



# Virology Breakout Sessions

## Participant Guide

The exercises in the sessions contained in this document should be performed in smaller break-out groups, so that questions or problems participants may have can be addressed.

On the pages that follow, you will work through scenarios related to laboratory diagnosis of influenza. Each scenario is preceded by specific instructions. Some scenarios will give you an opportunity to practice specimen collection methods; others will include discussion questions to answer. A numbered outline of the scenarios is provided below. Please complete the scenarios in the order in which they are listed.

- 1.** State the purpose of different levels of laboratory testing
- 2.** Determine a sampling and testing time schedule and investigation priorities for a suspected case of novel influenza
- 3.** Fill in a laboratory form
- 4.** Prioritize which laboratory tests to perform and determine when specimens should be sent to reference facilities

# 1

## Activity 1: Purpose of Laboratory Testing

### Participant Guide

#### Instructions

Divide into groups of 4-8 people. Read the case study background information. Then work together as a group to develop a response to the questions that follow.

Time allotted: 15 minutes



#### Background

Countries may have existing protocols for laboratory specimen collection, packaging, storage, transport and testing and should follow their usual procedures. Respiratory virus detection depends on the collection of high-quality specimens, their rapid transport to the laboratory and appropriate storage before laboratory testing.



#### Question

In the context of severe respiratory illness, what is the purpose of a laboratory investigation? Consider investigations performed by

- a. Basic clinical laboratories
- b. Specialized clinical laboratories
- c. National Influenza Centers (NIC's)

# 2

## Activity 2: Sampling Timeframe and Investigation Priorities

### Participant Guide

#### Instructions

Read the case study background information. Then work together as a group to develop a response to each of the five discussion questions.

Time allotted: 1 hour

#### Scenario

A six-year-old girl presented to a district hospital with fever, cough, and sore throat on May 2nd. The hospital participates in the country's program for sentinel surveillance of severe acute respiratory illness. The girl was admitted with a high fever and difficulty breathing. Her mother reported that the girl's symptoms started on May 1<sup>st</sup>.

The physician is worried about the severity of the case, and considers influenza in the diagnosis because of recent public health concerns about the development of a novel influenza strain. As a hospital laboratorian, you advise the doctor on what specimens should be collected.



#### Questions

1. What type of specimens should be collected?
  
  
  
  
  
  
  
  
  
  
2. When should the specimen be collected?

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3. If the girl had presented at the clinic 4 days after her symptoms began, would you change your choice of what specimens to collect?

4. How should the specimens be stored before they are sent to the laboratory?

5. If there is a delay in sending respiratory and serum samples to the laboratory, what should you do with the samples?

**Patient Update**

Later that day, the doctor of the 6-year-old girl calls you again. He tells you that the girl's mother has refused to allow nasal swabs to be collected from her child, and that she refuses to have more samples taken over the next several days. The doctor himself does not understand why so many specimens are necessary.

6. What do you tell the doctor?

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### May 3

On the morning of May 3, the health department issues an alert to area physicians, hospitals, and clinical laboratories. Several cases of severe respiratory illness testing positive for Influenza A have been reported in the last 36 hours. This amount of activity is unusual outside the normal influenza season. Physicians and laboratories are encouraged to participate in surveillance efforts for severe respiratory disease.

7. At the early stages of a potential influenza pandemic, how should specimen collection be prioritized?
8. Does this change as the pandemic takes shape?



#### Brainstorm

What is the role of a sentinel surveillance site in testing specimens during “normal” times versus during times of increased concern or possible pandemic?

# 3

## Activity 3: Fill in a Laboratory Form

### Participant Guide

#### Instructions

The previous scenario is continued below. Please read the scenario, choose which of the provided 2 forms you should fill out, and then use the information provided to fill in the example laboratory specimen collection form. Note that the forms given in this exercise represent the minimal data requirements; each country and even specific surveillance sites may have additional items to include, and you may substitute your own country's forms in this exercise. The identification numbers given in the scenario can be altered to reflect the identification number system used in your country

Time allotted: 15 minutes

#### Scenario

A female child named Ayana presented to a local hospital with fever, cough, and sore throat on May 2, 2006. She was admitted with a high fever and difficulty breathing. The child lives with her family in Addis Ababa. Her mother reported that the girl's symptoms started on May 1<sup>st</sup>. The mother also reported that several of their chickens had died one week ago. The child's birth date is November 22, 2003.

The child was alert when a nasopharyngeal aspirate and blood sample were collected on May 2<sup>nd</sup>. The nasopharyngeal sample was given the number 730087 and the blood sample was given the unique number 730088. The child fully recovered, and a second blood sample was taken on May 20<sup>th</sup>. It was given the number 730889.

