

Pandemic surveillance

Member States Briefing – 17 March 2022



**World Health
Organization**

The need for sustained surveillance

Dr Maria Van Kerkhove, Technical lead COVID-19
Emerging Diseases and Zoonoses Unit Head, WHE/WPE/EPP

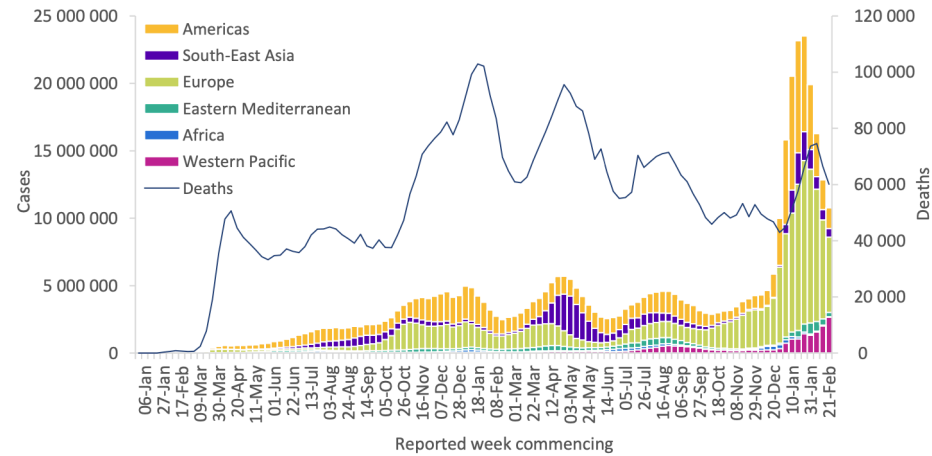
The pandemic is not over



Cumulative reporting of cases/deaths

- 435,626,514 confirmed cases
- 5,952,215 confirmed deaths

Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 27 February 2022**



**See [Annex 2: Data, table, and figure notes](#)

Diagnostic testing for SARS-CoV-2 infection

Countries need to test for SARS-CoV-2 according to the national strategy, using available and approved diagnostic tests.

Use of antigen-detection rapid diagnostic testing

WHO recommends that all suspected cases be tested for SARS-CoV-2.

Who should be tested for SARS-CoV-2?

Regardless of vaccination status or COVID-19 disease history.

- Higher priority:** Suspected cases at a higher risk of developing severe disease / requiring hospitalization or ICU or organ transplantation.
 - For asymptomatic individuals in a closed setting (e.g. hotels, prisons, etc.)
- Medium priority:** Asymptomatic individuals at higher risk of SARS-CoV-2 infection.
 - Contacts of case (close or probable cases)
 - People who are frequently exposed through their occupations, such as health and care workers
- Lower priority:** Asymptomatic individuals with no direct risk of exposure.
 - Widespread testing of asymptomatic individuals, including through self-testing, is not currently recommended due to limited evidence on impact and cost-effectiveness.

Policies to test outside these recommendations should consider:

- Timely and of suitable quality of diagnostic testing to meet demand as the priority strategy
- There are available human and financial resources for testing, including logistics, and that testing and follow-up of a test are available

For more information see WHO guidance: <https://www.who.int/publications/m/item/who-2021-04-01>

Why is testing for SARS-CoV-2 important?

Test should be reliable, accurate, affordable, accessible and provide results rapidly*

Results of testing are important for a number of reasons:

- Enables individuals to know if they are infected
- Ensures appropriate clinical care and support to individuals
- Prevents transmission by empowering individuals to protect their families and communities
- Enables a better understanding of where the virus is circulating to inform the COVID-19 response

Examples of where testing can be done:

- Health care facilities, clinics, health centers, and pharmacies
- Community-based testing sites, such as walk-through or drive-through centers,

SARS-CoV-2 Sequencing Capacity data as of 10 January 2022



The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. [1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

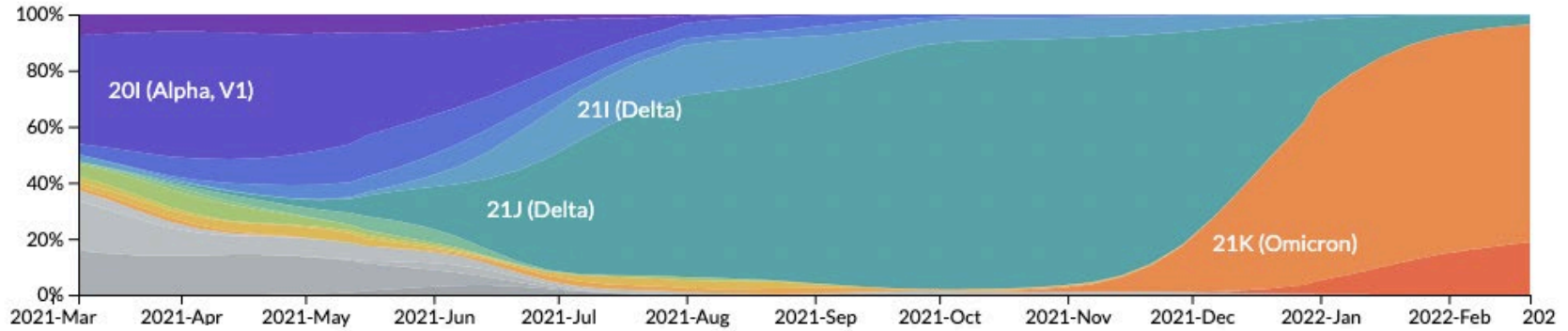
Data Source: World Health Organization
Map Production: WHO Health Emergencies Programme
Request ID: COVID19_45

World Health Organization
© WHO 2022, all rights reserved.

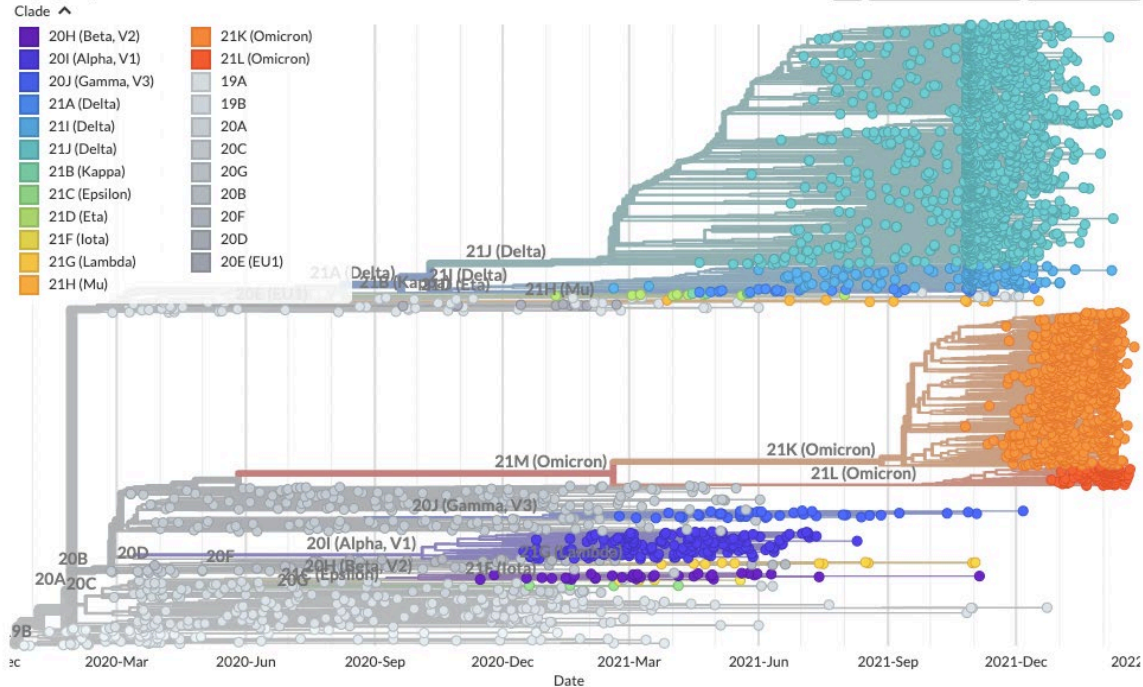
Careful assessment & monitoring of variants remains critical



