

Dissemination of new multidrug resistance *Salmonella* strains in Northwest cattle

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Salmonella Typhimurium circulating in food animal populations and carrying resistance to antimicrobial agents represents a potential human health risk. This study was designed to evaluate the rate of introduction of new multidrug resistant *Salmonella* strains on dairy farms and to evaluate the rise of extended spectrum cephalosporin resistance in a new clone of *Salmonella enterica* serovar Typhimurium isolated from cattle and humans.

Pooled fecal (n =5776) and feed (n =3280) samples collected at four months intervals over a 30 months period on 60 Washington dairy farms were cultured for *Salmonella*. All isolates were serogrouped and in vitro susceptibility to 11 antimicrobials was evaluated. The new clone of *Salmonella enterica* serovar Typhimurium is identified by pulsed-field gel electrophoresis (PFGE) patterns, (WA TYP035/ TYP187), which differ by only a single band. Multiple-locus variable number of tandem repeat analysis (MLVA) was performed to genotype 155 *Salmonella* Typhimurium new clone of isolates were genotyped by using four-loci markers.

Of 886 *Salmonella* positive fecal pools, 103 (12%) contained new *Salmonella* serotypes. Of the new strains introduced, 43% were multidrug resistant. Serotype Typhimurium was the most frequent (43%) followed by Dublin (14%), Newport (7%) and others 38%. One hundred seven (3.3%) feed specimens were positive for *Salmonella*. Serogroup C1 was the most frequent (41%) followed by E1 (10%), B (7%) and others (42%). All isolates from a new clone of *Salmonella* had identical PFGE types were separated into 43 MLVA types. Using ceftazidime as a screening drug for extended spectrum cephalosporin resistance, resistance increased in bovine isolates from zero in 1999 to 73% (27/37) in 2006. In 2006 62% (5/8) human isolates were resistant to ceftazidime.

New multidrug resistant *Salmonella enterica* strains are commonly introduced into Northwest dairy farms. Result suggests that extended spectrum cephalosporin resistance (presumably acquisition of *bla*CMY-2 bearing plasmids) occurred on multiple independent occasions during the expansion of this TYP035/187 clone. This PFGE type may be largely restricted to Washington and the local antimicrobial selection pressure likely in cattle resulted in the development of increased ceftazidime resistance in this clone.