68, 69).

C5. Coordination

C5.1 Incorporate coronavirus disease threats into broader disease management frameworks and plans, in particular those targeting respiratory diseases

Ensure that national and subnational public health threat management plans fully incorporate coronavirus disease threats within broader disease management frameworks and plans, adopting a mode of transmission approach consistent with WHO's PRET initiative. This should include both routine, programmatic management frameworks and plans, as well as those aimed at potential epidemics / pandemics.

This can include:

- Aligning national coronavirus disease threat management strategic objectives with those of other respiratory pathogen management programmes, ensuring flexibility for (re-) emerging threats and while maintaining coronavirus-specific needs, as well;
- Developing adaptable, pathogen-agnostic management approaches and protocols across multiple respiratory pathogens, reducing operational complexity and improving programmatic efficiency.

Where countries have broader routine, programmatic and emergency public health coordination frameworks, coronavirus disease management should be fully integrated into these plans. For countries that do not, platforms developed during the acute COVID-19 response can be leveraged as a foundation for further comprehensive respiratory disease management planning.

WHO's PRET Initiative and associated tools and the HEPR Framework provide technical guidance for embedding coronavirus disease management within broader respiratory disease programmes and preparedness strategies, promoting an all-hazards approach (3, 6).

C5.2 Strengthen routine and emergency coordination mechanisms for sustained coronavirus disease threat management, following a multisectoral, One Health approach

Institutionalize national and subnational coordination mechanisms for coronavirus disease threat management, including both routine, programmatic and emergency processes and platforms. Depending on national context, this could include integrating coronavirus disease management into broader public health and One Health coordination structures, or it could mean maintaining

and expanding the COVID-19-specific platforms developed during the acute phase of the pandemic to meet the varied coordination needs posed by other, non-COVID-19 coronavirus diseases.

In all cases, such mechanisms should foster multisectoral collaboration, including between public health, veterinary, environmental, and agricultural sectors, among others, as well as non-governmental actors (private sector, research institutions & academia, civil society), adopting the One Health approach. Where available, Public Health Emergency Operations Centres (PHEOCs) should serve as a core operational structure for coordination during health emergencies, with clearly defined governance, information flow, and decision-making protocols, and should be adapted to support sustained threat management in non-emergency contexts.

Coordination mechanisms may include:

- **Decision-making structures (committees, fora, etc):** Defined leadership and governance processes to streamline decision-making during routine operations and emergency escalations.
- **Standard operating procedures (SOPs) and other operational protocols:** Pre-defined processes for coordinating public health activities and responses, including triggers for escalation, resource allocation, and stakeholder engagement, as well as protocols for integrating new data and evidence into decision-making.
- **Information sharing channels (dashboards, bulletins, etc.):** Channels for rapid information exchange across implicated sectors (e.g., health, agriculture, transport, military) and levels (local, national, regional, global).

WHO supports countries through normative guidance in its HEPR Framework, Quadripartite OH-JPA, TZG and its operational tools, and the PHEOC-related guidance, which together provide models for effective multisectoral committees, coordination platforms, and public health operations (3, 4, 25, 70).

C5.3 Promote regional, cross-border, and global coordination

Strengthen regional, cross-border, and global collaboration to improve early detection, joint risk assessment, and coordinated response to coronavirus disease threats. This should include both routine, programmatic, and emergency coordination, aligned with broader respiratory disease management frameworks, where they exist, or building on COVID-19- or MERS-specific platforms where they do not. The scale and depth of collaboration should be calibrated to the epidemiological risk profile, with higher levels of investment and coordination warranted in settings facing ongoing transmission or repeated spillover events, in the case of zoonotic coronaviruses, like in countries where MERS-CoV circulates.

Coordination efforts should also support Member States in strengthening core capacities under the IHR, leveraging existing assessment and planning mechanisms such as the JEE, SPAR, National Action Plans for Health Security (NAPHS), and the Universal Health and Preparedness Review processes.

This can include:

- **Harmonized national, regional, and global preparedness plans:** Aligning national coronavirus disease management strategies with regional and global frameworks, including those informed by JEE, SPAR, and NAPHS, to ensure consistent, coordinated approaches.
- **Cross-border and multinational information sharing:** Establishing or strengthening mechanisms for real-time data exchange, joint risk assessment, and coordinated decision-making across borders.
- **Joint capacity building, programme reviews, and simulation exercises:** Conducting regular joint training, cross-border exercises, and scenario planning to strengthen regional and global capacities to manage coronavirus disease threats.

WHO's IHR (2005), regional preparedness strategies, and cross-border frameworks support joint risk assessments, information sharing, and harmonized preparedness and response planning (24)*. These tools help Member States ensure consistency and interoperability across borders and regions.*

Cross-cutting enablers

The successful implementation of the strategic objectives in support of the overall aim depends on a set of foundational enablers that create the conditions for sustained, effective, and equitable coronavirus disease threat management programming. These enablers allow for the smooth operationalization of the plan, across all core public health capabilities.

