

Reporting and Surveillance

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Learning Objectives



At the end of this lecture, you will be able to:

1 Define surveillance

2 Know aims and uses of surveillance system

3 Understand the different types of surveillance systems

4 Recognize the elements of surveillance system

5 Be able to assist in establishing and evaluation a surveillance system

Session Overview

- Definition
- The Uses
- Aims
- Types
- Elements
- Evaluation
- National Examples



What is Surveillance?



The Centres for Disease Control and Prevention (CDC) defined Public Health Surveillance as

“Ongoing systematic collection, analysis, interpretation and dissemination of data regarding a **health related event** for use in public health action to reduce **morbidity** and **mortality** and to **improve health**”

- Surveillance means “information for action”



What is Surveillance?



- It is the eyes (and ears) of public health
- It is a network of people and activities to keep this process
- Functions at local to international levels.



Describing Surveillance?



- Surveillance systems provide descriptive information regarding **when and where health problems are occurring and who is affected** (the basic epidemiologic parameters of time, place, and person)

Surveillance Vs Monitoring

- Surveillance and Monitoring are often used interchangeably but they are **distinct**.
- **Monitoring** refers to “ongoing measurements of health services or a health programme with a view to ‘**evaluate**’ the particular programme / service or intervention, with constant adjustment of performance in relation to the results.
- Surveillance concerns **general** populations while monitoring applies to **specific** target groups (e.g. vaccinated infants).

The Objectives of Public Health Surveillance

1. To study the trends of disease
2. Early warning of epidemics
3. To provide quantitative estimates of magnitude of health problem
4. To study the natural history of disease
5. Demonstrating the spread of a disease in time and Place
6. To develop epidemiologic research questions
7. To test epidemiologic hypothesis
8. Evaluation of control and preventive measures
9. Monitoring of change in infectious agent
10. Detecting changes in health practices

Criteria for Identifying High Priority Areas for Establishing Surveillance Activities

- The **Frequency of the disease** (incidence of mortality, and incidence/prevalence of morbidity due to the disease)
- The **Severity** (case fatality ratio, proportionate mortality ratio, hospitalization rates due to the disease, disability rates)
- The **Economic impact** (direct costs that add due to medical treatment for the disease and indirect costs due to reduction in productivity)
- **Preventability**
- The **Public interest** (community and political attitudes towards the disease).

Features of a Surveillance System

- Practical, clear case definitions for each disease
- Workable, uniform and continuous data collection methods
- Rapidity of collection, analysis, interpretation and dissemination of data.

Types of Surveillance



Types of Surveillance



- Passive surveillance
- Active Surveillance
- Sentinel surveillance

Passive surveillance



WHO Definition

- Regular reporting of disease data by all institutions that see patients (or test specimens) and are part of a reporting network.
- There is no active search for cases.
- Relies on the cooperation of health-care providers — laboratories, hospitals, health facilities and private practitioners
- This is the more common type of surveillance.

Passive surveillance Cont.



- In this type of surveillance **criteria are established for reporting diseases**, risk factors or health-related events then health practitioners are notified of the requirements and they **report events** as they come to their attention.
- The data recipient has to wait for the data providers to report
- In most countries with a passive surveillance system, every health facility is required to send a monthly (sometimes weekly/daily) report of all cases on a standard form.

Passive surveillance Cont.



Advantages

- Simple to conduct
- Inexpensive
- Covers wide areas (whole countries or provinces)

Disadvantages

- It can be difficult to ensure completeness and timeliness of data (because it relies on an extensive network of health workers)
- Usually underestimate the true illness burden

Active Surveillance



Definition

- In active surveillance the organization conducting the surveillance actively seeks the relevant information (healthcare providers are contacted and asked to provide details of any cases they have seen).
- Data must be obtained by searching for cases (e.g. health workers go into the community, search for cases of fever and take their blood slide for malarial parasite), and also by periodically contacting those who may know of cases

Uses of Active Surveillance



- **Active surveillance is used when there is an indication that something unusual is occurring**
 - Rare disease
 - Disease on way to eradication
 - During outbreaks

- **Regular outreach to potential reporters, to stimulate the reporting of specific diseases or injuries.**

Active Surveillance Cont.



