Influenza Like Illness (ILI) and Severe Acute Respiratory Infection (SARI) Surveillance Guideline (Myanmar)

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Acronyms:

AFP	Acute Flaccid Paralysis
ARI	Acute Respiratory Infection
BHS	Basic Health Staff
CDC	Centre for Disease Control and Prevention
CEU	Central Epidemiology Unit
CIF	Case Investigation Form
DUNS	Diseases under National Surveillance
EPI	Expanded Program on Immunization
EQAP	External Quality Assessment Project
HMIS	Health Management Information System
IEC	Information, Education and Communication
ILI	Influenza like illness
MS	Medical Superintendent
NNT	Neonatal Tetanus
NHL	National Health Laboratory
OPD	Out Patient Department
PCR	Polymerase Chain Reaction
PPE	Personal Protective Equipment
RRT	Rapid Response Team
RSO	Regional Surveillance Officer
SARI	Severe Acute Respiratory Infection
SDCU TL	Team Leader of Special Disease Control Unit
TMO	Township Medical Officer
VTM	Viral Transport Media
WHO	World Health Organization

1. Background

Influenza pandemics have surprisingly threatened the world by taking away many lives in a flash as in "Spanish Flu" (1918-1919) without giving enough preparation time for the health personnel. The researchers found out that enormous waves of pandemic attacks have evolved when an influenza virus which was not previously circulating among humans and to which most people don't have immunity emerges and transmits among humans. Thus, it is important to detect small tides of circulating seasonal influenza every year all over the world to inspect over the influenza outbreaks including those with pandemic potential. Influenza viruses both seasonal and zoonotic constantly evolve and change. That is why influenza surveillance and virus monitoring are keys to timely detect and mitigate influenza outbreaks through vaccination and antiviral therapy.

Therefore, the Global Influenza Surveillance and Response System (GISRS), previously known as the Global Influenza Surveillance Network (GISN) had been performing influenza viral surveillance since 1952. In January 2017, GISRS network consisting of 143 National Influenza Centers (NICs) in 113 countries around the world with 6 WHO collaborating centers and 4 Essential Regulatory Laboratories functioning under World Health Organization (WHO).

The primary aims of GISRS

- To monitor changes in antigenicity of influenza viruses;
- To guide the selection of strains for the annual influenza vaccine;
- To provide virus samples for use in vaccine production.

Myanmar has established National Influenza Centre (NIC) in National Health Laboratory since 2008 and already builds up sharing influenza information with WHO. NIC is collaborating with WHO collaborating center (Tokyo) by sending influenza isolates twice annually for new vaccine development and Niigata University, Japan for influenza genotyping and antiviral susceptibility. NIC is participating in WHO Influenza EQAP (from Hong Kong) and CDC EQAP.

Central Epidemiology Unit (CEU) of Ministry of Health and Sports is the focal unit for Influenza like illness (ILI) and Severe Acute Respiratory Infection (SARI) surveillance. NIC of NHL and CEU are reporting weekly national surveillance data into regional and global influenza surveillance platform (FluNET and FluID). Sentinel ILI surveillance monitors persons care in ambulatory facilities; Sentinel SARI surveillance monitors persons with more severe illness who have been admitted to hospital for their respiratory illness.

At present, there is very few concrete data on ILI and SARI with accompanying laboratory and epidemiology components. There are some very few cross-sectional studies on ILI and SARI surveillance in Myanmar which would be very useful as a starting point and a base-line for ensuing plan to develop ILI and SARI surveillance system in Myanmar. Myanmar still needs to strengthen the ILI and SARI surveillance system for monitoring influenza to understand the true burden and epidemiology of influenza, and to help in planning of intervention and preventive measures.

Through those studies, at least, Epidemiologists, Chest Medicine and National Health Laboratory (NHL) personnel have gained knowledge and experience in epidemiology and laboratory based ILI surveillance in cross-sectional manner. Those expertise and departments will become valuable resources future establishment of ILI and SARI surveillance in Myanmar. Their participation in surveillance of influenza will assist in strengthening of ILI and SARI surveillance in Myanmar to gradual build-up and expand all over the country including private clinics and hospitals**.**

Influenza surveillance will be functioning to provide timely and high-quality epidemiological data and viral isolates to perform the following set of functions.

- Describe the **seasonality** of influenza where feasible
- Provide candidate viruses for **vaccine production.**
- Describe the **antigenic character and genetic makeup** of circulating viruses.
- Identify and monitor **groups at high risk** of severe disease and mortality.
- Establish **baseline levels** of activity for influenza and severe influenza-related disease
- Generate influenza data **to estimate influenza burden** and help decision-makers prioritize resources and plan public health interventions.
- Identify locally **circulating virus types and subtypes** and their relationship to global and regional patterns.
- Monitor antiviral sensitivity.
- Detect **unusual and unexpected events** such as outbreaks of influenza outside the typical season, severe influenza among healthcare workers, or clusters of vaccine failure that may herald novel influenza virus.

This ILI/SARI surveillance guideline attempts to advocate the hospital administrators, laboratory focal persons and Township Medical Officers (TMO) for participation with surveillance of influenza and to assist in strengthening of ILI and SARI surveillance in Myanmar as gradual build-up and expansion all over the country including private clinics and hospitals.

2. Objectives

- To standardize surveillance procedures and the specimen collection method
- To clarify the roles and responsibilities of respective personnel in case - based ILI and SARI surveillance

* The type of surveillance will be hospital - based at hospital OPDs and inpatients covering all ages and sexes. It is all year - round and nationwide.

3. Overview of Influenza

Influenza viruses belong to the *Orthomyxoviridae* family and are divided into types A, B and C. Influenza types A and B are responsible for epidemics of respiratory illness that are often associated with increased rate of hospitalization and deaths. Type C is a milder infection that does not cause epidemics. All influenza viruses are negative sense single-stranded RNA viruses with a segmented genome. Influenza type A and B viruses have 8 genes that coded for 10 proteins, including the surface proteins haemagglutinin (HA) and neuraminidase (NA). In the case of type A viruses, further subdivision can be made into different types according to differences in these two surface proteins. To date, 16 HA subtypes and 9 NA subtypes have been identified. Influenza type B viruses almost exclusively infect to humans.

Influenza viruses are spread from infectious people to susceptible people through large virus-containing droplets and aerosols that are produced by coughing, sneezing or talking. Less commonly, influenza viruses may also be spread via contaminated fomites or by direct touching. In addition to the annual seasonal epidemics of influenza seen in some regions, pandemics of influenza have occurred infrequently and irregular intervals. In all age groups, influenza infection rates are generally higher during pandemics than during annual epidemics.