Enabler 1: Enabling legal foundations, governance, and political will

Robust legal and governance frameworks are essential to institutionalizing and sustaining coronavirus disease threat management. Countries should maintain clear laws and policies for preparedness and response, coordination across sectors and borders, data sharing, and equitable access to medical countermeasures and services. Governance mechanisms should translate these frameworks into practice through transparent decisions, accountability, and effective coordination. Ongoing political commitment is needed to keep coronavirus disease threats visible and prioritized within broader health security, One Health, and pandemic preparedness agendas, in line with International Health Regulations (2005) and regional agreements.

Enabler 2: Reliable, long-term financing for coronavirus disease threat management

Long-term financing is critical to sustaining core capabilities and ensuring readiness for future coronavirus disease threats. Countries should institutionalize dedicated funding for coronavirus disease prevention, preparedness, response, and recovery, embedding these allocations within national health, agriculture, and environment budgets and complementing them with flexible emergency financing instruments.

Enabler 3: Sustained, inclusive partnerships and stakeholder engagement across sectors and health system levels

Partnerships are essential to achieving a coordinated, whole-of-society approach to coronavirus disease threat management. Sustained and inclusive engagement across sectors, governmental and non-governmental, public and private, ensures alignment of efforts and avoids fragmentation. Building on the collaborative platforms, some developed during COVID-19 and MERS responses, countries should strengthen mechanisms for multisectoral coordination and ensure communities, civil society and relevant professional associations, and affected populations are meaningfully involved in policy development, planning, and implementation.

Enabler 4: Adequate, trained public health workforce equipped for sustained coronavirus disease management across core public health functions

A capable and resilient public health workforce is essential to delivering sustained and equitable coronavirus disease threat management. Countries should ensure the availability, distribution, and continuous development of a multidisciplinary health workforce, including clinicians, epidemiologists, laboratory professionals, risk communicators, social scientists, logisticians, and occupational health and safety personnel, among many others. Investments should support competency-based training, surge capacity development, supportive supervision, and systems that promote workforce wellbeing, particularly at the subnational and frontline levels.

Enabler 5: Integrated, interoperable data systems and digital tools to support analysis for informed decision making

Reliable data are the foundation of timely, evidence-based public health action. Countries should invest in integrated, interoperable data systems that link surveillance, laboratory, clinical care, immunization, pharmacovigilance and regulatory, and social and behavioural data across sectors and levels. These systems should support real-time data sharing, disaggregation by relevant equity dimensions, and linkages to broader digital health architecture to inform risk assessment, policy development, and programmatic adjustments.

Box 3

Equity considerations

The Strategic Plan for Coronavirus Disease Threat Management applies an explicit equity lens to ensure that the benefits of prevention, preparedness, response, and recovery reach all population groups, especially those at highest risk of severe disease and systemic disadvantage.

Member States and partners should identify and prioritize population groups that face barriers to access or are at elevated risk due to factors such as age, sex, disability, comorbidities, socioeconomic status, displacement, occupation, ethnicity, or any other status.

WHO encourages Member States to:

- Use disaggregated data (by sex, age, geography, and social determinants) to guide activity targeting (e.g. microplanning for vaccine delivery);
- Engage communities through participatory mechanisms in the planning and delivery of services;
- Tailor activities to account for the needs of vulnerable populations, including older adults, persons with disabilities, migrants, and health workers;
- Design monitoring frameworks that capture equity indicators such as service coverage among priority use groups and marginalized communities.

4. Implementation approach

Implementation of the plan will follow a flexible, risk-based, and Member State-driven approach, recognizing that Member States feature widely varying national contexts and are at different stages of coronavirus disease threat management capacity development. It is designed to complement and support national policies and priorities and interlink with other WHO technical and operational guidance, frameworks, and strategies, as explained in the subsequent section.

Implementation of the current plan will need to be tailored to national context, coronavirus disease threat and burden level, and health system development level. Particular attention will be given to low- and middle-income countries, fragile settings, and zones with elevated spillover risk where targeted support may be needed to maintain and enhance core capabilities and ensure programmatic sustainability.

A variety of stakeholders have roles in supporting Member States to advance sustainable and comprehensive coronavirus disease threat management, each playing a unique role in the global public health ecosystem. To ensure that each can effectively contribute to coronavirus disease threat management, the plan aims to highlight these roles and recognize and leverage the comparative advantages of each stakeholder, as described in the following sub-sections.

Member States

Member States are the foundation of sustainable and comprehensive coronavirus disease threat management not only within their borders, but also regionally and globally, through their international and multi-lateral engagements. Member States play several critical roles in advancing the objectives of this plan, notably:

1. **As policymakers**, establishing national policies, frameworks, and mechanisms to prepare for, prevent, and respond to coronavirus disease threats, shaping how public health capabilities are implemented at the country level.
2. **As technical engines of coronavirus disease threat management**, Member States, specifically their health systems and health and care workers, are responsible for implementing and operationalizing key public health functions, from surveillance and clinical case management to vaccination and risk communication.

3. **As actors within the multilateral system**, Member States contribute to collective decision-making, data sharing, and coordinated global health security efforts, ensuring coronavirus disease threat is prioritized in the context of broader respiratory threat management and pandemic preparedness efforts.

