



Antimicrobial resistance

1. What is **antimicrobial resistance**?

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3. EFSA is working with **key EU actors to reduce antimicrobial resistance**

1. What is **antimicrobial resistance**?

- Antimicrobials, such as antibiotics, are essential in human and veterinary medicine to treat infections caused by bacteria. Antimicrobial resistance (AMR) is resistance of a bacterium to an antimicrobial to which it was previously sensitive.
- The overuse or misuse of antibiotics has been linked to the emergence and spread of micro-organisms that are resistant to them, rendering treatment ineffective and posing a serious risk to public health. When AMR occurs in zoonotic bacteria present in animals and food, it can compromise the effective treatment of infectious diseases in humans and in animals.

2. How EFSA **contributes to EU-wide cooperation** on antimicrobial resistance

EFSA provides independent scientific support and advice to risk managers on the possible emergence, spread and transfer to humans and animals of AMR through the food chain. In its work, EFSA cooperates closely with other relevant EU agencies such as the European Centre for Disease Prevention and Control (ECDC) and the European Medicines Agency (EMA).

■ **Monitoring and analysis of antimicrobial resistance in the food chain**

EFSA monitors and analyses the situation on AMR in food and animals across Europe. It is assisted by EFSA's network on zoonoses data collection: a pan-European network of national representatives of EU Member States, other reporting countries, the World Health Organization (WHO) and World Organisation for Animal Health (OIE).

Based on data collected by the EU Member States, EFSA and ECDC produce annual European Union Summary Reports on zoonotic infections, food-borne outbreaks and antimicrobial resistance in Europe. EFSA also publishes baseline survey reports on the prevalence of AMR in the EU in specific animal populations and provides guidance to national authorities on how to carry out their monitoring and reporting activities.

■ **Risk assessments and recommendations**

EFSA's Scientific Panels review the annual reports and make recommendations on prevention and reduction measures. This work has included risk assessments on antimicrobial resistance in the food and feed chain and of methicillin-resistant *Staphylococcus aureus* (MRSA) in animals and foods.



3. EFSA is working with key EU actors to reduce antimicrobial resistance

- **2001** – the European Commission launches an EU strategy to combat the threat of antimicrobial resistance to human, animal and plant health. It includes the phasing out of antibiotics for non-medical use in animals.
 - **2006** – EU legislation on animal nutrition bans the use of antibiotics used for growth promotion in animal feed.
 - **2007** – EFSA publishes specifications for the harmonised monitoring of AMR in two important zoonotic bacteria – *Salmonella* and *Campylobacter* – found in animals and foods.
 - **2008** – EFSA examines how food may become a vehicle for transmitting antimicrobial resistant bacteria to humans. It makes recommendations for preventing and controlling transmission, highlighting good hygiene practices at all stages of the food chain as a critical prevention and control factor. EFSA publishes further specifications for the harmonised monitoring of antimicrobial resistance in *Escherichia coli* and enterococci bacteria in animals and foods.
 - **2009** – EFSA assesses the public health significance of methicillin-resistant *Staphylococcus aureus* (MRSA) in animals and foods. It concludes that livestock-associated MRSA represents only a small proportion of all reported MRSA infections in the EU with significant differences between Member States. EFSA also publishes the results of an EU-wide baseline survey on MRSA in pigs.
- A joint opinion by EFSA, ECDC, EMA and the Scientific Committee on Emerging and Newly Identified Health Risks concludes that AMR is increasing worldwide and raises specific concern in human medicine about bacterial resistance to antibiotics used in the treatment of *Salmonella* and *Campylobacter* infections – the two most reported zoonotic infections in Europe.
- **2010** – EFSA publishes the first EU Summary Report on AMR in zoonotic bacteria found in animals and foods covering the years 2004-2008.

- **2011** – EFSA and ECDC publish their first joint report on AMR in zoonotic bacteria affecting humans, animals and food. The report makes an important contribution to work being carried out at European level and assists the European Commission as it develops its proposals for action to fight antimicrobial resistance.
- **2012** – EFSA publishes specifications on how to monitor and report AMR in *Salmonella*, *Campylobacter*, indicator *Escherichia coli* and *Enterococcus* spp. bacteria found in food, and on how to monitor and report AMR in MRSA found in animals and food.
- **2014** – EFSA publishes specifications on how to carry out sampling to monitor AMR in zoonotic and indicator bacteria from animals and meat.

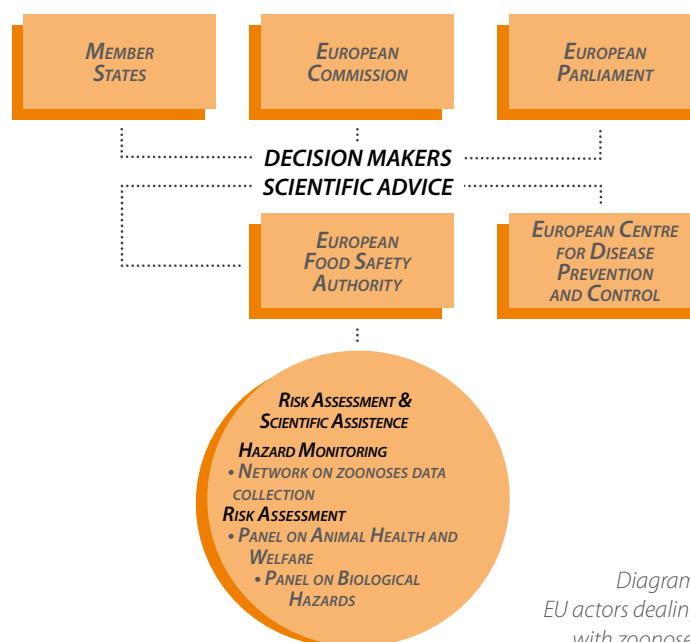


Diagram: EU actors dealing with zoonoses

Did you know?

- Bacteria most frequently causing food-borne infections, such as *Salmonella* and *Campylobacter*, show significant resistance to common antimicrobials in humans.
- Combined resistance (co-resistance) to critically important antimicrobials is low. While this means that treatment options for serious infections with these zoonotic bacteria are available in most cases, the fact that antimicrobial resistance is commonly detected is cause for concern.
- If bacteria become clinically resistant to several antimicrobials (multidrug-resistant), treating the infections they cause can become more difficult or even impossible.
- The development of AMR in bacteria in animals and food can also compromise the effective treatment of human infections, as resistant bacteria and resistant genes may be transferred to humans from animals and food.