Myanmar had experiences in national influenza pandemics preparedness since SARS (2003) and pandemic influenza A (H1N1) global outbreak (2009). NIC has been launched in 26th February, 2008 at NHL, Yangon. Since its launching, NIC is contributing testing of the typing and sub-typing of influenza viruses so far and have plan to contribute and expand its capacity in strengthening of ILI and SARI surveillance in Myanmar together with CEU of Ministry of Health and Sports. (Table 2)

Figure 1; Percentage of Respiratory specimens that tested positive for influenza by influenza transmission zone (status as of 22nd December 2017)

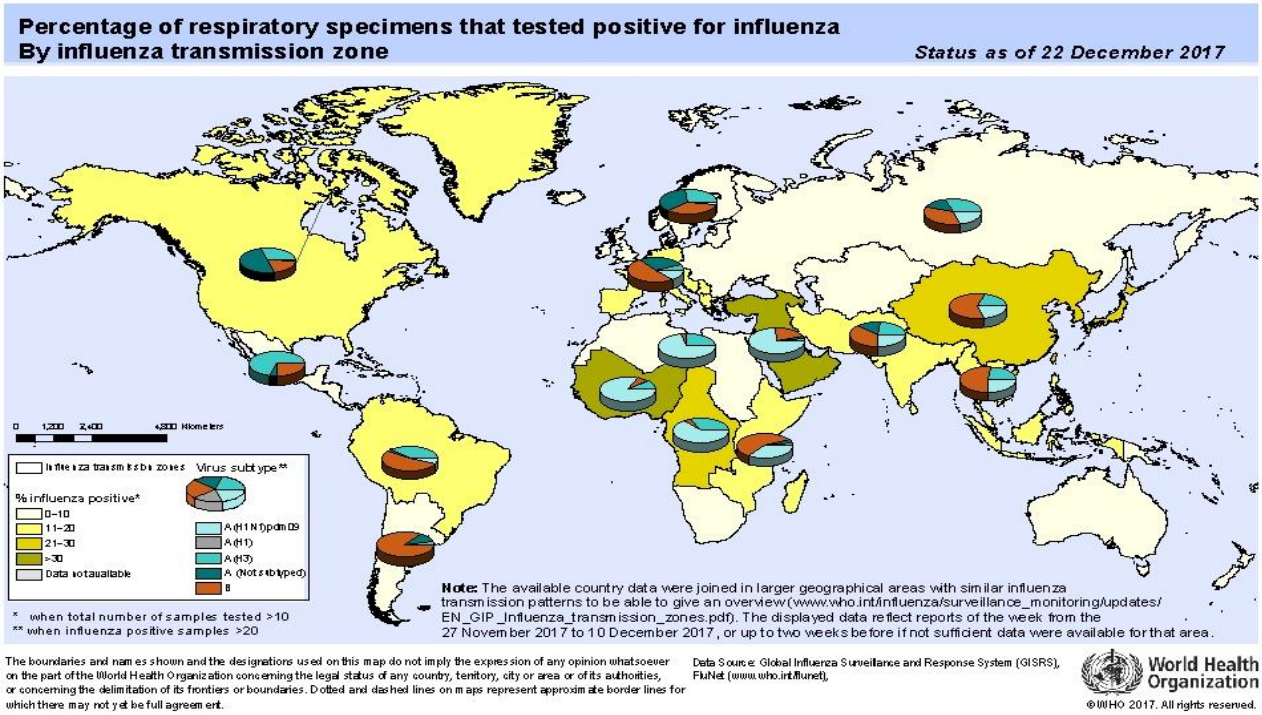


Table 1; Overview of Influenza Outbreaks, Global and Myanmar

Year	Influenza Epidemics	Virus Type	Deaths	Remarks
1918-1919	The Spanish Flu	A/H1N1	40 Millions	
1957-1958	The Asian Flu	A/H2N2	1 Million	
1968-1069	The Hong Kong Flu	A/H3N2	1 Million	
2003	Avian Influenza	A/H5N1	-	60 countries across Asia, Europe, Middle East & Africa. 220 million birds infected & culled. (One and only case was seven years old girl from Kyaing-Ton Township of Shan (East Region), Myanmar. Recovered.)
2009	New Influenza Pandemics	A/H1N1	575,400	43-49 million infected & 74 countries affected. (First case confirmed in Myanmar on 11th June 2009. Recovered.)
Since February 2013	New Influenza with pandemic	A/ H7N9	610	China; three human cases originated in China and were reported in Malaysia (1) and Canada (2). **1582** confirmed; **610** deaths (since February 2013).

Table 2; Influenza Virus Isolation in National Influenza Center, Yangon (2005 - 2017)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Clinical sample	975	307	1,250	1,417	533	694	444	580	343	642	376	725	1,162
Rapid Test													
Flu A	136	35	124	327	529	474	376	170	206	239	135	128	455
Flu B	98	0	160	133	0	220	26	351	0	166	2	272	3
Virus isolation													
A(H3N2)	1	0	63	134	350	17	165	0	72	56	1	119	49
A(H1N1)	11	0	0	66	121	0	0	0	0	0	3	0	0
A(H1N1) Pdm 2009	0	0	0	0	16	232	0	29	1	167	3	9	406
B	20	0	129	102	0	114	10	109	1	125	2	272	3
Total no. of isolates	32	0	192	302	487	363	175	138	74	348	9 and RSV-2	400	458
Negative	-	-	-	-	-	-	-	-	-	-	237	325	704

Pdm = Pandemic

RSV = Respiratory Syncytial Virus

4. ILI and SARI surveillance

Acute respiratory infection (ARI) is one of the current 17 Diseases under National Surveillance (DUNS), the monthly report put up by all townships of the country. The diseases and events included in DUNS will be exclusively clinical based and the data are just aggregate. The reports go upward to State/Region and Central where monthly and annual compilation is made and come out later as annual reports of DUNS by HMIS. Immediate reporting in case of outbreak situation and regular weekly reporting for routine surveillance are needed for effective monitoring and prompt response. So, in recent years, to back up surveillance of ARI, for enhancing surveillance of ARI, it was incorporated in Weekly Township Reporting of AFP, NNT and Measles Format. It was an attempt trying to catch up ILI and SARI in VPDs format. DUNS and Weekly Integrated Report of VPDs will remain in place as ongoing system of Central Epidemiology Unit.

The strengthening of ILI and SARI surveillance is adaptable to existing resources and integrated weekly reporting of VPDs. The integrated weekly report form of VPDs is shown in Annex 1 as TO 1 form. In TO 1 form, ILI and SARI is added in the form title and ILI and SARI replaced instead of ARI also in the table and the text concerning rapid test should be removed. (Please see at Annex 1.) Minimum epidemiological standard data for ILI and SARI is integrated into existing surveillance system of VPDs to efficiently use resources, to promote sustainability and to avoid disrupting existing system. The integrated weekly report of VPDs from the State/Regional Health Departments, from the hospitals with 50 beds or above and active surveillance of secondary/tertiary hospitals by medical officer or SDCU TL will be functioning in place to sustain the weekly surveillance including ILI and SARI.