World Health Organization

WHO plays a central role in coordinating, guiding, and supporting global efforts to manage coronavirus disease threats. In line with WHO's mandate and comparative advantages, WHO's role spans technical and normative leadership, convening and strategic coordination, evidence generation, risk assessment, and information sharing, and capacity-building across all core public health capabilities.

All three levels of WHO, headquarters, regional, and country offices support Member States, through a coordinated, tiered approach:

- **Headquarters**: Leads on global strategies, technical guidance, norms and standards, monitoring frameworks, resource mobilization efforts, and coordination with partners. This includes maintaining global surveillance platforms (e.g., eGISRS, CoViNet), convening expert networks and groups (e.g., i-MCM-Net, SAGE), developing evidence-based policy recommendations, and providing consolidated strategic, normative, and technical guidance across public health capabilities. Headquarters also manages the WHO prequalification process for vaccines, diagnostics, and therapeutics to ensure quality, safety, and efficacy of products for global use.
- **Regional offices**: Translate global guidance to account for regional context and complexities, foster regional knowledge exchange, and support operational planning and monitoring. They also help identify regional priority needs, strengthen cross-border coordination, and facilitate training and peer learning.
- **Country offices**: Support countries to review and align their national plans and policies with the objectives of this strategy and other guidance provided by WHO. This may include technical assistance to update coronavirus threat management plans, conduct national readiness assessments, adapt vaccination policies, and improve data flows for surveillance, response, and programme monitoring.

Through this structure, WHO ensures that global coronavirus disease threat management strategies are responsive to local realities and reinforce national ownership.

WHO's mechanisms of action

To play its role in coronavirus disease threat management, WHO works through the following key mechanisms of action:

- **Leadership, convening, and advocacy**: Advocating for sustained investment in integrated respiratory threat management and aligning global stakeholders through high-level engagement, and convening technical advisory groups to ensure policy and operational decisions are informed by the latest scientific evidence;
- **Norms, standards, and technical guidance**: Developing and disseminating evidence-based recommendations and policy options for all aspects of coronavirus threat management;

- **Technical support and capacity building**: Delivering in-country support, developing training curricula through WHO Academy and OpenWHO, and strengthening national capacity across public health functions;
- **Strategic information and risk monitoring**: Collecting, analysing, and disseminating epidemiological, genomic, and programmatic data; conducting risk assessments; and supporting data-informed decision-making.

Coordinating WHO's response

The WHO Health Emergencies Programme Global COVID-19 and Other Coronaviruses Programme (GCP) will coordinate implementation of this plan at the global level, in close collaboration with WHO regional and country offices, other HQ offices and programmes, and partners. The GCP will serve as the central hub for tracking progress, identifying emerging needs, supporting cross-regional coherence, and ensuring alignment with broader health security and respiratory disease initiatives, including under the HEPR Framework.

Technical and implementation partners

Technical and implementation partners, including other United Nations and multilateral agencies (notably the Food and Agriculture Organization of the UN, World Organisation for Animal Health, and UNICEF), regional public health institutions, global health networks, and non-governmental organizations, play a critical role in supporting and delivering public health functions at global, regional, and national levels. These partners provide capacity building, technical support, and in-country assistance to strengthen health system resilience and ensure effective public health interventions. Regional public health institutions also help promote regional standards, coordinate preparedness and response mechanisms, and operate or link to early warning systems that can enable timely detection and joint action. Collectively, these actors contribute to operational research, knowledge exchange, and programmatic alignment, helping to translate global strategies into local action. In addition, they often play a key role in advocacy and resource mobilization, ensuring sustained investment in coronavirus disease threat management.

Non-governmental funding institutions

Non-governmental funders, including philanthropic foundations, global financing mechanisms, and development banks, like CEPI (Coalition for Epidemic Preparedness Innovations), Gavi, the Vaccine Alliance, and many others, play an important role in providing resources to advance coronavirus disease threat management. These actors contribute by aligning funding priorities with global health needs, supporting sustained investment, and coordinating with other partners to maximize impact and avoid duplication. Their engagement is critical to ensuring that research, capacity-building, and programmatic activities are adequately resourced and sustained over time.

Civil society organizations

Civil society organizations (CSOs) play a key role in ensuring coronavirus disease threat management is inclusive, trusted, and responsive to community needs. They help build public trust, improve health literacy, and support uptake of services, including vaccination. CSOs also facilitate community feedback, reach underserved and marginalized populations, and promote accountability by ensuring interventions reflect local realities.

Health and care worker professional associations and labour organizations play a critical role in representing and safeguarding the health workforce, strengthening dialogue with health

authorities, and ensuring that workforce needs are incorporated into preparedness and response efforts.

Research institutions & academia

Research institutions and academia are essential to advancing the scientific understanding of coronavirus diseases and developing new approaches for their management. These stakeholders conduct critical research on virus evolution, transmission dynamics, and host-pathogen interactions, while also supporting the development of new diagnostics, therapeutics, and vaccines. They play a central role in data sharing and rapid knowledge dissemination, ensuring that emerging evidence can be translated into effective public health policies and practices. Building local research capacities is also a critical contribution, supporting sustainable long-term preparedness.

