Operational guideline for ARI, ILI & SARI surveillance

First Edition 2012

Public Health Laboratory
Department of Public Health
Ministry of Health
Thimphu: Bhutan
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Acronyms

<table>
<thead>
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<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHB</td>
<td>Annual Health Bulletin</td>
</tr>
<tr>
<td>ARI</td>
<td>Acute Respiratory Illness</td>
</tr>
<tr>
<td>BHU</td>
<td>Basic Health Unit</td>
</tr>
<tr>
<td>CDD</td>
<td>Control of Diarrhea Diseases</td>
</tr>
<tr>
<td>CMO</td>
<td>Chief Medical Officer</td>
</tr>
<tr>
<td>DHO</td>
<td>District Health Officer</td>
</tr>
<tr>
<td>DMO</td>
<td>District Medical Officer</td>
</tr>
<tr>
<td>H1N1</td>
<td>Hemeagglutinin 1 Neuraminidase1</td>
</tr>
<tr>
<td>H5N1</td>
<td>Hemeagglutinin 5 Neuraminidase1</td>
</tr>
<tr>
<td>HIMS</td>
<td>Health Information and Management</td>
</tr>
<tr>
<td>IEC</td>
<td>Information Education and Communication</td>
</tr>
<tr>
<td>ILI</td>
<td>Influenza Like Illness</td>
</tr>
<tr>
<td>IMCI</td>
<td>Integrated Management of Childhood Illness</td>
</tr>
<tr>
<td>MS</td>
<td>Medical Superintendent</td>
</tr>
<tr>
<td>MT</td>
<td>Medical Technician /Technologist</td>
</tr>
<tr>
<td>NRRT</td>
<td>National Rapid Response Team</td>
</tr>
<tr>
<td>OPD</td>
<td>Out Patient Department</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
</tr>
<tr>
<td>PHL</td>
<td>Public Health Laboratory</td>
</tr>
<tr>
<td>RRT</td>
<td>Rapid Response Team</td>
</tr>
<tr>
<td>RSV</td>
<td>Respiratory Syncytial Virus</td>
</tr>
<tr>
<td>SARI</td>
<td>Severe Acute Respiratory Illness</td>
</tr>
<tr>
<td>VTM</td>
<td>Viral Transport Media</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
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1. Background

Respiratory illness due to influenza virus infection and other respiratory pathogens is a major cause of morbidity and mortality worldwide. Annual influenza epidemics are estimated to result in between 3-5 million cases of severe illness and between 250,000 and 500,000 deaths every year around the world. Additionally, lower respiratory infections are the leading cause of death in low income countries and the third leading cause of death worldwide.

In Bhutan, Acute Respiratory Infection Illness (ARI) is a major public health concern and affects majority of the population in Bhutan. (ARI ranked number one public health disease in the country for the past five years and it has dominated the morbidity among public health diseases (Annual Health Bulletin-2010). The rate of pneumonia is very high among children less than 5 years but the common causative agent causing the pneumonia is unknown. Moreover, the country has now become endemic to avian influenza, thereby posing a significant threat to the people of the country. So far, the spread of H5N1 virus from person-to-person has been very rare, limited and un-sustained. However, this epizootic disease continues to pose an important public health risk because of its severity with high mortality. Influenza (A/H1N1) 2009 pandemic has taken every country by surprise and most developing countries were never prepared to such scale of pandemic. However, it is fortunate that the 2009 pandemic has been relatively mild but the next pandemic might take a different course in terms of severity.

As of now the country does not have systematic ARI/Influenza Like Illness/Severe Acute Respiratory Infection (ILI/SARI) surveillance to monitor the trend of respiratory illnesses and also to find out the causative agents of respiratory infection. Therefore, Bhutan needs to establish an efficient ARI/ILI/SARI surveillance system for monitoring influenza illness to understand the true burden, epidemiology of influenza and other respiratory pathogens, the social and climatic factors that influence community transmission to help in planning of intervention and preventive measures.
2. Objectives

1. To determine the burden of respiratory diseases in the country;
2. Monitor epidemiology and severity of influenza and other respiratory pathogens (e.g. Respiratory syncytial virus (RSV), adenovirus, para-influenza virus, and rhinovirus);
3. Provide information on groups at high risk for severe outcomes, including hospitalization and death to institute prevention and control measures.

