Prevalence of antimicrobial resistance amongst canine Pseudomonas aeruginosa clinical isolates between 2011–2015

Vanessa Schmidt, Lucy Botham, Laura Buckley, Dorina Timofte
University of Liverpool, Neston, UK

Pseudomonas aeruginosa is commonly implicated in a variety of bacterial infections in dogs and is of veterinary concern due to broad-spectrum inherent antimicrobial resistance and its ability to acquire further resistance to key antimicrobials. This study aimed to investigate the prevalence of antimicrobial resistance (AMR) amongst canine P. aeruginosa isolates (n = 113) during the last five years. Data from a UK based-Microbiology Diagnostics Laboratory was collected from 22/11/2013 and 30/09/2015. Vaccination dates ranged between 24/03/1998 and 30/09/2015. The term ‘vaccinated’ was defined as any animal that had received at least one vaccination and it was recorded in its clinical health records. In dogs, pathogens considered a ‘core’ vaccines were canine distemper virus (CDV), canine parvovirus (CPV) and canine hepatitis virus (CHV); in cats, feline calicivirus (FCV), feline herpesvirus (FHV) and feline panleucopenia (FPV); and in rabbits, vaccines for myxomatosis and rabbit haemorrhagic disease (RHD). Proportions and confidence intervals (95%) were calculated using robust standard errors to allow for the clustering within veterinary practices.

Overall, 77.9±0.2% of all animals were vaccinated (81.5±0.3% of dogs, 73.1±0.5% of cats and 48.4±1.6% of rabbits). When animals of less than six months of age were considered, 76.7±0.5% of animals were vaccinated (82.1±0.6% of dogs, 69.1±1.0% of cats and 45.3±3.2% of rabbits). Median age (years) at first vaccination was 0.21±0.01 for dogs, 0.33±0.1 for cats and 0.35±0.3 for rabbits. More than half (~62.0%) of all cats were vaccinated for each core pathogen, whilst only ~46.0% of dogs were vaccinated against each core pathogen. A total of 46.9% and 46.7% of rabbits were vaccinated for myxomatosis and RHD, respectively. Canine non-core vaccines such as vaccines for Leptospira spp., and parainfluenza virus were always administered with the core vaccines. In cats, the same was true for the non-core vaccine against feline leukemia virus.

A considerable proportion of dogs, cats and rabbits had not been vaccinated against the core pathogens. In dogs and cats, few of the traditionally considered as non-core vaccines were always administered along with core-vaccines indicating the need for further research in the area of companion animal vaccinology to generate optimal recommendations for its vaccination.