4.1. Case definition of ILI

Any acute respiratory infection with:

- measured fever of 38˚C or above
- and cough
- with onset of fever within 10 days

4.2. Case Definition of SARI

Any acute respiratory infection with:

- measured fever of 38˚C or above
- and cough
- with onset of fever within 10 days
- and requires **hospitalization**

5. TOR for ILI and SARI surveillance

Medical Superintendents

- Supervisory role for influenza surveillance
- Assign the duty of clinician/ EMO/ Ward MO/ Laboratory Technician
- Implement the necessary in house training
- Coordinate hospital staff, NHL and surveillance focals
- Logistic and financial management

Clinicians

- Identification of patients that meet the ILI/SARI case definitions
- Daily recording of ILI and SARI cases at their respective sentinel sites
- Proper completion of ILI and SARI case investigation form to be sent for sample collection
- Supervise sample collection and transportation management to NHL, Yangon or PHL, Mandalay
- Provide the collected data including patient's outcomes to Surveillance Focal Points for data compilation and analysis

Surveillance Focal Points

- Focal persons should be appointed in consultation with the hospital administration.
- Collect and collate data on total number of patients who meet the ILI and SARI case definitions at OPD, in-patient wards and also count the total number of OPD and in-inpatients seen every day on a weekly basis.
- Report 5 to 10 samples of ILI and all cases of SARI to CEU/NHL on weekly basis.
- Disseminate the report and feedback received from NHL to the relevant health personnel
- Provide the feedback from sentinel sites to NHL.

Medical Laboratory Technologist/ Technician

- Ensure all ILI case investigation forms and SARI case investigation forms are filled out completely and accurately.
- Ensure all respiratory specimens for ILI and corresponding forms are assigned with unique ID number.
- Collect respiratory specimens (nasopharyngeal swab and nasal swab) appropriately from patients meeting the case definitions. (But the specimens should be collected by the first person / health staff who is able to do. e.g. Medical officer, Nurse)
- Properly label, pack, store with cold chain and transport specimen to NHL

6. Reporting system

6.1. Routine weekly procedure

Focal person in State/Region (SDCU TL or designated person) must be informed new cases reported and investigated from tertiary/secondary hospitals from the respective townships so as to include these cases in the township line list. The CIF must be faxed or communicated from the respective townships to the focal persons for AFP/NNT/Measles/ILI at state/regional level on a weekly basis. The SDCU TL should ensure the collection of the weekly routine data in forms TO1, HO1, HO2 and the data should be merged in form SO1 and send together with the weekly State/ Region line list to CEU on Thursday of every week. By Friday, CEU reports to the WHO Regional Office and also shares information with NHL.
(Chart 2; Flow Chart of Integrated Weekly Reporting)
(TO 1, SO1, HO1, and HO2 are depicted as Annex 1, 2, 3, and 4).
Note: It is important to keep the State and Regional Health Director updated on the status and the progress of ILI cases and outbreaks.
*The ILI cases attending the outpatient departments of sentinel hospitals and SARI cases from the medical wards are to be included in the weekly integrated reports. Influenza surveillance should be reinforced with specimen collection and subsequent submission to the laboratory (NHL, Yangon) for influenza virus typing (Chart 1)

KEY INDICATORS

(1) Overall and by age

(2) The proportion of hospital admission for SARI

Total number of admission for SARI during the reporting period/ Total number of medical admissions during the reporting period

(3) The proportion of deaths associated with SARI

Total number of deaths associated with SARI during the reporting period/ Total number of deaths during the reporting period

(4) Case Fatality Rate in case of SARI

(5) Of all sample tested, the proportion of samples positive for influenza

Total number of influenza-positive sampling during the reporting period/ Total number of samples tested during the reporting period

