MALAYSIA INFLUENZA SURVEILLANCE PROTOCOL

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Coordinated by:
Surveillance Sector
Disease Control Division
Ministry of Health Malaysia
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EDITORIAL BOARD

1. INTRODUCTION

Influenza is an acute contagious viral respiratory disease characterized by fever, cough, sore throat, headache, myalgia, prostration and coryza. Whereby, symptoms and signs differ according to the age of those infected.

The influenza virus spreads rapidly around the world in seasonal epidemics. In temperate regions, seasonal influenza typically occurs every year in the late fall or winter. In tropical and subtropical regions, the seasonality of influenza is less clearly defined, with background activity occurring year-round.

Influenza infection is caused by RNA viruses belonging to the *Orthomyxoviridae* family. There are three types of influenza viruses; A, B and C, and humans can be infected with all three types. Influenza A and B viruses cause epidemic disease in humans and type C viruses usually cause a mild, cold-like illness.

At unpredictable intervals, however, novel influenza viruses emerge with a key surface antigen (the haemagglutinin) of a totally different sub-type from strains circulating the year before. The reality of a pandemic threat is further highlighted by the fact that limited, non-sustained H5N1 virus transmission between humans has been reported. These incidents serve to emphasize the importance of surveillance as the foundation for efforts to understand and control influenza disease.

2. THE GUIDING PRINCIPLES

The development of this document, following revision of the previous document (i.e. Malaysia Influenza Surveillance System; 2004) was guided by the following principles:

a) Recent publication of the WHO Global Epidemiological Surveillance Standards for Influenza in 2013, which describes revised global standards for a minimal basic respiratory disease surveillance system for the monitoring of influenza.

b) Revised, standard and reliable case definitions addressed in this document would allow for the collected data to be compared across time, within Malaysia and regionally.

c) Creation of a routine surveillance system will establish infrastructure such as systems for specimen transport and testing, systems for information gathering and analysis, and a formation of trained personnel whom are familiar with influenza and respiratory disease epidemiology.

d) The routine data collected in a sustainable sentinel surveillance system is the most efficient approach to collect high-quality data in a timely way.

3. OBJECTIVES

a) To establish seasonal thresholds and reliable national trend data for influenza-like illness (ILI) and severe acute respiratory infection (SARI).

b) To describe the antigenic character and genetic makeup of circulating viruses.

c) To provide data that can contribute to the estimation of the burden of severe respiratory disease associated with influenza and other respiratory pathogens.

d) To provide platform for surveillance that includes additional common respiratory pathogens that may be of national interest.

4. THE CASE DEFINITIONS

There are two (2) case definitions in this guidance document. Case definitions for influenza-like illness (ILI) are for milder disease presented and managed in the primary care / out-patient setting. The case definition for severe acute respiratory infection (SARI) is provided for use in the in-patient hospital settings. The combination of data from ILI and SARI patients should provide a description of a broad range of medically-attended influenza cases.

a) Case definition for influenza-like illness (ILI):
An acute respiratory infection with:
- Measured fever of ≥ 38^{o}C;
- and cough;
- with onset within the last ten (10) days.

Notes:
Taking into consideration the work process involved in capturing data at the sentinel sites, it is recommended for a diagnosis of upper respiratory tract infection (URTI) to be used as the proxy for ILI case selection.

b) Case definition for severe acute respiratory infection (SARI):
An acute respiratory infection with:
- History of fever or measured fever of ≥ 38^{o}C;
- and cough;
- with onset within the last ten (10) days;
- and requires hospitalization.

Notes:
Taking into consideration the work process involved in capturing data at the sentinel sites, it is recommended for a diagnosis of pneumonia, bronchitis or bronchiolitis to be used as the proxy for SARI case selection.

5. THE SENTINEL SITES

A sentinel surveillance system is formed by one or more designated health care facilities that routinely and consistently collect epidemiologic information and laboratory specimens from patients presenting with an illness consistent with a specified case definition. Sentinel surveillance systems provide an efficient way to obtain high quality data on relatively common conditions from a manageable number of locations. In this way, the objectives of influenza surveillance can be met more easily and at lower cost, than with universal surveillance.

Therefore, the number of the sentinel sites was revised (mainly based on their performance within the previously existing Malaysia Influenza Surveillance System; MISS) and the following sentinel sites were identified nationwide:

a) Sentinel Sites for Influenza-Like Illness (ILI) Surveillance		
No.	State	Facility
1.	Kedah	Bandar Alor Setar Health Clinic
2.	Pulau Pinang	Seberang Jaya Health Clinic
3.	Perak	OPD of Kuala Kangsar Hospital
4.	Selangor	Salak Tinggi Health Clinic
5.	WPKL & Putrajaya	Batu Health Clinic
6.	Negeri Sembilan	Nilai Health Clinic
7.	Melaka	Peringgit Health Clinic
8.	Johor	Mahmoodiah Health Clinic
9.	Pahang	Lanchang Health Clinic
10.	Terengganu	Hiliran Health Clinic
11.	Kelantan	Bandar Kota Bharu Health Clinic
12.	Sarawak	• Jalan Masjid Health Clinic • Miri Health Clinic
13.	Sabah	• Luyang Health Clinic • Sandakan Health Clinic

b) Sentinel Sites for Severe Acute Respiratory Infection (SARI) Surveillance		
No.	State	Facility
1.	Kedah	Sultanah Bahiyah Hospital, Alor Setar
2.	Selangor	Tengku Ampuan Rahimah Hospital, Klang
3.	WPKL & Putrajaya	Kuala Lumpur Hospital

4.	Melaka	Melaka Hospital
5.	Johor	Sultanah Aminah Hospital, Johor Bahru
6.	Kelantan	Raja Perempuan Zainab II Hospital, Kota Bharu
7.	Sarawak	Sarawak General Hospital, Kuching
8.	Sabah	• Queen Elizabeth Hospital, Kota Kinabalu • Likas Women's And Children's Hospital

