Operational considerations for COVID-19 surveillance using GISRS

Interim guidance
26 March 2020

World Health Organization

Background

Several countries have demonstrated that COVID-19 transmission from one person to another can be slowed or stopped. The key actions to stop transmission include active case finding, care and isolation, contact tracing, and quarantine. WHO has published Global surveillance recommendations for COVID-19, which outlines case and contact definitions for COVID-19 and reporting to WHO. In addition to active case finding and testing, it is critical to enhance surveillance activities to detect and monitor if there is COVID-19 transmission in the community. WHO has outlined surveillance recommendations according to four transmission scenario (countries with no cases, sporadic cases, clusters of cases, and community transmission) and recommends that countries consider using existing hospital-based severe acute respiratory infection (SARI) and primary care influenza like illness (ILI) sites, or whichever syndromic respiratory disease systems may already be in place. Existing respiratory disease surveillance systems and associated networks, such as the Global Influenza Surveillance and Response System (GISRS), are playing an important role in monitoring the spread of COVID-19 and will be relied on if comprehensive active case finding is challenging in countries with community transmission.

GISRS is a well-established network of more than 150 national public health laboratories in 125 countries that monitors the epidemiology and virologic evolution of influenza disease and viruses. Influenza and COVID-19 are both respiratory viruses with similar clinical presentations. Notably, as of 25 March, approximately 85% of more than 220 national public health laboratories currently testing for COVID-19 globally are laboratories closely associated with GISRS. Leveraging the GISRS system is an efficient and cost-effective approach to enhancing COVID-19 surveillance.

Purpose of the document

This document is intended for Ministry of Health and other government officials responsible for COVID-19 and influenza surveillance and summarizes the operational considerations for leveraging influenza surveillance systems to incorporate COVID-19 testing. The enhanced surveillance outputs will support national, regional, and global situation monitoring, knowledge building, risk assessment, and response actions.

As we gain a better understanding of COVID-19, this document will be periodically updated to meet surveillance and public health needs. COVID-19 surveillance using GISRS is intended to:

1) Complement, not replace, COVID-19 surveillance activities, outbreak investigation, and containment activities focused on active case finding and reporting as recommended under the Global surveillance for human infection with coronavirus disease (COVID-19) guidance.
2) Leverage existing, routine, national, and sub-national influenza surveillance systems for efficient and cost-effective implementation of COVID-19 surveillance.

Surveillance objectives

The overall aim is to use existing national influenza surveillance systems and public health laboratories additionally for epidemiological and virologic surveillance for COVID-19. Depending on the existing national surveillance systems, one or more of the following objectives can be addressed (Table 1).

Table 1. Objectives and questions that can be addressed with data collected from enhanced surveillance using existing influenza surveillance systems

Objective	Data collected can inform the following critical questions
To monitor geographic spread, intensity of transmission, and severity trends of community transmission of COVID-19 over time.	• Where is the virus? Where do we see the virus activity? Is it increasing or decreasing? • What is the proportion of COVID-19 virus positivity among other respiratory viruses including influenza? • What is the outpatient to inpatient ratio of COVID-19 positivity?
To understand the risk factors for disease and transmission.	• What are the age-groups and sex distribution of persons at risk? • What are the comorbidities associated with higher risk?
To systematically monitor the genetic evolution of the COVID-19 virus.	• Is the virus genetically evolving in a way that might have implications for transmission, virulence, or development of therapeutics?
To assess severity and impact on health systems*	• What is the severity based on transmissibility, seriousness of disease and impact on health systems, compared with past influenza epidemics?

* Countries with experience using Pandemic Influenza Severity Assessment (PISA) are encouraged to report qualitative indicators (transmissibility, seriousness of disease, and impact) for severity as described in the PISA guidance using the thresholds set for seasonal influenza to enable comparison and capture data to understand the severity of COVID-19.

Approach

To complement COVID-19 active case finding and reporting according to WHO surveillance guidance, the guidance below outlines considerations for how countries with influenza systems can add COVID-19 testing to routine influenza epidemiological and virologic surveillance as outlined in the Global Epidemiological Surveillance Standards for Influenza.