(6) The number of cases with underlying co-morbid conditions

(7) The number of cases who received the seasonal influenza vaccine

Chart 1; ILI and SARI surveillance overview

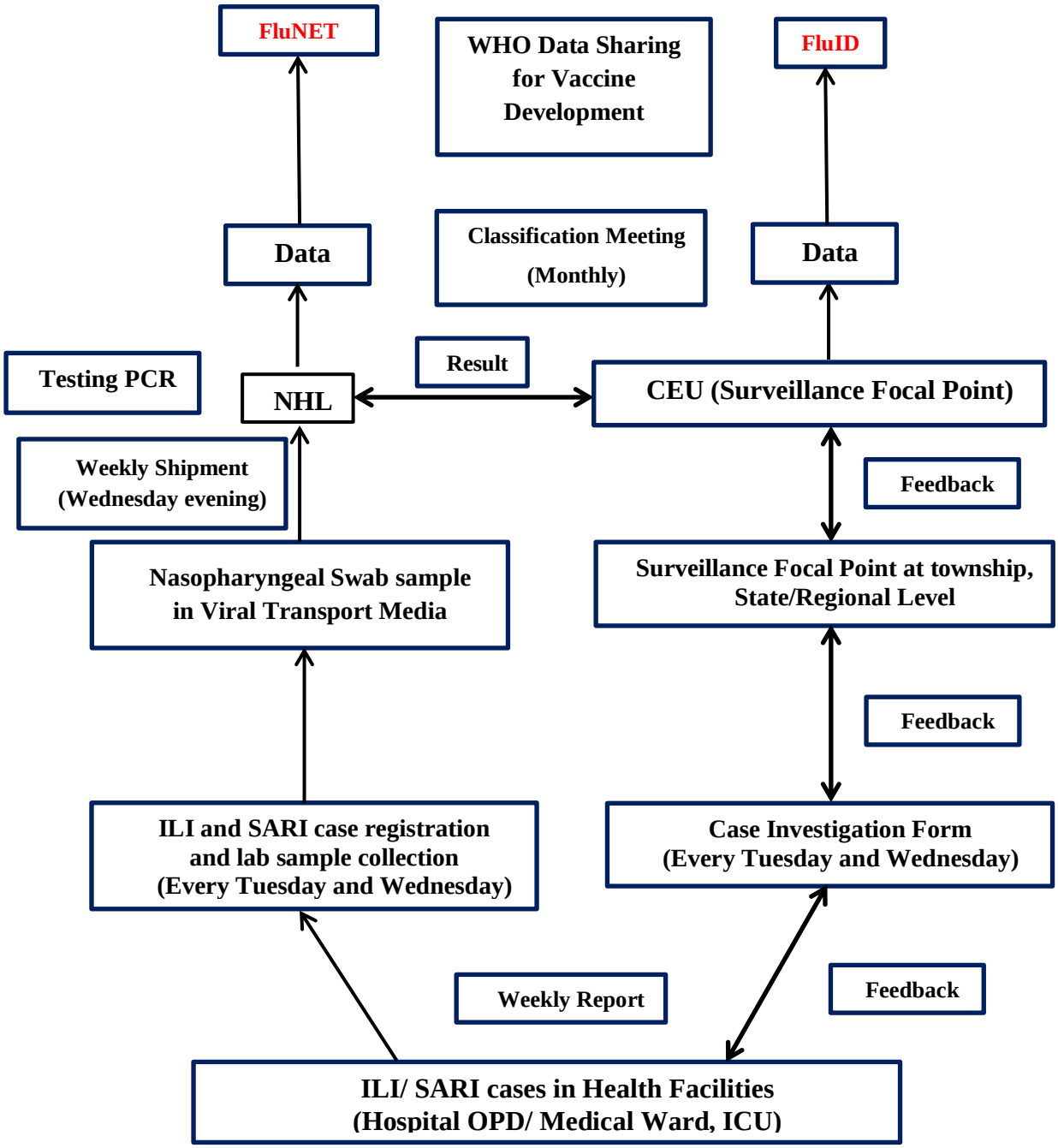
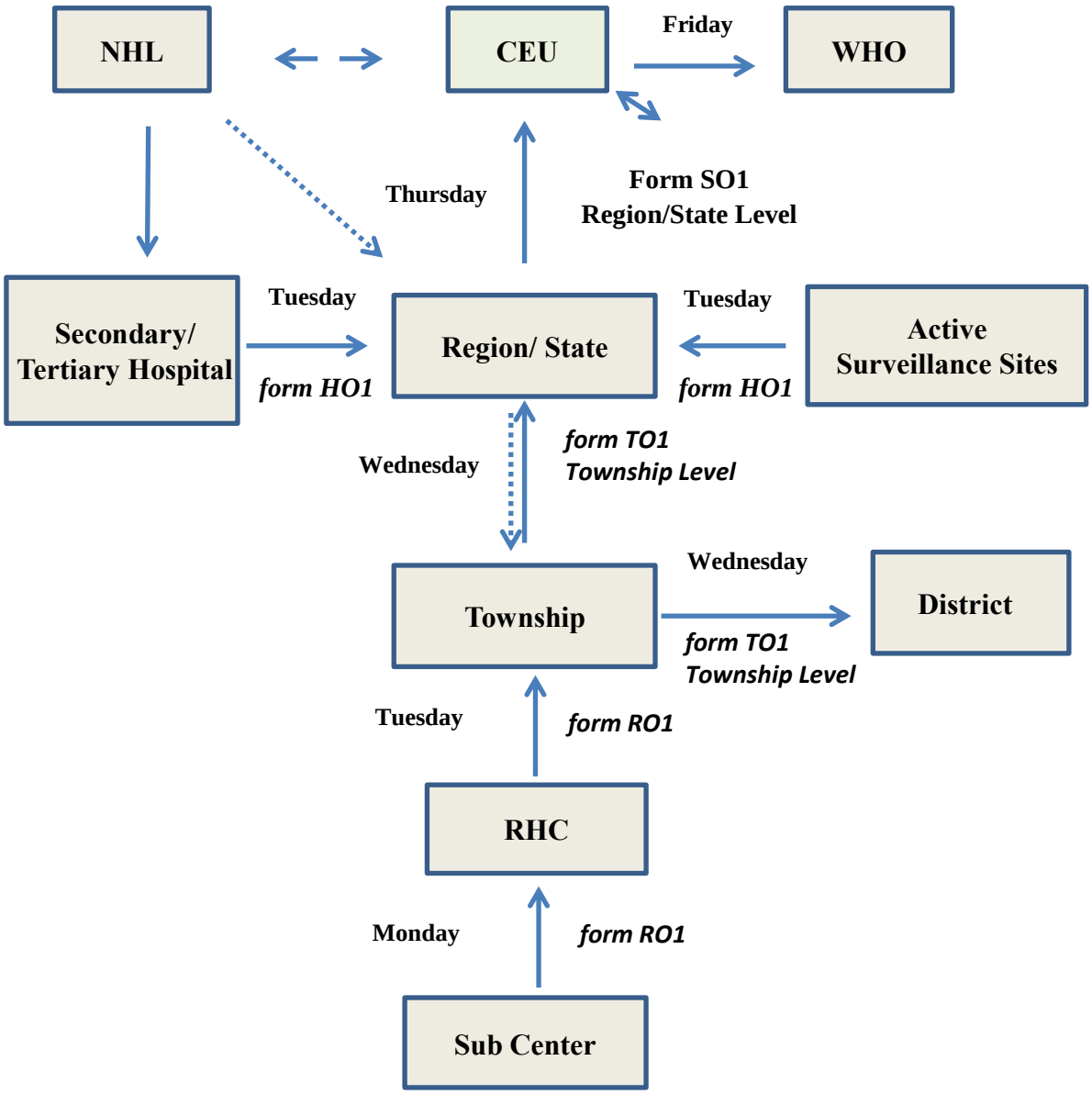


Chart 2; Flow Chart of Integrated Surveillance Weekly Reporting



Onward routine information

Feedback on cases from Big Hospital/ Active Surveillance

Procedure for case selection and sampling strategy

ILI

Sampling method; modified convenient sampling method
(Tuesday and Wednesday of the week)

Case enrollment; all cases in OPD meeting ILI case definition should be enrolled as ILI cases.

Specimen collection; each identified sentinel site for ILI should enroll for at least 5 ILI specimen collection per week.

(The cases for specimen collection should equally distribute between children and adult.)

SARI

Sampling method; all cases

Case enrollment; all cases of admitted patients which meet the SARI case definition

Specimen collection; all cases of admitted patients which meet the SARI case definition

(Cases are counted independent of gender and age.)

Sample collection, Storage and Transportation

For the virus typing, the specimen once taken should be sent to NHL within two days in cold chain with temperature maintained at 2 - 4°C.

Procedures for collection of specimens are provided in Annex 7.

Types of specimen that can be collected for PCR test of ILI

Nasopharyngeal swab (also for culture)

All samples should be accompanied by the relevant surveillance forms (CIF) duly filled up by the concerned medical officer or designated health staff.

Any throat swab collected in VTM should be immediately stored and transported to NHL within two days in cold chain by respective health staff designated by respective health department.

Two samples are taken, one from left nostril and another from right.

The samples are put into VTM, tightly closed and put in the refrigerator.

Laboratory Tests

- Rapid diagnostic (antigen) testing
- RT-PCR
- Viral culture
- Immunofluorescence assays and serology

* Among these, **RT-PCR has the highest sensitivity** for detection and is the minimum recommended test for most laboratories.

