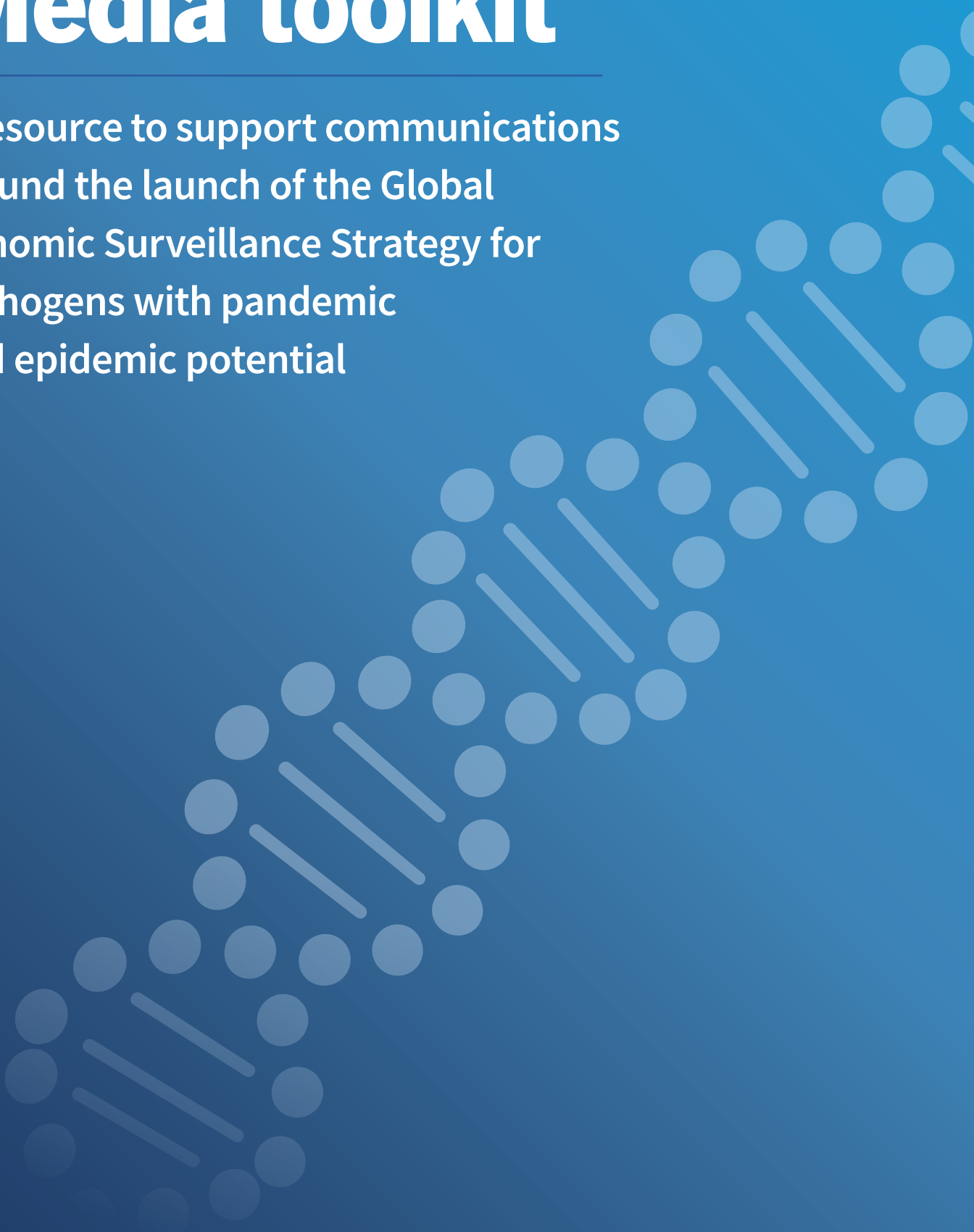
Media toolkit

A resource to support communications around the launch of the Global Genomic Surveillance Strategy for pathogens with pandemic and epidemic potential



World Health Organization

The Contents of this Toolkit

In this toolkit, you will find background information on genomic surveillance and the development of the Global Genomic Surveillance Strategy for pathogens with pandemic and epidemic potential ('**the Strategy**'), including key messages around the Strategy launch, and guidance on how to access further resources.