- *WHO Collaborating Centres (WHO CCs):* As formally designated institutions, WHO CCs provide specialized expertise, training, and technical support to WHO and Member States. They act as global reference hubs for laboratory science, surveillance, and operational research, and ensure scientific advances are rapidly connected to WHO guidance, norms, and standards.

Private sector

The private sector is a critical partner in the development, manufacturing, and deployment of MCMs, including vaccines, diagnostics, and therapeutics. It also plays a central role in digital health innovation, supply chain logistics, and data analytics, which are essential for timely public health decision-making. Effective public-private collaboration can accelerate research, enhance preparedness, and improve the resilience of global health systems.

Communities

Communities are essential to effective coronavirus disease threat management. Their engagement enables early detection, supports uptake of PHSM, and fosters equitable access to care and services. Community actors help ensure that interventions are trusted, contextually appropriate, and responsive to real-world needs. Their participation also strengthens accountability, resilience, and social cohesion, foundations for sustainable prevention, preparedness, and response.

5.

Interlinkages with other strategic documents

The current plan interlinks with a variety of global technical strategies, strategic frameworks and plans, and resolutions across the broader global health ecosystem. This ensures that global coronavirus disease threat management efforts are aligned, efficient, and complementary to existing strategies. These interlinkages include with:

WHO General Programme of Work 14 (GPW14) *(5)*	Guides WHO's overarching strategy, with direct relevance to the plan specifically on reducing health emergencies, enhancing pandemic preparedness, and strengthening surveillance systems. The current plan directly links into GPW14 strategic objectives 5 (Prevent, mitigate, and prepare for health risks from all hazards) and 6 (Rapidly detect and sustain response to health emergencies).
IHR (2005) & Amendments, and Standing Recommendations under the IHR *(1, 24)*	The legal framework guiding preparedness, surveillance, and response to public-health emergencies. The current plan supports these obligations by reinforcing core IHR capacities and by advancing implementation of the COVID-19 standing recommendations, including sustained respiratory-virus surveillance, vaccination readiness, IPC, and coordinated risk communication.
WHO Pandemic Agreement *(2)*	An international legal instrument to strengthen global cooperation in pandemic prevention, preparedness, and response. The current plan supports its objectives by advancing sustained capacities for surveillance, equitable access to MCMs, resilient health systems, and coordinated action across countries and sectors.
HEPR Framework *(3)*	Establishes WHO's approach to health emergency preparedness, response, and resilience. The current plan is fully aligned with the HEPR Framework, integrating its five core pillars (Collaborative Surveillance, Community Protection, Safe and Scalable Care, Access to Countermeasures, and Coordination) to ensure a

	comprehensive, systems-based approach to coronavirus disease threat management.
Quadripartite One Health Joint Plan of Action *(4)*	Outlines a cross-sectoral approach to zoonotic diseases, including coronaviruses. The current plan aligns closely with the OH-JPA by promoting integrated, multisectoral collaboration across human, animal, and environmental health sectors to reduce the risk of coronavirus spillover events, enhance early detection, and improve coordinated response to emerging zoonotic threats.
PIP Framework's Partnership Contribution High-Level Implementation Plan III *(71)*	Guides capacity building for global pandemic influenza preparedness over the next six years (2024-2030). The current plan aligns with HLIP III by supporting sustainable capacity building, integrated surveillance, and enhanced preparedness for respiratory disease threats, including coronaviruses.
Immunization Agenda 2030 (IA2030) *(72)*	Establishes global immunization priorities, including for COVID-19 and future coronavirus vaccines. The current plan aligns with efforts to integrate coronavirus disease immunization into routine programmes, including its reporting, and ensure equitable vaccine access. The plan specifically interlinks with IA2030 Strategic Priority 4 – Outbreaks & Emergencies.
National workforce capacity for essential public health functions roadmap *(73)*	Establishes a framework for defining, educating, and measuring the public health workforce needed to deliver essential public health functions, including emergency preparedness and response. The current plan aligns by supporting competency-based training, standardized workforce mapping, and integrating these workforce capacities into national health systems strengthening and health security goals.

A number of WHA resolutions provide important policy foundations for global efforts related to coronaviruses. The current plan aligns with and advances the following resolutions, in order of applicability:

WHA74.7 – Strengthening WHO's preparedness and response to health emergencies (2021)	Emphasizes the need for stronger global health emergency systems and coordinated international action. The current plan aligns with this resolution by reinforcing integrated coronavirus management and sustained health system strengthening**.**
WHA73.1 – COVID-19 Response (2020)	Calls for equitable access to diagnostics, therapeutics, and vaccines, as well as robust global response mechanisms. The current plan builds on these priorities by supporting sustained, integrated COVID-19 management within routine health systems.
WHA73.8 – Strengthening preparedness for health	Focuses on building resilient public health capacities and full implementation of the IHR (2005). The current plan directly

emergencies: Implementation of the IHR (2005) (2020)	supports this by enhancing core capacities for detection, risk assessment, and response.
WHA76.5 – Strengthening the global architecture for health emergency preparedness, response and resilience (HEPR) (2023)	Calls for a cohesive, sustainable HEPR approach. This plan contributes by operationalizing HEPR principles for coronavirus disease threats, aligning with global priorities on surveillance, medical countermeasures, and community engagement.
WHA66.12 – Pandemic Influenza Preparedness Framework (2013)	Establishes the framework for global collaboration on pandemic preparedness, including virus sharing and access to countermeasures. The current plan aligns by promoting integrated, pathogen-agnostic respiratory disease management.
WHA75.8 – Strengthening One Health Approaches (2022)	Calls for multisectoral action at the human-animal-environment interface. The current plan integrates One Health principles into coronavirus disease management to reduce spillover risk and enhance cross-sector collaboration.
WHA75.13 – Global strategy on infection prevention and control (2022)	Calls for strengthened IPC programmes across all levels of the health system, including during and between epidemics. The current plan aligns by embedding robust IPC measures into routine and emergency coronavirus disease management to reduce transmission risks and enhance health system resilience.
WHA70.13 – Review of the Pandemic Influenza Framework (2017)	Emphasizes the need for improved preparedness for respiratory pandemics. The current plan builds on this by supporting integrated, cross-pathogen management of respiratory threats, including coronaviruses.
WHA77.7 – Strengthening laboratory biological risk management (2024)	Focuses on biosafety, biosecurity, and the safe handling of high-risk pathogens. The current plan aligns by emphasizing secure laboratory systems as critical for early detection and response to coronavirus disease threats.
WHA67.20 – Regulatory system strengthening for medical products (2014)	Calls for stronger national regulatory systems to ensure access to quality, safe, and affordable medical products. The current plan supports this by promoting regulatory readiness for coronavirus-related vaccines, diagnostics, and therapeutics, aligned with WHO prequalification and global standards.
WHA74.14 – Protecting, safeguarding and investing in the health and care workforce (2021)	Highlights the central role of a resilient, well-supported health workforce in effective health systems and emergency response. The current plan aligns by prioritizing workforce protection, training, and support as critical components of sustained coronavirus disease threat management.

6. Monitoring, evaluation, and learning

Robust monitoring, evaluation, and learning (MEL) processes are essential to measuring progress toward the current plan's aim and strategic objectives, in order to inform timely course correction when needed. The current plan includes mechanisms for periodic review and continuous learning, enabling Member States, WHO, and their partners to adapt strategies based on emerging evidence and evolving risk.

Implementation progress will be tracked periodically through a set of key indicators aligned with the strategic objectives outlined here, across each core public health capability, supported by national, regional, and global reporting systems. These indicators will be released in a subsequent annex to allow for further technical consultation and alignment with broader respiratory disease monitoring frameworks.

The specific objectives of the MEL activities under the current plan are to:

- Monitor and report on country and global activities to sustainably and comprehensively manage coronavirus disease threats, integrated with broader respiratory disease prevention and control programmes.
- Document WHO's support to Member States to support coronavirus disease threat management; and,
- Promote sharing of lessons learned and enhance transparency and innovation amongst Member States and partners.

Approach

The MEL framework for the current plan is a collaborative initiative among stakeholders, driven by WHO's global and regional emergency management support teams (EMSTs). The MEL framework incorporates a combination of country-level indicators, WHO milestones consolidating WHO's contributions, and narrative case studies to complement existing financial monitoring, stakeholder coordination and feedback mechanisms.

Throughout implementation of current plan, periodic reviews will be conducted to ensure the appropriateness and suitability of the reporting and monitoring approach. Based on these periodic reviews, adjustments to the MEL framework may be made, as necessary.

Data collection, management, and validation

Data for the MEL framework will be drawn from a variety of sources, including national, regional, and global reporting systems, programmatic data flows, and dedicated assessments. Wherever possible, existing data streams will be leveraged to reduce reporting burden on Member States and improve data quality and consistency. This approach will minimize duplication of effort, streamline reporting, and ensure that indicators reflect accurate, timely information is available.

When and where possible, data disaggregated by age, sex, geography, and social determinants of health (e.g. income, disability status, migration status) will be collected.

Data will be validated by designated focal points at the source level, with logical checks performed by the WHO GCP team to ensure consistency, accuracy, and completeness. WHO will continuously monitor data quality, with periodic audits to confirm the reliability of reported metrics. Data will be integrated into WHO's data architecture, supporting efficient analysis and decision-making.