*The laboratory result should be sent to the surveillance focal point and CEU within one week.

5. Data Management

5.1. Data Collection Tool

Weekly integrated reporting forms, the case investigation forms, line lists and the outbreak reports

5.2. Data Analysis and Feedback

Collected data will be retained and analyzed monthly by CEU and NHL and data classification should be done.

And then, NHL data will go to **FluNET** and CEU will need to send to **FluID** for GISRS data.

Monthly/quarterly feedback should be brief and descriptive (time, place and person) followed by comprehensive annually.

5.3. Merging data and alerting the system of outbreaks

Surveillance focal points including SDCU TL should assemble the line lists of ILI cases from the various hospitals (ensuring that data from other sources such as secondary/tertiary hospitals) and merge them electronically to create a weekly state/regional line list. At the state/regional level, the multi township data is interpreted to identify ILI cases in townships with special emphasis given to clustering of cases in adjacent villages/wards of 2 or more townships. When adjoining township clustering is identified, feedback on ILI outbreak should be provided to the township officials, state/regional level and up to central level.

6. ILI Outbreak and Rapid Response

6.1. ILI Outbreak

ILI outbreak is defined/suspected as an 'abnormal increase' of cases compared with normal cases or trend in a given period. An 'abnormal increase' should be defined as an increase above and beyond the normal range of seasonal variation of reported cases. It can only be determined if prevalence is known. However, abnormal increase will differ from place to place and township to township. To confirm an outbreak, at least 3 to 5 laboratory samples from ARI or ILI cases should be collected and confirmed by NHL.

Any kind of outbreaks/ unusual conditions should be investigated by local RRT first. RRT from central or state/regional level will only come and join with local RRT on site if the outbreak investigation, control and response is beyond township's capacity or an outbreak has major programmatic implications. The composition and responsibilities of the RRT are as follows:

6.2. National Rapid Response Team (NRRT)

- Member of General Administration Department
- Epidemiologist
- Microbiologist
- Pediatrician/Physician
- Veterinarian (Optional)

6.3. Responsibilities of NRRT

- Provide technical expertise for any outbreak and provide all technical assistance to the State/Regional Health Department
- Visit outbreak area for outbreak investigation with State/Regional Health Department
- Provide logistic support including drugs, PPE and others
- Provide training, monitoring and evaluation to S/R level, Township level RRTs
- Recommendations and appropriate interventions to be undertaken by MOHS based on outbreak reports submitted by State/Regional RRT to prevent further outbreaks.
- Reporting to WHO through International relation division (IRD) of MOHS or IHR focal person

6.4. Rapid Response Team (RRT) at State/ Regional Level

- Member of State/ Regional General Administration Department
- Team Leader, Special Disease Control Unit (SDCU TL)
- Microbiologist, State/ Regional Hospital
- Pediatrician/Physician, State/ Regional Hospital
- Veterinarian (Optional)

6.5. Responsibilities of State/ Regional Level RRT

- Provide technical expertise for any outbreak and provide all technical assistance to the Township Public Health Department
- Visit outbreak sites to investigate outbreak with TMO & RRT
- Provide logistic support including drugs, PPE and others
- Recommendations and appropriate interventions to be undertaken by State/ Regional Health Department based outbreak reports submitted by township RRT to prevent further outbreaks.
- Report to the central level

6.6. Rapid Response Team (RRT) at Township Level

- Member of Township General Administration
- Veterinarian (Optional)
- Township Medical Officer or Township Health Officer or Medical Officer
- Township Health Assistant or HA-1 or Public Health Supervisor I or II
- Laboratory Technician

6.7. Responsibilities of Township Level RRT

- In ARI/ILI outbreak, the team should immediately visit the affected site
- Ascertain cases based on clinical case definition and send appropriate samples from 3 to 5 cases to the NHL for laboratory confirmation.
- Inform the State/Regional RRT for any assistance if required
- Inform the local authority about the situation and possible risks
- Ensure logistics supply including drugs, PPE and others
- Immediately implement intervention measures to control the outbreak
- Report to the State/ Regional level

* In outbreak investigation, if ILI of Influenza type A virus is suspected with history of associating with poultry or food products, never fail to call for veterinary health personnel for co-operation and consultation in consideration of differential diagnoses, at all levels of RRT's response.

6.8. Rapid Response to ILI Outbreak

Once an outbreak is believed to have occurred, the RRT in township must immediately conduct a rapid investigation and implement appropriate intervention measures. A National or State/Regional RRT may visit the area to conduct outbreak investigation if township needs any assistance and request State/Regional RRT to intervene. A detailed outbreak investigation will be conducted to establish outbreak epidemiology, etiology, and instruct both short and long term interventions for the current outbreak and prevent future outbreaks.

An outbreak response should include the following steps/actions:

- Investigations to confirm the outbreak
- Establish that the "suspect cases" fit the case definition of ILI by obtaining information regarding sign and symptoms of disease, onset of illness, place of residence, etc.
- Early diagnosis, containment and control of the outbreak and early patient referral
- The cases must be line listed
- Conduct the active cases search including deaths with suspected ILI or unknown causes and report in timely manner
- Information, Education and Communication
- IEC campaign should be planned once outbreak is confirmed and launched for general public to ensure ILI cases are taken to the nearest health facility for checkup and supportive care.
- IEC must provide the information to the community regarding the disease and its possible threats.
- IEC should be communicated through mass media if available till outbreak is contained.

7. ILI Monitoring & Evaluation at Central Level

The overall usefulness of a sentinel surveillance system will depend on whether it contributes to the early detection, prevention and control of adverse health events. A surveillance system should undergo regular monitoring to routinely assess whether it is functioning efficiently and providing qualified data. Additionally, routine assessment will indicate the needs of technical or logistical support and/or refreshment training. Indicators to assess surveillance system are described below.

Through registration, compilation of weekly reports, investigation/laboratory request forms and line-lists, analysis will be done weekly, monthly and annually by CEU and NHL jointly since there consist of both epidemiological and laboratory components in format tools like integrated weekly reporting of VPDs and CIF. (CIF is shown in Annex 5). As feedback, the copies of laboratory results will be forwarded by NHL to (1) CEU, (2) State/Regional Health Department, (3) MS/TMO of State/Region, District and/or Township Hospitals.