Advantages

- Produce complete data of a good quality

Disadvantages

- Expensive
- high use of resources (For this reason, when it is used, it is for a limited time period)

Sentinel Surveillance

Definition

- Reporting of cases of specific diseases or risk factors that may indicate that the particular preventive or therapeutic activity is not working as planned.
- It is used when high-quality data are needed about a particular disease that cannot be obtained through a passive system.

Sentinel Surveillance Cont.

- It involves only a limited network of carefully selected reporting sites
- Data is obtained from selected hospitals who agree to report all cases of the disease
- Data collected in a well-designed sentinel system can be used to
 - Signal trends
 - Identify outbreaks
 - Monitor the burden of disease in a community

Sentinel Surveillance Cont.

Advantages

- Rapid
- Economical alternative to other surveillance methods (Because it is conducted only in selected locations)

Disadvantages

- May not be as effective for detecting rare diseases or diseases that occur outside the catchment areas

Steps in Establishing a Surveillance System



Organization and Structure of a Surveillance System

The essential components of a surveillance system are :

- **An overall organization** : Consisting of personnel, finances, logistics and administrative back up.
- **The originators of data** : This would include the sources of data, data collectors and data collecting mechanisms.
- **The transmission of data** to the surveillance centre, with specification of the mode of transmission and frequency of such transmission.

Organization and Structure of a Surveillance System Cont.

- **Data management and analysis** : This includes manual/computerized data files, and statistical analysis procedures.
- The sensible **interpretation or results** : Including their consolidation and preparation of reports.
- A system of **feed back of results** : To the originators of data and to those who are in a position to enforce preventive steps.
- A system to **periodically evaluate** the surveillance system itself.

Steps in Establishing a Surveillance System

Step 1:

Is it Justifiable to Establish a Surveillance System?

- Confirming if the disease is of public health importance and whether prevention/ control measures are available

Steps in Establishing a Surveillance System

Step 2:

Spell out the objectives of surveillance system :

The following issues should be addressed :

- Clearly **specify the disease** (s) proposed to be brought under surveillance.
- *Specify*: **Who** needs **what** information, for **what purpose**?
- *The target population*
- *The health problem* : e.g. whether only Acute MI or entire spectrum of IHD is to be put to surveillance ?
- **Nature of control programmes** : e.g. if it is a rare disease or a disease moving towards eradication, a fine surveillance will be needed; on the other hand if it is a common disease, a crude surveillance would suffice

Steps in Establishing a Surveillance System

Step 3:

Specify the organization and structure of the surveillance ?

At the planning stage, clear specifications should be made as to “**who will do what, how**, and will be responsible to whom”.

Steps in Establishing a Surveillance System

Step 4:

Clearly define the disease(s) being considered for surveillance ?

- **Case definitions** should be accurately worked out after detailed consultation with experts.
- All those involved in the collection of data should be **well trained** in the use of these case definitions/ diagnostic methods.
- Case definitions/ diagnostic procedures should be **simple** enough so as to be understood and used by all those on which the system depends for reporting.

Case Definition



A set of uniform criteria used to define a disease for public health surveillance (possible, probable, confirmed)

- Enable public health officials to classify and count cases consistently across reporting areas.
- It is not intended to be used by healthcare providers for making a clinical diagnosis or determining how to meet an individual patient's health needs
- Refer to standard definitions stated by WHO and CDC
- Every year, case definitions are updated

Case Definition Gradient



Low Specificity

High Specificity

Suspected

Probable

Confirmed

Example of Case Definition



Novel Corona Virus (2019-nCoV)

Suspected 2019-nCoV case is defined as:

A person with acute respiratory illness (fever with cough and/or shortness of breath)

AND and of the following:

1. A history of travel to China in the 14 days prior to the symptom onset.
2. A close physical contact in the past 14 days with a confirmed case of 2019-nCoV infection

Example of Case Definition



Novel Corona Virus (2019-nCoV)

Confirmed 2019-nCoV case is defined as:

A suspected case with laboratory confirmation of 2019-nCoV infection

Example of Case Definition



Smallpox

Clinical Description

An illness with acute onset of fever $>101^{\circ}$ F followed by a rash characterized by vesicles or firm pustules in the same stage of development without other apparent cause.