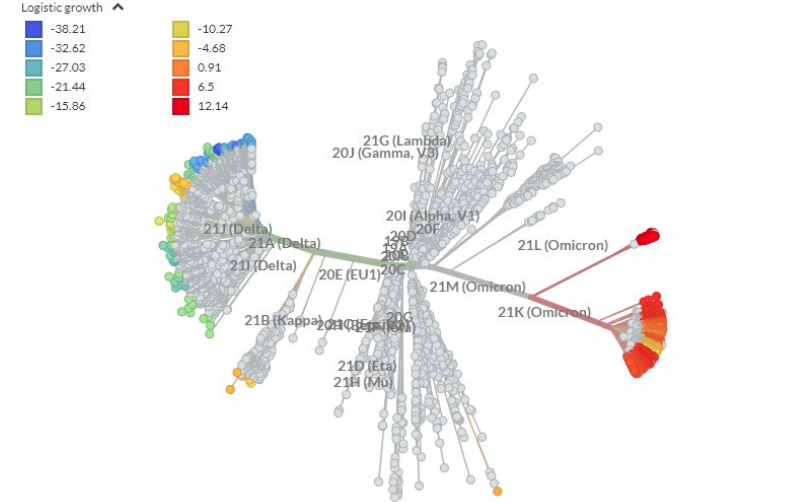
Frequencies (colored by Clade)



Phylogeny



Phylogeny

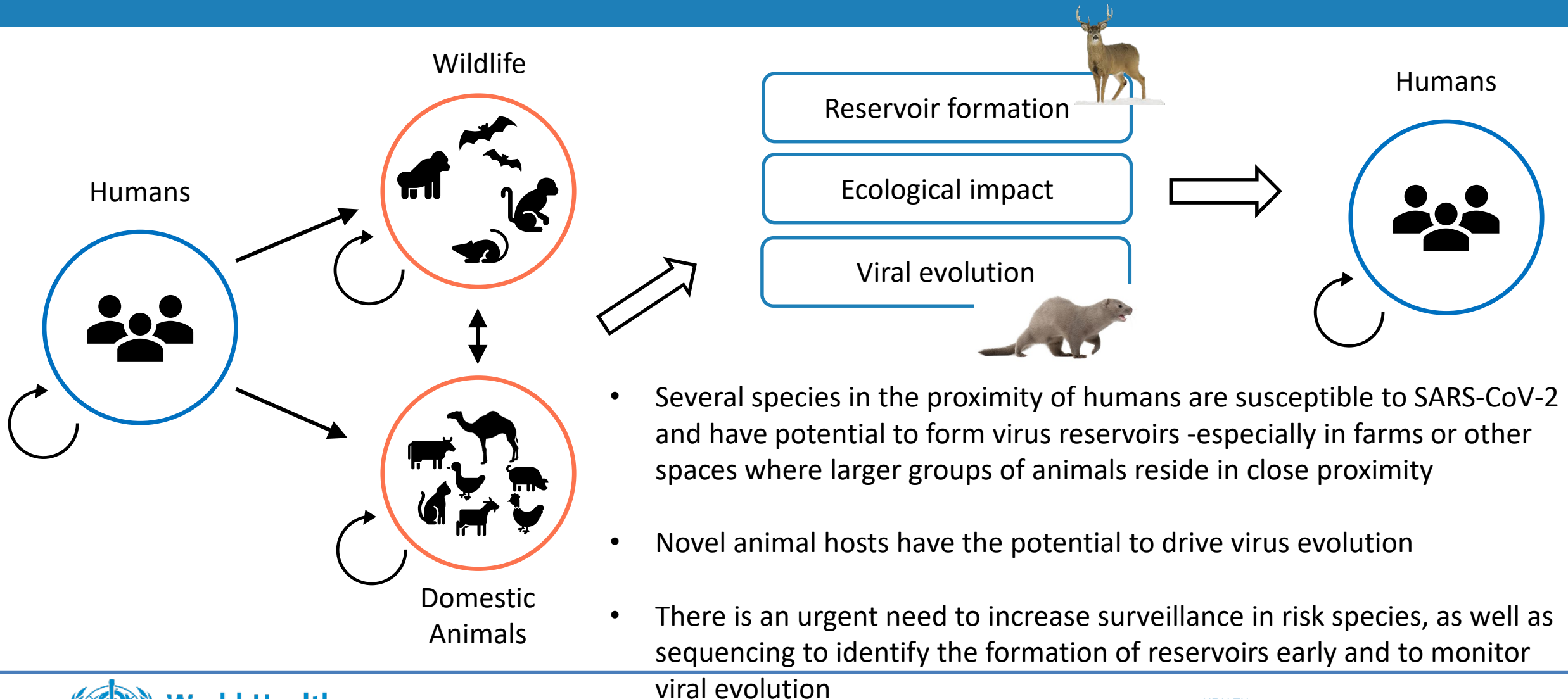


Built with [nextstrain/ncov](#). Maintained by the [Nextstrain team](#). Enabled by data from [GISAID](#).

Showing 3128 of 3128 genomes sampled between Dec 2019 and Feb 2022.



SARS-CoV-2 infections in animals: The risks



Countries face different situations, challenges and scenarios for ending the emergency phase and for achieving sustained COVID-19 control



Current and Previous Strategy

Current Epidemiology

Population demographics and risk factors for severity

Population immunity from vaccination and/or infection

Access to life saving tools

Capacities to implement in communities and across all pillars

Operational readiness and agility to adjust actions and surge as needed

Public trust, societal engagement and unrest

Ending the public health emergency of COVID-19 in 2022

Reduce and control incidence of SARS-CoV-2 infection



Protect individuals (especially the vulnerable) from exposure and reduce risk of future variants

- Track the virus and its variants with expanded testing and sequencing
- Community led strategies and interventions
- Vaccination development incl 2nd/3rd generation vax
- Calibrated PHSM measures at individual and population level inc. measures to protect high risk groups or settings
- Clear supported policies that are targeted, layered and comprehensive

Health, Economy, Politics, Risk-tolerance, Human Rights, Acceptance

Optimizing National and International Strategies and operational readiness

Prevent, Diagnose and Treat Coronavirus Disease (COVID-19)



Reduce disease morbidity, mortality and longterm consequences of infection to a minimum

- Protect those most vulnerable with full course of effective vaccine (70% by June 2022)
- Early diagnosis and effective clinical management of symptomatic disease (especially in most at-risk groups in all countries)
- Better understanding and therapeutic options for Post COVID-19 Condition
- Protect HCWs and restore resilient health systems

Upcoming technical consultation on surveillance

Dr Boris Pavlin, WHE/WRE, COVID-19 Epidemiology Pillar Lead

Consultation 1:

Urgent surveillance needs during the current COVID-19 pandemic



- Informal dialogues with WHO ROs and Member States
- Review current objectives, achievements and challenges in WHO-HQ COVID-19 surveillance, 2 years into the pandemic
- Adjust short term objectives of SARS-CoV-2 surveillance for Member States, through internal and external review and consensus
- Timeframe: target March 2022
- Output: updated COVID-9 Public Health Surveillance interim guidance, target April 2022

