

Prevalence of Antimicrobial Resistant E.coli in a Veal Calf Production System

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Antimicrobial resistance is a public health concern for both human and veterinary medicine. In food animal production systems, medically important antimicrobials are used for both prophylactic and therapeutic purposes; therefore, food animals have the potential to serve as a reservoir for antimicrobial resistant bacteria. Previous research has shown an uneven distribution of resistance with a higher prevalence within young animals; however, limited research has addressed antimicrobial resistance within veal production systems. Vertically integrated veal production systems provide a unique opportunity to study the transmission of resistance through the food supply. The objective of this study was to estimate the prevalence of antimicrobial resistant *Escherichia coli* within different stages of a vertically integrated veal production system. A total of 377 fecal samples were collected from nine different calf cohorts on six different farms, where the average age was 69 days (range: 8-115). Four of these cohorts were followed to harvest for additional sample collection. At harvest, a total of 159 fecal samples, 161 pre-evisceration and 150 post-evisceration carcass swabs were collected. *E. coli* isolated from samples was subjected to twelve antimicrobials using Kirby-Bauer disk diffusion assays. Zones of growth inhibition were measured for each antimicrobial and determined resistant based on CLSI standards. Isolates were obtained from 100% of fecal samples, 52% (84/161) of pre-evisceration swabs and 16% (24/150) of post-evisceration swabs. Greater than 98% (372/377) of isolates obtained from farm fecal samples were resistant to two or more antimicrobials. A decrease in resistance was seen at harvest where only 46.9% (73/159), 69.0% (58/84), and 29.2% (7/24) of isolates from fecal samples, pre-evisceration and post-evisceration carcass swabs, were resistant to two or more antimicrobials. These results provide insight to the current prevalence of resistance among the production system and the opportunity for further research to determine factors affecting the prevalence of resistance.