Table 3; Indicators for Monitoring and Evaluation

Indicators	Frequency of Monitoring	Source of Information
Timeliness of reporting	Weekly	Routine data
On particular Completeness of data	Weekly	Routine data
No. of samples collected	Weekly	Routine data
Number of ILI outbreak detected	Quarterly	Routine data

8.1. Timeliness of reporting

Timeliness refers to the reporting to the national level on time through the steps in a surveillance system Indicators of timeliness include;

- Expected dates of data reporting from township to CEU as compared to actual dates of reporting
- Time elapsed from specimen collection at township to arrival at NHL for testing (Processing, testing and generating the result)

8.2. Completeness of data collected

Completeness refers to the data collected with complete information and can be measured by assessing the following;

- Percentage of forms received from each township with complete data
- Percentage of forms that are received as compared to the expected forms

8.3. Number of ARI/ILI outbreaks detected

The surveillance can be monitored by assessing the outbreaks that were detected. The indicators used are:

- Number of outbreaks reported as compared to that of the previous year
- Number of outbreaks investigated and confirmed by laboratory

9. Logistics

OPDs of secondary/tertiary hospitals (50 beds and above), township hospitals should be provided with -

- Swabs sticks for nasals, nasopharyngeal and throat specimens taking (Specimen collection kit)
- Viral Transport Media
- CIF, Line -list Forms
- Pamphlets and Posters (IEC)

Annex 1.

Form T01. Weekly Township Report of AFP, NNT, Measles, ILI and SARI

The Republic of the Union of Myanmar

Please send this report every Tuesday afternoon to: State/Region

State/Regional Health Director _____

Address _____

Telephone _____

Fax _____

This report should reach State/Regional Public Health Department **by noon on Wednesday**

Township _____ State/Region _____

Week No. _____ Year _____

_____

Period included in the report: From --/----/---- (Sunday) to) --/--/--(Saturday)

Number of units expected to report: _____

Number of units reporting: _____

Number of units reporting on time: _____

Number of AFP cases detected and reported this week: _____

Write 0("zero") if no cases

List the EPID-Codes of AFP cases detected and reported this week:

Number of cases and deaths (C/D) of NNT and Measles detected and reported this week and Immunization status: *ff no cases/deaths were identified, write 0("zero")*

	NNT	Measles						
		<9m	9-	1-4	5-9	10-	15y+	Total
	C/D	C/D	C/D	C/D	C/D	C/D	C/D	C/D
Number detected and Reported								
No. of immunization of mother or child								

ILI		ILI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

SARI		SARI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

Name of person filling the report:_____

Date report sent: _____

Signature of Township Medical Officer _____

The number of new ILI and SARI cases from whom specimens were collected during the week.

The total number of new ILI and SARI cases reported during the week.

ALL TOWNSHIPS SHOULD REPORT WEEKLY EVEN IF NO CASES OF AFP, NNT, MEASLES, ILI AND SARI WERE DETECTED. ALL CASES OF AFP, NNT, MEASLES, ILI AND SARI SHOULD BE INVESTIGATED.

Case definition of ILI	**Case definition of SARI**
Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days	Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days and requires hospitalization

Annex 2.

Form S01

Weekly State/Regional Report of AFP, NNT, Measles, ILI and SARI

Please send this report every Thursday *afternoon to:* Epidemiologist

Address: CEU, DOPH, NayPyiTaw

Telephone: 067-431432, 431433

Fax: 067-431434,

This report should reach CEU **every Friday before noon**

State/Region_____

Week No. _____ Year_____

Period included in the report: From –/--/-- (Sunday) to–/--/--(Saturday)

Number of units expected to report: _____

Number of units reporting: _____

Number of units reporting on time: _____

Number of AFP cases detected and reported this week: _____

(Write 0 ("zero') if no cases)

No. of AFP cases detected and reported this week: ( ) Cumulative this year: ( )

Number of cases and deaths (C/D) of NNT and Measles detected and reported this week and immunization status: *If no cases/deaths were identified, write 0 ("zero")*

	NNT	Measles						
		<9m	9-11m	1-4 y	5-9 y	10-14 y	15y+	Total
	CID	CID	CID	CID	CID	C/D	CID	C/D
Number detected and reported								
Immunization status of mother or child								

ILI		ILI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

SARI		SARI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

Name of person filling the report:_____

Date report sent to CEU, DOPH, and Yangon: _____

Signature of State/Regional Health Director: _____

The number of new ILI and SARI cases from whom specimens were collected during the week.

The total number of new ILI and SARI cases reported during the week.

ALL STATES/REGIONS SHOULD REPORT WEEKLY EVEN IF NO CASES OF AFP, NNT, MEASLES, ILI and SARI WERE DETECTED.

ALL CASES OF AFP, NNT MEASLES, ILI and SARI SHOULD BE INVESTIGATED.

Case definition of ILI	**Case definition of SARI**
Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days	Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days and requires hospitalization

Annex 3.

Form H01 Weekly Hospital Report of AFP, NNT, Measles, ILI and SARI

The Republic of the Union of Myanmar

After review of all ward and registry books, please send this report to the following address given below every Monday, so that it will arrive by Wednesday noon the same week.

Epidemiologist (CEU) / State or Regional Health Director: _____

Address:_____

Telephone:_____ Fax: _____

Hospital: _____ City: _____

State/Division: _____

Week No. _____

Period of report: From _____ (Sunday) to _____ (Saturday)

Number of cases of AFP identified:

If no cases/deaths were identified, write 0 (zero).

Number of cases and deaths (C/D) of NNT and Measles identified and their immunization status:

If no cases/deaths were identified, write 0 (zero)

	NNT	Measles						
		<9m	9-11m	1-4 y	5-9 y	10-14 y	15y+	Total
	C/D	C/D	C/D	C/D	C/D	C/D	C/D	C/D
Number detected and reported								
No. of immunization of mother or child								

ILI		ILI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

SARI		SARI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

Name of persons filling the report: _____

Date report sent to CEU (for Yangon hospitals): _____

Date report sent to State/Regional Health Dir. (for others): _____

Signature of Medical Superintendent: _____

*The Week begins at 00:00 hrs on Sunday and ends on 24:00 hrs on Saturday. Refer to the attached calendar of reporting weeks.

ALL CASES OF AFP IN CHILDREN UNDER 15 YEARS OF AGE AND ALL CASES OF NNT SHOULD BE REPORTED AND INVESTIGATED. ALL CASES OF MEASLES SHOULD ALSO BE REPORTED ALONG WITH THE IMMUNIZATION STATUS.

The number of total new hospital admissions reported during the week in the sentinel hospital.

The number of total new outpatient visits during the week in outpatient clinics where ILI surveillance is being conducted.

Note: This form should be completed every Monday by the person in the hospital responsible for reporting diseases. Hospitals in Yangon Region should send it to the CEU and others to the State/Regional Health Department on Monday every week by "Speed Post" or other means so that it reaches by noon on Wednesday that week.

Case definition of ILI	**Case definition of SARI**
Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days	Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days and requires hospitalization

Annex 4.

