Integrated sentinel surveillance of influenza and SARS-CoV-2 and the development of the Global Influenza Surveillance and Response System Plus

Virtual meeting
12 – 14 October 2021

World Health Organization

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Contents

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Acronyms

ARI	Acute respiratory infection
COVID-19	Coronavirus disease 2019
EQAP	External quality assessment project
GISRS	Global Influenza Surveillance and Response System
GISAID	Global Initiative on Sharing All Influenza Data
ILI	Influenza-like illness
PCR	Polymerase chain reaction
NIC	National Influenza Centre
PISA	Pandemic influenza severity assessment
SARI	Severe acute respiratory infection
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
WHO	World Health Organization

Background

The first WHO consultation from 6-8 October 2020 developed interim guidance[1] for the integrated epidemiological and laboratory surveillance of influenza and SARS-CoV-2 using the Global Influenza Surveillance and Response System (GISRS) and associated systems. Since the implementation of the interim guidance, including expediting GISRS genomic surveillance[2] as part of global efforts, extensive experience has been gained at national, regional and global levels. Meanwhile, the approach of integrated surveillance of influenza and SARS-CoV-2 to simultaneously address critical public health needs of both influenza and SARS-CoV-2 using existing systems has been welcomed by countries and supported by international agencies.

A year and a half into the coronavirus disease 2019 (COVID-19) pandemic, countries and the world have started building longer-term health emergency preparedness. The low seasonal influenza activity and frequent detections of zoonotic influenza infections are an ominous sign of an impending threat of influenza. It was critical to have a follow up global consultation one year after the first consultation to review and address immediate needs and discuss strategy for the mid- to long-term development of GISRS. A virtual consultation was, therefore, held on 12-14 October 2021. An agenda and list of participants is provided in the meeting report annex.

Objectives of the meeting

The overall aim was to update the interim guidance on the integrated surveillance of influenza and SARS-CoV-2 and chart a roadmap for the development of GISRS towards GISRS Plus for influenza and other respiratory viruses including SARS-CoV-2, respiratory syncytial virus and other future respiratory viruses of pandemic and epidemic potential. Specific meeting objectives were to:

- take stock of experience and lessons learned from countries in using influenza sentinel systems in sampling, testing, sequencing, reporting SARS-CoV-2 surveillance data and sharing of SARS-CoV-2 genetic sequence data
- review and update the interim guidance on integrating influenza and SARS-CoV-2 surveillance
- assess and update existing surveillance tools for influenza as learned from the COVID-19 pandemic to date, and potentially for SARS-CoV-2
- review and enhance readiness of the GISRS pandemic response
- develop a roadmap for GISRS development towards GISRS Plus.

Expected meeting outcomes were updated practical guidance on integrated surveillance of influenza and SARS-CoV-2; a compendium of country best practices for integrating influenza and SARS-CoV-2 sentinel surveillance; and a GISRS Pandemic Response Plan and a GISRS Plus roadmap.

Meeting overview

The meeting reviewed recent evidence on severe acute respiratory infection (SARI), influenza-like illness (ILI) and acute respiratory infection (ARI) case definition performance for SARS-CoV-2 surveillance; best practices for integrated surveillance from participating countries; interim standards for and current gaps in SARS-CoV-2 epidemiologic, laboratory and genomic sentinel surveillance; the Pandemic influenza severity assessment (PISA) and GISRS pandemic response plan; and the GISRS Plus strategy and roadmap. A full agenda is given in Annex 1.
Participants included national laboratory and epidemiology national focal points for influenza; experts from WHO Collaborating Centers and other laboratories of GISRS; international experts in surveillance of influenza, SARS-CoV-2 and other respiratory viruses; global and regional partners; and other interested bodies. A list of participants and their affiliations is provided in Annex 2.

Impact of the COVID-19 pandemic on influenza sentinel surveillance

The pandemic has caused disruptions to many elements of influenza surveillance systems, especially at the start of the pandemic. Surveillance was restarted integrating SAR-CoV-2 into influenza surveillance. Significant progress has been made by all countries taking part in integrated surveillance, including uploading data in a timely manner to FluNet and with at least 79% of GISRS laboratories having submitted data to the Global Initiative on Sharing All Influenza Data (GISAID).