References

1. Standing recommendations for COVID-19 issued by the Director-General of the World Health Organization (who) in accordance with the International Health Regulations (2005) (IHR). Geneva: World Health Organization; 2023. (https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_8Add2-en.pdf, accessed 14 September 2025).
2. WHO Pandemic Agreement. Geneva: World Health Organization; 2025 (https://apps.who.int/gb/ebwha/pdf_files/WHA78/A78_R1-en.pdf, accessed 14 September 2025).
3. Strengthening the global architecture for health emergency prevention, preparedness, response and resilience. Geneva: World Health Organization; 2023 (https://www.who.int/publications/m/item/strengthening-the-global-architecture-for-health-emergency-prevention--preparedness--response-and-resilience, accessed 14 September 2025).
4. One Health Joint Plan of Action (2022 – 2026). Working together for the health of human, animals, plants and the environment. Rome: FAO, UNEP, WHO, and WOAH; 2022 (https://doi.org/10.4060/cc2289en).
5. Global Health Strategy and Fourteenth General Programme of Work 2025-2028. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/380456).
6. Preparedness and Resilience for Emerging Threats (PRET) Initiative. Geneva: World Health Organization; 2024 (https://www.who.int/initiatives/preparedness-and-resilience-for-emerging-threats, accessed 14 September 2025).
7. Joint External Evaluation. Geneva: World Health Organization; n.d. (https://www.who.int/emergencies/operations/international-health-regulations-monitoring-evaluation-framework/joint-external-evaluations, accessed 14 September 2025).
8. IHR States Parties Self-Assessment Annual Report (SPAR). Geneva: World Health Organization; n.d. (https://www.who.int/emergencies/operations/international-health-regulations-monitoring-evaluation-framework/states-parties-self-assessment-annual-reporting, accessed 15 September 2025).
9. Global Influenza Surveillance and Response System (GISRS). Geneva: World Health Organization; n.d. (https://www.who.int/initiatives/global-influenza-surveillance-and-response-system, accessed 14 September 2025).
10. WHO Coronavirus Network (CoViNet). Geneva: World Health Organization; n.d. (https://www.who.int/groups/who-coronavirus-network, accessed 14 September 2025).
11. WHO R&D Blueprint for Epidemics. Geneva: World Health Organization; n.d. (https://www.who.int/teams/blueprint/who-r-and-d-blueprint-for-epidemics, accessed 14 September 2025).
12. Learnings from COVID-19 for future respiratory pathogen pandemic preparedness. A summary of the literature. Geneva, World Health Organization; 2023 (https://iris.who.int/handle/10665/376201).

13. Drawing light from the pandemic: A new strategy for health and sustainable development. Copenhagen: World Health Organization Regional Office for Europe; 2021 (https://iris.who.int/handle/10665/345027).

14. End-to-end integration of SARS-CoV-2 and influenza sentinel surveillance: revised interim guidance, 31 January 2022. Geneva: World Health Organization. (https://iris.who.int/handle/10665/351409).

15. Deliver, Together: partnerships to deliver vaccines in a pandemic—learning from COVID-19 vaccine delivery. Geneva: World Health Organization; 2023 (https://www.who.int/publications/m/item/deliver--together--partnerships-to-deliver-vaccines-in-a-pandemic-----learning-from-covid-19-vaccine-delivery, accessed 14 September 2025).

16. The COVID-19 Vaccination Response: Country Experiences, best practices, and lessons. Geneva: World Health Organization; 2023 (https://www.who.int/docs/default-source/coronaviruse/covid_19_vaccination_response_country_experiences_best_practices_lessons.pdf, accessed 14 September 2025).

17. Integrated disease surveillance and response technical guidelines: Booklet Two: sections 1, 2, and 3, 3rd ed. Brazzaville: World Health Organization Regional Office for Africa; 2019 (https://iris.who.int/handle/10665/312317).

18. WHO policy brief: COVID-19 surveillance. Geneva: World Health Organization; 2024 (https://www.who.int/publications/m/item/who-policy-brief-covid-19-surveillance, accessed 14 September 2025).

19. Implementing the integrated sentinel surveillance of influenza and other respiratory viruses of epidemic and pandemic potential by the Global Influenza Surveillance and Response System: standards and operational guidance. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/379678).

20. WHO guiding principles for pathogen genome data sharing. Geneva: World Health Organization; 2022 (https://iris.who.int/handle/10665/364222).

21. "Crafting the mosaic": a framework for resilient surveillance for respiratory viruses of epidemic and pandemic potential. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/366689).

22. Respiratory Investigations and Studies (Unity Studies). Geneva: World Health Organization; n.d. (https://www.who.int/initiatives/respiratory-pathogens-investigations-and-studies-unity-studies, accessed 14 September 2025).

23. Global Influenza Programme Surveillance & monitoring. Geneva, World Health Organization; n.d. (https://www.who.int/teams/global-influenza-programme/surveillance-and-monitoring).

24. International Health Regulations (2005). Geneva: World Health Organization; 2005 (https://iris.who.int/handle/10665/246107).

25. Tripartite Zoonoses Guide: Operational tools and approaches for zoonotic diseases. Geneva: World Health Organization; 2019 (https://www.who.int/initiatives/tripartite-zoonosis-guide, accessed 14 September 2025).

26. International Health Regulations (2005): IHR monitoring and evaluation framework. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/276651).