Leveraging Existing Systems : GISRS

Dr Wenqing Zhang, Unit Head Global Influenza Programme, WHE/WPE /EPP

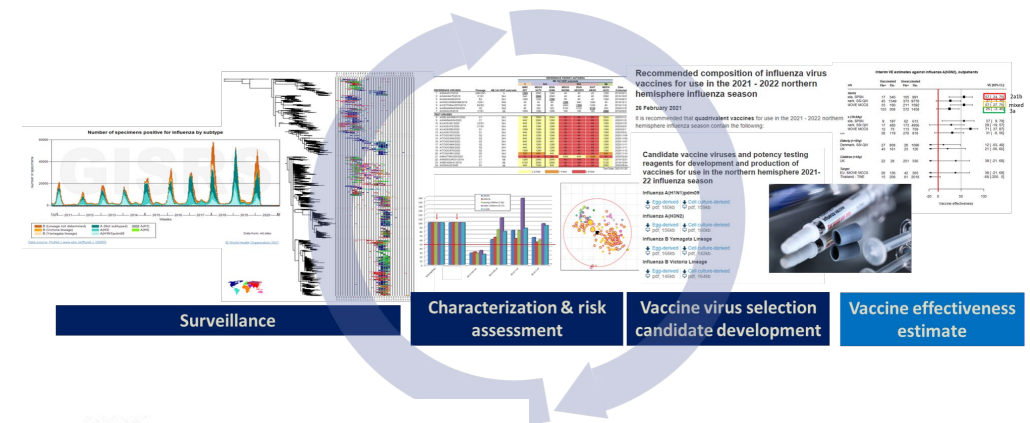
Existing network for Influenza surveillance: GISRS

Global Influenza Surveillance and Response System (GISRS)

- Global **foundation** for influenza surveillance, preparedness and response
- Currently 158 institutions in 124 Member States
- Global **public health model** for **70 years**
- **Institutionalized capacity** in countries
 - Laboratory & diseases surveillance integrated
 - Response mechanisms exercised very season in epidemics
 - Enormous commitment from Member States and support from international agencies and partners

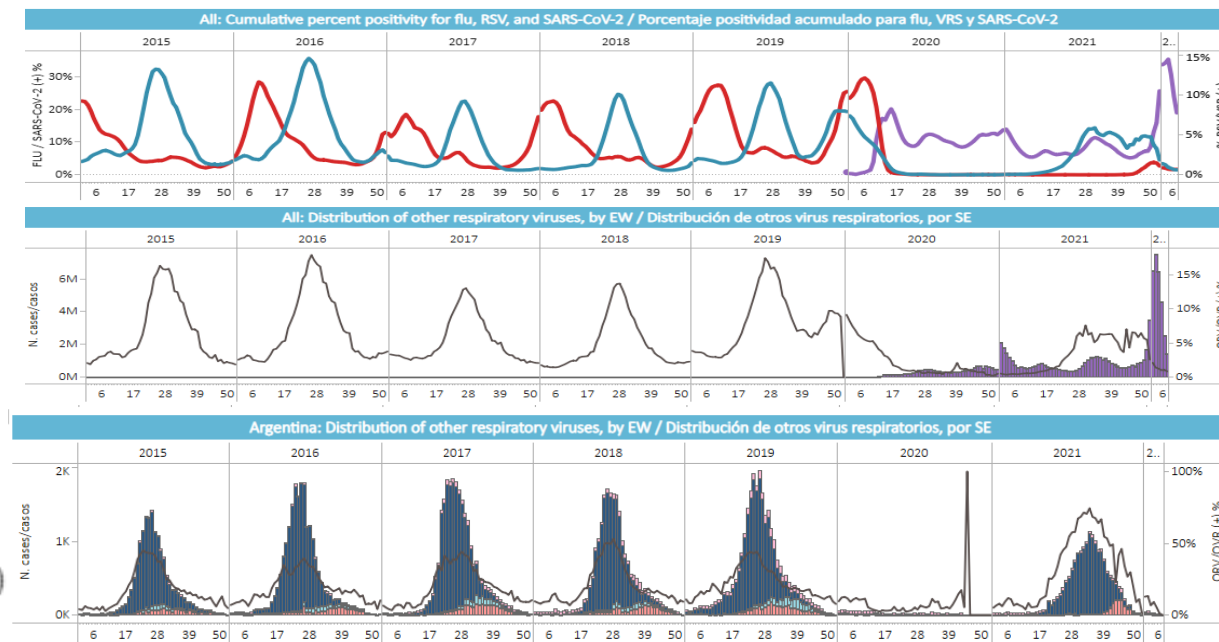
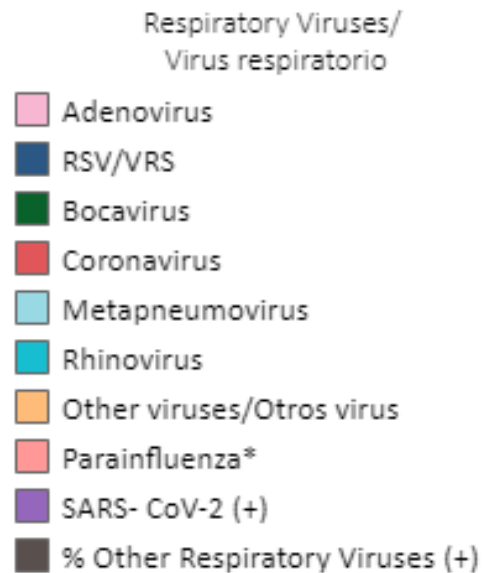
*from specimens
to public health
products*

Year-round cycle



Integration of multiple viruses in a single platform

- 2002: **SARS-CoV-1** was *identified* by GISRS
- Since 2015: **RSV** is being integrated into GISRS influenza surveillance system in some countries. It has strengthened GISRS surveillance capacity in pediatric populations
- In the Region of the Americas: a **panel of respiratory viruses** integrated into GISRS

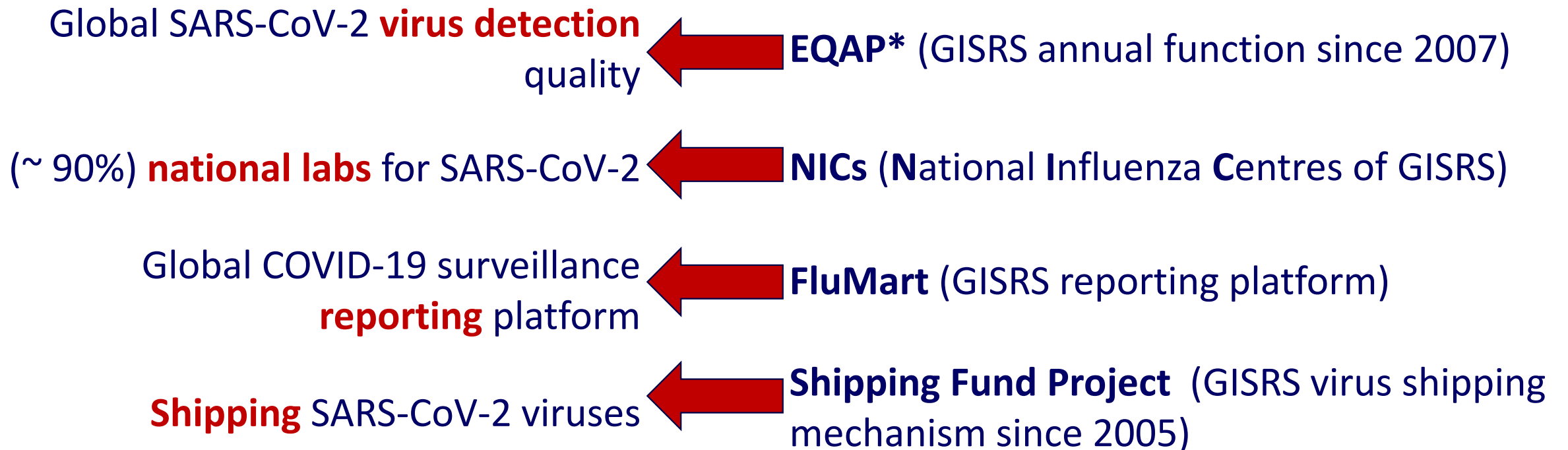


Leveraging GISRS for COVID-19 pandemic response

GISRS in action *since day 1* of SARS-CoV-2 detection
Genetic sequence data sharing: GISAID EpiFlu™ → EpiCoV™