Laboratory Criteria for Confirmation

- Isolation of smallpox (variola) virus from a clinical specimen, or
- Polymerase chain reaction (PCR) identification of variola DNA in a clinical specimen, or
- Negative stain electron microscopy (EM) identification of variola virus in a clinical specimen (Level D laboratory or approved Level C laboratory)

Example of Case Definition



Probable Case of Smallpox

A case that meets the clinical case definition that is not laboratory confirmed but has an epidemiological link to another confirmed or probable case.

Confirmed Case of Smallpox

A case of smallpox that is laboratory confirmed.

Working Case Definition



Smallpox Outbreak

- Anyone who meets original case definition
- Anyone with fever ($>101^{\circ}$ F) or rash who was in a confirmed exposed area during the Bioterrorism (BT) event or came in contact with a confirmed or probable case should be considered a case. (*until confirmed; if not confirmed; will be under observation and could be classified as “case”; and others as “confirmed cases”*)

Steps in Establishing a Surveillance System

Step 5:

Specify the Details of Collection of Information

- Select the proper sources of data
- Specify the method of data collection
- The forms that will be used
- What time/place of diagnosis will be entered
- What will be the frequency of reporting?
- Decide the method of transmission of reports
- Central Collection of Data

Steps in Establishing a Surveillance System

Step 6:

The Organization and procedures of data Analysis

- Simple display of data :
 - Data can be displayed through histograms/ bar diagrams/ line diagrams describing the data according to various characteristics of person, place and time.
- Descriptive statistics :
 - Give the “Summary statistics” (Incidence rates / prevalence / proportions /Mean / Median) along with the measures of dispersion (SD) and the 95% confidence intervals.

Steps in Establishing a Surveillance System

Box - 1 : Suggested form for weekly or monthly reporting from PHC or CHC to next higher health care level

Period covered by the report : From (Date) : _____ To (Date) : _____

Name and address of health facility :

Sl No	Name	Address	Age	Sex	Diagnosis	Level of Diagnostic certainty (suspected/probable/confirmed)	Date of onset
1.							
2.							
3.							
4.							
5.							

Name _____ Designation :

Date _____ Signature :

Steps in Establishing a Surveillance System

Table - 1 : Distribution of cases according to age & sex

Disease :			Reporting period :		
Sex	Age Group (Years)				
	0 - 4	5 - 14	15 - 44	≥45	Total
Males					
Females					
Total					

Steps in Establishing a Surveillance System

Table - 2 : Distribution of cases according to place of residence

Disease :

Reporting period :

Number of cases according to Villages

Village - 1

Village - 2

Village - 3

Village - 4

Total

Steps in Establishing a Surveillance System

Step 7:

Making Scientific interpretations out of the results

- Consider whether the apparent, statistically significant, increases or decreases in the disease incidence at a given place and time represent true changes.
- False increase or decrease may be due to
 - Improvement in diagnostic procedures
 - Duplicate reporting
 - Enhanced reporting
 - Increase in population size

Steps in Establishing a Surveillance System

Step 8:

Ensure proper feedback to all concerned

- Provide regular (usually monthly) feedback reports to all those who are in a position to take action on the surveillance data (as, secretaries and directors of health department as well as other department concerned with human development)

Steps in Establishing a Surveillance System

Step 9:

Periodically evaluate / review the surveillance system

- Periodic evaluation is important to identify defects and reorient the methodology
 - See whether the case definitions need a change?
 - Are there some problems in the timely and accurate reporting
 - How can it be improved?

Evaluation of Surveillance System



1. Is the system detecting what it is supposed to detect?

The surveillance system data need to be compared with data produced by another detection mechanism

2. Is the system producing data in time for appropriate responses?

3. Can the system cope with changes?

The disease or our knowledge may be changing quickly. A surveillance system should adopt to such changes (flexibility)

Evaluation of Surveillance System Cont.