27. WHO policy brief: Building trust through risk communication and community engagement and infodemic management. Geneva: World Health Organization; 2024 (https://www.who.int/publications/m/item/who-policy-brief-building-trust-through-risk-communication-and-community-engagement-and-infodemic-management, accessed 14 September 2025).
28. A framework for civil society organization engagement in health emergencies. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/382149).
29. Engaging with communities in health emergencies: Building readiness, response and resilience. Copenhagen: World Health Organization Europe; 2024 (https://iris.who.int/handle/10665/376361).
30. Infodemic Management Course Series. Geneva: World Health Organization; n.d. (https://openwho.org/channels/infodemic-management).
31. Community-Based Surveillance: guiding principles. Geneva: International Federation of Red Cross and Red Crescent Societies; 2017 (https://www.ifrc.org/document/community-based-surveillance-guiding-principles, accessed 14 September 2025).
32. WHO SAGE Roadmap for prioritizing uses of COVID-19 vaccines. Geneva: World Health Organization; 2023 (https://www.who.int/publications/i/item/WHO-2019-nCoV-Vaccines-SAGE-Prioritization-2023.1, accessed 14 September 2025).
33. Behavioural and social drivers of vaccination: tools and practical guidance for achieving high uptake. Geneva: World Health Organization; 2022 (https://iris.who.int/handle/10665/354459).
34. WHO policy brief: COVID-19 vaccination. Geneva: World Health Organization; 2024 (https://www.who.int/publications/m/item/who-policy-brief-covid-19-vaccination, accessed 15 September 2025).
35. The generic all-hazards risk assessment and planning tool for mass gathering events. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/365577).
36. Risk communication and community engagement readiness and response toolkit: mass gatherings. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/382356).
37. Roadmap to improve and ensure good indoor ventilation in the context of COVID-19. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/339857).
38. A decision framework for effective, equitable and context-specific public health and social measures during public health emergencies: decision navigator. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/382868).
39. Public health and social measures during health emergencies. Geneva: World Health Organization; n.d. (https://www.who.int/initiatives/who-public-health-and-social-measures-initiative, accessed 15 September 2025).
40. WHO policy brief: Clinical management of COVID-19. Geneva: World Health Organization; 2024 (https://www.who.int/publications/m/item/who-policy-brief-clinical-management-of-covid-19, accessed 15 September 2025).
41. WHO policy brief: COVID-19 testing. Geneva: World Health Organization; 2024 (https://www.who.int/publications/m/item/who-policy-brief-covid-19-testing, accessed 14 September 2025).

42. Clinical management of COVID-19: living guideline, June 2025. Geneva: World Health Organization; 2025 (https://doi.org/10.2471/B09467).

43. Clinical management of severe acute respiratory infection when Middle East respiratory syndrome coronavirus (MERS-CoV) infection is suspected: interim guidance. Geneva: World Health Organization; 2019 (https://iris.who.int/handle/10665/178529).

44. Laboratory testing for Middle East respiratory syndrome coronavirus – revised. Geneva: World Health Organization; 2018 (https://iris.who.int/handle/10665/259952).

45. Operational Framework for Primary Health Care: transforming vision into action. Geneva: World Health Organization and United Nations Children's Fund (UNICEF); 2020 (https://iris.who.int/handle/10665/337641).

46. A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/345824).

47. Infection prevention and control in the context of COVID-19: a guideline, 21 December 2023. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/375200).

48. Infection prevention and control during health care for probable or confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection. Geneva: World Health Organization; 2019 (https://iris.who.int/handle/10665/174652).

49. WHO policy brief: Infection prevention and control measures for COVID-19 in health care settings. Geneva: World Health Organization; 2024 (https://www.who.int/publications/m/item/who-policy-brief-infection-prevention-and-control-measures-for-covid-19-in-health-care-settings, accessed 15 September 2025).

50. Coadministration of seasonal inactivated influenza and COVID-19 vaccines: interim guidance, 21 October 2021. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/346897).

51. Therapeutics and COVID-19: living guideline, August 2025. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/382888).

52. Considerations for integrating COVID-19 vaccination into immunization programmes and primary health care for 2022 and beyond. Geneva; World Health Organization and the United Nations Children's Fund (UNICEF); 2022 (https://iris.who.int/handle/10665/366171).

53. WHO COVID-19 Vaccine Delivery Toolkit. Geneva: World Health Organization; n.d. (https://www.who.int/tools/covid-19-vaccine-introduction-toolkit, accessed 14 September 2025).

54. WHO i-MCM-Net. Geneva: World Health Organization; n.d. (https://www.who.int/initiatives/i-mcm-net, accessed 14 September 2025).

55. WHO-UNICEF Joint Reporting Form on Immunization (JRF). Geneva: World Health Organization; n.d. (https://www.who.int/teams/immunization-vaccines-and-biologicals/immunization-analysis-and-insights/global-monitoring/who-unicef-joint-reporting-process, accessed 14 September 2025).

56. WHO VigiBase. Geneva: World Health Organization; n.d. (https://www.who-umc.org/vigibase/vigibase/, accessed 14 September 2025).

57. Monitoring COVID-19 vaccination: Considerations for the collection and use of vaccination data. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/339993).

58. Evaluation of COVID-19 vaccine effectiveness. Geneva: World Health Organization; 2021 (https://iris.who.int/items/626ab70a-25b3-4116-9449-ad8e53bb4ad5).