Countries that conduct primary care or hospital-based sentinel surveillance for ILI, ARI, SARI, or pneumonia should continue to collect respiratory specimens using existing case definitions, through sentinel or syndromic networks. Laboratories should continue testing routine sentinel site samples, as well as non-sentinel samples for influenza, with the addition of testing for COVID-19. Until we know more about the temporal patterns of transmission, all countries are encouraged to conduct year-round surveillance for COVID-19.

Operational considerations: sentinel sites

It is recommended to use the WHO's case definition for ILI and SARI for COVID-19 surveillance (Table 2). It is probable that some COVID-19 infections may be missed due to the requirement of fever as a criterion. This is acceptable since we are monitoring for general trends and not estimating the burden of illness, and it is likely that fever will enrich the viral yield.

Table 2. Case definitions for SARI and ILI

Inpatient surveillance	Outpatient surveillance
SARI **Acute respiratory infection with:** **- history of fever or measured fever of 38 ºC or more AND** **- cough** **- with acute onset within past 10 days AND** **- requires hospitalization**	**ILI** Acute respiratory infection with: - measured fever of 38 ºC or more, AND - cough - with onset within past 10 days

Case selection, sampling strategy, sample size

Within the existing surveillance systems, the patients selected for testing for COVID-19 should preferably be representative of the population and include all ages and both sexes. If possible, continue to collect samples from both ILI and SARI sentinel sites to represent both mild and severe illness. It is recognized, that based on the local situation, resources, and epidemiology, countries may wish to prioritize sampling among inpatients (SARI or pneumonia cases) to understand COVID-19 circulation in patients with more severe disease.

Countries should continue to follow WHO's global epidemiological surveillance standards for influenza for case selection and sampling strategy. The sampling strategy may vary depending on the local context and surveillance practice in each country and must be clearly defined. In the laboratory, the number of specimens to be tested for COVID-19 should be determined by the availability of laboratory supplies and diagnostic kits. WHO recommends testing influenza negative specimens for COVID-19. To detect a positivity rate of at least 2%, a sampling strategy should be developed that results in a **minimum** of 50 specimens per week for COVID-19 testing.

Specimen type and transport to testing laboratory

At minimum, respiratory specimens from patients should be collected from the upper respiratory tract (nasopharyngeal (NP), oropharyngeal (OP) swab, or nasal wash) with preference for NP/OP in ambulatory patients and/or from lower respiratory tract (endotracheal aspirate or bronchoalveolar lavage) in patients with more severe respiratory disease. Storage of clinical specimens at the site of collection and transport to the testing laboratory should follow the WHO manual for laboratory diagnosis for influenza and WHO guidance for laboratory testing for COVID-19 . Transport of clinical specimens should comply with guidelines for transport of infectious substances.

Operational considerations: laboratory

Laboratories performing diagnostic testing for COVID-19 should strictly comply with WHO biosafety guidance for COVID-19.