Background

The Strategy

The COVID-19 pandemic marked a watershed moment in genomic surveillance. Scientists in laboratories worldwide collaborated to track genomic changes to the rapidly evolving SARS-CoV-2 virus at an unprecedented speed and scale. The continuous detection, monitoring and assessment of existing and emerging pathogens has become a global priority.

Recognizing that the time is right and there is both need and momentum for global collaboration in strengthening genomic surveillance, WHO coordinated the development of a 10-year Strategy to strengthen genomic surveillance in order to better detect and respond to future pandemics and epidemics. The Strategy builds on the lessons of the past, including the COVID-19 pandemic, while thinking ahead to safeguard the health and wellbeing of human populations.

The Strategy is not specific to a single pathogen or disease threat. Instead, it provides a unifying vision for strengthening and using genomic surveillance capacities in local to global pandemic and epidemic preparedness and response.

Countries are at the heart of the Strategy. The Strategy builds on existing strengths and encourages partnerships to ensure that genomics is part of our 21st century surveillance toolbox for a post-COVID world. This relies on a number of key ingredients including having better global access to tools and technologies, stronger capacities and capabilities, and streamlined data sharing and analyses. Implementing the Strategy will mean that disease threats are recognized and addressed quickly.

View full Strategy online

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Genomic surveillance

Different types of information are needed to understand and control disease. This includes understanding the characteristics of people or animals getting infected, the clinical signs and symptoms, and the speed of disease spread. Genomics offers a unique insight into the microscopic fingerprint - the genome - of pathogens that cause disease.

Mapping and monitoring pathogen genomes provides vital information on the structure, function and evolution of pathogens. Genomic surveillance tracks such genetic evolution across different pathogens, including bacteria, parasites, and viruses.

Genomic surveillance therefore plays a key role in the warning system for emerging infectious diseases with epidemic or pandemic potential. It helps give researchers, governments and public health officials the information needed to track the path of an epidemic, determine the rate of pathogen evolution, understand if existing medical countermeasures (vaccines and medicines) are still effective to control the pathogen, or develop new countermeasures.

The technological revolution in genomics is transforming how we approach disease surveillance and our public health readiness for future pandemics.

1. **History:** Sanger sequencing emerged in 1977, and was the primary method used for genome sequencing until the development and improvement of high-throughput technologies, often referred to as Next Generation Sequencing (NGS), from 2006 onwards.

2. **Today:** Both Sanger and high-throughput sequencing technologies are in use. Each platform has its advantages and limitations depending on public health surveillance objectives, capacities, time constraints and costs.

3. **For COVID-19:** Genomic surveillance has been used extensively throughout the pandemic, and has helped characterize variants, including variants of concern. As of January 2022, 68% of countries have the technology and tools needed to sequence SARS-CoV-2 virus.

4. **Looking ahead:** technologies are evolving rapidly and are becoming easier to use and adapt to different contexts and for different disease control programmes. This is our opportunity to shape the future of genomic surveillance for pathogens with pandemic and epidemic potential.

Strategy goals

The Strategy is powered by a unifying vision to inform and support country, regional and global genomic surveillance. It aims to scale up genomic surveillance capacity while strengthening quality and standards to enable public health authorities to respond swiftly and appropriately to emerging epidemic or pandemic threats.

The goal of the Strategy is that **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.

Key messages

Genomic surveillance is a ***powerful*** and proven ***tool*** that can help public health systems to ***detect, prepare for and respond*** to emerging pandemics and epidemics.

Existing strengths and ***existing barriers***, gaps and weaknesses came to light due to the ***COVID-19 pandemic***.

The ***urgent need*** for a globally harmonised and accepted genomic surveillance strategy was revealed by the ***COVID-19 pandemic***.

Genomic sequencing and other molecular techniques have been applied to the ***investigation and management of other diseases/outbreaks*** such as Ebola, Zika, cholera and polio.

Despite recent rapid innovations, development and technical advances, ***a great deal of work remains to be done*** to strengthen and build systems that seamlessly integrate genomic data into disease control efforts.

A global strategy for genomic surveillance can set a collective ***high-level agenda*** to ***leverage existing strengths***, address ***barriers*** and ***fill gaps***.