The need for integrated respiratory sentinel surveillance

Meeting participants shared information on best practices for integrated influenza and SARS-CoV-2 surveillance, recognizing that these can be used to assist countries to overcome challenges in establishing and sustaining effective integrated surveillance. It was noted that there is increased national interest in respiratory surveillance at this time and an opportunity to work with new partners to build a resilient and effective surveillance system for the future. Participants agreed that we need to tackle the joint challenge of influenza [low circulation during the past year and thus low levels of immunity] and COVID-19 [continuing SARS-CoV-2 circulation and the threat of new variants] and to address co-circulation of these viruses; and we need to learn from the COVID-19 pandemic and to build integrated respiratory surveillance for the future that can rapidly integrate the surveillance of a new virus.

General lessons learned based on experience reported by participants include the need for:

- greater clarity on the definition of “integrated surveillance” and its core and expanded objectives [these could be collection of data for vaccine effectiveness studies]

- support and practical guidance from WHO on:
    - how to disaggregate sentinel and non-sentinel data from all surveillance data
    - how to source samples from COVID-19 test centres (where necessary) so that representative samples meeting agreed case definitions are selected and essential meta-data are collected
    - how to ensure a focus on higher quality data (that meet the agreed case definition and are therefore interpretable) is achieved
    - what to do if core data are not available for the expanded sample set for samples meeting the agreed case definition
    - clear recommendations on case definitions to be adopted, including addressing implications for comparisons with historical data
    - guidance on actions required to report sentinel SARS-COV-2 results separately to FluNet.

The main principles that should guide adaptation of sentinel surveillance were the need for them to:

- be agile / adaptable - timely revisions to the system may be needed in future
- accommodate expansion – whilst maintaining feasibility, data quality and representativeness in a way that is sustainable
- maximize representativeness – essential for data extrapolation more widely beyond the surveillance population.
- facilitate future digitalisation – to promote real time access to data for decision making and timely intervention and to facilitate data management and data sharing; with the understanding that this would require detailed system specification and preparation [with in depth planning and piloting] and new electronic systems accessible to all stakeholders.

Integrated surveillance guidelines

It was noted that the systematic review of published studies and surveillance data from the 7 countries studies assessing ILI and SARI in different age groups against laboratory confirmed SARS-CoV-2 infection supported the recommendations that countries could continue to use ILI and SARI for influenza and SARS-CoV-2 surveillance and collect essential metadata. It was noted that countries with high testing capacities can continue with an ARI case definition.

Suggested revisions to the guidance document included:

A. Epidemiology

- ARI case definition to be recommended for case detection
- specification of a core minimum data set, aligned with core objectives
- more background on the rationale for 50-150 specimens / week
    - 50 per week is the minimum number per National Influenza Centre (NIC) to achieve core objectives
    - 150 per week is the ideal number per NIC, where possible
    - additional specimens needed to achieve additional objectives

- more detail on sourcing of specimens from non-sentinel sites or SARS-CoV-2 testing laboratories needed
- recommendation to operate year-round surveillance in temperate climates to determine seasonality post-pandemic.

It was noted that the use of non-sentinel systems will require attention to:

- ensuring cases meet a recognized WHO case definition
- need for country-specific algorithms for selecting SARS-CoV-2 test samples
- sending metadata together with samples to the laboratory
- identifying data as from a sentinel or non-sentinel site
- support for consumables and for transport and other additional logistics
- need for guidelines / new authorisations for sharing samples with NICs
- need for staff feedback on problems to identify and solve problems
- staff training needs and human resources, with care not to over-burden staff
- consideration of what needs to be put in place to ensure sustainability.

It was noted that NICs may be able to secure additional samples from non-sentinel sites or COVID-19 testing laboratories to meet sample size requirements. However, priority should be given to samples from patients with symptoms consistent with the ILI/SARI/ARI case definitions, who represent the wider population seeking healthcare. Data recording and reporting should distinguish sentinel from non-sentinel sites, and data should be reported appropriately to global and/or regional platforms.

B. Laboratory

The meeting highlighted the need for clear guidance on sample size for testing and sequencing and on how to maintain representativeness of samples [if testing more than 150 such as during epidemics]. It was noted that there was a need for robust genomic surveillance to assess the impact of emerging variants; and for contingency plans for accumulating mutations in terms of re-manufacture, re-qualification, and quality control processes. It was suggested that the use of variant-specific polymerase chain reaction (PCR) for surveillance may be useful when there is no dominant variant [but is not useful for clinical decision-making]. It was considered important to:

- maximize representativeness, timeliness, continuity and quality [rather than quantity]
- upload sequences to GISAID or other publicly accessible databases weekly or