

One Health and Major and Endemic zoonosis

Organization: Universitat Autònoma de Barcelona

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Teaching unit outline (summary 5 to 10 lines with the main learning outcomes)

This module will start with a brief introduction to the most common epidemiological and risk assessment concepts and tools. Then, the general concepts of zoonosis and the evolutionary mechanisms of infectious agents for persisting despite the attack of the immune system and the current and future therapeutic agents or strategies will be introduced. The relevance and the final impact in the public health of these pathogens' escape and resistance mechanisms will be also evaluated. The biological, epidemiological, pathogenic, diagnose and control mechanisms of the most relevant zoonoses in the world will be presented from One Health concept perspective.

Topics addressed

Epidemiology: Basic epidemiological concepts, surveillance, risk assessment and geographic information systems.

Introduction to zoonoses and etiological agents: history of zoonoses; definitions, pathogens' mechanisms to avoid immune system.

Antimicrobial Resistance: multi-resistant zoonotic bacteria; use of antibiotics in animal production and MDR; consume and self-medication in human medicine and MDR; impact of multi-resistance in nosocomial infection; resistance against antiparasitic and antifungal products; new treatments and therapeutical approaches; the role of wild animals as reservoirs.

Major Bacterial Zoonoses: mycobacterias' molecular epidemiology; tuberculosis in humans and animals, new vaccine strategies and sanitation campaigns, control and communication; human and animal health actions against brucellosis; rickettsiosis; Lyme disease and other borrelias; Q fever; zoonoses of companion animals; tularaemia.

Major Viral Zoonoses: evaluation, control and communication of rabies; influenza A and the role of domestic and wild animals, the surveillance programme, antiviral resistances and new treatments; Coronavirus, MERSCo, SARS; research and communication skills in human outbreaks.

Major Parasitic and mycotic Zoonoses: Toxoplasmosis (control in cats, wild reservoirs, in pregnant women; leishmaniasis (in dog, in humans, new vaccines,); hydatidosis/ *Echinococcus multilocularis*; other parasitic zoonoses from companion animals; mycotic zoonoses in domestic animals.

Lab practices (Workshops): microbiological, immunological and molecular diagnostic tools and interpretation.