4. Is the system as simple and cheap as possible?
5. Are the public health responses timely and appropriate?
Any system that does not lead to appropriate responses is flawed.

Example of National Surveillance Systems



- **Health Electronic Surveillance Network” (HESN) to control and manage infectious diseases and epidemics online**

HESN

- It includes 7 modules they are:

WORK MGMNT

INVESTIGATIONS

OUTBREAKS

IMMUNIZATION

FAMILY HEALTH

INVENTORY

ADMIN

- Investigations
- Outbreaks
- Immunization
- Family Health

- Work Management
- Inventory
- Admin

HESN dashboard

Welcome to HESN

HESN is a comprehensive on-line communicable disease surveillance system. It supports the identification, management and control of infectious diseases and outbreaks that pose a threat to the public's health.

Specify your Service Delivery Location (SDL).

Service Delivery Location:

SDL Time Zone: AST

Personal WorkLoads

View all your assigned work tasks

Reporting

Specify and view client specific and aggregate reports.

Document Management

Add, update, delete and search for electronically attached documents.

Notifications

Create and view jurisdiction and threshold notifications.

[View Jurisdiction Notifications](#)

[View Threshold Notifications](#)



Need Help ?

Contact information for the [HESN Help Desk](#)

September						
S	M	T	W	T	F	S
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2	3	4	5	6
2011			2012		2013	



External Reference Links

LINKS WILL OPEN A NEW WINDOW

NoRefLinkMsgKey

No Reference Link has been added

Work Management

WORK MGMNT INVESTIGATIONS OUTBREAKS IMMUNIZATION FAMILY HEALTH INVENTORY ADMIN

Recent Work

Workload

- Personal
- Team

Reservations

Subject

- Search Clients
- Client Details
- Client Warnings
- Relationships
- Households
- Consent Directives
- Allergies
- Risk Factors
- Travel History
- Imms History Interpretation
- Upload Clients
- Potential Client Matches

Notes

- Document Management
- Communication Templates
- Reporting & Analysis
- Notifications
- Communications Log
- Administration

Maintain Personal Workload

Daily View Weekly View

From: 2012 / 9 / 23 To: 2012 / 9 / 23

yyyy mm dd yyyy mm dd

Use the same 'From' and 'To' date if you want to view workload for a single day. Enter starting date ('From') only when viewing a week. Week ending date ('To') will be calculated as 5 days following. Tasks will be displayed for up to and including 'To' date.

[Display](#) [Clear Dates](#)

Tasks

[Hide Assigned Tasks](#)

View: All Pending Open Completed

0 assigned tasks found To view a task, click on the Sub-task ID. To view the work, click on the Work Type link.

[Select All](#) Row Actions: [Mark Completed](#) [Update](#) [Re-open](#) [Create Task](#)

[Accept](#) [Reject](#) [Delete](#)

Sub-Task Status	Requested Start Date	Priority	Sub-Task ID	Description	Work Type
-----------------	----------------------	----------	-------------	-------------	-----------

Total: 0 Page 1 of 1 Jump to page:

Reassigned Tasks

[Hide Reassigned Tasks](#)

The tasks shown below were reassigned from you and are shown for information only. To view a task, click on the Task ID. To view the work, click on the Work Type link.

Sub-Task Status	Sub-Task ID	Priority	Description	Work Type	Reassigned On
-----------------	-------------	----------	-------------	-----------	---------------

Investigation

WORK MGMNT

INVESTIGATIONS

OUTBREAKS

IMMUNIZATION

FAMILY HEALTH

INVENTORY

ADMIN

Recent Work

Search

Search Investigations

Search Lab

Search Exposures

Search Interventions

Search Clients

Search Non-Human
Subjects

Investigation

Subject

Cohort

Notes

Document Management

Communication
Templates

Reporting & Analysis

Notifications

Communications Log

Administration

Search Investigations - Basic



Search Criteria

Hide Search Criteria

Wildcard characters % (multiple letters) and _ (singleletters) can be used when searching by First or Last Name -except when matching phonetically.
Wildcard-only searches not allowed.

