

Epidemiology (2 CFU; 24 hours: lectures, 22 hours; 2 hours of computer lab)

After completing this module the student knows the main methods of description and epidemiological characterization of animal infectious diseases and is able to apply the main tools of veterinary epidemiology and interpret the results of epidemiological studies.

Lectures

Knowledge and skills	Topics	Specific content	hours
1. CURRENT PERSPECTIVES AND RECENT TRENDS (TOT. 3 HOURS) [understand the importance of Epidemiology and Statistics, both for Veterinary Science and human medical science]	Definitions	Why an understanding of epidemiology is an important component of clinical veterinary medicine, animal health and public health	1
		John Snow's classical investigation of cholerae (London, 1849-1853).	1
	Current perspectives and recent trends	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.	1
2. THE ECOLOGY OF DISEASE (TOT. 7 HOURS) [How to use epidemiological methods to investigate the causes of disease and the effectiveness of treatments]	Determinants of disease	Classification of determinants	1
		Causal models	1
	Agent determinants	Contagiousness and measure of contagiousness; infectious dose; invasion of the host; virulence and pathogenicity	2
	Host determinants	Species and breed, genotype, age, sex, other host determinants	2
	Environmental determinants	Climate, microclimate, housing, management, stress, other environmental determinants	1
3. DIAGNOSTIC TESTS (TOT. 3 HOURS) [How to describe diagnostic tests using sensitivity, specificity, predictive value]	Diagnosing testing	Interpreting diagnosing tests	1
	Evaluation and interpretation of diagnostic test	Sensitivity and specificity; Predictive value; Ascertain true status	1
		Multiple testing; Parallel testing; Serial testing	1
4. DISEASE OCCURRENCE (TOT. 4 HOURS) [Why you need to have epidemiological measures (including Prevalence and Incidence rates) what they are and how they help to describe diseases]	Describing disease occurrence	Measures of disease occurrence. Prevalence, incidence. The relationship between prevalence and incidence rate.	2
		Mortality, Death rate, Survival	1
		Endemic occurrence, Epidemic occurrence, Sporadic occurrence, Outbreaks	1

5. SAMPLING (TOT. 5 HOURS) [The need to take samples]	Sampling: some basic concepts	Censuses and sample surveys; What sample size should be selected?	1
	Surveys	Detecting the presence of disease; Estimation of disease prevalence	2
	Probability sampling methods	Simple random sampling, Systematic sampling, Stratified sampling, Cluster sampling Campionamento a cluster; campionamento per stratificazione	2
Computer lab			
Knowledge and skills	Topics	Specific content	hours
6. DIAGNOSTIC TESTS (TOT. 4 HOURS) [The way that the characteristics of diagnostic tests determine their usefulness for clinical diagnosis and for the control of diseases within populations]	Evaluation and interpretation of diagnostic test	Sensitivity and specificity; Predictive value; Ascertain true status; Multiple testing; Parallel testing; Serial testing	2