

LT404 EPIDEMIOLOGY

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Lecture # 1.0

RECOMMENDED BOOKS:

- ▶ Public Health by Ilyas Ansari
- ▶ Public Health by J Park
- ▶ Epidemiology by [Leon Gordis](#) Published December 10th 2004 by Saunders Published December 10th 2004 by Saunde
- ▶ Epidemiology: A Very Short Introduction by [Rodolfo Saracci](#) Published April 5th 2010 by Oxford University Press, USA (first published February 25th 2010)

EVALUATION

- ▶ Quizzes ()
- ▶ Assignments ()
- ▶ Midterm ()
- ▶ Quizzes ()
- ▶ Assignments ()
- ▶ Final exam ()
- ▶ Class participation

What is Epidemiology?

- ▶ The branch of medicine which deals with the incidence, distribution, and possible control of diseases and other factors relating to health.
- ▶ the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control of health problems
- ▶ [Oxford English Dictionary](#)

The branch of medical science which treats of epidemics

Definitions of an Epidemic

- ▶ Last JM: A Dictionary of Epidemiology. 4th ed

The occurrence in a community or region of cases of an illness, specific health-related behavior, or other health-related events clearly in excess of normal expectancy

- ▶ From the Babylonian Talmud (Tractate Taanit, 21A)

A city that has fifteen hundred military age men such as akko, and that suffers nine deaths in three days, that is considered a plague. A city with five hundred such as amiko, and has three deaths in three days, that is considered a plague.

What Is The Unique Skill Of Epidemiologists



- ▶ Measuring Disease Frequency In Populations

TERMS USE IN Definition :

1. Distribution

- ▶ Selection of people who experience disease
 - ❑ person (Who)
 - ❑ Place (Where)
 - ❑ Time (When)

2. Frequency

- ▶ Number of occurrence per unit time or population
- ▶ Could be cause of a disease, Number of births or deaths

3. Determinants

- ▶ Any characteristic that effect the health of papulation.

- ▶ Etiological causes (Risk Factor) of disease

1. Agent
2. Host
3. Environment

- ▶ Tow type of determinants

1. Primary determinants

Disease agents

2. Secondary determinants

Attributes of the host and the environment

a. Agent

- ▶ An element or a substance, dead or alive the presence or absence of which may initiate a disease

i. Biological Agent :

- ▶ Agent may be Biological, Physical or Chemical

These are live and have certain properties such as infectivity, pathogenicity, and Virulence

e.g. Various Fungi, Bacteria, Protozoa and Metazoa

ii. Physical Agent

- ▶ Exposure to excessive heat , Cold, Humidity, Radiation, Electricity, Sound waves etc

iii. Chemical Agent

- ▶ **Endogenous (Intrinsic)** : produce inside the body which results in some abnormality excessive urea cause uremia and rise in total bilirubin case Jaundice
- ▶ **Exogenous (Extrinsic)** : Arising outside the body like Dusts, gases, Fumes, Allergens, insecticides etc

iv. Mechanical Agents:

- ▶ Chronic friction associated with the use of drill machine used by road builders

virulence & Pathogenicity:

Virulence is the ability of an infectious agent to cause disease in a particular host, in terms of severity

Fatality: fatality is an indicator of virulence when death is the only outcome

Pathogenicity refers to the quality of disease induction.

Pathogenicity and virulence are determined by a variety of host and agent characteristics.

Bacterial virulence and pathogenicity are determined by a group of factors including toxin, adhesion production, invasion of the host and defense mechanism of the host.

b: Host Factor:

- ▶ Which make a person susceptible to a disease. Which includes

i. Demographic Characteristics

- ▶ Age, Sex etc

ii. Biologic Characteristics

- ▶ Genetic factor, Blood Groups, Enzymes, Immune Status, blood pressure

iii. Life Style Factor

- ▶ Such as habits, life style, lazy, inactive or active, smoker non smoker

C. Environmental factor in Disease occurrence and Distribution

- ▶ These factor responsible fro exposing the host to the agent which are

i. Biological environment

- ▶ These includes agents of biological infections, Reservoirs, disease vector, plants animals

ii. Psycho-social Environment:

- ▶ These includes social and political organizations, the availability and accessibility of health services, the general life style of the people, tradition and hobbits, educational levels , religion of the people

iii. Physical environment :

- ▶ Includes heat, noise, radiation, air, soil, water climate etc.

4. Health

- ▶ According to the world health organization (1948) ‘Health is a state of complete physical, mental and social well being and not merely the absence of disease or infirmity’

5. Disease

- ▶ Disease is as any deviation from an interruption of the normal structure or function of any part, organ or system of the body that is manifested by a characteristic set of symptoms and signs and whose etiology, pathology and prognosis may be known or unknown