Disease / Basic Criteria

Hide Disease / Basic Criteria

Include: Human Non-Human Both

Search by:

Investigation ID:

Investigation Group:

Outbreak Group:

Disease Event ID:

Report Date (Received) Range: From: / / To: / /
yyyy mm dd yyyy mm dd

Encounter Group:

Disease:

Authority:

Classification:

Causative Agent:

Outbreak

WORK MGMNT

INVESTIGATIONS

OUTBREAKS

IMMUNIZATION

FAMILY HEALTH

INVENTORY

ADMIN

Recent Work

Search

- Search Outbreaks
- Search Exposures
- Search Interventions
- Search Lab

Outbreak

- Outbreak Summary
- Outbreak Details
- Outbreak Subject Summary
- View Counts
- Record Unidentified Counts
- Exposure Summary
- Intervention Summary
- Lab Summary
- Outbreak Communications

Notes

Document Management

Communication Templates

Reporting & Analysis

Notifications

Communications Log

Administration

Search Outbreaks - Basic



Search Criteria

Hide Search Criteria

Wildcard characters % (multiple letters) and _ (single letters) can be used. Wildcard-only searches not allowed.

Search by:

Outbreak ID:

Alternate Source: **Alternate ID:**

Outbreak Name:

Outbreak Link Role: **Unlinked Only:**

Outbreak Type:

Outbreak Status:

Outbreak Setting Type:

Outbreak Setting:

Responsible Organization Unit:

To specify an Organization first click on the 'Find' button. Then search, or type the name of the Organization you wish to specify, select it and click on 'Select' button. Then click 'Close' to close.

Organization: Top Level > Level 2 (specific one) > Level 3 (specific one) > [Selected Level 4 Organization]

Find

Encounter Group:

Disease:

Causative Agent:

Disease Lab Confirmed:

Report Date (Received) Range From: / / **To:** / /

yyyy mm dd yyyy mm dd

Immunization

WORK MGMNT

INVESTIGATIONS

OUTBREAKS

IMMUNIZATION

FAMILY HEALTH

INVENTORY

ADMIN

Recent Work

Client

Search Clients

Client Details

Client Warnings

Relationships

Households

Consent Directives

Allergies

Risk Factors

Travel History

Imms History

Interpretation

Upload Clients

Potential Client Matches

Cohort

Immunizations

Lab

Upload Data

Notes

Document Management

Communication
Templates

Reporting & Analysis

Notifications

Communications Log

Workgroups

Search Clients



Basic Search Criteria

Hide Basic Search Criteria

[Search Jurisdictional Registry](#)

Wildcard characters % (multiple letters) and _ (single letters) can be used on any text field - except on Client Number and on First and Last Name when matching phonetically. Wildcard-only searches will be treated as blank searches.

- Phonetic Matches
- Exclude Indeterminate Clients
- Include Inactive Clients

Personal Identifier:
(Client ID, Saudi ID, Iqama, Additional IDs)

Personal Identifier Type:

Last Name: **First Name:** **Middle Name:**

Gender:

Date of Birth or Age

Hide Date of Birth or Age

- Not Applicable
 - Date of Birth / /
yyyy mm dd
 - Age Year(s)
Units
- Range ± Year(s)
Units

Jurisdictional Organization:

To specify an Organization first click on the 'Find' button. Then search, or type the name of the Organization you wish to specify, select it and click on 'Select' button. Then click 'Close' to close.

