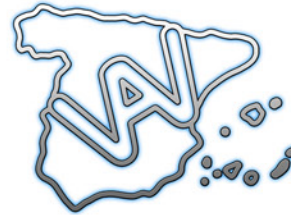


## What is an Antimicrobial Resistance?

The antimicrobial agents are chemical substances used to avoid or decrease the spread of bacteria in the environment. Due to the selective pressure imposed by the use of these antimicrobials, some microorganisms can respond quickly and efficiently to survive in the new environment and to become resistant. Therefore, the spread of antimicrobial resistance is produced due to the selection of resistant microorganisms by mutation or by transfer of resistance genes.

## Why bacterial resistance is important?

It was supposed that infectious diseases could have been eliminated by the discovery of antibiotics. However, currently, many bacterial agents that cause diseases are resistant to many antibiotics and therefore there are less antimicrobial agents to be used against these diseases. This phenomenon obliged governments and pharmaceutical companies to invest on the innovation and development of new drugs to increase the possibility of therapeutic treatments.



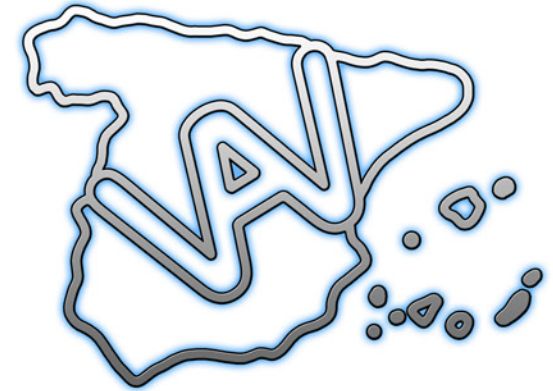
Veterinary Antimicrobial  
Resistance Surveillance Network

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# Veterinary Antimicrobial Resistance Surveillance Network



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The discovery of antimicrobial agents represents one of the major achievements of medicine in the treatment of infectious diseases. Nevertheless, the versatility and the adaptability of the microorganisms together with the extension use of these substances cause selection of resistant microorganisms to antibiotics.

## VETERINARY ANTIMICROBIAL RESISTANCE SURVEILLANCE NETWORKS

The principal function of the Veterinary Antimicrobial Resistance Surveillance Networks is systematic and continuous collection, analysis, interpretation and dissemination of health data. The objective of these actions is to provide early detection of emerging problems of resistance, target, evaluate its impact and take prevention and control measures.

The establishment of standardized and coordinated Antimicrobial Resistance Surveillance System at national and/or international level is necessary to provide current information on highly relevant bacteria.

Currently, numerous networks exist worldwide which are in charge of monitoring the level of bacterial resistance in humans as well as in animals.

## THE SPANISH VETERINARY ANTIMICROBIAL RESISTANCE SURVEILLANCE NETWORK (VAV)

The Spanish Veterinary Antimicrobial Resistance Surveillance Network started in 1997 following the integrated model of monitoring programme initiated by Denmark (DANMAP). This monitoring system is composed of three programmes: healthy animals, diseased animals and food of animal origin.

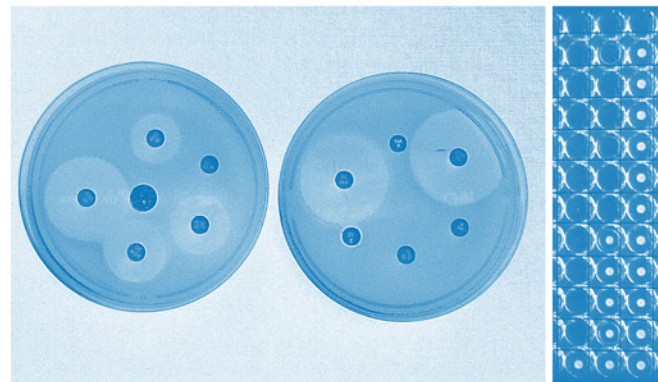
Chronologically, the diseased animals programme was set up first with the data collected in 1997. The programme of healthy animals was started at the end of 1998 and the food of animal origin programme during the year 2000. So far, these programmes have become systematically developed with the continuous help of The Ministry of Agriculture, Fisheries and Food (MAPYA). The objectives of this system focus on animal as well as human health in order to give good services in both sectors.

The antimicrobial agents included in the monitoring programmes are those authorized for animal use, current growth promoters or those used historically and those authorized for human use.

The laboratory techniques utilized to determine susceptibility testing are micro dilution and diffusion methods to obtain data of Minimum Inhibitory Concentration (MIC) or Inhibition Zone Diameter (IZD).

The obtained data from the VAV programme are presented through an annual report to The Ministry of Agriculture, Fisheries and Food and they are also diffused through periodic bulletins of the network.

- PARTNER LABS**
- Facultad de Veterinaria de Madrid- Hospital Clínico Veterinario
  - Facultad de Veterinaria de Zaragoza
  - Institut de Biologia Animal de Balears S.A.
  - Laboratorio Agrario y de Medio Ambiente de Murcia
  - Laboratorio Alimentario y Agropecuario de la Diputación de Toledo
  - Laboratorio de Salud Publica de la Comunidad de Madrid
  - Laboratorio de Sanidad Animal de Badajoz
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  - Laboratorio Regional de Sanidad Animal de León
  - LAV – Laboratorio de Análisis Veterinarios (Madrid)
  - Saprogal S.A.
  - SYVA Laboratorios
  - TROUW Nutrition
  - LIGAL – Laboratorio Interprofesional Galego de Análise do Leite



## LINE OF STUDIES

### 1. Study on antibiotic resistance

#### • Healthy Animals Programme

- Active sampling of national distribution
- Animal species: Birds and Porcine
- Microorganisms in the programme: *Escherichia coli*, *Enterococcus faecium*, *Salmonella enterica* and *Campylobacter spp.*

#### • Diseased Animals Programme

- Passive sampling through collaborating laboratories
- Animal species: Animals for human consumption, accompanying and wild animals
- Microorganisms in the programme: *Escherichia coli*, *Enterococcus faecium*, *Staphylococcus aureus*

#### • Food of Animal Origin Programme

- Passive sampling through collaborating laboratories
- Foods: Meat (chicken, pork, etc.), eggs, milk, etc.
- Microorganisms in the programme: *Escherichia coli*, *Salmonella enterica*, *Enterococcus faecium*, and *Campylobacter coli*.

### 2. Characterization of antibiotic resistance

- Resistance to Fluoroquinolone
- Resistance to Aminoglycoside
- Extended Spectrum  $\beta$ -lactamases
- Resistance to Florfenicol
- Resistance to Apramycine
- Hipermutations and Resistance to antimicrobial agents.