3. Operational aspects of ARI/ILI/SARI surveillance

3.1 ARI surveillance

ARI will be exclusively a clinical based surveillance and will be carried out in all health centers. It will be operationalized at three levels (BHU’s, district/referral hospital and national level) with the District Health Officer as the nodal officer in the district hospitals and Medical Superintendent in referral hospitals. ARI cases from health facilities will be reported to district health authority and then to national ARI/CDD programme including referral hospitals. The district health officers/medical superintendents will coordinate the overall ARI surveillance in the district and referral hospitals. The key person coordinating surveillance at BHU and hospitals will be a nodal officer identified by respective BHU or hospital management for ARI surveillance in health centers. The national program officer of ARI/CDD programme will coordinate the activity at national level. Data collected on ARI surveillance will be collated and analyzed by ARI/CDD programme and feedback provided to district health authority for further dissemination to the health centers (Figure 1).

3.2 ILI/ SARI surveillance

ILI and SARI will be both clinical as well as laboratory based surveillance and these surveillances will be carried out exclusively in the identified sentinel sites (Table No.1) selected based on geographical location, climatic condition, population and patient referral. The CMO or MS will coordinate the overall surveillance activities in their respective site. The reports from the sentinel sites will be communicated to PHL by an identified focal person in sentinel sites by hospital management.
Table No. 1: Sentinel sites for ILI/SARI surveillance

<table>
<thead>
<tr>
<th>Western region</th>
<th>Code</th>
<th>Central region</th>
<th>Code</th>
<th>Eastern region</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paro hospital</td>
<td>PAR</td>
<td>Trongsa hospital</td>
<td>TON</td>
<td>Trashigang hospital</td>
<td>TGA</td>
</tr>
<tr>
<td>Punakha hospital</td>
<td>PUN</td>
<td>Damphu hospital</td>
<td>DAM</td>
<td>Mongar RR hospital</td>
<td>MON</td>
</tr>
<tr>
<td>Phu lhing hospital</td>
<td>PHU</td>
<td>Gelephu RR hospital</td>
<td>GAY</td>
<td>SamdrupJongkhar hospital</td>
<td>SZK</td>
</tr>
<tr>
<td>Samtse hospital</td>
<td>SAM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PHL will coordinate the activity at national level. Data collected for ILI/SARI surveillance will be collated and analyzed by PHL and feedback provided to CMO of respective sentinel sites (Figure 2). PHL will send samples to reference lab if deemed necessary for further testing and study.

Each identified sentinel sites (hospitals) for ILI will register 3-5 ILI cases randomly for sample collection every week (15-20 per month). Criteria for those ILI cases registered for sample collection should have fever or history of onset of fever within the last 72 hours. A patient meeting the criteria for sample collection from OPD/Ward/Emergency should be referred or reported to Laboratory by concerned clinicians/nurses for ILI case registration and sample collection. Similarly each identified site for SARI will register all SARI cases and collect samples from every SARI case. All ILI/SARI sentinel sites will collect one nasal and one throat swab samples from ILI selected cases and all SARI for testing by rapid test kit and referral to PHL for PCR/Real Time PCR testing. Throat swab collected for PCR/Real Time PCR should be shipped to PHL on a weekly basis. All sentinel sites will test nasal samples for influenza virus and in addition, the sentinel sites having bacteriology culture facilities will collect sputum sample/appropriate respiratory specimen from all SARI cases to carry out culture and identification of bacterial respiratory pathogens (namely Haemophilus influenza B and streptococcus pneumoniae). The bacteriology reports should be shared to PHL every month.
Figure 1: ARI Surveillance Overview

Health centers (BHUs/BHU-1s/hospitals/referral hospitals

ARI case detection and reporting

Monthly feedback

Weekly reporting

District Health Authority

Monthly feedback

Data collation, analysis and monthly reporting

National ARI Programme

Monthly reporting

HIMS

Figure 1: ARI Surveillance Overview
Figure 2: ILI/ SARI Surveillance Overview
4. Roles and Responsibilities of Health centers

4.1. Roles of BHUs/hospitals including referral hospitals on ARI surveillance

Each health facility should have a **focal point** responsible for the routine surveillance operations. The health facility focal point(s)/management should ensure that:

- Case definitions are known and adhered to;
- All data collection forms are filled out completely and accurately;
- Epidemiologic data are appropriately managed and transmitted from all health centers to ARI/CDD programme;
- Data reporting are occurring in a timely way and according to the indicators outlined in the system monitoring section.

