

EPIDEMIOLOGY

Definition:

Epidemiology is the study of disease in populations and of factors that determine its occurrence; the key word being populations. Veterinary epidemiology additionally includes investigation and assessment of other health-related events, notably productivity.

All of these investigations involve observing animal populations and making inferences from the observations.

The uses of epidemiology

There are five objectives of epidemiology:

1. determination of the origin of a disease whose cause is known;
2. investigation and control of a disease whose cause is either unknown or poorly understood;
3. acquisition of information on the ecology and natural history of a disease;
4. planning, monitoring and assessment of disease control programmes;
5. assessment of the economic effects of a disease, and analysis of the costs and economic benefits of alternative control programmes.

Types of epidemiological investigation

- There are four approaches to epidemiological investigation that traditionally have been called 'types' of epidemiology. These types are descriptive, analytical, experimental and theoretical epidemiology.
- 1- Descriptive epidemiology : Descriptive epidemiology involves observing and recording diseases and possible causal factors. It is usually the first part of an investigation. The observations are sometimes partially subjective, but, in common with observations in other scientific disciplines, may generate hypotheses that can be tested more rigorously later. Darwin's theory of evolution, for example, was derived mainly from subjective observations, but with slight modification it has withstood rigorous testing by plant and animal scientists.

- 2 -Analytical epidemiology : Analytical epidemiology is the analysis of observations using suitable diagnostic and statistical procedures.
- 3 Experimental epidemiology : Experimental epidemiologists observe and analyse data from groups of animals from which they can select, and in which they can alter, the factors associated with the groups. An important component of the experimental approach is the control of the groups. Experimental epidemiology developed in the 1920s and 1930s, and utilized laboratory animals whose short lifespans enabled events to be observed more rapidly than in humans
- 4- Theoretical epidemiology : Theoretical epidemiology consists of the representation of disease using mathematical 'models' that attempt to simulate natural patterns of disease occurrence.