

PUBLIC HEALTH SURVEILLANCE

Specific Learning Objectives

At the end of this session the students should be able to:

Describe public health surveillance

Identify purpose and uses of surveillance

Describe sources of data

Design and execute a surveillance system

Describe ways to improve
surveillance system

PUBLIC HEALTH SURVEILLANCE

is the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice. Surveillance needs to be linked to timely dissemination of the data, so that effective action can be taken to prevent disease

Such surveillance can:

- Serve as an early warning system for impending public health emergencies;
- Document the impact of an intervention, or track progress towards specified goals; and
- Monitor and clarify the epidemiology of health problems, to allow priorities to be set

and to inform public health policy and strategies.

Surveillance mechanisms include:
compulsory notification regarding specific diseases,
specific disease registries (population-based or hospital-based),

continuous or repeated
population surveys
aggregate data that
show trends of
consumption patterns
and economic activity.

Uses of surveillance

**Surveillance is an
essential feature of
epidemiologic**

practice and may be used to:

recognize isolated or clustered cases;

assess the public health impact of events and

assess trends;

measure the causal

factors of disease;

monitor effectiveness

and evaluate the impact

of prevention and control measures, intervention strategies and health policy changes; and plan and provide care.

In addition, data can also be used to:

strengthen commitment, mobilize communities, and

advocate for sufficient
resources.

Surveillance systems

Passive Surveillance

Its automatic and routine

Collected by –

Health care providers

Laboratories

Hospitals

Private clinics and General practitioners

Active **Surveillance**

Rarely carried out routinely

Costly and labor intensive

Door to door visits

Periodic visits to health institutions

***Principles of
surveillance***

A key principle is to include only conditions for which surveillance can effectively lead to prevention.

Another important principle is that surveillance systems should reflect the overall disease burden of the community.

Other criteria for
selecting diseases
include:

incidence and
prevalence

indices of severity (case-
fatality ratio)

mortality rate and
premature mortality

an index of lost
productivity (bed-
disability days)
medical costs
preventability
epidemic potential
information gaps on new
diseases.

Purpose of surveillance

- Baseline Data

To determine the usual rates of
disease incidence in a population.
Deviations from norms can be easily
detected.

For example –

A sudden increase in measles incidence
Could be due to reduced intake of MMR
vaccine.

- **Time trends**

Variation in disease incidence over
time.

Allows us to look at the impact of
public health interventions.

Effect of vaccination policies
Removal of potentially harmful exposure
Public health education

- **Patterns of disease**

To note any seasonal variation in the
observed rates.

More incidence of viral infection in the
winter months

Falls in temperature may be responsible
for peaks in cardiac mortality during
winter months. (Weerasignhe et al.
2002)

Need to be adjusted to the baseline estimates in healthcare institutions.

Sources of routine data

- Demographic data
 - Census ➤
 - General Household Survey ➤
 - National Family Health Survey ➤
 - Sample Registration Survey ➤
 - District Level Household Survey ➤
- Mortality Data
 - Cause of death through official death certification ➤
 - A well-used proxy measure for the level of disease in a population. ➤
 - Allow for disease-specific death rates comparison between countries. ➤
 - A single standardized coding system is used. ➤

Mortality data can be used to calculate a number of health indices:

- Neonatal mortality •
- Infant mortality •
- Under – five mortality •
- Maternal mortality •
- Child mortality •
- Disease specific mortality •
- Morbidity data
 - To know the burden of non-fatal chronic conditions. ✓
 - To identify notifiable diseases like cholera, plague and yellow fever. ✓
 - To plan health services and allocate medical resources. ✓
 - To monitor trends in cancer incidence, prevalence and survival over time. ✓

Morbidity data are routinely collected from:

Health centers and hospitals –

Hospital admissions

Length of hospital stay

Types of interventions used

Cancer diagnoses

Survival rates

Registers for chronic conditions

National Congenital Anomaly System

(UK).

How useful are routinely collected data?

How to improve the surveillance system

Infectious disease surveillance and response (IDSR)

Use of electronic methods to collect data to improve accuracy.

Laboratory based surveillance methods to enhance the diagnostic accuracy. Use a combination of data collection methods for analyses (Syndromic Surveillance)

How to design a surveillance system

Activity 1

You are responsible for a new government initiative to assess the risks posed to men in the workplace. You have been given a limited budget and time period to collect data and write your report. After some preliminary fact-finding, you consider whether to conduct a cross-sectional survey of the working population or to review the available data from routine surveillance systems.

THANK YOU