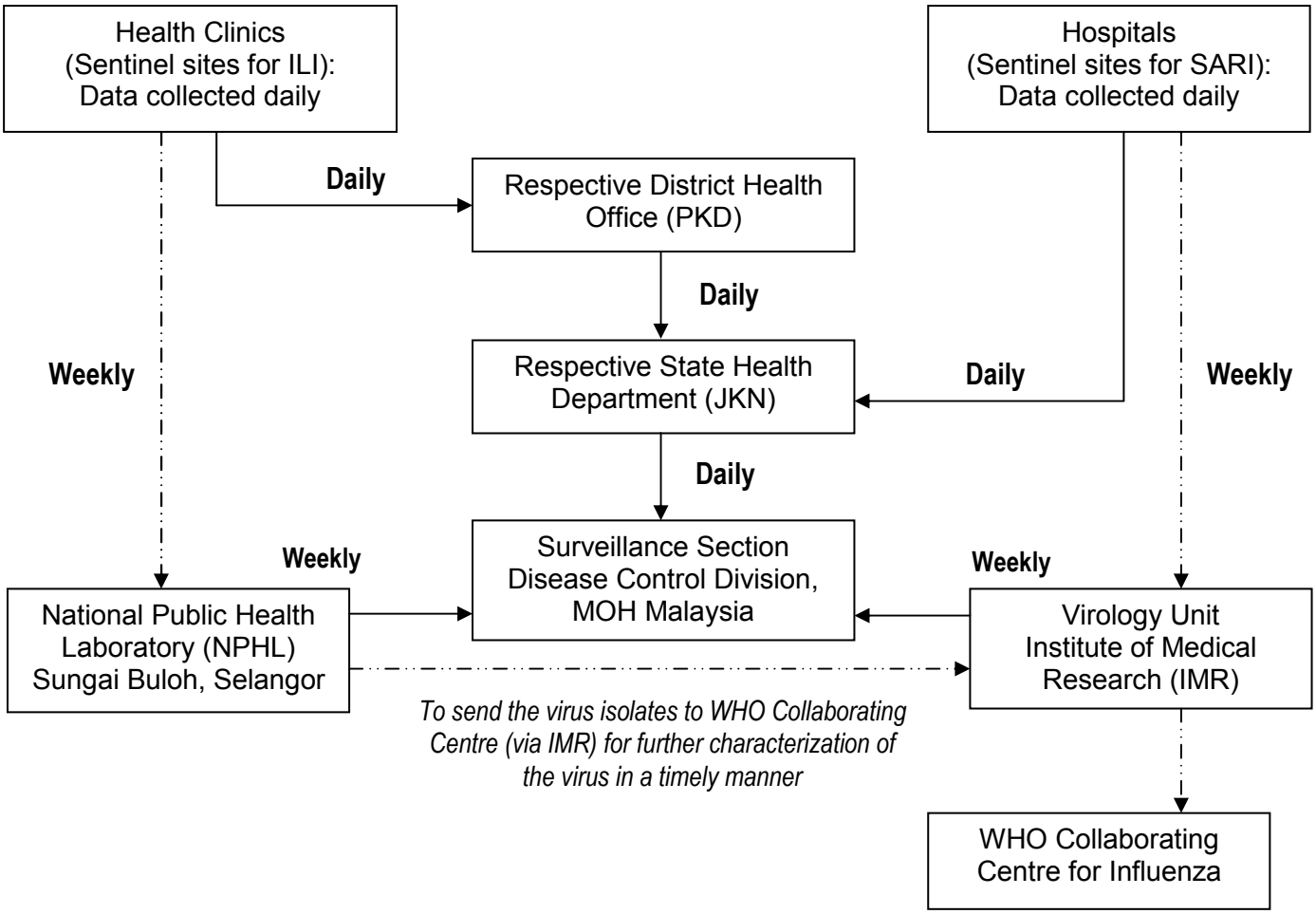
6. METHODOLOGY

The surveillance activities for influenza, including both the clinical-based and laboratory-based are carried out throughout the year as Malaysia being a tropical country, has no well-defined seasonality of influenza.

a) Epidemiological / Clinical-Based Influenza Surveillance

Data collected daily at the sentinel sites (both for ILI and SARI cases) using respective format in 'Annex 1', 'Annex 2' and 'Annex 3'. The flow of data related to influenza surveillance activity and details of the relevant tasks involved, are shown in 'Figure1' and 'Table 1' respectively.

Figure 1: Flow of Data Related to Influenza Surveillance Activity



Note:

→ Flow for epid data

⇢ Flow for clinical specimens

Table 1: Details of Task / Activity Related to Influenza Surveillance Activity

Task / Activity	Responsibility	Timeframe
Health Clinics (as the sentinel sites for ILI) (A) <u>Epid / Clinical-Based Surveillance:</u> • Establishment of a working diagnosis • Treat accordingly • Referral to hospital (if necessary) • Recorded within the 'Daily Aggregated Data Form For ILI' (refer Annex 1) (B) <u>Laboratory-Based Surveillance:</u> • To collect 5 specimens per site per week (i.e. 3 adults and 2 children) by doctors or trained medical personnel • The patient is systematically chosen for testing and meets the case definition for ILI – refer 'Annex 4' for the sampling methodology • To use the 'Laboratory Request Form' (Annex 6)	The Assistant Medical Officer: • To complete the 'Daily Aggregated Data Form For ILI' (refer Annex 1) • To send Annex 1 to the respective District Health Office (PKD) • To compile both epid data (Annex 1) and lab data (as per Annex 6) for future reference The Medical Officer / Assistant Medical Officer / Nursing Personnel: • To collect the clinical specimens as guided by the established procedures (Annex 5) The Medical Laboratory Technologist: • To ensure proper storage and transport of the collected samples • To send the samples collected to NPHL Sungai Buloh, in accordance with the procedures established	• By the end of the clinic's operation hours • By 9:00 am of the next working day • Continuously • Based on the specified schedule • Continously • Weekly
Hospitals (as the sentinel sites for SARI) (A) <u>Epid / Clinical-Based Surveillance:</u> • Establishment of a working diagnosis • Treat accordingly • Recorded within the 'Daily Aggregated Data Form For SARI' (refer Annex 2) – involving data both from Medical and Pediatric Ward, including the respective ICUs	The nursing personnel: • To complete the 'Daily Aggregated Data Form For SARI' (refer Annex 2) – involving data both from Medical and Pediatric Ward, including the respective ICUs	• By 12:00 midnight, based on grand total of the daily census generated by nursing personnel

