

Principles of Epidemiology

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Epidemiology

Epidemiology is the study the distribution and determinants of disease frequency in man.

Selected summary of definitions of epidemiology

- 1927 **Frost** "the science of the mass-phenomena of infectious diseases, or as the natural history of infectious disease;.. concerned not merely with describing the distribution of disease, but equally or more fitting it into a consistent philosophy"
- 1931 **Stallybrass** "the science of the infective diseases, their prime causes, propagation and prevention"

Selected summary of definitions of epidemiology

- 1934 **Greenwood** "the study of disease as a mass phenomenon"
- 1938 **Paul** "concerned with circumstances... where disease is prone to develop"
- 1943 **Aycock** "Epidemiology must understand disease, not so much as it affects the individual or as it behaves under the eye of the observer at any one time or in any one place, but as it imposes itself on groups of people even if they extend across boundaries set by men for economic, political, and social purposes"

Selected summary of definitions of epidemiology

- 1951 **Maxcy** "That field of medical science which is concerned with the relationships of the various factors and conditions which determine the frequencies and distributions of an infectious process, a disease, or a physiologic state in a human community"
- 1958 **Stamler** "the study of disease in populations"

Selected summary of definitions of epidemiology

- 1958 **Lilienfeld** "the study of the distribution of a disease or condition in a population and of those factors which influence their distribution"
- 1961 **Reid** "deals with the characteristic behavior of such diseases within the complex matrix of human populations"
- 1962 **Pemberton** "the study of the laws governing the distribution of disease in the community"

Selected summary of definitions of epidemiology

- 1963 Cockburn "the study of the ecology of infectious diseases"
- 1963 Gordon "the study of disease as it occurs in nature"
- 1967 Taylor "the study of health or ill health in a defined population"
- 1970 Fox et al "the study of factors determining the occurrence of disease in populations"

Selected summary of definitions of epidemiology

- 1970 **MacMahon & Pugh** "the study of the distribution and determinants of disease frequency in man"
- 1973 **Sartwell** "the study of the distribution and dynamics of diseases in human populations"
- 1973 **Lowe and Kostrzewski** "the study of the factors determining the frequency and distribution of disease in human populations"

Selected summary of definitions of epidemiology

- 1974 **Mausner & Bahn** "the study of the distribution and determinants of diseases and injuries in human populations"
- 1974 **Friedman** "the study of disease occurrence in human populations"
- 1975 **Morris** "the basic science of preventive and community medicine"
- 1975 **Lasagna** "the science dealing with the incidence, spread, and control of disease"

Selected summary of definitions of epidemiology

- 1976 **Lilienfeld** "the study of the distribution of a disease or a physiological condition in human populations and of the factors that influence this distribution"
- 1976 **Sinnecker** "concerned with mass outbreaks of disease"
- 1986 **Kelsey JL** "the study of the occurrence and distribution of diseases and other health related conditions in populations"

Selected summary of definitions of epidemiology

- 1987 **Susser M** "the study of the distributions and determinants of states of health in populations"
- 1988 **Last JM** "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"

Chain of infection

reservoir

portal of exit

mode of transmission

portal of entry

susceptible host

reservoir

human reservoirs

animal reservoirs

environmental reservoirs

mode of transmission

Direct transmission

- Direct contact

- Droplet spread

Indirect transmission

- Air-borne

- Vehicle-borne

- Vector-borne

 - Mechanical

 - Biological

Direct transmission

Direct contact

Droplet spread

Indirect transmission

Air-borne

Droplet nuclei : droplet (< 5 micron) TB, Legionnaire's disease

Dust

Indirect transmission

Vector-borne

Mechanical transmission

Biological transmission

Reference

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- Annette Bachand, Introduction to Epidemiology: Colorado State University, Department of Environmental Health