Organization: Top Level > Level 2 (specific one) > Level 3 (specific one) > [Selected Level 4 Organization]

Find

Inventory

WORK MGMNT

INVESTIGATIONS

OUTBREAKS

IMMUNIZATION

FAMILY HEALTH

INVENTORY

ADMIN

Recent Work

Inventory Replenishment

- Product Requisitions
- Product Delivery Request
- Product Returns
- Forecast Product Demand
- Plan Replenishment
- Mass Requisitions

Inventory Maintenance

Inventory Setup

Document Management

Communication Templates

Reporting & Analysis

Notifications

Communications Log

Workgroups

Catalogue Item Information



Catalogue Item Search

Search/Add Catalogue Item - Search Required Before Adding

Catalogue Item Code:

Product Alternate ID:

Catalogue Item Status:
Active
Discontinued
Inactive

Find Search String:

Level 1 - Category:

Add Edit

Level 2 - Product Group:

Add Edit

Level 3 - Generic Product Strength:

Add Edit

Level 4 - Generic Product Presentation:

Add Edit

Level 5 - Generic Product Package Size:

Add Edit

Level 6 - Trade Product:

Add Edit

Search Retrieve Clear

Search Results Returned

Select All Deselect All

Catalogue Item Code	Product Alternate ID	Catalogue Item Name	Catalogue Item Description	Catalogue Level	Current Catalogue Item Status
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Administration

WORK MGMNT

INVESTIGATIONS

OUTBREAKS

IMMUNIZATION

FAMILY HEALTH

INVENTORY

ADMIN

System Administration

System administration tasks are grouped into categories. Click on a text link to navigate to the area of interest.

INDICES

- Manage Organizations
- Manage Providers
- Manage Service Delivery Locations
- Risk Factor Categories

SECURITY MANAGEMENT

- Manage Permissions Sets
- Manage Permissions
- Manage Roles
- Manage System Accounts
- Upload User Accounts
- Manage User Accounts
- View Audit Log

TERMINOLOGY

- Manage Vocabulary Domains
- Manage Value Sets
- Manage Code Sets

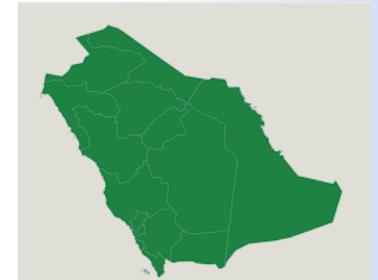
GENERAL / MISCELLANEOUS

- Manage Reference Links
- Manage Batch Schedule
- Config. Services Properties List

TEMPLATES

- Manage User Defined Forms

Example of National Surveillance Systems



Influenza Surveillance In Saudi Arabia (ISSA)

• Objectives of influenza surveillance

The goal of influenza surveillance is to minimize the impact of the disease by providing useful information to public health authorities, which will help in planning appropriate control and intervention measures, allocate health resources, and make case management recommendations

Appendix 2: ILI Data Collection set

Case definition											
ILI case Definition: beginning at the last 10 days, did the patient experience: <input type="checkbox"/> History of sudden onset fever or current fever ($\geq 38^{\circ}\text{C}$) <input type="checkbox"/> Cough		Does the patient meet ILI case definition? <input type="checkbox"/> Yes <input type="checkbox"/> No IF "No", DO NOT CONTINUE									
Other suspected disease: _____											
ID number: _____		Date of First Interview: _____									
Demographic Information											
Primary Health Care: Patient's name: (family name), (given name(s))		Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female									
Nationality : _____		Visitor : <input type="checkbox"/> Hajj <input type="checkbox"/> Umrah <input type="checkbox"/> Other reason									
Date of birth (Gregorian)		or age: Years _____ Months (1-12) _____ (Gregorian)									
Address: (Village/District/Governorate)		Contact Telephone Number: _____									
Clinical History											
Date of symptom onset Temperature at first review: ____ °C Chronic medical conditions: <input type="checkbox"/> Heart disease <input type="checkbox"/> Asthma <input type="checkbox"/> Chronic lung disease <input type="checkbox"/> Chronic liver disease <input type="checkbox"/> Diabetes <input type="checkbox"/> Neuromuscular dysfunction <input type="checkbox"/> Chronic kidney disease <input type="checkbox"/> Chronic hematological disorder <input type="checkbox"/> Immune compromised <input type="checkbox"/> Other _____ <input type="checkbox"/> Unknown											
Pregnancy: <input type="checkbox"/> Yes <input type="checkbox"/> No											
Did the patient receive influenza antiviral within the last 14 days?											
Vaccination for influenza in the last 6 months:											
Specimen Collection											
Nasopharyngeal swab collected?		Throat swab collected?	Date of specimen collection:								
Specimen Laboratory Form											
ID number: _____		Hospital: Date specimen collected: __/__/____ Date of shipment: __/__/____ Ward/Department: _____									
Date Lab received specimen: __/__/____											
Type of specimen - Oropharyngeal Specimen: <input type="checkbox"/> Yes <input type="checkbox"/> No - Nasopharyngeal Specimen: <input type="checkbox"/> Yes <input type="checkbox"/> No		- Blood Specimen: <input type="checkbox"/> Yes <input type="checkbox"/> No Other (specify): _____									
Flu A: seasonal H1N1	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	Adenovirus	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
Flu A: seasonal H3N2	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	hPIV 1	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
Flu A: A(H1N1)pdm09	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	hPIV 2	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
Flu A: H5N1	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	hPIV 3	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
Flu A: Unsubtypeable/Novel	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	hMPV	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
Flu B	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	MERS-CoV	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
RSV	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>	Others:	<input type="checkbox"/>	Pos (+)	<input type="checkbox"/>	Neg (-)	<input type="checkbox"/>
Date results reported: __/__/____											
Comments: _____											