(B) <u>Laboratory-Based Surveillance:</u> • To collect 5 specimens per site per week (i.e. 3 adults and 2 children), with the recommendation of one specimen each from these wards: - Male medical ward; - Female medical ward; - General ICU; - Paediatric medical ward; - Paediatric ICU. • The patient is systematically chosen for testing and meets the case definition for SARI – refer 'Annex 4' for the sampling methodology • To use the 'Laboratory Request Form' (Annex 6)	The personnel of Public Health Unit: • To collate Annex 2 from respective wards and to send the completed Annex 3 to the respective State Health Department (JKN) • To compile both epid data (Annex 3) and lab data (as per Annex 6) for future reference The Medical Officer / Nursing Personnel: • To collect the clinical specimens as guided by the established procedures (Annex 5) The laboratory personnel: • To ensure proper storage and transport of the collected samples • To send the samples collected to Virology Unit of IMR, in accordance with the procedures established	• By 9:00 am of the next working day • Continuously • Based on the specified schedule • Continously • Weekly
District Health Office (PKD) • To send 'Daily Aggregated Data Form For ILI' (refer Annex 1) from the health clinic to the respective State Health Department (JKN) • To collate copies of 'Laboratory Request Form' (Annex 6) send by the health clinic to NPHL Sungai Buloh • To analyse local data and to monitor the weekly trend • To get verification from the respective health clinic of any unusual trend recorded and to alert the State Health Department of such finding, if necessary	The Epid Officer & Assistant Environmental Health Officer (PPKP)	• By 10:00 am, daily • Every week, on Monday • Every week, on Tuesday • As and when the need arise

State Health Department (JKN) • To send Annex 1 and Annex 3, gathered respectively from PKD and hospital to the Surveillance Sector, Disease Control Division, MOH • To collate the results of laboratory investigations done by NPHL Sungai Buloh and IMR, on the ILI and SARI specimens; respectively • To analyse state data and to monitor the weekly trend • To get verification from the respective PKD / hospital of any unusual trend recorded and to alert the Surveillance Sector, Disease Control Division of such finding, if necessary • To incorporate the analysis within weekly report	The Epid CDC Officer / Surveillance Officer & Assistant Environmental Health Officer	• By 11:00 am, daily • Every week, on Monday • Every week, on Monday • As and when the need arise • Every week, on Tuesday
Surveillance Sector, **Disease Control Division, MOH** • To collate Annex 1 and Annex 3, gathered from JKNs nationwide • To collate the results of laboratory investigations done by NPHL Sungai Buloh and IMR, on the ILI and SARI specimens; respectively • To analyse national data and to monitor the weekly trend • To get verification from the respective JKN of any unusual trend recorded • To prepare report and disseminate it within the weekly bulletin	The personnel of Surveillance Sector, Disease Control Division, MOH	• By 12: 00 noon, daily • Every week, on Monday • Every week, on Monday • As and when the need arise • Every week, on Tuesday

a) Laboratory-Based Influenza Surveillance

In general, clinical specimens and epidemiological data should be collected in a manner that minimizes bias and best represents the population under surveillance. Hence, based on the ability of the health care facility to process, store and transports specimens, as well as the capacity of the relevant laboratories to process, store and test the samples in a timely manner – the number of patients to be sampled for laboratory testing was decided upon, as the following:

- From identified health clinics (i.e. the sentinel sites for ILI): To collect 5 specimens per site per week (i.e. 3 adults and 2 children) by doctors or trained medical personnel;

- From identified hospitals (i.e. the sentinel sites for SARI): To collect 5 specimens per site per week (i.e. 3 adults and 2 children) by doctors or nursing personnel, with the recommendation of one specimen each from these wards:
  - Male medical ward;
  - Female medical ward;
  - General ICU;
  - Paediatric medical ward;
  - Paediatric ICU.

Specimens Collection

Specimens should preferably be taken before commencement of anti-viral medication. The time between the onset of illness and specimen collection should be recorded on the laboratory request form.

Selected patients should fulfil the following criteria in order to be tested:

- Meet the clinical case definition for ILI or SARI; and
- The onset of symptoms falls within 10 days of sample collection.

Although informed consent from the patient is not considered necessary for routine surveillance, a verbal explanation of the reason for specimen collection as well as how the specimen will be used, should be given to each patient.

A variety of specimens are suitable for influenza virus detection and isolation. Specimens from nasal and nasopharyngeal specimens have a higher yield of virus detection in ILI cases than oropharyngeal specimens. If patients are intubated, endotracheal aspirates or bronchoalveolar lavages can also be used where clinically indicated and may have a higher yield than upper respiratory specimens in these severe cases.