The global genomic surveillance strategy for pathogens with pandemic and epidemic potential has ***5 objectives***, addressing ***access*** to ***tools***, strengthening the ***workforce***, enhancing ***data sharing and utility***, maximizing ***connectivity***, and maintaining a ***readiness posture*** for emergencies.

The Strategy aims to increase the, ***geographic representativeness***, ***timeliness***, ***quality***, ***and utility*** of genomic surveillance to complement the other systems used for early warning alert and response.

Diseases have no borders. With rapidly ***evolving technology***, and more countries building genomic surveillance capabilities to investigate different diseases. ***Global coherence, through harmonized systems and approaches***, will help get the most out of the data generated.

Target audiences

The Strategy will be viewed by:

- national health authorities
- partners
- donors
- public health officers
- academia
- private sector
- laboratory specialists
- technical or non-technical experts

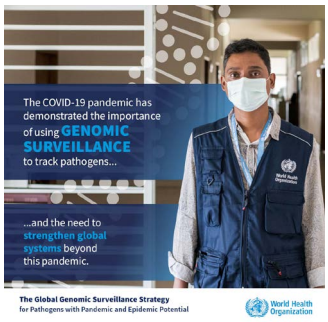
Social media messaging and assets

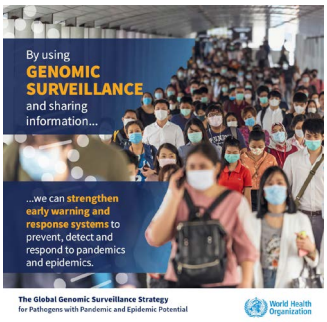
Hashtags and handles:

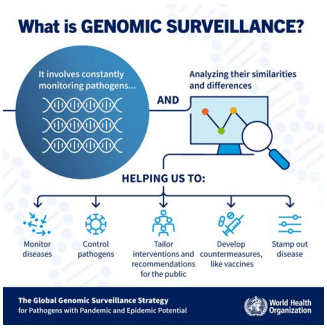
#genomicsurveillance
#genomesequencing
#COVID19
#pandemic
#globalcooperation
#pathogengenomics
@WHO

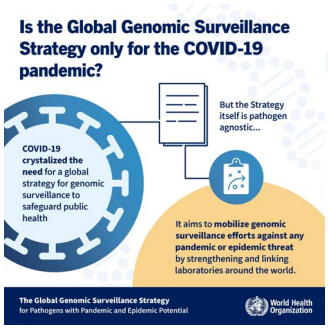
Access the social media infographics

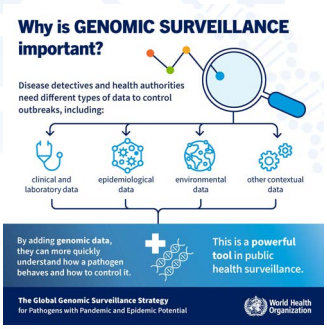
Click to view

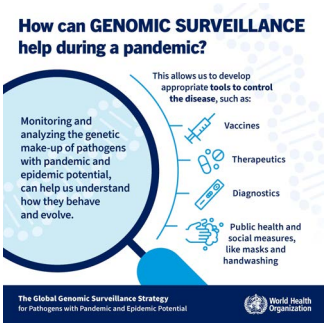












Media resources

The Strategy launch materials

WHO website: https://www.who.int/
The Strategy Initiative page: https://www.who.int/initiatives/genomic-surveillance-strategy

Full Strategy document

→ Click to view

Infographic summary PDF of the Strategy

→ Click to view

Video explainer series:

1. What is genomic surveillance?
2. How has genomic surveillance contributed to the fight against COVID-19?
3. What is the potential of genomic surveillance for the future beyond COVID-19?
4. How can international partners and partnerships help to strengthen genomic surveillance?

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Annex

Quotes from Key Experts

Dr. Senjuti Saha
Director & Scientist
Child Health Research Foundation (CHRF)
Dhaka, Bangladesh
https://chrfbd.org/pages/team-details/8

Dr. Mike Ryan
Executive Director
Health Emergencies Programme, WHO
https://www.who.int/director-general/who-headquarters-leadership-team

Dr. Rick Bright
Senior Vice President
Pandemic Prevention & Response, Rockefeller Foundation
https://www.rockefellerfoundation.org/profile/dr-rick-bright/

1. What is genomic surveillance?

"Genomic surveillance for pathogens basically means using genomic sequencing to track pathogens. Pathogens could be bacteria. It could be a virus. It could be fungi. We basically try to answer questions like, "Where did a pathogen come from? Where is it going? How is it travelling? Can we predict what it looks like? What kind of diseases does it cause? How severe is the disease going to be? And what are the vaccines that we should be designing?"
-Dr. Senjuti Saha

"Surveillance comes from the French word surveiller "to watch over". And that is the essence of public health. It's to watch over and protect the health of ordinary people...

