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## ENTEROPATHOGEN INFECTIONS IN CANINE PUPPIES: (CO-)OCCURRENCE, CLINICAL RELEVANCE AND RISK FACTORS

Laboratory confirmation of the causative agent(s) of diarrhoea in puppies may allow for appropriate treatment. The presence of potential pathogens however, does not prove a causal relationship with diarrhoea. The aim of this study was to identify specific enteropathogens in  $\leq 12$  month old puppies with and without acute diarrhoea and to assess their associations with clinical signs, putative risk factors and pathogen co-occurrence. Faecal samples from puppies with (n=113) and without (n=56) acute diarrhoea were collected and screened for Canine Parvovirus (CPV), Canine Coronavirus (CCoV), *Salmonella* spp., *Campylobacter* spp., *Clostridium perfringens*, *Clostridium difficile*,  $\beta$ -hemolytic *Escherichia coli* (hEC), *Giardia* spp., *Toxocara* spp., *Cystoisospora* spp., and *Cyrclomyces guttulatus*. One or more pathogens were detected in 86.5% of diarrhoeic puppies and in 77.8% of asymptomatic puppies. Significant positive associations were found between CPV and CCoV, CPV and *Cystoisospora* spp., *Toxocara* spp. and hEC, *Giardia* spp. and *C. guttulatus*. Only CPV and CCoV were significantly associated with diarrhoea, hEC with a subset of puppies that had diarrhoea and severe clinical signs. CPV was more prevalent in puppies under 3 months of age. Puppies from high-volume dog breeders were significantly at increased risk for CPV (OR 4.20), CCoV (OR 4.50) and *Cystoisospora* spp. (OR 3.60). CCoV occurred significantly more often in winter (OR 3.35), and CPV in winter (OR 3.78) and spring (OR 4.72) as compared to summer.

We conclude that routine screening for CPV, CCoV and hEC is recommended in puppies with acute diarrhoea, especially if they are under 3 months of age and originate from high-volume dog breeders. Routine screening for other pathogens may lead to less conclusive results.