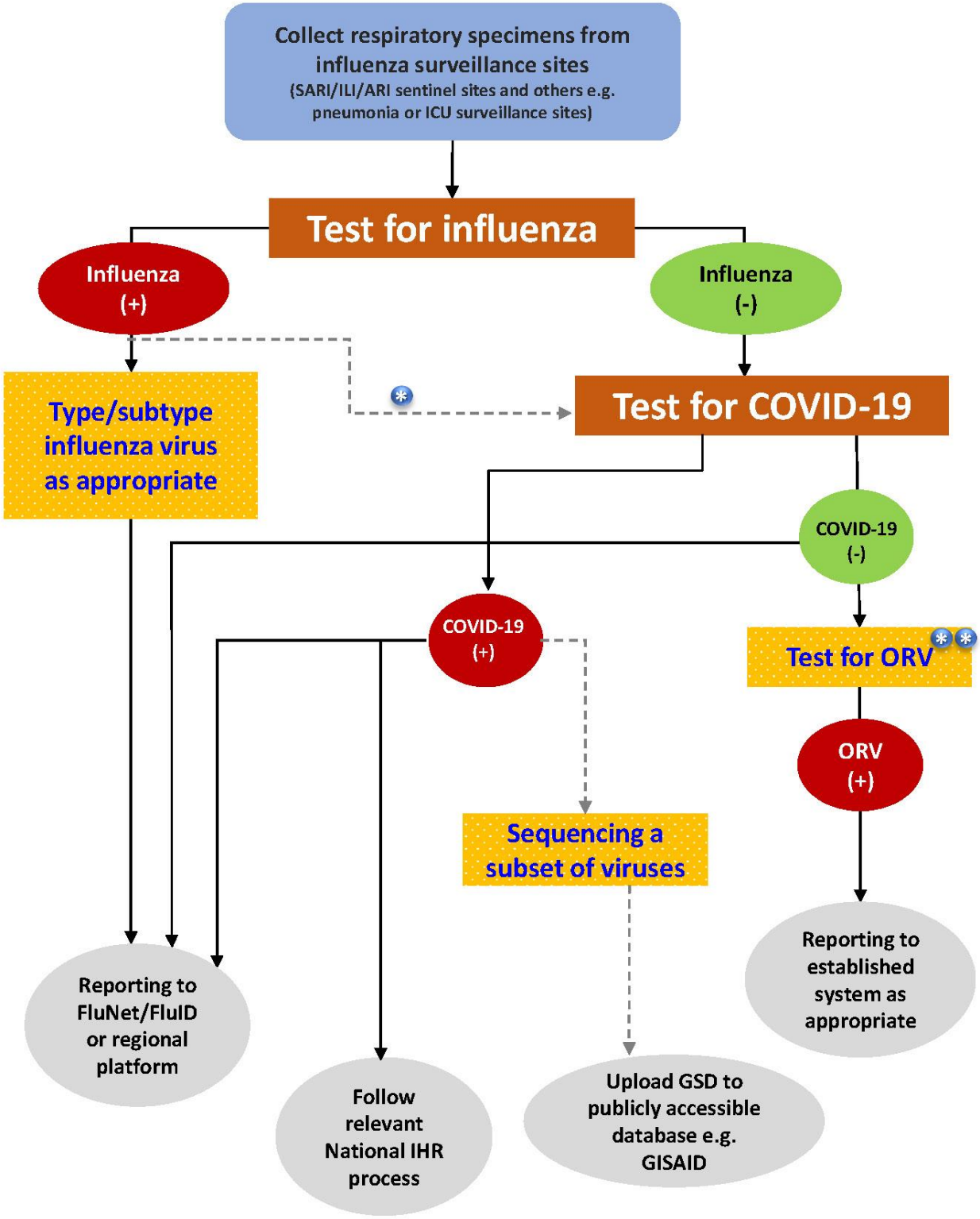
Testing algorithm

Priority for COVID-19 testing should be given to influenza-negative specimens. It is recommended to test at least 50 to 100 specimens for COVID-19 per week, as resources allow, that are negative for influenza. Depending on availability of resources and country priorities, specimens positive for influenza may also be tested for COVID-19 to detect possible co-infections.

Almost 60% of GISRS laboratories test for other respiratory viruses (ORV) in their routine surveillance. This testing should continue based on country priority and available resources. As common respiratory viruses like rhinovirus or enterovirus may not cause illness, it is recommended to test for COVID-19 before testing for other respiratory viruses.

Laboratory protocol for COVID-19 detection

WHO recommends using real-time reverse transcriptase polymerase chain reaction (rRT-PCR) for laboratory confirmation of COVID-19 virus in respiratory specimens. PCR protocols for the diagnosis of COVID-19 and molecular assays are regularly updated on the WHO website. Tests should be performed according to manufacturer or developing laboratory instructions and laboratory confirmation of a case is determined based on criteria outlined in the WHO guidance for laboratory testing for COVID-19.