The proposed sampling methodology (as per '**Annex 4**') and the method for specimen collection (as per '**Annex 5**') should be adhered to. The following are the recommended specimens to be collected from ILI and SARI case, respectively:

a) Source: ILI Case
(to collect either one of the recommended specimens)

Type of specimen	Container	Transport Media	Transportation
Nasopharyngeal swab	-	*VTM	Transport to the designated laboratories at **2°-8°C** within **48 hours** after collection
Throat swab			
Sputum	Sterile container	-	

**VTM: Viral transport media*

b) Source: SARI Case
(to collect either one of the recommended specimens)

Type of specimen	Container	Transport Media	Transportation
Nasopharyngeal swab	-	*VTM	Transport to the designated laboratories at **2°-8°C** within **48 hours** after collection
Throat swab			
Nasopharyngeal aspirate	Sterile container	-	
Bronchoalveolar lavage (BAL)			
Tracheal aspirate			
Endotracheal tube aspiration			

**VTM: Viral transport media*

Materials required for specimen collection:

i. Personal protective equipment (PPE):
   - Standard precautions should always be followed (i.e. hand hygiene, and barrier protections applied appropriately).
   - The use of PPE will depend on the setting (outpatient versus hospital) and on the severity of symptoms; outpatient personnel may wear gloves and surgical mask to take a swab from an ILI case while a hospital personnel taking a swab from a SARI case may wear gloves, surgical mask and gown.

ii. Swabs:
   - **Use only sterile dacron, rayon or polyester fibre swab**.
   - Calcium alginate or cotton swabs, or swabs with wooden stick should not be used because they may contain substances that inactivate some viruses and inhibit PCR testing.

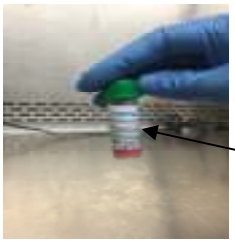
iii. Tongue depressor – for the collection of throat swabs.

iv. Viral transport media (VTM) :
- To place the nasopharyngeal or throat swab immediately after collection.
- These should be readily available and be pre-positioned at sentinel sites for the collection of specimens from cases of ILI and SARI respectively.

v. Sterile container – to keep the following specimens; i.e. sputum, nasopharyngeal aspirate, bronchoalveolar lavage (BAL), tracheal aspirate and endotracheal tube aspiration.

vi. The completed laboratory request form and packaging materials for transport (e.g. biohazard plastic bag, ice packs and cool box).

Specimens Storage, Packaging & Transport

The Steps	
Place the collected sample in sterile container or VTM [for throat or nasopharyngeal (NSP) swab].	 Sample in sterile container  Throat / NSP swab in VTM
Label the sample with: • Patient's name; • Patient's ID number; • Sample type; • Date of sample collection.	
Fill in the laboratory request form	Refer '**Annex 6**'.

The Steps	
Place sample individually in a biohazard plastic bag.	  1 sample / plastic bag
Put the sample into cool box with 3 units of ice packs (i.e. 1 unit at the bottom of the cool box and 2 units at both sides of the samples). Place some absorbent material to protect the container from high impact or unforeseen rough handling of the cool box.	
Seal the cool box. Place the laboratory request form in a plastic bag and paste on top of the cool box. Transport the sample to NPHL Sungai Buloh / IMR, respectively at 2^{o} to 8^{o}C within 48 hours after collection. All samples must be sent to the sample receiving counter of the respective laboratory.	

Specimens Testing

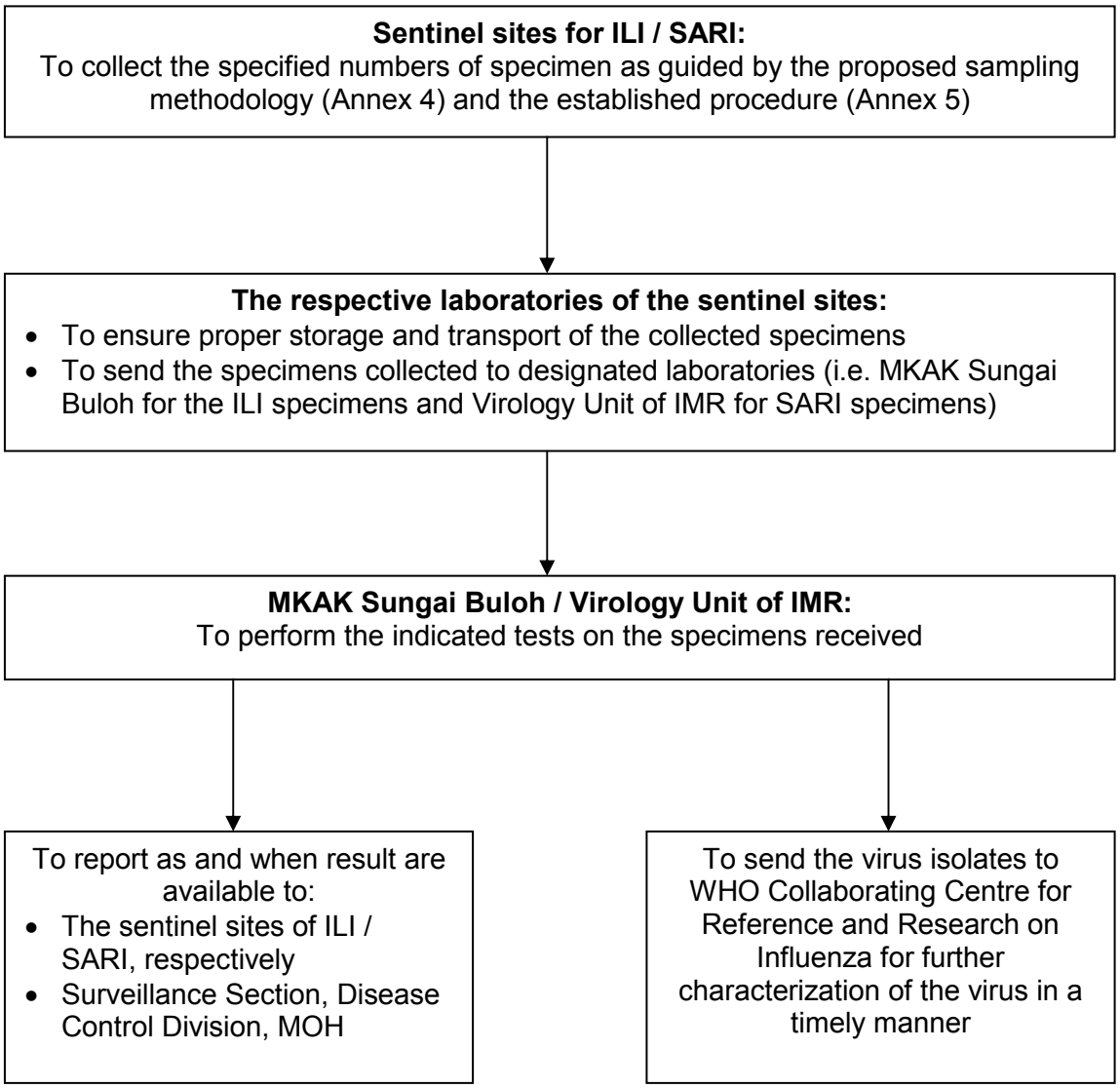
Laboratory testing for the detection and subtyping of influenza viruses in respiratory specimens has relied for decades upon the isolation of influenza viruses in eggs and later cell culture followed by haemagglutination inhibition assay (HAI) using the WHO CDC reagent kit supplied annually to National Influenza Centres (NICs). This has the advantage that many viruses are available to WHO for vaccine strain selection. During the past decade, the majority of laboratories started to use molecular detection techniques to detect and subtype influenza viruses. Most widely used is RT-PCR on real-time PCR platforms and many laboratories gained important experience during the Pandemic (H1N1) 2009.

