

Study suggests pets are not a major source of transmission of drug-resistant microbes to their owners

April 20 2020



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New research due to be presented at this year's European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) has identified

genetically identical multidrug-resistant bacteria in humans and their pets, suggesting human-animal transfer is possible in this context. However only a small number of cases were found, suggesting this is not a major source of antibiotic-resistant infections in humans. The study is by Carolin Hackmann, Institute for Hygiene and Environmental Medicine, Charité - University Hospital Berlin, Germany, and colleagues.

The project behind this study is investigating the relevance of pet care in the infection of hospital patients with multidrug-resistant organisms (MDROs) since the potential role of pets as reservoirs of MDROs remains unclear. The project focusses on the most common MDROs in pet owners: methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), 3rd generation cephalosporin-resistant Enterobacterales (3GCRE) and carbapenem-resistant Enterobacterales (CRE). The study is being performed at Charité - University Hospital Berlin, and is funded by the Federal Department of Health (BMG).

To assess the contact to household pets as a risk factor for the colonisation with one of the above-named pathogens, the authors asked the pet owners questions about well-known [risk factors](#) and their contact to dogs and cats. This includes information about the number of pets in the household, the closeness of contact and diseases as well as medical treatment of the pets.

To assess the [genetic relationship](#) between the human and pet MDROs, the researchers collected nasal and rectal swabs of the participants in the hospital and their pets to test them for MDROs. Phenotypically matching MDROs in the samples of participants and their pets were tested for genetic relationship using whole genome sequencing (WGS).

Among the first 1,500 participants, 495 participants (33%) tested

positive for MDROs. In total, 296 participants (20%) owned at least 1 pet (range 1-5 pets), and 38% of these owners (112) tested positive for MDROs. There was no [significant difference](#) in the proportion of pet owners between cases and controls. Further analysis of factors concerning the health status of pets and closeness of contact to pets also showed no significant differences between cases and controls.

So far in this ongoing study, samples of 77 dogs and 71 cats from 112 pet owners have been analysed. Among these, 14% of pets (23 dogs and 1 cat) tested positive for one MDRO each. In two cases, MDROs of a dog and its owner were phenotypically matching. The matching pathogens were VR Enterococcus faecium and 3GCR Escherichia coli. The [genetic analysis](#) based on a gene-by-gene comparison approach confirmed that the matching pairs were genotypically identical in dog and owner.

The authors conclude: "This analysis of preliminary data showed no significant difference in pet care or closeness of contact to pets between MDRO-positive and MDRO-negative hospital patients. A transmission of MDROs between human and animal was confirmed in only 1.8% of 112 [pet owners](#) and their respective pets. So far, the preliminary data does not indicate pet care as a significant risk factor for MDRO colonisation in hospital patients."

Provided by European Society of Clinical Microbiology and Infectious Diseases

Citation: Study suggests pets are not a major source of transmission of drug-resistant microbes to their owners (2020, April 20) retrieved 28 April 2024 from <https://medicalxpress.com/news/2020-04-pets-major-source-transmission-drug-resistant.html>

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