4.2. Roles of ILI/SARI surveillance sentinel sites (hospitals including referral)

Each sentinel site should have a **focal point** responsible for the routine surveillance operations. The health facility focal point(s)/management should ensure that:

- Case definitions are known and adhered to;
- All data collection forms including ILI/SARI case investigation and samples collection forms are filled out completely and accurately;
- Epidemiologic data are appropriately managed and transmitted to PHL;
- Respiratory specimens are collected from appropriate patients meeting the case definitions and are properly labeled, packaged, stored, and transported to PHL according to the guidelines;
- Data reporting, specimen collection, and specimen transport at the sentinel sites are occurring in a timely way and according to the indicators outlined in the system monitoring section.

4.3. Roles of ILI and SARI sentinel sites laboratories

- Ensure all respiratory specimens and corresponding forms are assigned a unique ID number
- Ensure respiratory specimens are collected from appropriate patients meeting the case definitions and are properly labeled, packed, stored, and transported to the PHL according to guidelines
- Perform rapid flu test (*Rapid flu test kit has limitation in terms*
of sensitivity and identifying influenza subtype).

- Ensure rapid flu test results are reported to the treating clinician as soon as test is completed and simultaneously recorded in the relevant form (ILI/SARI).
- Ensure there is adequate stock of test kits, VTM, barcodes and relevant forms in the laboratory.
- Referral hospital laboratories will, in addition, collect sputum samples from same patients enrolled for SARI surveillance and perform bacteriological tests. Reports should be shared to PHL every month.

4.4. Roles of Public Health Laboratory

- PHL will serve as the technical and scientific focal point for activities pertaining to ILI and SARI surveillance
- Provide training on proper case selection, specimen collection, storage and transport
- Receiving, archiving and storing original clinical specimens at -70°C for ILI/ SARI for at least one year.
- Testing samples using real time PCR/conventional PCR
- Managing computer database and disseminating the monthly and annual influenza surveillance reports
- Reporting to IHR any cases of influenza novel strains as per the IHR requirements
- Sharing with WHO collaborating centres a representative clinical sample of seasonal and pandemic influenza,
- Sharing of samples that react poorly with the WHO CDC reagents kit, and all novel viruses detected.
- Communicating the results of all individual confirmatory tests for ILI/ SARI cases back to the sentinel site focal points as soon as they are known
- Reporting weekly national surveillance data into regional and global influenza surveillance platforms
- Participating in the WHO Global External Quality Assessment Project for the molecular detection of influenza viruses as well as in regional programmes
5. Case Definitions

There are three case definitions in this guideline; ARI (outpatient), ILI (outpatient) and SARI (Inpatient). The SARI case definition is further broken down into case definitions used for person ≥ 5 years old and children < 5 years old. The combination of ILI surveillance with SARI surveillance will provide a description of a broad range of medically attended influenza.

5.1 Case definition for ARI
Any person with sudden onset of at least one of the four respiratory symptoms;

- cough,
- sore throat,
- coryza,
- shortness of breath

OR

- clinician’s judgment that the illness is due to an infection

(Note: ARI may present with or without fever)

5.2 Case definition of ILI
Any person with sudden onset of fever >38 °C and cough or sore throat in the absence of other diagnosis

(Note: Consider sample collection from ILI patients only if onset of fever is within the past 72 hours/3 days)

5.3 Case definition for SARI in persons ≥ 5 years old
Onset of the following signs and symptoms during the previous 7 days that result in hospitalization

- Fever > 38 °C; AND
- cough or sore throat; AND
- Shortness of breath or difficulty in breathing

(Note: In adult, SARI is not equivalent to classic pneumonia and would not always present as pneumonia).

5.4 Case definition for SARI in children < 5 years old
For children < 5 years old, the WHO case definition for pneumonia and severe pneumonia from the Integrated Management of Childhood
Illness (IMCI) programme should be used. The IMCI case definition for pneumonia is any child aged 2 months to 5 years with cough or difficulty breathing and:

- breathing faster than 40 breaths/minute (ages 1–5 years);
- breathing faster than 50 breaths/minute (ages 2–12 months)

(Note: Infants less than 2 months of age with fast breathing of 60 breaths or more per minute should be referred for serious bacterial infection).

