

Antimicrobials are now more effective against canine bacteria in Finland thanks to antibiotic regulation

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Antimicrobial resistance in bacteria from dogs is decreasing, according to the latest FINRES-Vet report. One likely reason is the diminished use

of antimicrobials, which have been linked to the development of resistance in bacteria. Bacteria from cats are still more susceptible to antibiotics compared to bacteria from dogs.

The [FINRES-Vet monitoring report](#), a joint action by the University of Helsinki, the Finnish Food Authority and the Finnish Medicines Agency Fimea, indicates that antibiotics used to treat canine infections are more effective against bacteria than previously.

The improvement is partially due to the decreased use of antimicrobials in Finnish veterinary medicine in general. Moreover, the sales of oral antibiotic preparations for companion animals has halved since 2011, according to statistics provided by Fimea. Usage has declined through recognition of the importance of the topic and changes in treatment regimens in recent years.

"The use of antibiotics has decreased in Finland, especially in canine patients with skin and ear infections. These are very common ailments in dogs, but are rarely primarily caused by bacteria. The focus of the treatment is now on identification and treatment of the primary cause," says laboratory veterinarian Katarina Eskola from the University of Helsinki.

Another reason for this improved situation in Finland is that more specimens are nowadays taken from acute infections, so the statistics on resistance better reflect average infections.

"Sampling has previously focused on chronic infections, in which [resistant bacteria](#) are more likely," says docent Merja Rantala, head of the clinical microbiology laboratory at the Faculty of Veterinary Medicine, University of Helsinki.

The proportion of MRSP isolates halved; canine E.

coli is more susceptible to antibiotics

Staphylococcus pseudintermedius is a common inhabitant on the skin and mucous membranes of even healthy dogs, and can cause wound and skin infections. The proportion of isolates resistant to methicillin (i.e. MRSP) among all *S. pseudintermedius* isolates was halved since 2016, falling to only six percent in 2018.

Antimicrobial resistance among canine *Escherichia coli* has also declined since 2016 in Finland. For example, resistance to amoxicillin-clavulanic acid, a common drug for treating urinary tract infections, decreased from 21 percent to 12 percent. Resistance to fluoroquinolones decreased eight percentage points during the follow-up time. Resistance remained stable in feline *E. coli* and is still less common than in dogs.

One important mechanism for antimicrobial resistance in bacteria is the production of beta-lactamase enzymes such as ESBL and AmpC. These enzymes degrade a wide variety of penicillin and cephalosporin antimicrobials, making the treatment more challenging. According to the latest statistics, only slightly over one percent of canine and feline *E. coli* isolates produced ESBL enzymes, while AmpC production was observed in four percent of canine *E. coli* and two percent of feline *E. coli*.

More specimens are needed from equine infections

Penicillin and potentiated sulphonamides are the basis of antibiotic treatment in horses. Therefore, it is very concerning that *Streptococcus zooepidemicus* is gradually developing resistance to potentiated sulphonamides.

"Resistance was previously almost non-existent in Finland, but currently seven percent of the *S. zooepidemicus* isolates express resistance to

sulphonamides. In addition, nearly a fifth of equine Staphylococcus aureus isolates are resistant to penicillin," Merja Rantala says.

Monitoring resistance for equine pathogens is difficult as very few samples from equine infections are sent to laboratories. There is a threat that the resistance situation in equine [bacteria](#) may worsen without detection. For example, the presence and emergence of MRSA in the Equine Veterinary Teaching Hospital this year may indicate that this pathogen is becoming more common in the equine population in Finland.

The awareness of veterinarians plays a vital role

The researchers wish to thank veterinarians for what they have done to reduce antimicrobial resistance. The role of veterinarians is vital in improving treatment practices and shaping public opinion regarding antimicrobial use and resistance.

"We would like to thank the veterinary community for their hard work in combating [antimicrobial resistance](#). It has been a pleasure to follow the growing interest in the prudent use of antimicrobials, and the work being done in this area has now borne fruit," says Thomas Grönthal, Ph.D., from the Faculty of Veterinary Medicine at the University of Helsinki.

Provided by University of Helsinki

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