Briefly, the type of tests done and the laboratory turnaround time (TAT) are shown below:

Type of specimen	Type of test	Laboratory TAT
Nasopharyngeal swab	• Virus isolation • Real time RT-PCR	• 21 days • 7 days
Throat swab		
Sputum	• Virus isolation • Real time RT-PCR • Immunofluorescence antibody test (IFAT)	• 21 days • 7 days • 5 days
Nasopharyngeal aspirate		
Bronchoalveolar lavage (BAL)		
Tracheal aspirate		
Endotracheal tube aspiration		

In conclusion, the flow chart of clinical specimen for influenza surveillance is summarized in ‘Figure 2’.

Figure 2: Flow Chart of Clinical Specimen Management for Influenza Surveillance



7. DATA ANALYSIS AND REPORTS

Data analysis will describe the distribution of cases over time, case by age category and cases by local surveillance level. The laboratories involved will record the frequency and percentage by positive viruses by type and strain. The following parameters should be used for the analysis of influenza surveillance data:

a) ILI Surveillance Analyses By Epidemiologic Week

- Proportion of ILI cases per total consultations;
- Proportion of ILI cases per total consultations by age category;
- Proportion of ILI cases testing positive for influenza and other respiratory viruses per the total number of ILI cases.

b) SARI Surveillance Analyses By Epidemiologic Week

- Proportion of SARI cases per total hospitalizations;
- Proportion of SARI cases per total hospitalizations by age category;
- Proportion of SARI cases testing positive for influenza and other respiratory viruses per the total number of cases tested

Taking into consideration the revision which took place onto the Malaysia Influenza Surveillance System (MISS), the new weekly threshold can only be calculated for the above parameters after five years of conducting surveillance using the new approach. This will also aid in the determination of the influenza seasonality.

Regular dissemination of surveillance data reports can lead to the creation of a group of informed, committed local professionals who by use of timely data can act as powerful advocates for respective interventions within the framework of national recommendations. As a result, influenza surveillance reports should regularly be disseminated to public health officials, health care professionals, policymakers and the general public in order to increase public awareness of influenza and compliance with recommended measures of prevention and control.

All influenza surveillance data collected should also be regularly analysed and reported back to various players participating in the influenza surveillance system in order to:

- Allow for monitoring of the influenza season;
- Guide appropriate public health action;
- Sustain the reporting interest.

8. THE ROLES AND RESPONSIBILITIES

This section describes general roles and responsibilities of the core personnel within the national influenza surveillance system. Strong communication and close coordination among sentinel sites, District Health Offices, State Health Departments, the respective laboratories (i.e. IMR and NPHL Sungai Buloh) and Disease Control Division, is essential for an efficiently functioning influenza surveillance system.

a) Sentinel Sites, District Health Offices & State Health Departments

Each level should designate a focal point that may be a person or persons responsible for the routine surveillance operations. The designated focal point(s) should assure that:

- Case definitions are known and adhered to;
- Any sampling strategies are being adhered to in as unbiased a manner as possible;
- Respiratory specimens are collected appropriately from patients meeting the case definitions and are packaged, stored and transported to the designated laboratory according to the procedure established;
- All data collection forms are filled out completely and accurately;
- Epidemiologic data are appropriately managed and transmitted along the order in a timely manner;
- Regular monitoring of surveillance resources is undertaken to maintain adequate supplies for sustaining the routine functions of surveillance;
- Timely feedback and updates of the current influenza situation are provided to clinicians and other personnel participating in the surveillance activities.

b) Disease Control Division, MOH

The Surveillance Sector, Disease Control Division as the national coordinator of the influenza surveillance program should be responsible for:

- Selection of appropriate sentinel sites;
- Decisions to maintain or discontinue specific sentinel sites;
- Decisions about surveillance strategies, techniques and epidemiological data collection;
- Assuring that sentinel sites, District Health Offices and State Health Departments have the necessary epidemiologic data collection instruments and that mechanisms for routine transmission of these forms (whether electronic or paper-based) are available to and well understood by, the relevant parties involved in the surveillance activity;

