At a glance:

The global genomic surveillance strategy

For pathogens with pandemic and epidemic potential

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How will the Strategy be implemented?

View full strategy online
What is genomic surveillance?

Genomic surveillance is monitoring the genetic make-up of pathogens, such as viruses and bacteria, to understand how they behave and how we can control them.

It involves constantly monitoring pathogens...

...and analyzing their similarities and differences.

For example, genomic surveillance is used to monitor for changes in SARS-CoV-2 virus, and to identify new variants.

It helps us to:

- Monitor diseases
- Control pathogens
- Tailor interventions and recommendations for the public
- Develop countermeasures, like vaccines
- Stamp out disease
Why is genomic surveillance important?

Disease detectives and health authorities need different types of data to control outbreaks.

- clinical and laboratory data
- epidemiological data
- environmental data
- other contextual data

By adding **genomic data**, disease detectives and health authorities can more quickly understand how a pathogen behaves and how it can be controlled.

This is a powerful tool in public health surveillance.
What is the global genomic surveillance strategy for pathogens with pandemic and epidemic potential?

A 10-year unifying framework to strengthen country, regional and global genomic surveillance.

IT AIMS TO:

- Link and embed pathogen monitoring within broader surveillance systems
- Identify opportunities to strengthen and establish capacities and systems
- Bring partners and stakeholders together to work on a common vision

The COVID-19 pandemic showed how critical it is to use genomics to protect public health. Genomics is just as relevant to help prevent and control other public health challenges, like influenza, Ebola virus disease and antimicrobial resistance. This is why the Strategy is pathogen agnostic.

The Strategy aims to mobilize genomic surveillance efforts against any pandemic or epidemic threat by strengthening and linking laboratories around the world.
Understanding how the virus behaves and evolves helped us respond. As a result, today, we have a wide range of tools to control the disease:

- Vaccines
- Therapeutics
- Diagnostics
- Public health and social measures, like masks and handwashing

But challenges remain:

- The high technical and financial cost of genomic surveillance, especially in resource-limited settings.
- Prioritizing the use of existing genomic surveillance capabilities for COVID-19 destabilized surveillance for other disease threats.
- The scale, geographic coverage and timeliness of data
- Limited linkages between genomic data and other information such as clinical or epidemiological data that give important context

The need for a globally aligned strategy was crystalized by the COVID-19 pandemic.
What are the Strategy’s goals and objectives?

Goal
Genomic surveillance for pathogens with pandemic and epidemic potential is strengthened and scaled for quality, timely and appropriate public health actions within local to global surveillance systems.

Objectives
5 objectives will support the achievement of the Strategy’s goal. Each objective is underpinned by a set of strategic actions.

Objective 1
Improve access to tools for better geographic representation

Objective 2
Strengthen the workforce to deliver at speed, scale and quality

Objective 3
Enhance data sharing and utility for streamlined local to global public health decision making and action

Objective 4
Maximize connectivity for timely value-add in the broader surveillance architecture

Objective 5
Maintain a readiness posture for emergencies
Objective 1

Improve access to tools for better geographic representation

This objective focuses on ensuring appropriate technology and infrastructure are available.

Strategic Actions

- Advocate the value of genomic surveillance with policy makers
- Map and monitor capacity and capability landscape
- Deliver contextualized and sustainable technology solutions
- Stimulate innovation and research to address local to global needs
- Shape a sustainable and quality market to maximize access

“Tools both for sequencing and bioinformatics should be adapted to country needs and available at costs that are applicable for all countries.”
Objective 2

Strengthen the workforce to deliver at speed, scale and quality

This objective focuses on having an enhanced workforce that meets country needs to detect, monitor and respond.

Strategic Actions

- Develop training packages in genomics and bioinformatics
- Promote communities of practice and knowledge exchange
- Implement external quality assessment programs for genomics and analytics
- Strengthen programs for workforce development and retention

“At the time of an emergency, the workforce must be capacitated to surge, connect and deliver at speed.”
Objective 3
Enhance data sharing and utility for streamlined local to global public health decision-making and action

This objective focuses on promoting standardization to enable interoperability of systems to generate data and information that can be used for timely decision making and action.

Strategic Actions
- Develop consensus on data and meta data standards
- Establish data sharing and access principles
- Ensure data sharing agreements
- Harmonize norms, standards, benchmarks and reference materials
- Make the use of genomics routine in surveillance

“Recognizing the benefits of genomic surveillance, it is imperative that data-related systems are easy to contribute to, access and utilize.”
Objective 4
Maximize connectivity for timely value-add in the broader surveillance architecture

This objective focuses on ensuring connections across countries, disease areas and disciplines to maximise impact and efficiency, enabling more effective and timely preparedness and response actions.

Strategic Actions

- Facilitate data, specimen and information sharing
- Increase network linkages at local to global levels
- Implement collaboration with One Health partners
- Strengthen networks in routine, epidemic and pandemic contexts

“Genomic surveillance for pandemic and epidemic preparedness and response will be most successful by encouraging linkages to build on existing strengths and capacities.”
Objective 5
Maintain a readiness posture for emergencies

This objective focuses on building and sustaining local, regional and global readiness to use and surge genomic surveillance appropriately for emergencies.

Strategic Actions

- Test the surge and stretch of genomic surveillance systems
- Establish or sustain joint projects to maintain capacities
- Implement inter- or after-action reviews to strengthen practices

“Readiness actions are critical to cope with the added pressure of an emergency.”
How will the Strategy be implemented?

Implementation of this strategy will require a collaborative approach across governments, networks, programmes, and partners for maximal impact and contribution to public health.

The Strategy

- Country
- Regional
- Global

Actions

Indicative examples:

- Define national needs and stakeholders
- Map and monitor capacity
- Build and sustain genomics infrastructure
- Build or strengthen data collection, management, analysis and sharing
- Establish or maintain data sharing agreements and practice
- Adapt standard reference materials, norms and protocols
- Conduct exercises or reviews to strengthen system functionality
- Monitor implementation using metrics defined globally/locally

Principles

- Country-centred
- Value for money
- Sustainability
- Joint responsibility

Enablers

- Existing assets
- Leadership and policy
- Partnerships
- Financing
- Monitoring and evaluation

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For more information or to engage in the strategy development, visit the WHO website, contact country or regional offices, or email pathogengenomics@who.int

Additional communication materials and other resources on genomic surveillance and the Strategy are also available for viewing and download.