COVID-19 response

GISRS capacity leveraged

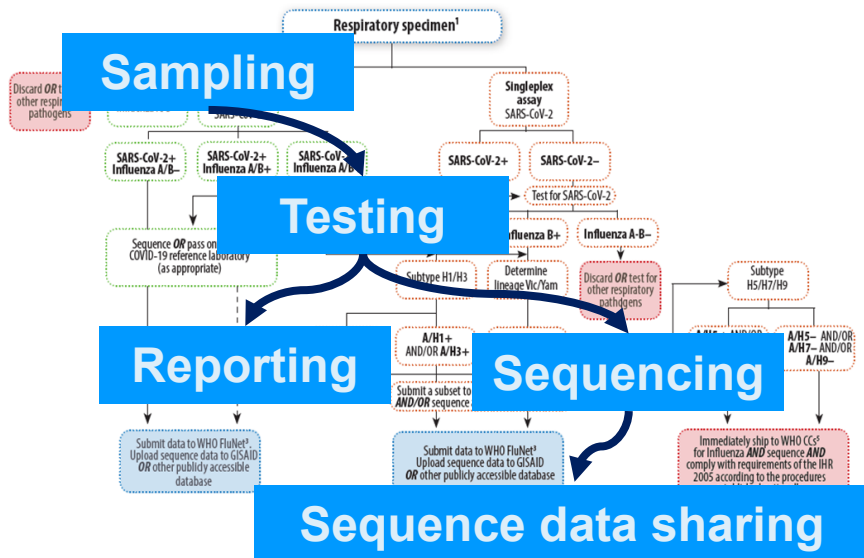


* EQAP: External Quality Assurance Program of WHO

Sentinel surveillance for SARS-CoV-2 using GISRS

- Integration of SARS-CoV-2 with influenza surveillance
- Using **existing** sentinel surveillance systems of influenza
- Addressing public health needs of **non-COVID-19 simultaneously**
- Building **sustainability** with GISRS

Standardized algorithms



Quantitative guidance



Standardized tools

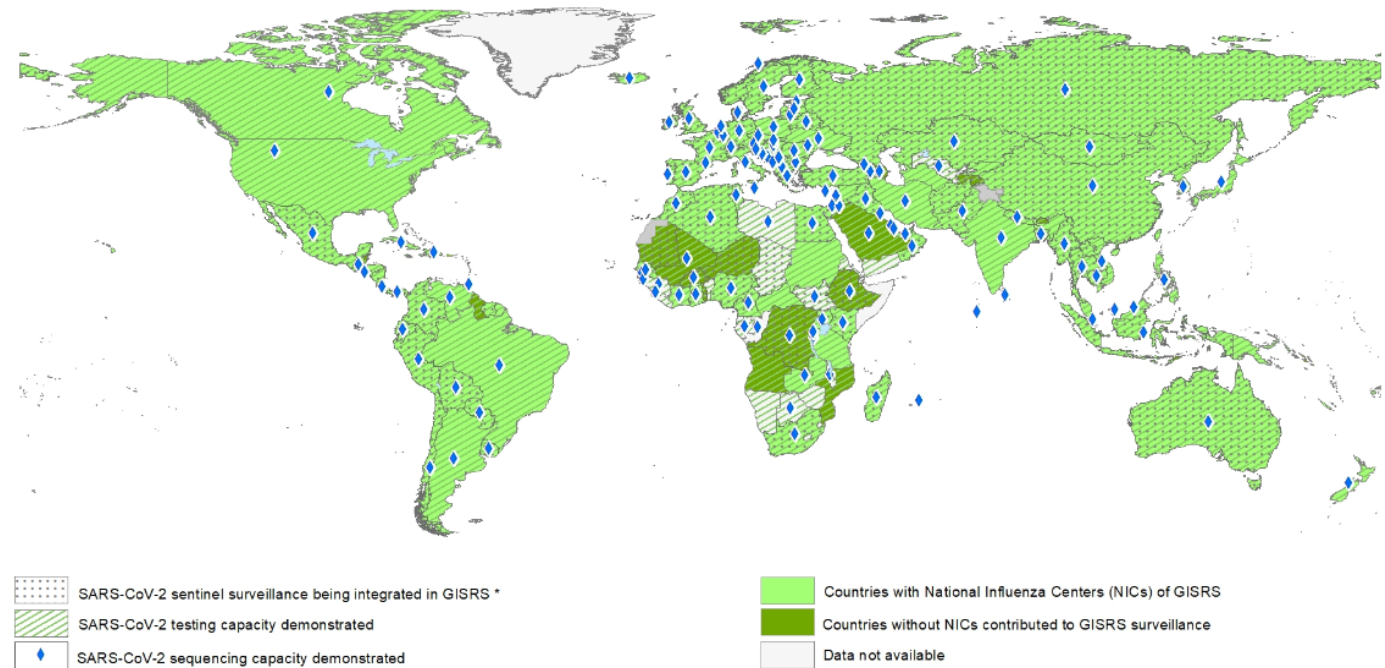
- EQAP 2020&2021; 2022 ongoing
- **Multiplex PCR** reagents for GISRS
- **Lab supplies** for LMICs
- **Reporting** tools
- **Trainings & daily support**

Sentinel surveillance for SARS-CoV-2 using GISRS

- capacity to date

- **100 countries** have integrated COVID-19 surveillance into GISRS sentinel systems *as of 14 Mar 2022*:
 - 89 countries with smoothly functioning integrated surveillance
- **Virus detection:**
 - **23 out of 26** WHO COVID-19 Reference labs are members of GISRS
 - **224 labs** from **176 countries, areas and territories** participated in the WHO EQAP for SARS-CoV-2.
- **Sequencing:** GISRS laboratories in **106 Member States generated & shared** genetic sequence data

GISRS capacity leveraged to COVID-19 pandemic response



*As demonstrated in reporting to FluNet from January 2021 to date

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represents approximate border lines for which there may not yet be full agreement. [1] All references to Kosovo in this document should be understood to be in the context of United Nations Security Council resolution 1244 (1999).