The IMCI case definition for severe pneumonia is any child aged 2 months to 5 years with cough or difficult breathing and any of the following general danger signs:

- unable to drink or breastfeed, or
- vomits everything, or
- convulsions, or
- lethargic or unconscious, or chest indrawing or stridor in a calm child

6. Reporting system

ARI surveillance will be reported at three levels (BHU’s, district, regional/national referral hospitals) while ILI/SARI surveillance will be reported from selected sentinel sites.

6.1. ARI reporting from BHU level

BHU will report number of ARI cases to District Health Office (DHO) weekly in ARI reporting Form A (Annexure 1) by fax or phone/mobile (with availability of mobile network across the country, reporting by mobile can also be considered as formal reporting from any BHU’s to respective District Health Office and accordingly documenting the data in appropriate form/format).

The DHO office will compile data from all BHUs in district ARI reporting Form B (Annexure 2) and submit to ARI/CDD programme every month. Copy of the report must be retained by DHO office.

6.2. ARI reporting from District Hospitals/BHU-I level

Regional referral/District hospital/BHU-I will report ARI cases to DHO Office weekly in ARI reporting Form A (Annexure 1) by fax/post/e-mail/web based. The DHO office will compile reports in ARI reporting Form
B (Annexure 2) from all hospitals and submit to ARI/CDD programme every month. Copy of report must be retained in DHO office.

6.3 ARI reporting from Regional/National Referral hospitals
Referral hospital will submit ARI report to ARI/CDD programme every week in weekly ARI reporting Form A (Annexure 1) by fax/email. Copy of report must be retained by the hospital.

6.4 ILI/SARI reporting from sentinel sites
Sentinel sites identified for ILI/SARI surveillance will collect ILI/SARI data in Form C (Annexure 3) and send to Public Health Laboratory weekly fax/email/web based.

7. Data Collection Tool
There are two reporting forms for ARI surveillance and one reporting form for ILI/SARI surveillance with an additional of two case-based data collection forms for ILI/SARI surveillance.

7.1 Weekly ARI reporting form from health centers (Form A):
All focal persons in BHU’s and hospitals BHU’s including referral hospitals should provide weekly ARI data in the form A.

7.2 Monthly ARI reporting form from district health office (Form B):
DHO office should compile and provide monthly ARI data in form B.

7.3 Weekly ILI/SARI reporting form from sentinel sites (Form C):
All ILI/SARI sentinel sites should provide ILI/SARI data in form C.

7.4 ILI sample registration/investigation and sample collection (Form D): All ILI/SARI sentinel sites should provide information from ILI patients selected for throat/nasal swab sample collection in form D (Annexure 4). The form D should be filled out by laboratory staff in the following order; (see Box-1)

- assign unique ILI identification number in the forms
- fill up the relevant information as required by the form
- assign the same unique ILI identification number to the sample
- shipped sample to PHL on a weekly basis
A copy of the form should remain at the sentinel site.

7.5 **SARI sample registration/investigation and collection (Form E):**

All ILI/SARI sentinel sites should provide information of SARI patients and collect throat/nasal swab sample for laboratory testing in form E (Annexure 5). The form E should be filled out by clinicians/ nurses and sent/reported to the laboratory for sample collection. Laboratory will assign unique SARI identification number in the forms (see Box-1), same unique SARI identification number to the sample and shipped sample to PHL on a weekly basis. A copy of the form should remain at the sentinel site.

**Box-1: Assigning Identification Unique number**

The first three alphabets specify the sentinel site. The sentinel site code is followed by a two digit number that indicates the year of symptom onset/ sample collection. The last digits are the case number. The case number should begin at the number 1 at the start of each influenza season at each sentinel site. *(Sentinel Site) (Year) (Case Number)*

**An Example:** MON/11 /0001 means the sentinel site is Monggar, year of collection is 2011 from the first case assigned on ILI investigation form. Same applies to SARI.

8. **Data Analysis and Feedback**

Data collected from districts will be maintained and analyzed monthly in Microsoft spread sheet. Monthly feedback will be brief descriptive (time, place and person) analysis followed by comprehensive annually. ARI/CDD programme will share monthly feedback to districts on ARI and PHL on ILI/SARI (FluView) which will be available in PHL website.

