Surveillance Recommendations for Member States in the Post Pandemic Period

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Purpose

The purpose of surveillance in the post/pandemic period is to provide information that will enable timely epidemic or pandemic detection, inform health policy decisions and influenza management strategies, and guide influenza vaccine development and prioritization.

Four key surveillance objectives include:

- early detection of unusual events that might indicate a shift in the severity or pattern of disease associated with influenza, or emergence of a new virus;
- establish and monitor baseline rates of severe respiratory disease, including monitoring the severity, disease burden, and impact of influenza;
- describe and monitor vulnerable groups at highest risk of severe disease;
- detection of antigenic or genetic changes in circulating viruses or the appearance of antiviral resistance.

Early Detection of Signal Events

Surveillance for unusual events is intended to give early warning in case of emergence of significantly changed versions of existing circulating influenza viruses, changes that might result from an increase in virulence for example, or the emergence of a novel influenza virus with different epidemiological characteristics. The early detection activities that individual Member States carry out will vary greatly according to available resources but may include activities such as:

- monitoring and analysis of the routinely reported data from existing surveillance networks;
- educating health care providers about signal events that should be immediately reported;
- monitoring media sources for reports of unusual clusters or patterns of respiratory disease,
- involving the ministry of education to report school outbreaks or unusually high levels of absenteeism;
- monitoring rates of absenteeism in the workplace;
- monitoring sales of "flu medicines" and other pharmaceuticals used for treatment of respiratory symptoms;
- monitoring for outbreaks of respiratory disease in animals.

Specific signal events that should trigger an investigation include:

- abrupt, unexpected changes in the trend of respiratory disease observed in routine surveillance systems;
- clusters of severe respiratory disease or pneumonia in families, work places, or social networks;
- an unexpected pattern of respiratory disease or pneumonia such as an increase in apparent mortality, a shift in the age group associated with severe influenza, or a change in the pattern of clinical presentation of influenza-associated disease;
- health care workers with severe respiratory disease;
- unusually high levels of sales of pharmaceuticals used for respiratory disease treatment;
- respiratory disease in humans that is associated with illness in animals;
- human cases of infection with any influenza virus not currently circulating in human populations.

If the results of investigation into unusual respiratory events meet the reporting criteria under International Health Regulations[1]*, the event should be reported to the WHO IHR focal point within 24 hours.*

Routine Epidemiological Data Collection and Reporting

Routine surveillance for respiratory disease plays a critical role in defining expected baseline rates of disease, understanding the overall burden of illness relative to other diseases, and describing risk groups for severe disease. These data are particularly valuable when collected in a systematic manner and combined with virologic testing of a sample of cases. Baseline data gathered through routine surveillance are critical to understanding the significance of signal events described in the previous section. Routine monitoring will also provide an understanding of the seasonality of respiratory illness, and other data useful for health care planning. Typically, routine respiratory disease surveillance is accomplished through regular data collection and analysis from designated sentinel sites. Member states currently monitor for a variety of disease syndromes including Influenza Like Illness (ILI), Acute Respiratory Infection (ARI), Severe Acute Respiratory Infections (SARI), and pneumonia. Each has advantages and disadvantages and the ideal system would include elements that enable the tracking of both mild disease managed in an ambulatory setting (ILI) and severe disease requiring hospitalization (SARI). Member states are encouraged to use standard WHO case definitions for surveillance[2].

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[1] See IHR 2005: www.who.int/ihr/9789241596664/en/index.html

[2] http://www.euro.who.int/__data/assets/pdf_file/0020/90443/E92738.pdf; http://www.paho.org/English/AD/DPC/CD/flu-snl-gpis.pdf; http://www.wpro.who.int/internet/resources.ashx/CSR/Publications/GuideToHarmonizingInfluenzaSurveillance-revised2302.pdf

Such systems should collect at least a limited set of epidemiological and clinical data including:

- numbers of ILI, SARI, Acute Respiratory Infections (ARI) and/or pneumonia cases in sentinel sites, depending the specific surveillance strategy adopted by the Ministry of Health;
- numbers of respiratory deaths at each sentinel site;
- risk factor data on cases, including the proportion of severe cases with pre-existing respiratory disease, heart disease, diabetes, neurological disorders, liver disease, immunodeficiency, and pregnancy;
- total number of outpatients seen at ILI sites and inpatients admitted to SARI sites (i.e. denominator data for calculating the proportion of total patients that have respiratory disease) or the population of the catchment area of the sentinel site.