Form HO2

Weekly Active Hospital Surveillance Report of AFP, NNT, Measles, ILI and SARI

The Republic of the Union of Myanmar

Name of Hospital visited: _____

Townships: _____

State/Region: _____

Name of Medical Officer responsible: _____

Week number: _____ending____/_____/_____

Date of visit: _____

	AFP	NNT	Measles						
			<9m	9-11m	1-4 y	5-9	10-14	15y+	Total
	C/D	C/D	C/D	C/D	C/D	C/D	C/D	C/D	C/D
Number Found this week									
No. of immunization of mother or child									

*Please get a list of names and addresses of unreported cases.

ILI		ILI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

SARI		SARI Cases with Unexplained Deaths	Death of Domestic Birds	Death of Wild Birds	Remarks
Cases	Deaths		Yes/No/Unknown (If yes, how many)	Yes/No/Unknown (If yes, how many)	

Wards Visited? (Yes/No)

Paediatric Inpatient _____

Paediatric Outpatient _____

Neuromedical Inpatient _____

Neuromedical Outpatient _____

Medical Wards (for13-15yr olds) _____

Physiotherapy Department _____

Isolation Ward _____

Signature of Hospital Authority:_____ Date: _____

The number of total new hospital admissions reported during the week in the sentinel hospital

The number of total new outpatient visits during the week in outpatient clinics where ILI surveillance is being conducted.

Remember:

1. Visit hospital between Monday and Wednesday. Send this form and completed Case Investigation Form to State/Regional Health Department to arrive on Wednesday and also phone or telegraph to CEU not later than Friday.
2. Review admission and outpatient registers and look for AFP, NNT and Measles, ILI and SARI cases/deaths.
3. Refer to your list of conditions that can present. Look for these conditions in the registers.
4. Unreported cases with onset of paralysis more than three months preceeding the time of the visit should also be reported and investigated. However stool specimens of such cases will not be collected.

Case definition of ILI	**Case definition of SARI**
Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days	Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days and requires hospitalization

Annex 5.

Form CIF

Case Investigation and Specimen sending Form for ILI/SARI

(Write √ in the brackets for positive response)

Part I: To be filled up by case investigator.

EPID No. MMR/ / / /

Source of patient/specimen OPD ( ) Field Outbreak ( )

Patient's Name: _____ Age: _____ Sex: _____

Nationality: _____

Occupation: _____

Address:

_____

_____

Clinical Onset Date _____

Symptoms: Fever with 38˚C or above ( ), Cough: ( ), Runny nose ( )

Red eyes: ( ).

Sore throat: ( ). Muscle pain: ( ). Joint pain: ( ).

Diarrhea: ( ).

Influenza vaccination history in the last 12 months:

Yes, when----------, No ( ), Don't know ( )

Type of Specimen	Collection Date	Shipping Date
Nasal	---/---/20--	---/---/20--
Throat swab:	---/---/20--	---/---/20—
Others	---/---/20--	---/---/20--

Hospitalization: ( ) Date: (dd/mm/yyyy). / /

Death: ( ) Date: (dd/mm/yyyy). / /

History of other Medical conditions:

Heart Disease: ( ). Asthma: ( ). Chronic Lung Disease: ( ). Liver disease: ( ).

Immune compromised: ( ). Pregnancy: ( ). Other (Specify) …….

Travel History in last 7 days: ( ) Area/location ……..

Exposure History: Direct exposure to animal: Yes ( ) No ( ).

Poultry: ( ). Swine: ( ).

Other (specify) ……..

History of taking antiviral drug: Yes ( ), No ( ) If Yes ……

Name of person completing the form: _____

Designation: _____

Hospital/Institution: _____

Contact detail: (Office phone, Mobile phone, Fax.):_____

Date: (dd/mm/yyyy). / /

Case definition of ILI	**Case definition of SARI**
Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days	Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days and requires hospitalization

Part II: To be filled up by National Health Laboratory, Yangon.

Date of specimen received at the lab.: (dd/mm/yyyy). / /

Condition of specimen: Good ( ). Poor ( ).

(Criteria for good condition: No leakage. No desiccation.

Reverse cold chain was maintained.)

PCR result:

Type A ( ). Type B ( ).

Negative ( ). Judgment impossible ( ).

Virus Isolation ……

Date of result reported to CEU / /

Isolate sent to reference Lab. Yes ( ). No ( ).

Date of isolate sent to reference Lab. / /

Case definition of ILI	**Case definition of SARI**
Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days	Any acute respiratory infection with: measured fever of 38'C or above and cough with onset of fever within 10 days and requires hospitalization

National Influenza Center, National Health Laboratory, Yangon

Annex 6. **Revised**

Influenza-like Illness (ILI) and Severe Acute Respiratory Infection (SARI)
Case Investigation & Laboratory request Form
Please complete this form carefully and circle the response.

Case Identification Number:
MMR _ _ _ - _ _ _ - _ _ - _ _ _

1. Report/Investigation Information: Name of Investigator(s): ----------

Date Case Reported: ------- /------- / -------

Date Case Investigated: ------- /------- / -------

2. Case Identification: Patient's Name: ---------- Date of Birth: ------- /------- / -------

Age: years ---------- months ---------- Sex: ----------

Father's Name (Guardian's name): ----------

Full Permanent Address: State/Region: ---------- Township: ---------- Village/ward: ----------

Street No. & House No .---------- Phone No. .----------

3. Hospitalization: Yes / No Date of Hospitalization: ------- /------- / -------

Name of Hospital: Hospital Registration Number:

Clinical Diagnosis:

Outcome: Recovered completely / Death/Unknown

4. Immunization History: Vaccinated against Flu? Yes / No / Unknown

Date of last Flu dose: ------- /------- / -------

5. Sign and Symptoms: Date of onset of first symptoms: ------- /------- / -------

Fever (≥ 38 C°): Yes / No Cough: Yes / No

Lower respiratory tract involvement; dyspnea: Yes / No or difficulty breathing: Yes / No

Upper respiratory tract symptoms ; sore throat: Yes / No or coryza :Yes / No

Other symptoms such as diarrhea, vomiting, abdominal pain, bleeding from the nose or gums, encephalitis, and chest pain

Complications of infection; if present ----------

Poultry contact history within two weeks : Yes / No / Unknown

---

6. Specimen Collection:

	Date Collected	Date Sent to Lab	Date of Result	Laboratory Results
Nasopharyngeal Swab	------- /------- / -------	------- /------- / -------	------- /------- / -------	Positive / Negative
Nasal Swab (or) Throat Swab	------- /------- / -------	------- /------- / -------	------- /------- / --------	Positive / Negative

8. Case Classification: Lab confirmed Seasonal Influenza / Lab confirmed Avian Influenza / Discard

9. Signature of responsible person filling the form

ILI Case Definition: An acute respiratory infection with: (1) measured fever of ≥ 38 C°; (2) and cough; (3) with onset within the last 10 days.