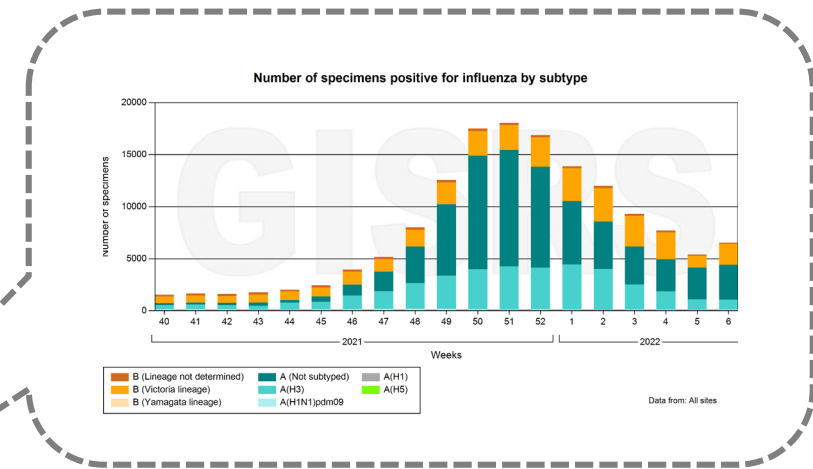
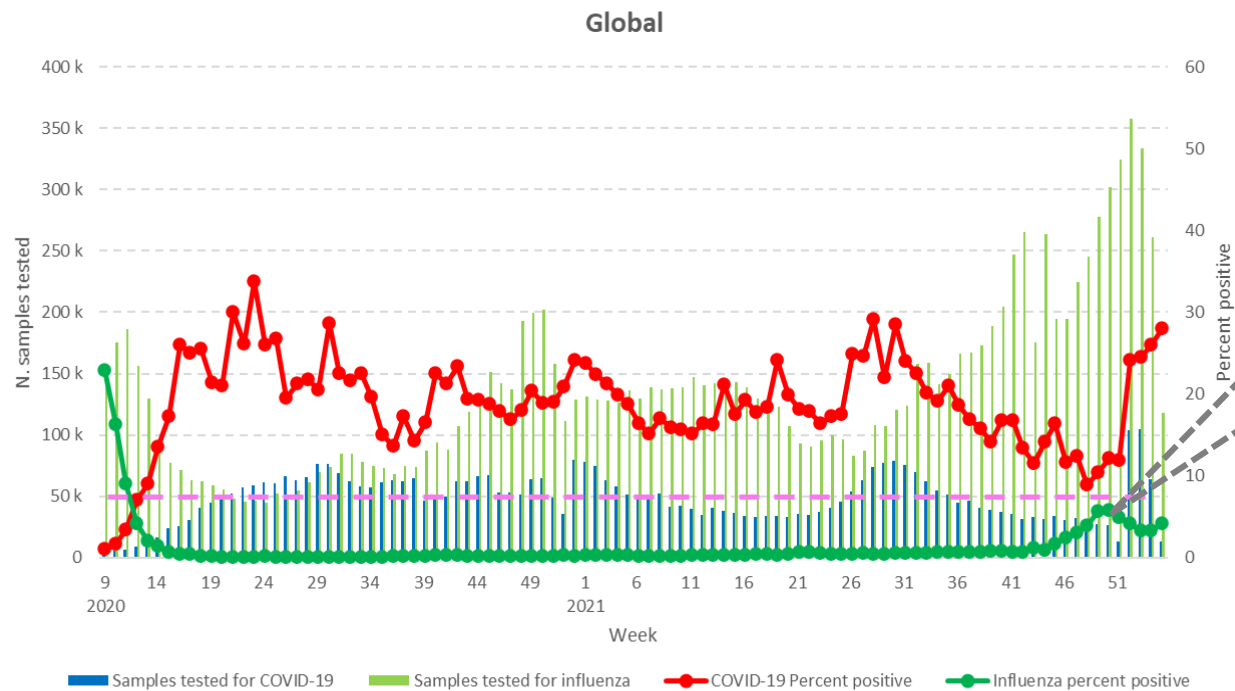
Data Source: GISRS Fiumart
Map Production:
Global Influenza Programme
World Health Organization



© WHO 2022. All rights reserved.

Sentinel surveillance for SARS-CoV-2 using GISRS

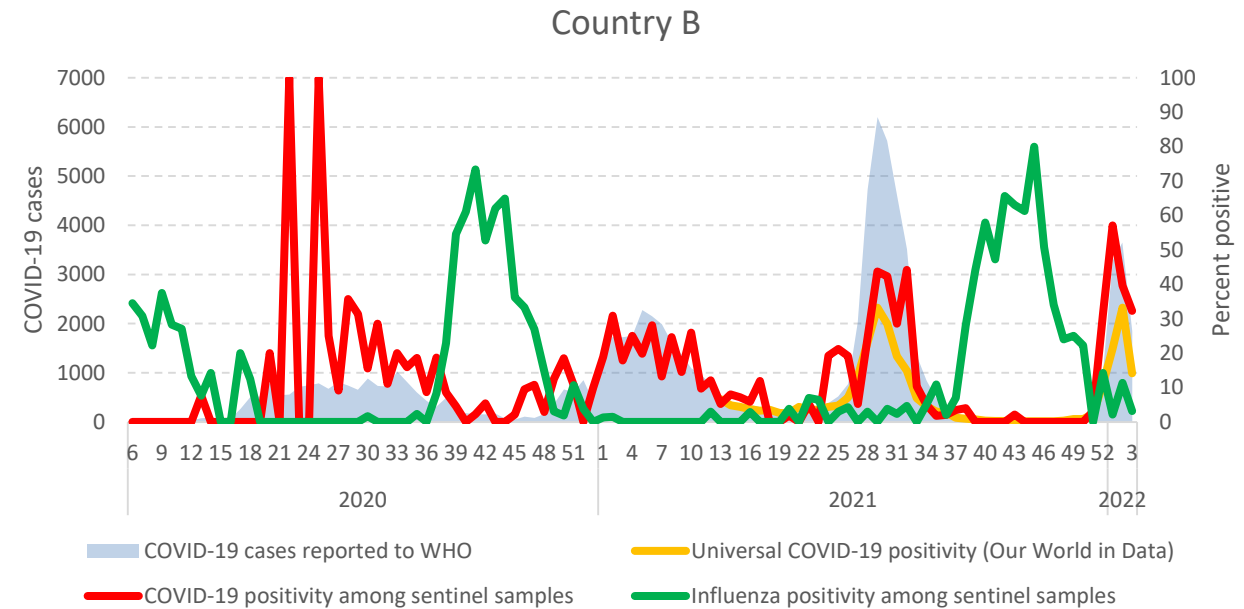
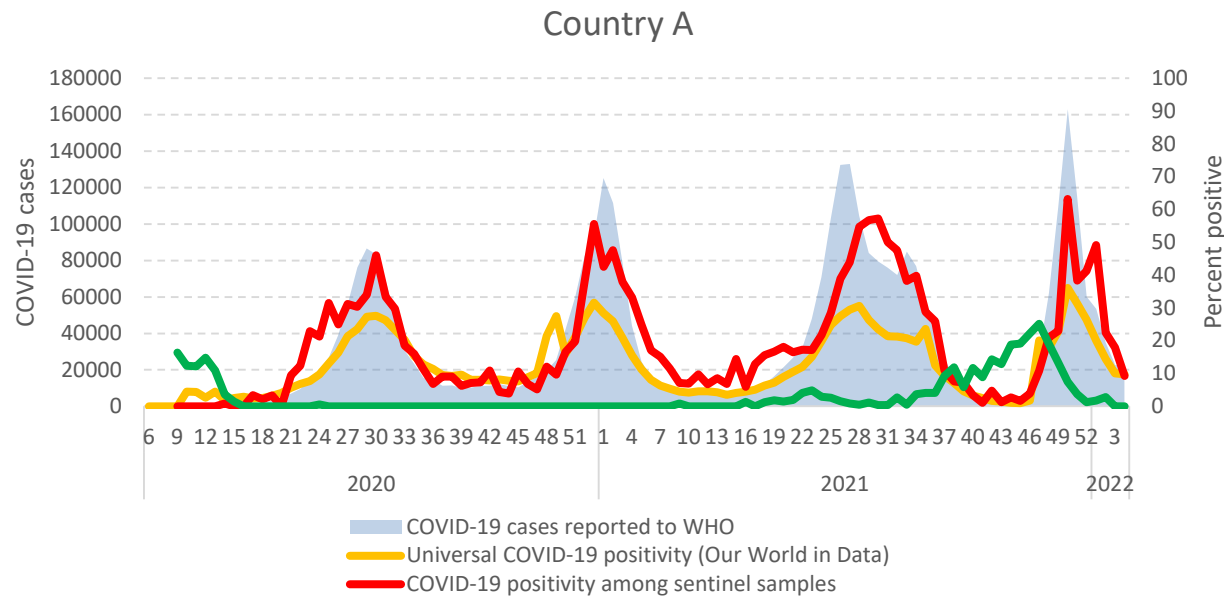
- monitoring relative co-circulations of SARS-CoV-2 and influenza in community



- Monitoring relative co-circulations of influenza and SARS-CoV-2 in community
- Influenza started during COVID-19 pandemic since week 40 2021, and under the radar screen of GISRS

Sentinel surveillance for SARS-CoV-2 using GISRS

- efficiency



- ***Sentinel surveillance*** needs significantly reduced resources than ***universal surveillance*** for monitoring trends of virus circulation in community
 - Country A: 142 vs 218,260* specimens weekly – **1500 times less specimens**
 - Country B: 44 vs 11,505** specimens weekly – **300 times less specimens**

*Data from week 10/2020; **Data from week 13/2021

In summary

- Thanks to Member States' support to GISRS
- GISRS demonstrated, through COVID-19 pandemic, its:
 - **resilience** leveraging rapidly national and global capacity from influenza to non-influenza
 - **surge ability** e.g. testing 340 specimens per week/country in 2019 to 10,000 in 2020
 - **feasibility** of monitoring SARS-CoV-2 and influenza at the same time
 - ability to maintain **vigilance** to emerging threat of influenza pandemic - 155 cases of zoonotic influenza infection detected so far during COVID-19 pandemic
- GISRS sentinel surveillance takes **systematic approach** from specimens, to virus detection and genetic sequencing, connecting disease monitoring.
- Strong sentinel surveillance is a **critical component** of broader surveillance operation and **complements** other surveillance models.
- **GISRS** system is **country-owned** with year-round functioning **capacity in countries**. GISRS surveillance will continue –a public health need driven by the *persistent threat of influenza* pandemics and seasonal epidemics.

