SOA8
Surveillance of pathogens of veterinary importance and their antimicrobial resistance profiles (SPAMR-VET)
(OO1 Action 4)

Priority area	Operational objective
Surveillance / monitoring systems and risk assessment of AH&W	Contribute to design and harmonize surveillance and monitoring systems for animal health and welfare
Key words	**Partner participation**
Antimicrobial resistance; veterinary pathogens; livestock; fish; environment; wildlife; ECOFFs; clinical breakpoints; metagenomics; WGS; surveillance	ANSES, DEFRA, CSIC, DTU, INIAV, INRAE, IRTA, IZLER, IZSLT, IZS – Teramo, NVI, PIWet, Sciensano, SSI, SVA, UAB, UCPH, UGent, UL, WR

Project summary

The set of activities on Surveillance of pathogens of veterinary importance and their antimicrobial resistance profiles (SPAMR-VET) will fill existing gaps on antimicrobial susceptibility testing for bacterial pathogens from terrestrial and aquatic food-producing animals. Furthermore, the project will boost the use of genomic methods for surveillance of veterinary pathogens and their antimicrobial resistance, by mapping genomic monitoring activities among project participants, developing harmonized tools for sharing and analysis of genomic monitoring data and evaluating the potential of metagenomics for surveillance. A comparative assessment of various activities of surveillance of antimicrobial resistance in animal populations will also be performed, including the monitoring in pathogenic and indicator bacteria, active and passive surveillance, diseased and healthy animals. The project will also assess the potential spread of antimicrobial resistance from farmed animals to the surrounding environment and identify the potential of terrestrial and aquatic wildlife as sentinels for environmental surveillance.

Project objectives

- Address antimicrobial susceptibility testing methodology not previously evaluated for bacteria from aquatic animals, and propose ECOFFs and clinical breakpoints for selected bacterial pathogens (continuation/supplementation of EARS-VET/EU-JAMRAI)
- Mapping the use of genomics in monitoring of pathogens of veterinary importance and AMR genetic determinants in terrestrial and aquatic food-producing animals, the farm premises and the surrounding environment in European countries.
- Develop hubs for genomic data, and select/develop tools for analysis and visualisation for pathogen and AMR surveillance using WGS data, harmonised with National and European One Health genomic surveillance systems
- Map the incidence and prevalence of selected pathogens and AMR genes identified by whole-genome sequencing (WGS) of isolates from animals and the surrounding environment, including wildlife.
- Collate existing data from passive pathogen-surveillance from all partner countries and compare/describe resistance profiles occurring in different surveillance components; evaluate the potential of transfer of resistance between surveillance components

- Identify potential transfer of resistance between pathogenic bacteria and indicator Escherichia coli
- Assess the potential spread of AMR genes from farmed animals to the surrounding environment, and identify wildlife species for sentinel surveillance
- Collect new data in active pathogen-surveillance surveys on healthy and diseased animals in a selection of case countries; use the data for validation of pathogen and resistance surveillance with metagenomics, by comparing the results of culture, WGS and metagenomics-based approaches
- Use metagenomics to identify associations between the microbiome and the resistome/pathogens in healthy and diseased animals