

Epidemiology of *Streptococcus zooepidemicus* infection in dogs in New Zealand

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Streptococcus zooepidemicus infections have been reported increasingly in dogs worldwide, with fatal haemorrhagic pneumonia in intensively housed dogs as the most important clinical manifestation. The organism belongs to the Lancefield group C streptococci with *S. equi* and *S. equisimilis*, and is commonly isolated from horses. *S. zooepidemicus* is not considered commensal in dogs but prevalence studies are lacking. This study had two aims; firstly to estimate the prevalence of *S. zooepidemicus* in healthy dogs and horses in New Zealand and secondly to test the hypothesis that contact with horses is associated with Lancefield group C streptococci infection in dogs. A prospective study with a convenience sample of Massey University Teaching Hospital client animals was performed. A total of 149 dogs were sampled using oropharyngeal swabbing and 97 horses using nasopharyngeal swabbing, visited on 37 separate holdings. Dogs or horses were not always present at each holding and not all animals present at each holding were always swabbed. Given the small sample sizes, the small number of positives detected and the use of an imperfect test, Bayesian methodology was used to give more robust estimates of apparent prevalence. Four of 149 dogs had *S. zooepidemicus* and 20/149 had *S. equisimilis*; 9/97 horses had *S. zooepidemicus* and 22/97 had *S. equisimilis* positive isolates confirmed. The estimated prevalence of *S. zooepidemicus* in dogs was 3.1% (95% CI=1.0-6.5%) and in horses was 19.4% (95% CI=10.7-32.3%). Collapsing the data over both Lancefield group C isolates, the odds ratio for the association between horses and dogs was 11.6 (95% CI 2.8-38.7) and the probability that a dog with a Lancefield group C isolate has had contact with horses is almost 100%. This study reveals that *S. zooepidemicus* can be isolated from oropharyngeal swabs in healthy dogs, and contact with horses and subclinically infected dogs may be important in the epidemiology of *S. zooepidemicus* infections.