9. **Sample collection, Storage and Transportation**

Specimens for the direct detection of viral antigens or nucleic acids should be taken no later than seven days after the onset of clinical symptoms, and preferably within three days. Specimens should
preferably be taken before commencement of anti-viral chemotherapy. Procedure for collection of specimens is provided in Annexure 6.

Types of specimen to collect:
- nasal swab (for rapid influenza testing)
- throat swab (for PCR)
- nasopharyngeal swab (for PCR/culture)
- sputum (bacterial isolation)

All samples should be accompanied by the relevant surveillance forms duly filled by the concerned health worker. Any throat swab collected in VTM should be immediately stored given in Annexure 7 and later transported to PHL as given in Annexure 8.

10. ARI/ILI Outbreak and Rapid Response

10.1. ARI/ILI Outbreak
ARI/ILI outbreak is defined 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 which can only be determined if prevalence is known. However, abnormal increase will differ from place to place and district to district. To confirm an outbreak, at least 5-10 samples from ARI/ILI cases should to be collected and confirmed by PHL.

The outbreak should be investigated at the local level by a district rapid response team. The Rapid Response Team from national level will only come to site if district cannot conduct outbreak investigation or an outbreak has major programmatic implications. The composition and responsibilities of the RRT are as follows:

10.2. National Rapid Response Team (NRRT)
- Epidemiologist
- Microbiologist
- Pediatrician/Physician
10.3. Responsibilities of NRRT at national level

- Provide technical expertise for any outbreak and provide all technical assistance to the RRT at district level.
- Visit outbreak sites to investigate outbreak at the request of district RRT.
- Provide all logistic support including drugs, PPE and other necessary supplies
- Recommend appropriate interventions to be undertaken by DoPH/ MoH based on findings and/or outbreak reports submitted by district RRT to prevent future outbreaks.

10.4. Rapid response team (RRT) at district level

- District Medical Officer (DMO)/Chief Medical Officer (CMO)
- District Health Officer (DHO)
- Medical Technologist/ Technician (MT)

10.5. Responsibilities of RRT in district

- In ARI/ILI outbreak, the RRT team from district should immediately visit the affected site.
- Ascertain cases based on clinical case definition and send appropriate samples from 5 – 10 cases to the PHL for laboratory confirmation.
- Inform the National RRT for any assistance if required.
- Inform the local authority about the situation and possible risks.
- Ensure logistics support including drugs, PPE and other necessary supplies
- Immediately implement intervention measures to contain the outbreak.

10.6. Rapid Response to ARI/ILI outbreak

Once an outbreak is believed to have occurred, the RRT in district should immediately conduct a rapid investigation and implement appropriate intervention measures. A national Rapid Response Team may visit the site to conduct outbreak investigation if district lacks capacity and request national RRT to intervene. A detailed outbreak investigation will be conducted to establish outbreak epidemiology, etiology, and recommend both short and long term interventions to respond to the 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 ARI/ILI by obtaining information regarding sign and symptoms of disease, onset of illness, place of residence, etc. The cases must be line listed.
- Conduct a rapid search for additional cases that may have occurred in the locality but not reported to the health facilities.
- Deaths, if any, should be determined that have not been reported or for which no cause has been known.

Information, Education and Communication
- IEC campaign should be planned once outbreak is confirmed and launched for general public to ensure ARI/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 though local media if available till outbreak is contained.

11. ARI/ILI/SARI Monitoring & Evaluation

The overall usefulness of a sentinel surveillance system will depend on whether it contributes to the prevention and control of adverse health events. A surveillance system should undergo regular monitoring to routinely assess whether it is functioning efficiently and providing quality data. Additionally, routine assessment will indicate areas in which personnel may need technical or logistical support and/or retraining. Indicators to assess surveillance system are described below:

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Frequency of monitoring</th>
<th>Source of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timeliness of reporting</td>
<td>Weekly</td>
<td>Routine data</td>
</tr>
<tr>
<td>Completeness of data collected</td>
<td>Weekly</td>
<td>Routine data</td>
</tr>
<tr>
<td>Number of samples collected</td>
<td>Weekly</td>
<td>Routine data</td>
</tr>
<tr>
<td>Number of ARI/ILI outbreaks</td>
<td>Quarterly</td>
<td>Routine data</td>
</tr>
</tbody>
</table>
11.1. **Timeliness of reporting**

Timeliness refers to the speed between steps in a surveillance system. Data must be timely, if it is to be useful to clinicians, public health authorities, and the community. Indicators of timeliness include:

- Expected dates of data reporting from sentinel site to PHL as compared to actual dates of reporting;
- Time elapsed from specimen collection at site to arrival at PHL for testing;
- Time elapsed from receipt of specimens at PHL to processing, testing and generating results;
- Time elapsed from receipt of laboratory results for individual cases by the sentinel site focal point to notification of the patient’s doctor;

11.2. **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 site with complete data;
- Percentage of forms that are received as compared to the expected forms;

11.3. **Number of samples collected**

Number of samples collected in each site can be used to monitor surveillance and can be assessed by:

- Comparing number of ILI/ SARI samples collected as compared to that of required number of samples.

11.4. **Number of ARI/ILI outbreaks detected**

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

- Number of outbreaks reported as compared to that of the previous year;
- Number of outbreaks investigated and confirmed by laboratory;
- Number of outbreaks that have been intervened and controlled.
12. References

1. WHO regional office for Europe Guidance for Influenza Surveillance in Humans.
4. Protocol for the evaluation of the quality of clinical data within the European Influenza Surveillance Scheme. www.euroflu.org or upon request from influenza@euro.who.int
6. Indicators of Influenza Activity. www.ecdc.europa.eu
### Annexure 1: Form A: ARI reporting form from BHUs/ Hospitals to District Health Authority

**WEEKLY ARI & PNEUMONIA SURVEILLANCE REPORTING FORM**

<table>
<thead>
<tr>
<th>Reporting Center Name</th>
<th>Month</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Week* ……. From …./…./…… To …./……/……

<table>
<thead>
<tr>
<th>Type of cases</th>
<th>0-11 Mths</th>
<th>1-4 years</th>
<th>5-14 years</th>
<th>15-29 years</th>
<th>30-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
</tbody>
</table>

1. No. of ARI cases
2. No of Pneumonia cases
3. Death due to ARDS/ Pneumonia
4. Total OPD cases

Reported By: Signature:

Mobile No.: Date:

*Reporting to be Week wise, for a total of 52 weeks in a year*

**ARI case definition:** Presenting with one of the following respiratory symptoms: cough, sore throat, shortness of breath, coryza AND a clinician’s judgment that the illness is due to an infection. *Note:* ARI may present with or without fever.

**Pneumonia case definition:** For children < 5 years, refer IMNCI guideline, 2009 AND for adults, refer national standard treatment guideline, 2007

ARDS: Acute Respiratory Distress Syndrome
16. Annexure 2: Form B: ARI reporting form from District to ARI Program

**WEEKLY ARI & PNEUMONIA SURVEILLANCE REPORTING FORM**
(From District to ARI program)

<table>
<thead>
<tr>
<th>Reporting Center Name</th>
<th>Month</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From…../……/………</td>
<td>To…………/………/………</td>
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<table>
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<tr>
<th>Type of cases</th>
<th>Age group</th>
<th>0-11 Mths</th>
<th>1-4 years</th>
<th>5-14 years</th>
<th>15-29 years</th>
<th>30-64 years</th>
<th>65+ years</th>
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<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
</tbody>
</table>

**Week: 1**
1. No. of ARI cases
2. No of Pneumonia cases
3. Death due to ARDS/ Pneumonia
4. Total OPD cases

**Week: 2**
1. No. of ARI cases
2. No of Pneumonia cases
3. Death due to ARDS/ Pneumonia
4. Total OPD cases

**Week: 3**
1. No. of ARI cases
2. No of Pneumonia cases
3. Death due to ARDS/ Pneumonia
4. Total OPD cases

**Week: 4**
1. No. of ARI cases
2. No of Pneumonia cases
3. Death due to ARDS/ Pneumonia
4. Total OPD cases

Reported By:                                                                           Signature:  
Mobile No.:                                                                             Date:
### WEEKLY ILI & SARI SURVEILLANCE REPORTING FORM

#### SENTINEL ILI & SARI SURVEILLANCE AGGREGATE DATA

<table>
<thead>
<tr>
<th>WEEK _____________ From: ...../......./..... To ...../......./....... Year.........</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Name:</td>
</tr>
</tbody>
</table>

**Aggregate cases by Age group (Years)**

<table>
<thead>
<tr>
<th>Age group (Years)</th>
<th>0-1</th>
<th>2-4</th>
<th>5-14</th>
<th>15-29</th>
<th>30-64</th>
<th>65+</th>
</tr>
</thead>
</table>

