

Research project IZS VE 13/10

Characterization of *Clostridium difficile* isolates from dogs to investigate on the epidemiological link between animals and human infections

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Clostridium difficile infection (CDI) has been historically considered a health-care-associated disease, however, in recent years increased both the report of community-acquired CDIs involving groups not previously considered at risk and the identification of *C. difficile* as an emerging animal pathogen. A possible explanations for the changing epidemiology of *C. difficile* also considered the increasing exposure to *C. difficile* through pets or other domestic animals. The latter hypothesis has been recently investigated and results pointed out that *C. difficile* can be recovered from a broad range of animal species, included dogs. Studies characterizing isolates from animals showed a high degree of genetic overlap between human and animal isolates, thus suggesting that *C. difficile* might be a candidate zoonotic agent transmitted to humans by direct or indirect contact with animals.

Aim of our proposal is to improve knowledge about the possible transmission of *C. difficile* from dogs to humans, by studying the phenotypic and genotypic characteristics of *C. difficile* canine isolates collected in Northern Italy and thus evaluating the homology between isolates from humans and dogs.

The specific objectives of the proposal are:

- to develop and validate a real time PCR for *C. difficile* detection in faecal broth cultures;
- to evaluate the diagnostic usefulness of a commercial rapid immuno-assay for CD antigen and toxins detection in dog faeces;
- to set up a collection of canine CD strains;
- to characterize canine *C. difficile* isolates by toxins coding genes detection and by ribotyping;
- to estimate the antimicrobial resistance against some important antimicrobials for human therapy.