### SARI Swab Form

ID Number:	Date of Symptom Onset:	Date of Form Completion:	Date of Specimen Collection:
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#### IDENTIFICATION

Patient Unique Identification Number:  OR Patient's First Name: _____ Patient's Last Name: _____	Sex: Male <input type="checkbox"/> Female <input type="checkbox"/>
Date of Birth: _____ or Age: Years _____ Months (1-12) _____	
Address: _____	Contact Telephone Number: _____

#### PRE-EXISTING MEDICAL CONDITIONS

Heart Disease  
  Asthma  
  Chronic Lung Disease  
  Liver Disease  
  Pregnant  
  Diabetes  
 Neuromuscular Dysfunction  
  Immune compromised  
  Other \_\_\_\_\_  
  Unknown

#### VACCINES AND ANTIVIRALS

Exposure to influenza antiviral drugs during the last 14 days?
 
 None  
 Yes, patient  
 Yes, household contact  
 Unknown

If Yes, name of antiviral: \_\_\_\_\_

Vaccination for influenza in current season?
 
 Yes  
  No  
  Unknown

#### SARI CASE CRITERIA

Measured fever of > 38 degrees?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Cough?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Sore throat?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Shortness of breath or difficulty breathing?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Requiring hospitalization?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown

#### REPORTING INFORMATION

Name/Unique ID Number of Reporting Doctor:	Telephone Number:
Name/Unique ID Number of Person Completing Form:	Signature:

*Send one copy of this form to the confirmatory laboratory with the specimen and one copy to the national surveillance centre. The original form should be kept at the surveillance site.*

**ILI Swab Form**

ID Number:	Date of Symptom Onset:	Date of Form Completion:	Date of Specimen Collection:
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**IDENTIFICATION**

Patient Unique Identification Number:	Sex: Male <input type="checkbox"/> Female <input type="checkbox"/>	
OR		
Patient's First Name:	Patient's Last Name:	
Date of Birth:	or	Age: Years _____ Months (1-12) _____

**VACCINES AND ANTIVIRALS**

Exposure to influenza antiviral drugs during the last 14 days?	<input type="checkbox"/> None <input type="checkbox"/> Yes, patient <input type="checkbox"/> Yes, household contact <input type="checkbox"/> Unknown
If Yes, name of antiviral:	
Vaccination for influenza in current season?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown

**REPORTING INFORMATION**

Name/Unique Id Number of Reporting Doctor:	Telephone Number:
Name/Unique ID Number of Person Completing Form:	Signature:

*Send one copy of this form to the confirmatory laboratory with the specimen and one copy to the national surveillance centre. The original form should be kept at the surveillance site.*

# 4

## Activity 4: Specimen Testing and Referral

### Participant Guide

#### Instructions

The previous scenario is continued below. Read the information about the scenario given below. Then work together as a group to develop a response to the questions that follow.

Time allotted: 1 hour

#### May 3 Update

Additional cases of influenza illness continue to be reported within your sentinel site and from the community. Other sites in your sentinel surveillance system are reviewing their records to be sure that recent severe cases of respiratory illness have been adequately tested. There is an urgent need for definitive laboratory test results about the influenza strain that has been detected at your sentinel site and in your community.



#### Questions

1. What are the primary methods for detection and sub-typing of influenza viruses in respiratory specimens?

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*More recently reverse transcriptase PCR (RT-PCR) or real-time RT-PCR have been used as the method of choice for detection and subtyping.*

2. What are the advantages and disadvantages of each method?
3. At the current, relatively low level of infection in the population, which cases should be prioritized for testing at a sentinel surveillance site? If the infection becomes widespread, do the priorities change?

**Later that day...**

Your laboratory has RT-PCR capability and has confirmed the presence of influenza A from the specimens of the 6-year-old girl and several other SARI patients. However, further RT-PCR to determine the strain type does not yield any conclusive results, and you suspect that the specimens contain a novel strain of influenza A. Your hospital director wants to make an announcement, but you suggest that the specimens you have tested should be sent to a WHO Reference Laboratory first.

4. When should specimens be sent to a WHO Reference laboratory? Which specimens should be sent to WHO collaborating centers?

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### **Specimen Shipment Debate**

Your hospital director concedes that the specimen may be sent to the WHO Reference Laboratory. However, there is no funding at the hospital for the urgent shipment of biological specimens. He asks you who will pay for this service. And, the director tells you, he would still like to make an announcement about the results from your laboratory.

5. What do you tell the hospital director about specimen shipment costs?

6. Do you need to wait until results are available from WHO to announce the findings?

If the pandemic strain was already verified by WHO in your area, would you need to wait for results from WHO Collaborating Centers to confirm a case?

