

Antimicrobial resistance in zoonotic bacteria still high in humans, animals and food

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Bacteria from humans and animals continue to show resistance to antimicrobials, according to a new report published today by the European Food Safety Authority (EFSA) and the European Centre for Disease Prevention and Control (ECDC). The report highlights some emerging issues and confirms antimicrobial resistance (AMR) as one of the biggest threats to public health. AMR reduces the effectiveness of treatment options.

Vytenis Andriukaitis, European Commissioner for Health and Food Safety reaffirmed his commitment to tackle AMR: "Levels of antimicrobial resistance still differ significantly from one EU country to another. To win the fight, we need to join our efforts and implement stringent policies on the use of [antibiotics](#) across sectors. It is vital that we all renew our commitment to fight antimicrobial resistance by focusing on the key areas set out in the EU One Health Action Plan against antimicrobial resistance."

Among the new findings, based on data from 2016, are detection of resistance to carbapenems in poultry, an antibiotic which is not authorised for use in animals, and of ESBL-producing *Salmonella Kentucky* with high resistance to ciprofloxacin in humans, which was reported for the first time in four countries.

Mike Catchpole, chief scientist at ECDC, commented on the results: "We are concerned to see that *Salmonella* and *Campylobacter* bacteria in humans show high levels of [antimicrobial resistance](#). The fact that we

keep detecting multidrug-resistant bacteria means that the situation is not improving. We need to investigate the origins and prevent the spread of highly resistant strains, such as ESBL-producing *Salmonella Kentucky*".

Marta Hugas, chief scientist at EFSA, said: "The detection of resistance to carbapenems in poultry and to linezolid in methicillin-resistant *Staphylococcus aureus* in pigs is alarming because these antibiotics are used in humans to treat serious infections. It is important that risk managers follow-up on these findings."

Main findings

Humans:

- One out of four infections in humans are caused by *Salmonella* bacteria that show resistance to three or more antimicrobials commonly used in human and animal medicine. The proportion is significantly higher in *S. Kentucky* and *S. Infantis* (76.3 and 39.4% respectively).
- For the first time, ESBL-producing *S. Kentucky* with high resistance to ciprofloxacin was detected in four countries. This type of bacteria cannot be treated with critically important antibiotics.
- *Campylobacter* bacteria, which cause the most common food-borne disease in the EU, show high resistance to widely used antibiotics (ciprofloxacin resistance 54.6% in *C. jejuni* and 63.8% in *C. coli*; tetracycline resistance 42.8% in *C. jejuni* and 64.8% in *C. coli*). The levels of resistance increased in two of the three analysed antibiotics (ciprofloxacin and tetracycline), but combined resistance to the critically important antimicrobials is stable and overall low (0.6% in *C. jejuni* and 8.0% in *C. coli*). In some countries, however, at least one in three *C. coli* infections

were multidrug-resistant to important antibiotics, leaving very few treatment options for severe infections.

Animals and foods:

- Resistance to carbapenem antibiotics was detected at very low level in poultry and in chicken meat in two Member States (fifteen *E. coli* bacterial isolates). Carbapenems are used to treat serious infections in humans and are not authorised for use in animals.
- Two livestock-associated methicillin-resistant *Staphylococcus aureus* bacterial isolates found in pigs were reported to be linezolid resistant. Linezolid is one of the last-resort antimicrobials for the treatment of infections caused by highly resistant MRSA.
- Combined clinical resistance to critically important antimicrobials was observed at low to very low levels in *Salmonella* (0.2%), *Campylobacter* (1%) and *E. coli* (1%) in poultry.
- Resistance to colistin was observed at low levels (2%) in *Salmonella* and *E. coli* in poultry.
- Prevalence of ESBL-producing *E. coli* in poultry varies markedly between the Member States, from low (less than 10%) to extremely high levels (more than 70%). Bacteria that produce ESBL enzymes show multi-drug resistance to β -lactam antibiotics - a class of broad spectrum antibiotics that includes penicillin derivatives, cephalosporins and carbapenems. This is the first time that the presence of extended-spectrum beta-lactamase (ESBL)-producing *E. coli* was monitored in poultry and poultry meat.

(ECDC)

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