Prevalence of Bacterial, Viral, and Parasitic Enteropathogens in 300 Dogs Frequenting Dog Parks

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Background
- The human-animal bond augments human physical and psychological health
- Dog parks are a socially interactive environment for dogs and dog owners
- Dogs attending dog parks represent a different population than those in veterinary settings
- Contact with other dogs, humans, and environmental features facilitates the transmission of enteropathogens
- Dog-dog, dog-human, and human-dog transmission
- Recently, there has been an alarming increase in the prevalence of parasitic enteropathogens in dogs, particularly hookworms
- Many enteropathogens that infect dogs are zoonotic, including Giardia, Salmonella, and Campylobacter jejuni

Hypotheses & Aims

Hypotheses
- Apparently healthy dogs will be frequently infected with a variety of bacterial, viral, and parasitic enteropathogens
- There will be no correlation between infection with one or more enteropathogens and stool consistency
- Zoonotic enteropathogens will be detected in a subset of apparently healthy, non-diarrheic dogs

Specific Aims
1. Determine the prevalence of bacterial, viral, and parasitic enteropathogens in 300 privately-owned dogs frequenting 3 dog parks in Northern CA
2. Investigate risk factors associated with infection with enteropathogens and shedding
3. Determine the prevalence of multidrug resistant hookworms and zoonotic Giardia

Methods
- A flag identification system was used to detect the stool and assign each dog a unique ID
- Owners were issued an at-home follow-up collection kit to sample their dog’s stool one month following the original collection for comparison
- Veterinary students and dog owners scored the dog’s stool using a modified Purina Fecal Scoring Scale (1-6), where scores of 4-6 represented diarrheic specimens

Results
- Each stool specimen underwent extensive conventional and molecular diagnostic testing:
  1. Zinc sulfate double centrifugation flotation
  2. Giardia ELISA
  3. KeyScreen PCR – a novel PCR panel capable of identifying 20 GI parasites, including multidrug resistant hookworms and zoonotic Giardia

Discussion
- All Giardia assemblages from identified infections were non-zoonotic
- Assemblages C and D
- No hookworms were identified on flotation or PCR, which is a similar result in comparison to a 2016 dog park study
- There was no apparent correlation between fecal score and infection with ≥1 enteropathogens
- Many socially active dogs are infected yet asymptomatic with normal stools
- There was a high association between ingestion of raw food or supplements and infection with Campylobacter jejuni
- 5/7 of these dogs had non-diarrheic stool specimens

Future Considerations
- A comprehensive analysis of risk factors is being conducted
- At-home collection kits collected one-month post-dog park visit will shed further light on the presence of Giardia and Cryptosporidium canis in asymptomatic dogs that tested positive earlier at dog parks

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References