

# UNIT V

(EPIDEMIOLOGY)

(MEASUREMENT IN EPIDEMIOLOGY)

(USES OF EPIDEMIOLOGY)

(COHORT STUDY)

By

Dr. Aprajita Upadhyay

Dept. Of Social Work

M.G.C.U.B.

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# EPIDEMIOLOGY

- It is derived from Greek *epi*, meaning 'upon, among', demos, meaning 'people, district', and logos, meaning 'study'.
- The branch of medicine which deals with the incidence, distribution, and possible control of diseases and other factors relating to health.
- Epidemiology is the study and analysis of the distribution (who, when, and where), patterns and determinants of health and disease conditions in defined populations.

# MAIN CONCEPT



## Definitions

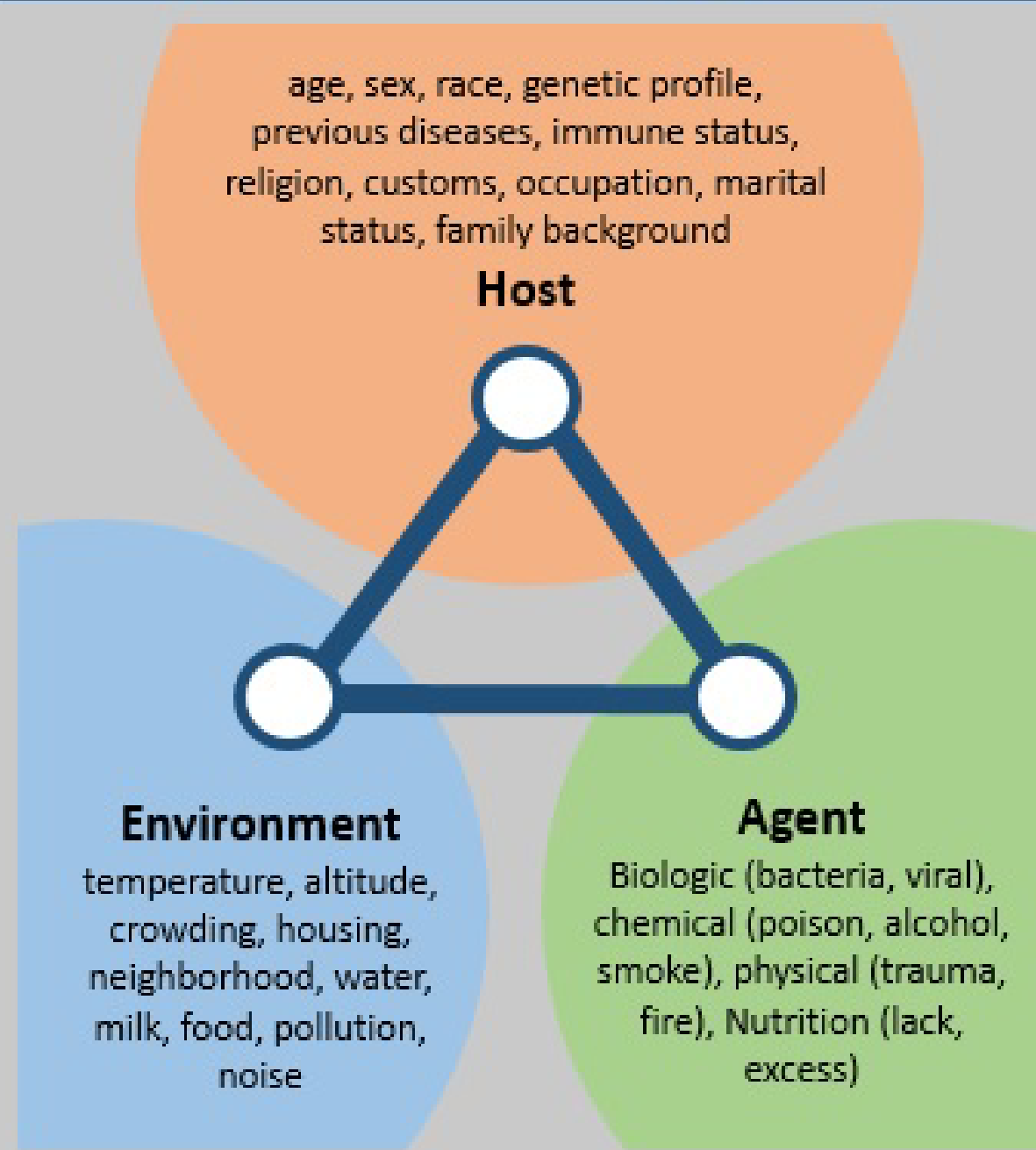
- **Endemic Disease**
  - A disease condition that is normally found in a certain percentage of a population
- **Epidemic Disease**
  - A disease condition present in a greater than usual percentage of a specific population
- **Pandemic Disease**
  - An epidemic affecting a large geographical area; often on a global scale

# Objectives of epidemiology

- ❑ To identify the etiology or cause of disease.
- ❑ To determine the extent of disease.
- ❑ To study the progression of disease.
- ❑ To evaluate preventive and therapeutic measures for a disease or condition.
- ❑ To develop public health policy.

# Epidemiological Triangle

- Basic model to study health problems
- 3 factors
  - Host
  - Environment
  - Agent
- Disease is produced by exposure of a susceptible **host** to an noxious **agent** in the presence of **environmental factors** that aid or hinder agents of disease



# MEASUREMENT IN EPIDEMIOLOGY

- RATIO
- PROPORTION
- PREVALENCE RATE
- INCIDENT RATE
- CASE FATALITY RATE
- MORTALITY RATE
- ATTACK RATE

# Epidemiology: uses

- ◎ **Causation of disease**: association between risk factors and outcome
- ◎ **Natural History of disease** : course and outcome of disease in groups/ individuals
- ◎ **Health status of populations**: disease burden (mortality, morbidity, disability etc)
- ◎ **Evaluating interventions**: effectiveness/efficiency



# COHART STUDIES

Cohort, Cross sectional, and Case-control studies are collectively referred to as observational studies.

**Cohort studies** are used to study incidence, causes, and prognosis. Because they measure events in chronological order they can be used to distinguish between cause and effect.

**Cross sectional studies** are used to determine prevalence. They are relatively quick and easy but do not permit distinction between cause and effect.

**Case controlled studies** compare groups retrospectively.

# TYPES OF COHART STUDIES

## 1. Prospective cohort

- An investigator identifies the study population *at the beginning of the study* and accompanies the subjects through time.
- In a prospective study, the investigator begins the study at the same time as the first determination of exposure status of the cohort.
- When proposing a prospective cohort study, the investigator first identifies the characteristics of the group of people he/she wishes to study.

## 2. Retrospective cohort

- An investigator accesses a historical roster of all exposed and nonexposed persons and then determines their current case/non-case status.
- The investigator initiates the study when the disease is already established in the cohort of individuals, long after the original measurement of exposure.

## Reference

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Thank you