* If resources allow, influenza positive specimens can be included for COVID-19 testing

** In countries with testing for other respiratory viruses (ORV) reestablished in routine surveillance, it is recommended to test those negative for influenza and COVID-19. The order or sequential tests can be adjusted according to individual testing platform and epidemiological situation

COVID-19 external quality assessment programme

To ensure quality and reliability of results and to improve global laboratory diagnostic capacity, national public health laboratories testing for COVID-19 and reporting data through GISRS FluNet and FluID are requested to participate in a WHO COVID-19 External Quality Assessment Program (EQAP). A global EQAP for COVID-19 is scheduled through GISRS for April 2020. Additional opportunities to participate in EQAP for COVID-19 are also being planned.

COVID-19 virus sequencing

Continuous monitoring of virus evolution through sequencing of representative viruses is essential for monitoring changes in the virus. It is recommended to select a subset of COVID-19 specimens based on geographic locations, age, sex, and disease severity for sequencing. Specimens or RNA extract that test positive for COVID-19, with a Ct value <30, are considered good material for sequencing the whole or partial genome of the virus. WHO guidance for sequencing of COVID-19 virus is under development and will be published separately here. Countries that are already sequencing COVID-19 virus samples are encouraged to share the genetic sequence data through GISAID or other publicly accessible databases.

COVID-19 surveillance data reporting and outputs

Continue to report aggregate case-based and death data

Based on active case finding, continue reporting as recommended under the Global surveillance for human infection with coronavirus disease (COVID-19) guidance.

Surveillance reporting

Countries should report weekly-aggregated COVID-19 results in the same format and frequency as they have been reporting influenza surveillance data. Virologic data (such as the number of samples testing positive and negative for COVID-19) from cases sampled in existing sentinel and non-sentinel or syndromic surveillance systems should be reported to established regional and global influenza platforms (FluNet) from the network laboratories. Routine epidemiological data (such as the number of ILI and SARI cases presenting to sentinel sites) will be reported through existing channels to FluID.

What to report?

- Routine weekly reporting of influenza results to FluNet and FluID should continue as usual.
- COVID-19 information should be included as additional variables in the same data file as influenza data.

Additional variables may include:
Laboratory (FluNet): Where possible, these should be reported separately by source (sentinel vs non-sentinel):

- Number of specimens that test positive and negative for COVID-19 by the week of specimen collection; the number of specimens with an indeterminate result can also be reported if available.
- Comment field: Please note which specimens are being tested for COVID-19 (e.g. all specimens received for respiratory virus testing or only influenza-negative specimens or a subset of influenza-negative specimens) as this may change over time.

Epidemiology (FluID): data fields already reported routinely to FluID (including age-group stratification where available); thus, not all of these may apply to every country:

- Number of ILI specimens tested for COVID-19 and number of those positive
- Number of SARI specimens tested for COVID-19 and number of those positive
- Number of pneumonia cases tested for COVID-19 and number of those positive
- Number of ICU admissions tested for COVID-19 and number of those positive
- Number of deaths tested for COVID-19 and number of those positive
- Comments: please note any changes to your case definition, sample collection, or other changes to your routine surveillance

How to report?

For countries uploading data directly to FluNet and FluID via FLUMART or reporting via the online platforms, please contact flumart@who.int for assistance in modifying the routine reporting template to include COVID-19 data and for assistance in uploading and reporting.

For countries reporting to **regional platforms**, this should be done through existing regional platforms and WHO regional contact persons. Please include flumart@who.int in all messages.

Surveillance outputs

COVID-19 related outputs including weekly/bi-weekly assessments will be published along with the influenza outputs on WHOwebsite and on the WHO COVID-19 website.

Severity assessment of COVID-19

Countries with experience using Pandemic Influenza Severity Assessment (PISA) are encouraged to also report qualitative indicators (transmissibility, seriousness of disease, and impact) for severity as described in the PISA guidance using the thresholds set for seasonal influenza to enable comparison and capture data to further understand the severity of COVID-19.

Laboratories not participating in GISRS testing for COVID-19

Laboratories testing for COVID-19 not currently participating in GISRS may wish to coordinate with their National MOH or other national institutes to determine if COVID-19 testing support is needed for testing routine sentinel or non-sentinel samples for reporting through GISRS.

WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

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