Data on the severe end of the disease spectrum as reflected in SARI or pneumonia cases are particularly valuable for tracking the impact of severe influenza-related disease and determining the risk factors for severe disease. Detailed recommendations for routine respiratory disease surveillance can be obtained from WHO regional offices.

Member States are also requested to share these data globally. Routine data sharing will facilitate global tracking and monitoring of influenza progress and impact. This will help inform all Member States of the location and occurrence of seasonal epidemic disease and the type of virus currently circulating. Such information can be of great value to ministries of health who are planning resource needs. FluID[3] is the WHO tool used to share epidemiological data on influenza on a global level. The tool complements the existing FluNet virological data reporting system[4] *(see Virological Surveillance below).* Some WHO regional offices have created regional data entry tools that link directly with FluID and FluNet, which can be used by Member States of those regions[5]. In addition to summary quantitative sentinel site data described above, FluID also collects information on the regular qualitative assessment of national respiratory disease activity including how widespread it is, the intensity of transmission, the trend in intensity of transmission, and the impact on the health care system as estimated by a national surveillance focal point. These qualitative assessments are particularly useful for countries without formal surveillance networks but require data from all member states to be more meaningful. FluID is designed to accept whatever kinds of data Member States collect and will allow real time tracking of respiratory disease trends globally. For further information, please contact fluid@who.int. Summary data collected from FluID will be publicly available in graphic form to all member states through the WHO websites.

[3] FluID: www.extranet.who.int/fluid
[4] FluNet: www.who.int/flunet
[5] One example is EuroFlu for the European region: http://www.euroflu.org/index.php

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Virological Surveillance

The collection and submission of viral samples in the post-pandemic period should be similar to the pre-pandemic period. Samples should be collected and tested in the course of routine epidemiological surveillance described in the previous paragraph. Selected samples should be submitted to WHO Collaborating Centres[6] for further characterization and analysis.

These would include:

- viruses that cannot be subtyped locally
- a sample of viruses collected at the beginning, peak, and end of each season
- viruses isolated from severe or unusual cases
- a sample of viruses isolated from outbreaks that are investigated
- any virus of a new subtype or strain.

The summary results of testing should be shared with WHO through the global database FluNet[7] or through WHO regional databases linked with FluNet, such as EuroFlu[8].

FluNet was created in 1996 and has been used since then as a global tool for influenza virological surveillance. The data are provided remotely by National Influenza Centres (NICs) of the Global Influenza Surveillance Network (GISN)[9] and other national influenza reference laboratories collaborating actively with GISN, or are uploaded from WHO regional databases. Public users have real-time access to selected data reports including tables, maps and graphs at national level, whereas data providers have full access to all virological information at national level and by laboratory.[10] The virological data entered into FluNet are critical for tracking the movement of viruses globally and interpreting the epidemiological data reported through FluID.

The data collected weekly through FluNet include:

- number of specimens received and processed by laboratories
- number of influenza viruses detected by subtype, i.e. A(H1), A(H3), A(H5), pandemic A(H1N1), A(not subtyped), B (Yamagata lineage), B (Victoria lineage), and B (lineage not determined)
- antiviral susceptibility of influenza viruses
- number and type of other respiratory viruses detected
- level of influenza-like illness
- a brief weekly report of the overall estimated influenza activity in the country.

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[6] WHO Collaborating Centres for influenza: www.who.int/csr/disease/influenza/collabcentres/
[7] FluNet: www.who.int/flunet
[8] EuroFlu: www.euroflu.org
[9] GISN: www.who.int/csr/disease/influenza/influenzanetwork/
[10] Data entry access can be provided upon request to GISN@who.int

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Antiviral resistance monitoring

While antiviral resistance in H1N1 (2009) viruses is rare, the detection of the genetic markers for oseltamivir resistance is a reportable event. Member states that have the capacity to test for antiviral resistance are encouraged to continue doing so. Cases that should be considered for antiviral resistance testing include:

- treatment failures
- patients with secure immunosuppression on long term treatment with antivirals.

Viruses found to have oseltamivir resistance should be sent to a Collaborating Centre for further characterization.

If antiviral resistance is detected, it is also important to document whether or not person-to-person transmission has occurred around the affected patient through careful investigation of case contacts.