SARI Case Definition: An acute respiratory infection with: (1) history of fever or measured fever of ≥ 38 C°; (2) and cough; (3) with onset within the last 10 days; (4) and requires hospitalization.

Annex 7.

Specimen Collection Tool Kit

- Collection vials with VTM
- Polyester fiber-tipped applicators
- Tongue depressors
- Secondary container
- Ice packs (wet ice in sealed plastic bags)
- Cold box
- Zip-locked bags
- Personal protective equipment
- Field collection forms
- Permanent pen or marker for labeling samples
- Scissors

How to manage Kit

- Store specimen collection kits in a dry, cool place.
- Store specimen collection kit where it will be accessible after office hours and on weekends.

Specimen Type

- Basically whether seasonal, avian, swine or pandemic, the samples for laboratory diagnosis are the same- respiratory specimens in Viral Transport Media (VTM).

Upper Respiratory tract specimens:

- Throat swab
- Nasopharyngeal swab
- Nasal swab
- Nasopharyngeal aspirate
- Nasal wash

Lower Respiratory tract specimens:

- Transtracheal aspirate
- Bronchoalveolar lavage
- Lung biopsy
- Post-mortem lung or tracheal tissue

Procedures for sample collection

1. Throat swab:

- Label VTM tube with ID number.
- Ask patient (adults) to sit comfortably on chair or lay down the patient (infants/young children) in a supine position on bed with extended positioning of the patient's arms above the head (Figure 1 & 2) (**Note**: throat swab from infants/young children should be collected by Pediatrician or only trained personnel only).
- Hold the tongue out of the way with a tongue depressor (Fig 3).
- Use a sweeping motion to swab the posterior pharyngeal wall and tonsilar pillars. Have the subject say "aahh" to elevate the uvula. Avoid swabbing the soft palate and do not touch the tongue with the swab tip (Figure 4). (**Note**. This procedure can induce the gag reflex).
- Put the swab into VTM.
- Immediately close the VTM tube and store in 2-4°C till the sample is processed or transported to NHL.

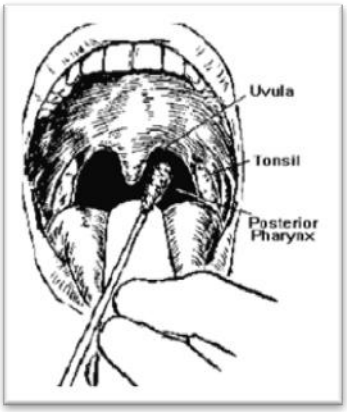
2. Nasopharyngeal swab:

- Label VTM tube with ID number,
- Ask patient (adults) to sit comfortably on chair
- Hold patient's head slightly back by left hand.
- Insert a flexible, **fine-shafted** polyester swab into the nostril and back to the nasopharynx (Fig 5 and 6). The swab is inserted following the base of the nostril towards the auditory pit till resistance is met. (Need to insert at least 5–6 cm in adults to ensure that it reaches the posterior pharynx). (***DO NOT*** *use rigid shafted swabs for this sampling method*).
- Leave the swab in place for a few seconds and withdraw slowly with a rotating motion.
- Put the swab into VTM.
- A second swab should be used for the other nostril and put into the same VTM tube. Immediately close the VTM tube and store in 2-4°C till the sample is processed or transported to NHL.

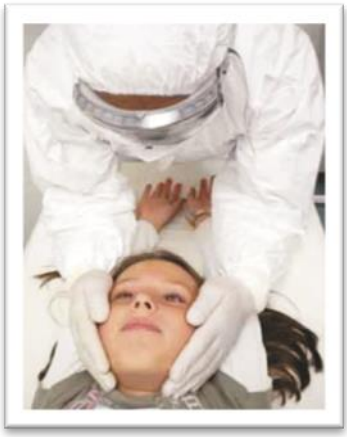
3. Nasal swab:

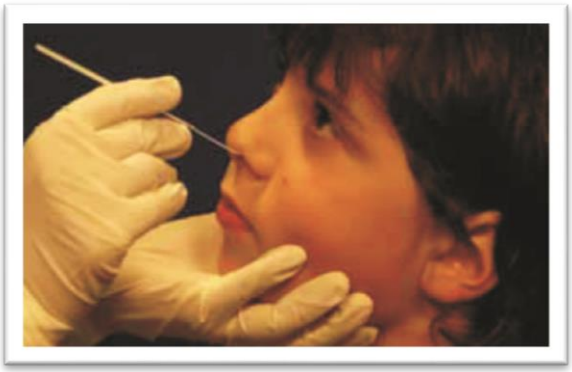
- Label VTM tube with ID number,
- Ask patient to sit comfortably on chair.
- Hold patient's head slightly back by left hand.
- Use the same type of rigid swab as for sampling from the throat.
- Advance the swab tip past the vestibule (anterior nares) to the nasal mucosa (approximately 2–3 cm from the nostrils in adults).
- Store in 2-4°C till the sample is processed or transported to NHL/reference lab. Gently rotate to collect nasal secretions from the anterior portions of the turbinate and septal mucosa (Fig 7).
- Put the swab into VTM.
- A second swab should be used for the other nostril and put into the same tube.
- Immediately close the VTM tube and store in 2-4°C till the sample is processed or transported to NHL.

Figures for Throat Swab



Figures for Nasopharyngeal Swab





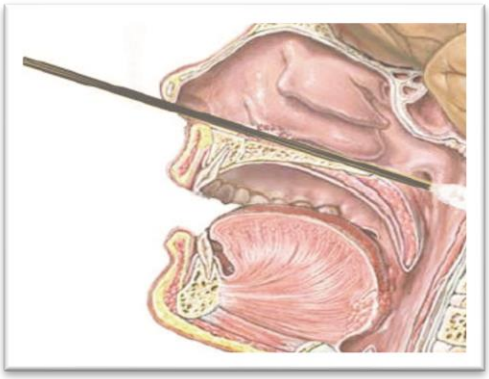
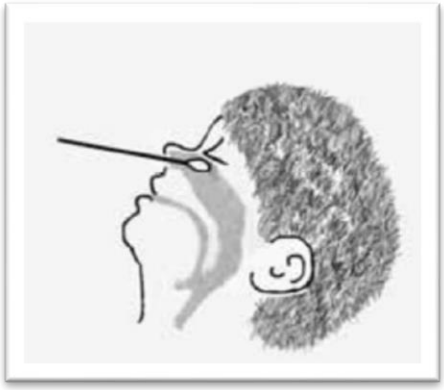


Figure for Nasal swab



Three layers packaging of specimens




Annex 8.

Hand Washing Procedure