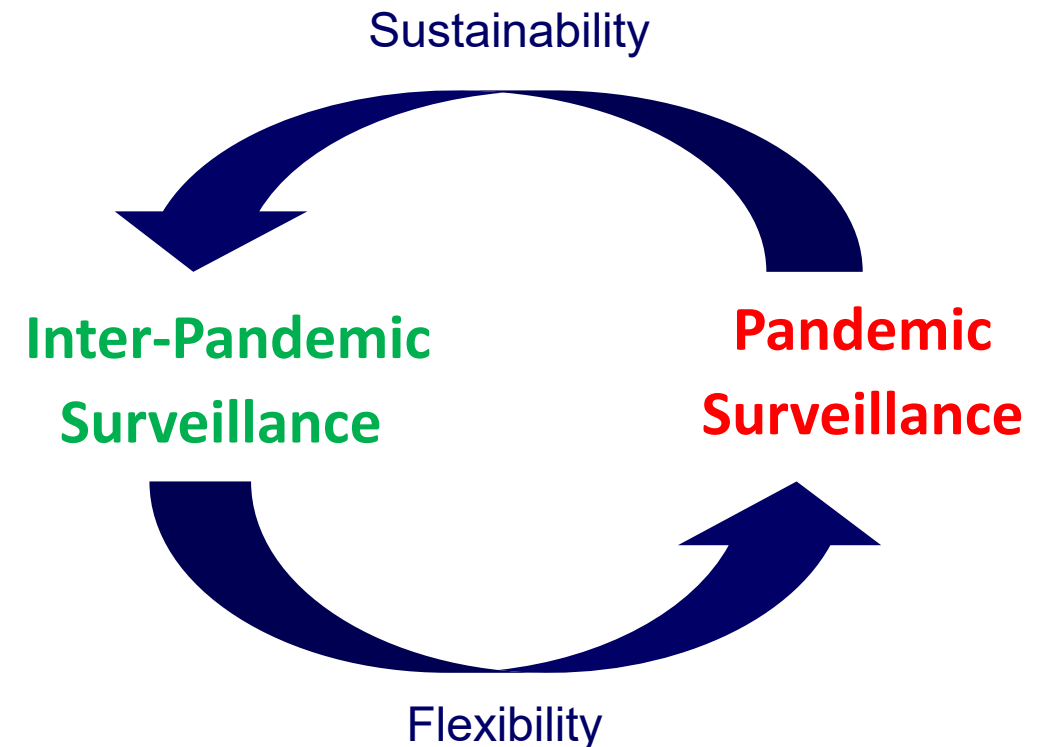
Pandemic Surveillance the way forward

Dr Sylvie Briand, Director Epidemic and Pandemic Preparedness and Prevention , WHE/WPE/EPP

Considerations on Pandemic surveillance



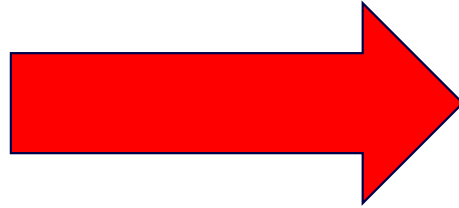
- Many pathogens could cause the next pandemic. However, respiratory viruses pose specific challenges for surveillance:
 - high and rapid transmission (short incubation period)
 - often pre-symptomatic or asymptomatic transmission
 - non-specific symptoms
 - evolving pathogens
- It is easier to scale up existing systems than to build a brand-new surveillance system during pandemic situation
- There is a need to **maintain the gains** of the COVID-19 pandemic
- AND **expand existing systems** to include current and future viruses of concern.





Surveillance systems provide information for decision-making like a car dashboard

- Speed of the car
- Position
- Engine problem,
- Need for fuel, oil, water, ...



- Spread of the disease
- Geographic distribution of the disease
- Impact on the health, health systems
- Allocation of resources



shutterstock.com • 644560246

Comprehensive pandemic surveillance through connected systems



SARI and ILI Sentinel Systems



Animal-human interface



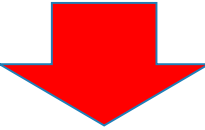
Event-based surveillance



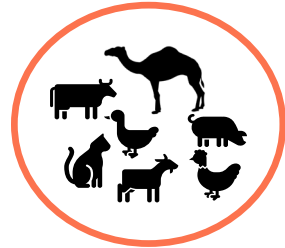
Complementary systems

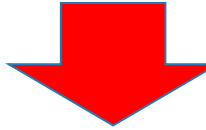


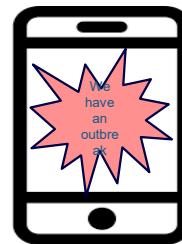
Special Studies

- 
- Circulation trends
 - Severity
 - Clinical information
 - Genetic changes
 - Impact/interventions

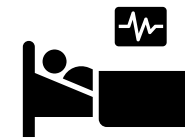
- 
- Novel viruses
 - New variants



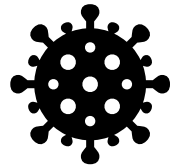
- 
- Outbreaks
 - Clusters of concern



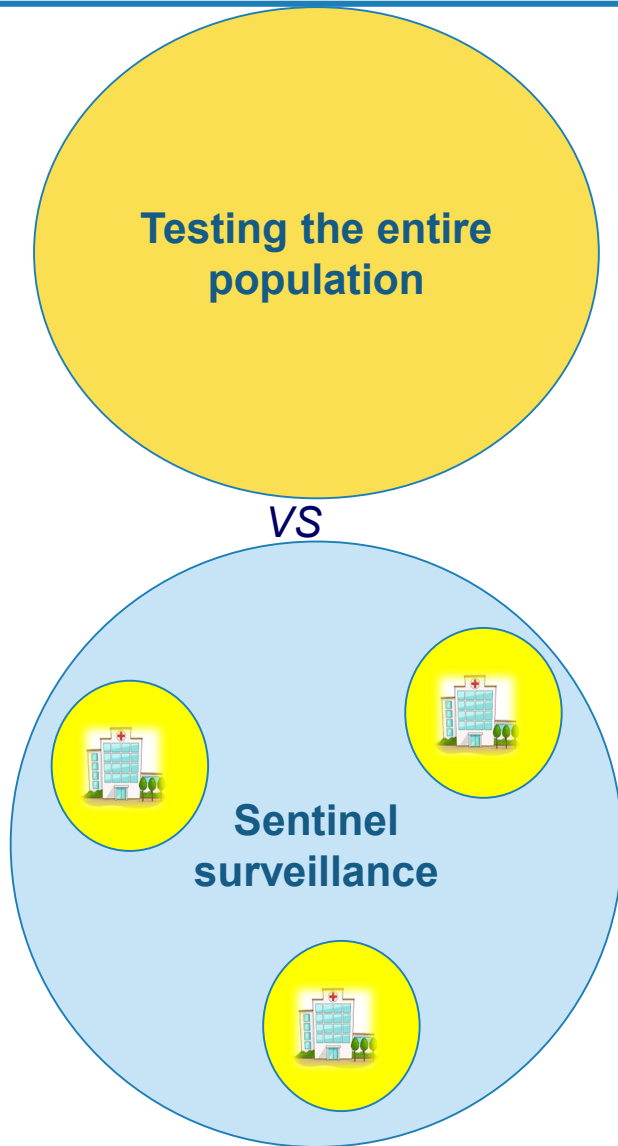
- 
- Impact/interventions
e.g vaccine coverage
 - Hospital capacity
 - Absenteeism