Appendix 5: Hospital Data Collection Form (Detailed form)

HBIS ID		Hospital name:												
Comp	Year	Month	Hospital ID	Patient ID	Department (Medicine=1; Pediatrics=2)					Date				
					Unit (Inpatient=1; Outpatient=2)					Time (use 24 hr. time format)				
Name								Age (YY-MM)						
Household head								Sex (Male=1; Female=2)						
Village / Pura / Mahalla								Health care worker (Yes=1; No=2)						
Union / Ward								Poultry worker (Yes=1; No=2)						
Upazila / Thana								Poultry raising (Yes=1; No=2)						
District								Local Travel within 7 days (Yes=1; No=2)						
Phone number								Where?						
International travel within 30 days (Yes=1; No=2)								Where?						
Date of admission (DD-MM-YY)					Date of discharge (DD-MM-YY)									
Provisional diagnosis														
Outcome								Fully recovered=1; Partially recovered=2; Remains hospitalized=3; Transferred=4; Death=5; Unknown=9						
Symptoms (Yes=1; No=2, Unknown=9)				Date of onset				Was fever subjective or measured? (Subjective=1, Measured=2)						
								If measured, record in (in °F):						
								Other symptoms (Yes=1; No=2)				Date of onset		
Fever				Others 1										
Cough				Others 2										
Difficulty breathing				Others 3										
Sore throat				Symptoms for <5 yrs. (Yes=1; No=2)				Date of onset						
Running nose				Chest indrawing										
Headache				Stridor in a calm child										
Diarrhea				Being unable to drink										
Chills				Lethargy or unconsciousness										
Body ache				Vomits everything										
Hemoptysis				History of convulsions										
Pleuritic chest pain														
Medical History								Has any doctor told you have lung disease? (Yes=1; No=2)						
Do you smoke? (Regularly=1; Sometimes=2; In past=3; Never=4)								Are you pregnant? (Women only) (Yes=1; No=2)						
Has any doctor told you have heart disease? (Yes=1; No=2)								Visited OPD with current illness? (IPD only) (Yes=1; No=2)						
History of underlying or chronic illness (Check all that apply): <input type="checkbox"/> Asthma <input type="checkbox"/> Malaria <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Diabetes <input type="checkbox"/> COPD(Chronic bronchitis/emphysema) <input type="checkbox"/> Hypertension <input type="checkbox"/> Cancer <input type="checkbox"/> other underlying or chronic illness (Specify)														
History of pneumonia in the prior 30 days: 1=Yes; 2=No; 9=Unknown														



Summary

- Surveillance is an **important tool** for public health
- It is **defined** as an “**Ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health related event for use in public health action to reduce morbidity and mortality and to improve health**”
- Routine surveillance data are available in regular reports by national and international sources all over the world



Summary

- Three main types of Surveillance:
 1. Passive (Common)
 2. Active
 3. Sentinel
- Main aim → disease control and prevention