- Maintaining a national surveillance database and assuring linkage between epidemiological and virological data;
- Assuring that the data collected from the sentinel sites is analysed in a timely and appropriate manner;
- Preparing and disseminating a weekly influenza report to relevant stakeholders and players participating in the surveillance activities;
- Providing initial and refresher training to the sentinel sites including:
  - Training on adherence to case definitions and clinical specimen collection;
  - Training on appropriate infection control measures and personal protective equipment (PPE) usage, specimen storage and transport, epidemiologic data collection, data reporting procedures and practical uses of surveillance data.
- Developing and implementing a process to routinely monitor the influenza surveillance system, including the development of performance indicators and a plan for regular auditing through site visits.

c) The Respective Laboratories (i.e. NPHL Sungai Buloh and IMR)

The designated virological focal point from both laboratories should be responsible for:

- Providing technical support and guidance to sentinel sites on appropriate specimen collection, packaging, storage and transport;
- Assuring that sentinel sites have appropriate sample collection materials, PPE and laboratory supplies to collect, store and transport specimens;
- Receiving, registering and storing specimens from cases of ILI and SARI from sentinel sites;
- Consolidating and analysing national laboratory data for weekly reports;
- Reporting weekly laboratory data to relevant stakeholders and players participating in the surveillance activities;
- Performing preliminary antigenic and followed by genetic characterization of the influenza virus isolates grown at the facility;
- Timely submission of the influenza virus isolated to WHO Collaborating Centre (via IMR) for further characterization of the virus;
- If any viruses cannot be subtyped using the WHO reagent kit, the laboratories should notify WHO and immediately send the virus isolate to the WHO Collaborating Centre for further analysis;
- Maintaining a database of specimens with timely entry of the laboratory results;
- Archiving and storing original clinical specimens at -70^{o}C or in liquid nitrogen for at least one year;

- Participating in WHO Global External Quality Assessment Project for molecular detection of influenza viruses, as well as in regional programmes when available;
- Developing national diagnostic standards and assays that are periodically validated, providing training in their use by other laboratories and organizing routine quality assurance programs (proficiency testing);
- Monitoring specimen quality and timeliness associated with sample submission and provision of feedback to sentinel sites to improve specimen quality;
- Conducting annual reviews of laboratory surveillance system for quality improvement.

9. THE NATIONAL INFLUENZA SURVEILLANCE COORDINATOR

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' Annex 1 '

DISEASE CONTROL DIVISION
MINISTRY OF HEALTH
MALAYSIA

DAILY AGGREGATED DATA FORM FOR INFLUENZA-LIKE ILLNESS (ILI)

(For ILI Sentinel Site / Health Clinic Use Only)

Clinic	**:**	
District	**:**	
State	**:**	
Date	**:**	

ILI case definition: *An acute respiratory infection with measured fever of ≥ 38^{o}C and cough with onset within the last 10 days.*

	<10 years	**10 to 19 years**	**20 to 59 years**	**≥ 60 years**	**Total**
Number of ILI Cases					
Total OPD Attendances					

Name of Reporting Personnel: …….. Signature: ……..……

Designation: ……..... Date: ……..……

NOTE:

- *Taking into consideration the work process involved in capturing data at the sentinel sites, it is recommended for a diagnosis of* ***upper respiratory tract infection (URTI)*** *to be used as the proxy for ILI case selection*
- *All completed form must reach the respective District Health Office* ***by 9:00 am*** *the next day*

' Annex 2 '

DISEASE CONTROL DIVISION
MINISTRY OF HEALTH
MALAYSIA

DAILY AGGREGATED DATA FORM FOR SEVERE ACUTE RESPIRATORY INFECTION (SARI)

(For SARI Sentinel Site i.e. Designated Wards Use Only)

Ward	**:**	**Medical / Pediatric / General ICU / Pediatric ICU*** **Please choose one of the above*
Hospital	**:**	
State	**:**	
Date	**:**	

SARI case definition: *An acute respiratory infection with history of fever or measured fever of ≥ 38^{o}C and cough with onset within the last 10 days and requires hospitalization.*

	Paediatric Patients (< 13 years)	**Adult Patients (≥ 13 years)**	**Total**
Number of SARI Cases (New Admission)			

Name of Reporting Personnel:…….. Signature: ….……..…

Designation: ……..... Date: ……..…

NOTE:

- *Taking into consideration the work process involved in capturing data at the sentinel sites, it is recommended for a diagnosis of* ***pneumonia, bronchitis or bronchiolitis*** *to be used as the proxy for SARI case selection*
- *All completed form must reach the respective State Health Department (via the Public Health Unit of the hospital)* ***by 9:00 am*** *the next day*

' Annex 3 '

DISEASE CONTROL DIVISION
MINISTRY OF HEALTH
MALAYSIA

DAILY AGGREGATED DATA FORM FOR SEVERE ACUTE RESPIRATORY INFECTION (SARI)

(For SARI Sentinel Site i.e. The Public Health Unit Use Only)

Hospital	**:**	
State	**:**	
Date	**:**	

SARI case definition: *An acute respiratory infection with history of fever or measured fever of ≥ 38^{o}C and cough with onset within the last 10 days and requires hospitalization.*

	Paediatric Patients (< 13 years)	**Adult Patients (≥ 13 years)**	**Total**
Number of SARI Cases (New Admission)			
Total All-Cause Hospitalizations (New Admission)			

Name of Reporting Personnel: …….. Signature: ……..…

Designation: ……..…….. Date: ……..…

NOTE:

- *Taking into consideration the work process involved in capturing data at the sentinel sites, it is recommended for a diagnosis of* ***pneumonia, bronchitis or bronchiolitis*** *to be used as the proxy for SARI case selection*
- *All completed form must reach the respective State Health Department* ***by 9:00 am***

SAMPLING METHODOLOGY

Laboratory testing on all patients seen in an outpatient department with ILI or admitted to a sentinel hospital for SARI would produce data with the least bias. However, this is not likely to be feasible for most sites.