- 
- Transmission
 - Seroprevalence
e.g.Unity studies

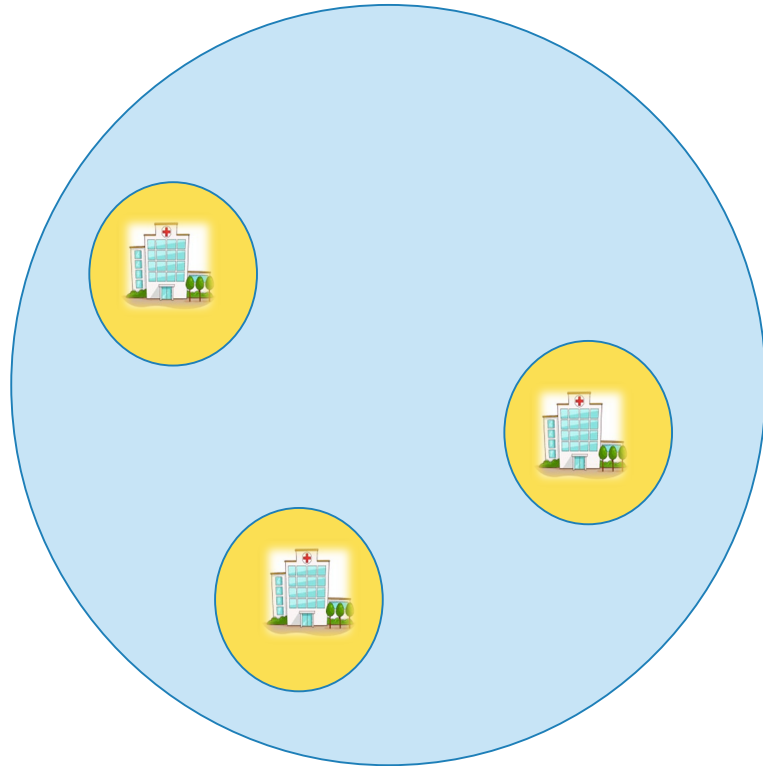


Sentinel SARI and ILI surveillance systems



- Sentinel ILI (Influenza Like Illness) and SARI (Severe Acute Respiratory Infection) surveillance monitors the circulation of seasonal respiratory pathogens, and their impact.
- Quality data can be obtained from a few well-run sites. Not every case needs to be identified, results can be extrapolated to the entire population.
- Small amounts of good data are better than large amounts of bad data!
- Sentinel sites should be selected to be representative of population under surveillance and practically feasible in terms of logistics and acceptance. The number of sentinel sites is based on resources.

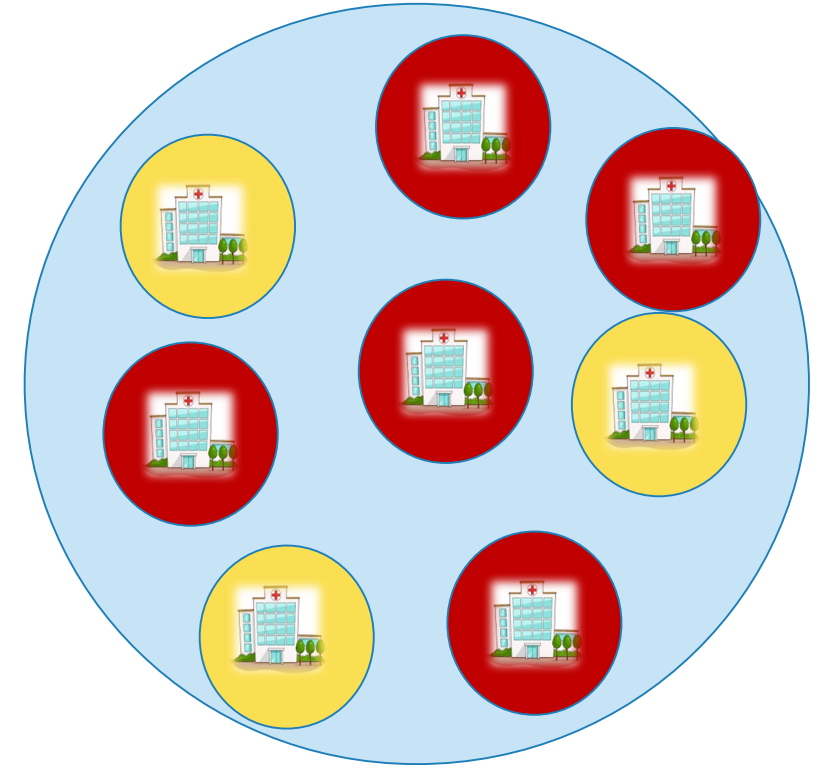
Temporarily enhancing sentinel SARI and ILI systems during a pandemic



Inter-pandemic

More information during a pandemic on:

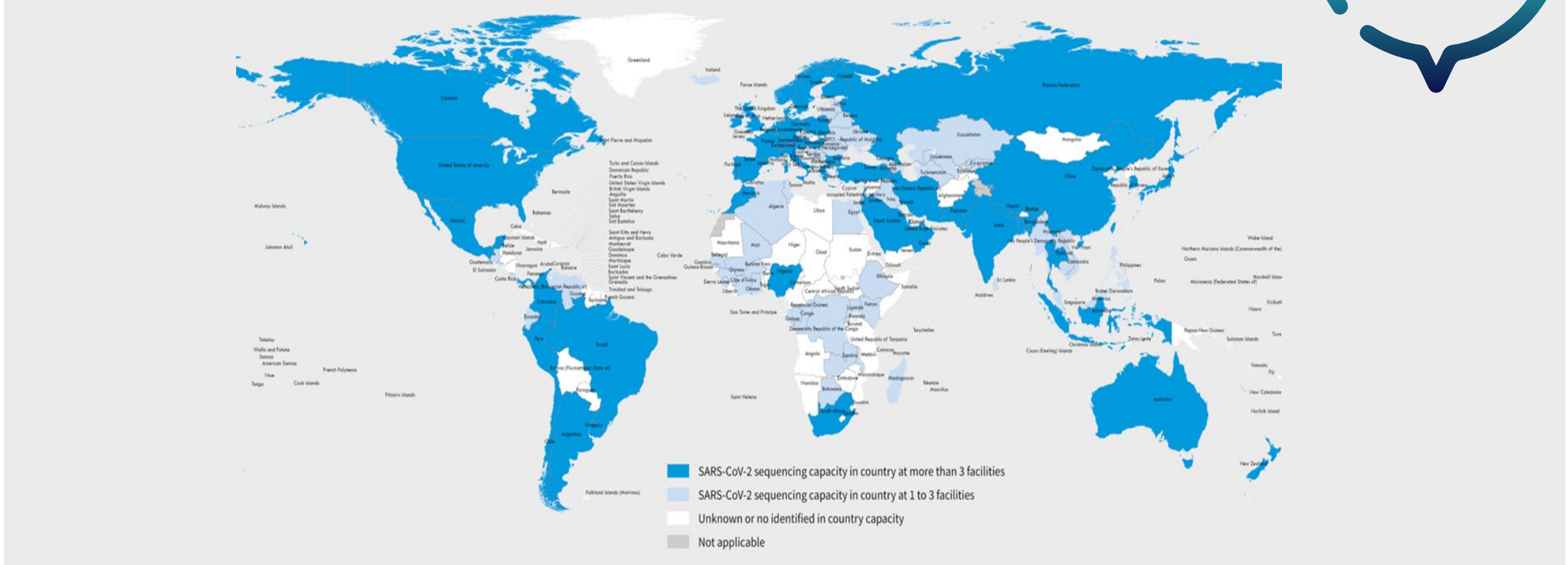
- Subnational monitoring
- High risk group monitoring
- Additional variant monitoring
- Clinical monitoring
- Vaccine Effectiveness monitoring
- Child pneumonia monitoring, etc.