Number of ILI cases during the week

Number of SARI cases during the week

Number of deaths due to SARI/Pneumonia during the week*

Total OPD cases ** during the week

*Death cases details:

<table>
<thead>
<tr>
<th>Name</th>
<th>Age/Sex</th>
<th>Sample collected for testing (Influenza/ other viral agents)? (Yes/ No)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**The OPD cases includes patients seen with and without ILI in the OPDs (total OPD registration)**

Reported By:                                                    Signature:  
Mobile No.:                                                   Date:
### 18. Annexure 4: Form D: ILI case Investigation and Sample collection form

**Influenza –Like Illness Case investigation/sample collection form**

<table>
<thead>
<tr>
<th>Patient ID number *</th>
<th>Site:</th>
<th>Month/Year</th>
<th>Sample ID:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Patient:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age/Sex:</td>
<td>Occupation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of onset of illness:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sign and Symptoms:</td>
<td>Fever ≥ 3°C:</td>
<td>Cough:</td>
<td>Sore throat:</td>
</tr>
<tr>
<td></td>
<td>Others:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel history prior illness:</td>
<td>□ No</td>
<td>□ Yes, travel to ______ duration ________ (weeks/month)</td>
<td></td>
</tr>
<tr>
<td>Direct exposure to animal:</td>
<td>□ No</td>
<td>□ Yes, poultry □ Yes, swine □ Yes other (specify) ________</td>
<td></td>
</tr>
<tr>
<td>Date of specimen collection:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimen type</td>
<td>Throat swab:</td>
<td>Nasal swab:</td>
<td>Others:</td>
</tr>
</tbody>
</table>

**Laboratory use only**

**Rapid Test Result**

<table>
<thead>
<tr>
<th>Influenza A:</th>
<th>Influenza B:</th>
<th>Influenza A+B:</th>
<th>Negative:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzed by:</td>
<td>Date:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Patient ID number example: if the sample is the first specimen collected in January 2012 from a patient in Mongar, the patient ID number would be: MON/Jan/12 /0001.
19. Annexure 5: Form E: SARI case investigation and sample collection form

SARI CASE INVESTIGATION AND SAMPLE COLLECTION FORM

(Send one copy of this form to PHL along with the sample. The original form should be kept at the surveillance site)

<table>
<thead>
<tr>
<th>SAMPLE COLLECTION INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Centre:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PATIENT IDENTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient name:</td>
</tr>
<tr>
<td>Address:</td>
</tr>
<tr>
<td>Date of reporting to the health worker/Health facility:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CLINICAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SARI Case Criteria</strong></td>
</tr>
<tr>
<td>Fever measured &gt;38 degrees?</td>
</tr>
<tr>
<td>Cough?</td>
</tr>
<tr>
<td>Sore throat?</td>
</tr>
<tr>
<td>Shortness of breath or difficulty breathing?</td>
</tr>
<tr>
<td>Requiring hospitalization?</td>
</tr>
<tr>
<td>Clinical Signs of Pneumonia:</td>
</tr>
<tr>
<td>Others (specify):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-Existing Medical Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Heart Disease</td>
</tr>
<tr>
<td>☐ Neuromuscular Dysfunction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Antiviral and Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure to influenza virus drugs during last 14 days:</td>
</tr>
<tr>
<td>If Yes, Name of antiviral:</td>
</tr>
<tr>
<td>Vaccination for influenza:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EPIDEMIOLOGY INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel History:</td>
</tr>
<tr>
<td>History of Travel within the last 7 days: Area and Location:</td>
</tr>
<tr>
<td>Exposure History</td>
</tr>
<tr>
<td>Direct exposure to animals: ☐ No</td>
</tr>
<tr>
<td>Reporting Physician/Clinician:</td>
</tr>
<tr>
<td>Telephone/Mobile No:</td>
</tr>
</tbody>
</table>

**Rapid Test Result (For Laboratory Purpose only)**

<table>
<thead>
<tr>
<th>Influenza A:</th>
<th>Influenza B:</th>
<th>Influenza A+B:</th>
<th>Negative:</th>
</tr>
</thead>
</table>

Analyzed by: | Date: |
20. **Annexure 6: Procedures for sample collection**

20.1. **Throat swab:**
   - Label VTM tube with Lab 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).
   - Open and put the swab into VTM.
   - Immediately close the VTM tube and store in 2-4°C till the sample is processed or transported to PHL/reference lab.
20.2. **Nasopharyngeal swab:**
- Label VTM tube with Lab 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
- Open and put the swab into VTM
- A second swab should be used for the other nostril and put into a second tube. This can serve as the second sample from the patient.
- Immediately close the VTM tube and store in 2-4°C till the sample is processed or transported to PHL.

