

# Study shows antibiotic-resistant 'superbugs' are being passed between dogs and cats and their owners

April 14 2023

---



Heartworms are a deadly disease in both dogs and cats, but can be prevented with medication and mosquito control. Credit: Unsplash/CC0 Public Domain

Evidence that multidrug-resistant bacteria are being passed between pet

cats and dogs and their owners will be presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Copenhagen, Denmark (15-18 April).

Six pets in Portugal and one in the UK were carrying [antibiotic-resistant bacteria](#) similar to those found in their owners, a Portuguese study found.

The finding underlines the importance of including pet-owning households in programs to reduce the spread of antimicrobial resistance.

Antibiotic resistance is reaching dangerously high levels around the world. Drug-resistant infections kill an estimated 700,000 people a year globally and, with the figure projected to rise to 10 million by 2050 if no action is taken, the World Health Organization (WHO) classes [antibiotic resistance](#) as one of the greatest public health threats facing humanity.

Dogs, cats and other pets are known to contribute to the spread of antibiotic-resistant pathogens that can cause [human disease](#). Juliana Menezes and colleagues from the Antibiotic Resistance Lab at the Centre of Interdisciplinary Research in Animal Health, Faculty of Veterinary Medicine, University of Lisbon, Portugal wanted to find out if pets being treated with antibiotics for infections are sharing such pathogens with their owners.

The researchers tested fecal samples from dogs and cats and their owners for Enterobacterales (a large family of bacteria which includes *E. coli* and *Klebsiella pneumoniae*) resistant to common antibiotics.

They focused on bacteria resistant to third generation cephalosporins (used to treat a broad range of conditions, including meningitis, pneumonia and sepsis, they are classed among the most critically important antibiotics for [human medicine](#) by the World Health

Organization) and carbapenems (part of the last line of defense when other antibiotics have failed). The prospective longitudinal study involved five cats, 38 dogs and 78 humans from 43 households in Portugal and seven dogs and eight humans from seven households in the UK.

In Portugal, one dog (1/43 pets, 2.3%) was colonized by a strain of multidrug-resistant OXA-181-producing *Escherichia coli*. OXA-181 is an enzyme that confers resistance to carbapenems.

Three cats and 21 dogs (24/43 pets, 55.8%) and 28 owners (28/78, 35.9%) harbored ESBL/Amp-C producing Enterobacterales. These are resistant to third generation cephalosporins.

In eight households, two houses with cats and six with dogs, both pet and owner were carrying ESBL/AmpC-producing bacteria. In six of these homes, the DNA of the bacteria isolated from the pets (one cat and five dogs) and their owners was similar, meaning these bacteria were probably passed between the animals and humans. It is not known whether they were transferred from pet to human or vice versa.

In the UK, one dog (1/7, 14.3%) was colonized by multidrug-resistant *E. coli* producing NDM-5 and CTX-M-15 beta-lactamases. These *E. coli* are resistant to third generation cephalosporins, carbapenems and several other families of antibiotics.

ESBL/AmpC-producing Enterobacterales were isolated from five dogs (5/7, 71.4%) and three owners (3/8, 37.5%).

In two households with dogs, both pet and owner were carrying ESBL/AmpC-producing bacteria. In one of these homes, the DNA of the bacteria isolated from the dog and owner was similar, suggesting the bacteria probably passed from one to the other. The direction of transfer is unclear.

All of the [dogs](#) and cats were successfully treated for their skin, soft tissue and urinary tract infections.

The owners did not have infections and so did not need treatment.

Menezes, a Ph.D. student, says, "In this study, we provide evidence that bacteria resistant to a third generation cephalosporins, critically important antibiotics, are being passed from pets to their owners."

"Dogs and cats may aid the spread and persistence of such bacteria in the community and it is vitally important that they are included in assessments of antimicrobial resistance."

"Owners can reduce the spread of [multidrug-resistant bacteria](#) by practicing good hygiene, including washing their hands after collecting their dog or cat's waste and even after petting them."

**More information:** Conference: [www.eccmid.org/](http://www.eccmid.org/)

Provided by European Society of Clinical Microbiology and Infectious Diseases

Citation: Study shows antibiotic-resistant 'superbugs' are being passed between dogs and cats and their owners (2023, April 14) retrieved 20 June 2024 from <https://phys.org/news/2023-04-antibiotic-resistant-superbugs-dogs-cats-owners.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.