Pandemic

SARS-CoV-2 sequencing capability

14%
increase in one year
(54% > 68%)



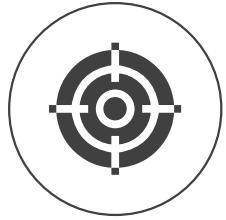
The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

[1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

Data Source: World Health Organization
Map Production: WHO Health Emergencies Programme
Request ID: COVID19_45

Global genomic surveillance strategy for pathogens with pandemic and epidemic potential

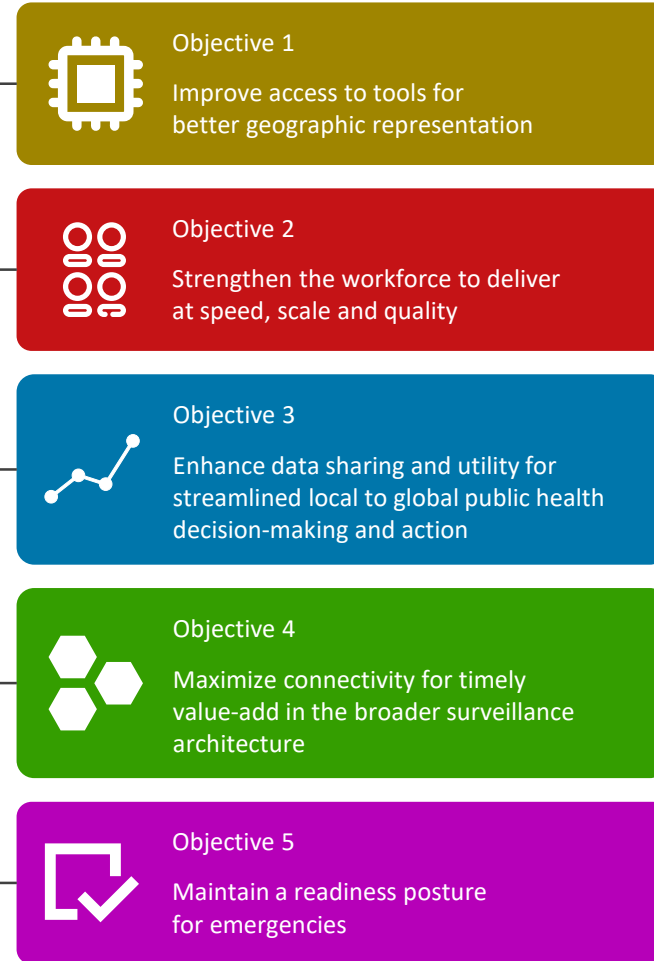
Strategy results hierarchy



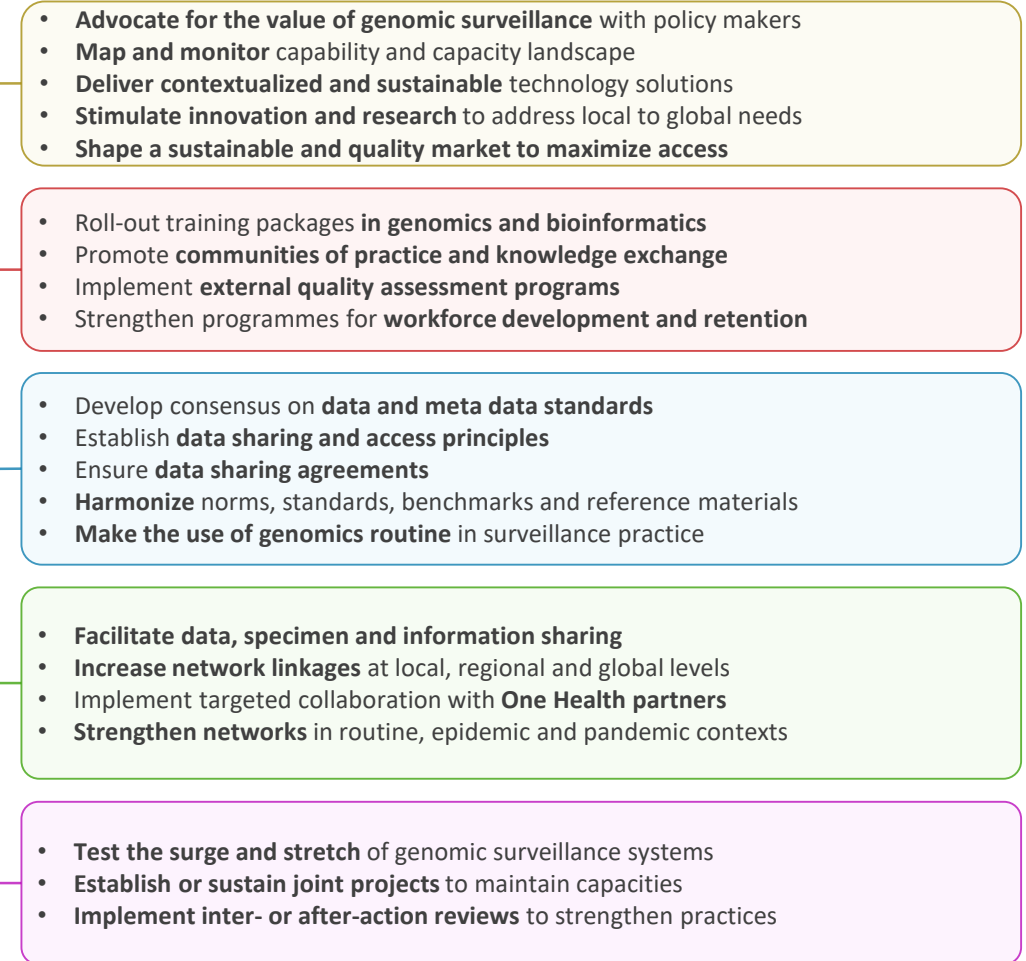
Goal

Genomic surveillance is strengthened and scaled for quality, timely and appropriate public health actions within local to global surveillance systems

Objectives



Strategic actions

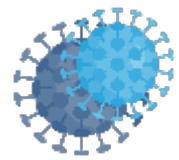




Summary on pandemic surveillance

- Member States have leveraged existing systems well during the current pandemic
- Multiple, complementary surveillance systems are needed to meet all needs
- Sentinel surveillance should be expanded during a pandemic (more sites) but with scalable capacity to meet additional objectives during a pandemic, without disrupting trend monitoring.
- The type and amount of data to be collected may vary throughout the pandemic and during interpandemic periods
- Standard protocols are needed for additional critical surveillance systems and studies. Standardization across countries allows for comparison and better understanding of the epidemiological characteristics
- We need to adopt new technologies (e.g.genomic sequencing) and surveillance innovations (e.g participatory surveillance) from the current pandemic experience

Planned global technical consultation (May 2022) on integrated surveillance for respiratory pathogens



Aim: leveraging and enhancing existing systems to ensure sustainable surveillance of SARS –CoV- 2, Influenza and other respiratory viruses.

- identify priority public health questions/ decisions
- determine how sentinel surveillance, and specific additional complementary surveillance systems and/or special studies, would best address these questions;
- define priority 2022 actions for further system establishment or enhancement; and
- understand and help countries overcome barriers as they enhance and establish the necessary surveillance systems that are sustainable over time



Thank You