20.3. **Nasal swab:**
- 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 PHL/reference lab. Gently rotate to collect nasal secretions from the anterior portions of the turbinate and septal mucosa (Fig 7).
- Open and put the swab into VTM
- A second swab should be used for the other nostril and put into a same tube. Immediately close the VTM tube and

21. Annexure 7: Sample storage

21.1. **Sample Storage Procedure (for sentinel sites)**

- Wear an apron, gloves and other protective barriers.
- Seal all VTM tubes containing specimens with parafilm airtight.
- Arrange specimens in serial order based on sample ID number in storage rack.
- Label storage racks with detailed information of specimens it contain.
- Place the specimen racks in a refrigerator at 2-8°C until ready to transport to PHL.

21.2. **Sample Storage Procedure (for PHL)**

- Wear an apron, gloves and other protective barriers.
- Check whether all VTM tubes containing specimens are sealed with parafilm airtight.
- Arrange specimens in serial order based on sample ID number in storage rack.
- Arrange surveillance specimen from sentinel sites serially in different storage racks.
- Label storage rack with detailed information of specimens it contain
- Store the specimens in -70°C until ready to be shipped to reference lass.
22. Annexure 8: Specimen Transportation Procedures

22.1.  *Domestic transport (district labs to Referral labs/PHL)*

- Place the specimen in a primary container (polysterelyne screw capped vials) containing VTM. The primary container must be leak-proof unbreakable and airtight.

- After tightening the cap, apply sealing tape (para-film) over the cap and top of the container and wrap in absorbent material (e.g. absorbent cotton or tissue paper) to absorb the accidental leakage.

- The sealed specimen container with a small amount of absorbent material must be placed in a suitably sized self sealing plastic bag.

- Seal the bag. Two or more sealed specimens from the same source may be placed in a larger plastic bag in batches and sealed. Specimen from a different source must not be placed in the same bag.

- Place the sealed bags containing the specimens inside a secondary self sealing plastic container and seal it. Specimens from several sources may be packed inside the same secondary plastic container.

- Place additional absorbent material inside the secondary container to cushion and to absorb any leakage that may occur.

- Tape the laboratory request form sealed in a plastic bag to the outside of this secondary container.

- Place the secondary bag containing the specimen in wizard/cool box containing ice/ice packs.

- Seal the cool box properly with the help of brown tape running around full length and breadth of the box so that a plus or cross sign is made.
• Label the box with appropriate addresses and a biohazard symbol.

22.2. **Transportation from PHL to Reference lab**

• After collecting the sample in sample vials provided, make sure that the vial is capped very tightly and sealed with parafilm.

• Wrap the sample vial(s) in absorbent (tissue paper can be used) using rubber band.

• Place the sample in primary receptacle (sealed plastic bag).

• Batch the sample according to the size of the secondary receptacle and place in it. Use additional absorbent and seal the secondary receptacle. For e.g. five primary receptacles can be batched together and placed inside the secondary receptacle.

• Put the secondary receptacle in transport container/shipping container for transporting to a designated laboratory.

• Place specimen data forms, letters and other relevant documents in a water proof bag (preferably sealed plastic bag) carefully tapped either to the outside of the secondary receptacle or inside of the transportation container.

• Place dry ice between the secondary and transport container to keep the sample at the required temperature during transportation.

• The outer shipping or transportation container should be labelled with the name of the receiver, indication of storage conditions required during transport, and bear any additional labels or stickers (biohazard sign) as per the national/international regulations.
Figure 8: Triple packaging system
### 23. Annexure 9: Cold Chain Maintenance Table

Site: ____________________________________ Year: ___________________

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Specimen #</th>
<th>Collection date at site</th>
<th>2-8°C storage duration at site</th>
<th>-70°C storage at PHL</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

Shipped by: _____________________________ Date of shipment: ___/_____/_____