59. COVID-19 vaccines: safety surveillance manual, second edition. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/345178).

60. WHO Target Product Profiles for COVID-19 Vaccines. Geneva: World Health Organization; 2022 (https://www.who.int/publications/m/item/who-target-product-profiles-for-covid-19-vaccines, accessed 14 September 2025).

61. WHO Target Product Profiles for MERS-CoV Vaccines. Geneva: World Health Organization; 2017 (https://www.who.int/publications/m/item/who-target-product-profiles-for-mers-cov-vaccines, accessed 15 September 2025).

62. Coronavirus disease (COVID-19) technical guidance: The Unity Studies: Early Investigation Protocols. Geneva: World health Organization; n.d. (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/early-investigations, accessed 15 September 2025).

63. Unity Studies: MERS-CoV Investigations & Studies. Geneva: World Health Organization; n.d. (https://www.who.int/initiatives/mers-cov-investigations-and-studies, accessed 15 September 2025).

64. Assessing the programmatic suitability of vaccine candidates for WHO prequalification. Geneva: World Health Organization; 2014 (https://iris.who.int/handle/10665/148168).

65. Emergency Use Listing (EUL) Procedure. Geneva: World Health Organization; n.d. (https://www.who.int/teams/regulation-prequalification/eul, accessed 14 September 2025).

66. WHO Prequalification Programme. Geneva: World Health Organization; n.d. (https://extranet.who.int/prequal/, accessed 14 September 2025).

67. Collaborative Registration Procedure for medical products. Geneva: World Health Organization; n.d. (https://www.who.int/teams/regulation-prequalification/regulation-and-safety/facilitated-product-introduction/collaborative-registration-procedure, accessed 15 September 2025).

68. Good reliance practices in the regulation of medical products: high level principles and considerations. Geneva: World Health Organization; 2021 (https://www.who.int/publications/m/item/annex-10-trs-1033, accessed 14 September 2025).

69. A Framework for evaluating and publicly designating regulatory authorities as WHO Listed Authorities (WLA). Geneva: World Health Organization; n.d. (https://www.who.int/initiatives/who-listed-authority-reg-authorities, accessed 15 September 2025).

70. Framework for a Public Health Emergency Operations Centre. Geneva: World Health Organization; 2015 (https://iris.who.int/handle/10665/196135).

71. Pandemic influenza preparedness framework: partnership contribution high-level implementation plan III 2024-2030. Geneva: World Health Organization; 2024 (https://iris.who.int/handle/10665/366981).

72. Immunization Agenda 2030 (IA2030). Geneva: IA2030; 2020 (https://www.immunizationagenda2030.org, accessed 14 September 2025).

73. National workforce capacity for essential public health functions: A roadmap. Geneva: World Health Organization; n.d. (https://www.who.int/teams/health-workforce/PHEworkforce, accessed 15 September 2025).

Annex: Methodology for developing the strategic plan

This Strategic Plan for Coronavirus Disease Threat Management was developed through a structured, multi-phase process designed to ensure technical rigour, relevance to country needs, and alignment with WHO's broader strategic frameworks. The process was led by the WHO Global COVID-19 and Other Coronaviruses Programme, withing the Department of Epidemic and Pandemic Threat Management, and involved close collaboration with technical teams across headquarters, WHO regional & country offices, Member States and external partners.

The development process began with a comprehensive desk review of existing WHO materials related to coronavirus disease threats, including COVID-19, MERS-CoV, and SARS-CoV-1. This review drew on the final COVID-19 Strategic Preparedness and Response Plan (SPRP), technical guidance on surveillance, vaccination, clinical care, risk communication, One Health, and many others, as well as the WHO Health Emergency Preparedness, Response and Resilience (HEPR) Framework and other cross-cutting initiatives. Strategies developed for other disease areas, including influenza, HIV, tuberculosis, and malaria, were also reviewed to identify transferable approaches, common structural elements, and methodological benchmarks.

Based on this foundation, an initial draft was prepared by an internal task team composed of WHO headquarters staff from relevant technical areas. An iterative drafting process followed, involving regular feedback loops between HQ technical leads and designated regional focal points to ensure the plan was grounded in operational realities and responsive to regional needs and lessons learned. Drafts were refined in close coordination with internal subject matter experts, ranging the full spectrum of areas of technical competence covered by the plan.

A near-final draft was shared with a panel of external peer reviewers representing global, regional, and country technical agencies, partner institutions, and implementing organizations. At the same time, a public comment period was opened to allow Member States, other stakeholders, and the general public to provide input. The draft was made available through the WHO website. Feedback received through both peer review and public comment was consolidated, reviewed, and, where appropriate, incorporated into the final version of the plan.

All contributors to the development and review process declared potential conflicts of interest, which were reviewed and managed in accordance with WHO policies. The plan reflects a consensus-driven process, with decisions resolved through open discussion or, when needed, arbitration by senior WHO leadership.

Department of Epidemic and Pandemic Management
WHO Health Emergencies Programme

World Health Organization
Avenue Appia 20
1211 Geneva
Switzerland

www.who.int