Patient selection for testing should be done in such a way as to minimize bias.

A systematic approach to case selection that does not leave the choice of cases to test (other than to determine that the case meets the definition) and that covers different times of the day and different days of the week is likely to be the most pragmatic, while providing reasonably representative data.

Several sampling methodologies are proposed below and they are presented in order of increasing potential for bias in case selection:

a) Interval Sampling

A straightforward method that would yield data similar to that from a random sampling strategy would be to select every Nth case at the sentinel site. For example, every 5th (or 7th or 10th) patient who meets the case definition would be selected for testing and data collection. Some foreknowledge of the volume of cases at the sentinel site is required so that the appropriate sampling interval can be selected. This type of sampling would likely require a designated person to oversee case selection on a daily basis and it is somewhat complicated.

b) Alternate Day Sampling

A second systematic sampling method is to select all patients who meet the case definition presenting to a facility on a certain day or days of the week. This can reduce the logistical challenges of surveillance by confining laboratory specimen and data collection efforts to a single day. In order to remove the bias introduced by differences in health-seeking behaviour associated with particular days of the week, the day on which cases are selected should be systematically alternated from week to week. A variant of alternate sampling is sequentially sampling whereby the personnel identify case patients during specific consecutive days of the week (e.g. Monday, Tuesday and Wednesday).

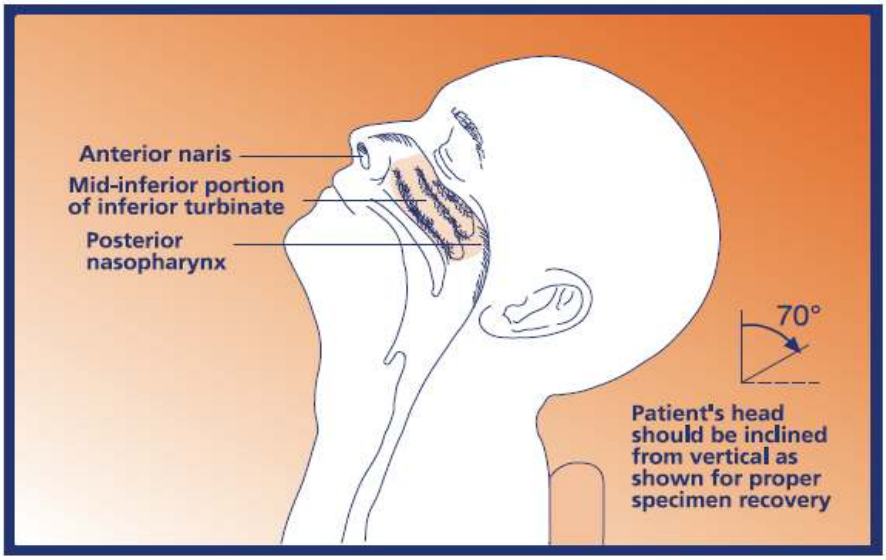
c) Modified Convenience Sampling

A third approach involves testing the first X number of cases that meet the case definition. If this method is used, the time frame for selection should be systematically rotated to take into account local health-seeking behaviours such as differential use of evening or weekend clinics. For example, a site might select the first 2 cases from the morning clinic session (or admissions to hospital, in the case of SARI), the afternoon clinic, and the evening clinic on each day of the week, including weekends. Care would need to be taken not to introduce systematic biases in the types of cases selected.

METHOD FOR COLLECTION OF RESPIRATORY SPECIMENS

a) Collection of Nasopharyngeal Swab

- For nasopharyngeal swab collection, the patient’s head should be inclined from the vertical as shown below for proper specimen recovery.

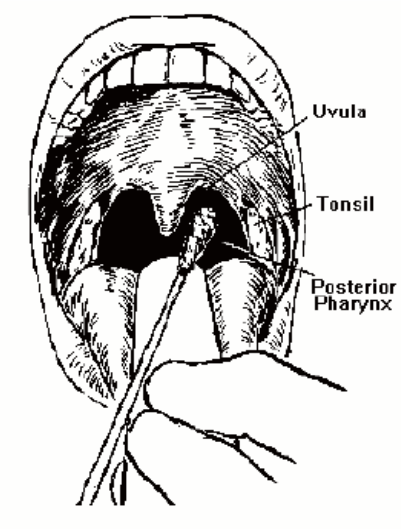


- Insert swab into one nostril until a slight resistance is met.
- Rotate swab over surface of posterior nasopharynx 2 to 3 times. Leave the swab in place for a few seconds to absorb secretions.
- Repeating procedure for the second nostril will deliver optimal combined sample. Withdraw swab and repeat procedure in other nostril with the same swab.
- Remove swab and place the swab immediately into a sterile vial containing VTM.
- Break the applicator stick off near the tip to permit closure of the lid. Plastic swab handles usually have a weak point in them to allow them to be broken off for insertion into a specimen tube. Others have a handle made of a brittle plastic that will snap easily. If the shaft cannot easily be broken off so that it is short enough to fit into a small tube, it will have to be cut. To do this:
  - Cut the shaft with a sterile scissors, taking care not to touch the tip;
  - Allow the tip to slide into the VTM and then cap the tube (do not let cut portions of the plastic bag fall into the tube).
- Label the specimen container (the cap should not be marked, as it may get switched during handling) with:
  - Patient’s name;
  - Patient’s ID number;
  - Sample type;
  - Date of sample collection.

- Send the specimen to NPHL Sungai Buloh / IMR, respectively at 2^{o} to 8^{o}C within 48 hours after collection.

b) Collection of Throat Swab

- Hold the swab and with a sweeping motion, swab the posterior pharyngeal wall and tonsillar pillars (refer the figure below):
  - Have the subject to say 'aahh' to elevate the uvula;
  - Hold the tongue out of the way with a tongue depressor (Note: this procedure can induce the gag reflex);
  - Avoid swabbing the soft palate and do not touch the tongue with the swab tip.



