

<p>Project Number & Title 2A-106: A Comprehensive Risk Factor Analysis of Post-weaning Diarrhoea</p>
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<p>Aims and Objectives Determine the risks inherent in a piggery environment responsible/contributing to <i>Escherichia coli</i> disease via an epidemiological risk factor characterisation study.</p>
<p>Key Findings <i>Escherichia coli</i> disease in pre- and post-weaned piglets has a major impact on the Australian pork industry. Using a snapshot survey approach 22-pig producers located across southeastern Australia were recruited. More than 1,100 faecal samples and detailed management and other information was collected:</p> <ul style="list-style-type: none"> • Scours prevalence in pre- and post-weaned pens was 17% and 24%, respectively. • The most prevalent enterotoxigenic genes were F18 (32%) and STb (32%); the most common combination in herds was F4: STb. • Of 60 factors screened with logistic regression, recent disease events (within the last 12 months) and presence of bedding were risk factors for scours. • Using Bayesian network analysis, the importance of herd-level management was confirmed; larger herds and those where other livestock were managed on the same farm were more at risk of scours. • <i>E. coli</i> resistance to a range of antibiotics was detected, such as tetracyclines (75%), trimethoprim-sulfamethoxazole (45%) and neomycin (35%). • Resistance to third-generation cephalosporins (3GC; an antibiotic class <i>critically important</i> to human health) occurred in 6.1% of <i>E. coli</i> isolates. • 3GC resistance was more likely to be detected in normal (non-scours) pens. • Four extended spectrum β-lactamase (ESBL) genes – previously unreported in Australian pigs – were detected. • <i>E. coli</i> isolates were susceptible to five of six disinfectants tested. <p>In a separate longitudinal study, the number of male piglets per pen and sow condition score at weaning were identified as key risk factors. Disease was seasonal, and during outbreak periods, a high diversity of <i>E. coli</i> clones was observed. This project represents the most comprehensive study of <i>E. coli</i> disease in Australian pig herds conducted in the past 20 years.</p>
<p>Application to Industry Controlling <i>E. coli</i> disease via management – such as more attention to hygiene and husbandry in large herds, reviewing the use of bedding, and improved biosecurity – allows producers to improve productivity and profit, and to reduce their reliance on antibiotic therapy. Antibiotic resistance appears widespread in the industry. Judicious use of available effective antibiotics for <i>E. coli</i> is critical. With continued and increasing concern over antibiotic resistance as a public health issue, modifying risk factors for <i>E. coli</i> disease also will enhance market access. Surveillance for antibiotic resistance and resistance genes in clinically normal post-weaned pigs will provide further market assurance.</p>