...So collecting information systematically from laboratories, from hospitals, from surveys that allow us to detect and track and monitor and characterise infectious diseases so that we can make better public health decisions has always been part of public health and it goes back centuries."
-Dr. Mike Ryan

2. Why is genomic surveillance important?

"Helps us understand, track patterns of antimicrobial resistance, for example, in bacteria. It helps us characterise or identify vaccine epitopes, so it helps us design our vaccines."
-Dr. Senjuti Saha

"By looking at the sequence from a pathogen, we can then track the evolution to note if it is changing in some way that might impact its biological properties like how it spreads or how it might evade immunity from either prior infection or from a vaccine or maybe it is resistant to an antiviral drug or to therapeutics. This helps us to better understand the pathogen itself, how it's evolving or changing in a host such as people and whether it is spreading within a community or across the globe."
-Dr Rick Bright

"What genomics allows us to do is move away from characterising those pathogens in a very simplistic way and really looking to the genetic code, to exactly how those pathogens are built and then being able to distinguish the different lineages."
-Dr. Mike Ryan

3. The role of genomic surveillance against COVID-19 and it's potential for future disease outbreaks

"It's really important to remember that what we are seeing now is just an example. There are really many, many areas where genomic sequencing can be used and actually is being used within the clinical setting...

...Genomic surveillance helps us track endemic infectious diseases, diseases that are common and prevalent in local communities. And that varies across the world."
-Dr. Senjuti Saha

"It's also been helpful to inform our evidence-based public health measures such as masking and social distancing. And it's also helped stakeholders to assess the risk within their family and within their community. We've had more SARS-CoV-2 genomes sequenced and shared publicly in initiatives like GISAID than any other pathogen in history...

...This increased capability. And the capacity to do so creates a huge opportunity for scientists to monitor the spread of known pathogens like influenza, antimicrobial-resistant bacteria, tuberculosis and other pathogens. And they can detect newly emerging pathogens that we may not even know about today much sooner."
-Dr. Rick Bright

"What this pandemic has demonstrated is the central value of being able to do genetic sequencing and characterisation. It's not just the sequencing. It's the analytics that goes with that and understanding how one pathogen relates to the other because it's not just about sequencing an individual pathogen. It's about mapping those pathogens, so we can see how they're different, how the pathogen is evolving, how it's changing in its behaviour. And that allows us to get ahead of the pathogen."
-Dr. Mike Ryan

4. What is the importance of global collaboration on strengthening genomic surveillance?

"We have learned very well in the last two years that diseases cannot be studied in isolation. Pathogens do not follow borders. Diseases move quickly from one place to another. And if we really, truly want to track pathogens in real time, it is very important that all across the world, all communities, all countries have their own genomic capacity."
-Dr. Senjuti Saha

"At the Pandemic Prevention Institute, our goal is to collaborate with a global network of partners, including WHO. All of us aligned around data and information generation, around the modern-day analytics and sharing of this information, incorporating the tools that communities can use locally while being connected globally to enable and empower decisions that will contain outbreaks and prevent pandemics."
-Dr. Rick Bright

"We're still very much in the centre of the COVID-19 storm, but we have to start to think about the future. We have to ensure that we sustain this effort and we sustain the capacities we've built…the Strategy will help us to do that…

...This is a global good, the ability to be able to track what's happening in the microbial world in order to protect human health, to have a better understanding of the biome that we live in and how viruses, bacteria and other pathogens exist with us in this very complex ecosystem. Building that ecosystem of humans to respond to that with surveillance is very important. And it's not just WHO and our member states. It's our partners, partners out there in hundreds, thousands of academic and other units, our partners in the private sector, our partners in the G7 and the G20… the future is about global solutions. But it's about local action and connecting all of that action locally into a global unbreakable chain of health protection for the future."
-Dr. Mike Ryan

For additional information, please contact:

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