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  - Allow the tip to slide into the VTM and then cap the tube (do not let cut portions of the plastic bag fall into the tube).
- Label the specimen container (the cap should not be marked, as it may get switched during handling) with:
  - Patient's name;
  - Patient's ID number;
  - Sample type;
  - Date of sample collection.
- Send the specimen to NPHL Sungai Buloh / IMR, respectively at 2^{o} to 8^{o}C within 48 hours after collection.

c) Collection of Sputum

Sputum is the mucous or phlegm coughed up from the lungs. It is **not** saliva or mucous from the back of the throat.

- For best results, obtain the sample first thing in the morning. If the subject just had his breakfast, wait at least an hour after he's eaten before trying. Before initiating the procedure, describe it well to the subject.
- To get a good sample, instruct the subject to take at least three deep breaths, then force out a deep cough. Explain that deep breathing helps loosen secretions and bring them to the back of the throat. Emphasize the importance of bringing up sputum, the thick secretions from the lungs, rather than expectorating saliva, the thin secretions from the mouth.
- Once the subject is comfortable with his part in the procedure, set up the equipment needed. Prepare a sterile specimen cup with a tight-fitting cap, the appropriate label, gloves, surgical mask and goggles.
- Be ready with an aerosol of 10% sodium chloride or sterile water on hand to administer via nebulizer if needed. This can help loosen tenacious secretions.
- Position the subject in a chair or on the side of the bed. If he's unable to sit up on his own, place him in a high-Fowler's position. Remove his dentures, if he has them.
- Next, have the subject rinse his mouth with plain water so that he doesn't contaminate the sputum being coughed up with the bacteria in his mouth. But don't allow him to brush his teeth or use mouthwash. Doing so could kill bacteria in the sputum, rendering it useless.
- Get ready by donning the gloves, surgical mask and goggles. Uncap the container, but avoid touching the inside to ensure that it's sterile. Then, have the subject perform the deep breaths and cough as instructed, expectorating the sputum into the container.
- Encourage the subject to continue coughing until adequate sample is collected. However, if he has trouble bringing up secretions, have him breathe into the nebulizer and try again.
- Once sufficient specimen collected, securely cap the container. Remove and discard the gloves and wash hands thoroughly. Allow the subject to rinse out his mouth and provide a tissue.
- Send the specimen to NPHL Sungai Buloh / IMR, respectively at 2^{o} to 8^{o}C within 48 hours after collection.

NOTE: Method for samples collection not documented here are those which will only performed by experienced personnel.

‘ Annex 6 ’

SISTEM SURVELAN INFLUENZA KEBANGSAAN
BORANG PERMOHONAN UJIAN MAKMAL
(Sampel ILI Dihantar Ke MKAK Sungai Buloh & Sampel SARI Dihantar Ke Unit Virologi, IMR)

No. Rujukan Makmal: (IMR / RES / 20 /) (MKAK / RES / 20 /)

A. MAKLUMAT PESAKIT			
Negeri:			
Hospital / Klinik Kesihatan:		Wad:	
Nama Pesakit:		No. Kad Pengenalan / Passport:	
R/N:	Warganegara:	Umur:	Jantina: L / P

B. MAKLUMAT KLINIKAL		
Gejala	**Tandakan (√) di ruangan berkenaan**	**Tarikh mula**
Demam ≥ 38^{o}C / sejarah demam beberapa hari sebelumnya		
Batuk		

Dapatan X-Ray (sekiranya berkenaan): ……

C. MAKLUMAT SPESIMEN KLINIKAL				
Jenis Spesimen	**Tandakan (√) di ruangan berkenaan**	**Tarikh diambil**	**Tarikh dihantar**	**Pengambil Sampel**
Nasopharyngeal (NP) swab				*(Tandatangan & Cop)*
Throat swab				
Nasopharyngeal aspirates				
Bronchoalveolar lavage (BAL)				
Tracheal aspirate				
Endotracheal tube aspiration				
Lain-lain (sila nyatakan:)				
NOTA: *Sampel palitan (swab) mesti dimasukkan ke dalam bekas yang mengandungi Viral Transport Media (VTM) dan sampel lain dimasukkan ke dalam bekas steril kosong. Kesemua jenis sampel mesti disimpan pada suhu 2^{o}-8^{o}C sejurus diambil dan tiba di makmal yang dikenalpasti dalam tempoh sekurang-kurangnya 48 jam selepas pengambilan.*				

CATATAN: ……..

D. MAKLUMAT PEMOHON	**E. MAKLUMAT MAKMAL TRANSIT* (sekiranya berkenaan)**
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:
No. Telefon:	No. Telefon:

** Makmal Transit: Makmal dimana spesimen dihantar untuk tujuan pengumpulan sebelum ia seterusnya dihantar ke MKAK Sungai Buloh / Unit Virologi, IMR*

F. UNTUK KEGUNAAN MAKMAL	
Kaunter Penerimaan Sampel	**Makmal**
Tarikh spesimen diterima:	Tarikh spesimen diterima:
Suhu: ^{o}C	Suhu: ^{o}C
Jenis spesimen:	Jenis spesimen:
Status: Sampel Diterima / Sampel Ditolak*	Status: Sampel Diterima / Sampel Ditolak*
* Sekiranya spesimen ditolak, sila nyatakan sebab: ……..	
CATATAN:	
Tandatangan & Cop Pegawai:	Tandatangan & Cop Pegawai:

Sebarang kemusykilan, sila hubungi:

- *Makmal Kesihatan Awam Kebangsaan (MKAK) Sungai Buloh, Selangor (u.p. Makmal Isolasi Virus): 03-6126 1200 / 1325*
- *Unit Virologi, Institut Penyelidikan Perubatan (IMR): 03-2616 2671*