Characterization of Multidrug-Resistant *Salmonella enterica* Serovar Heidelberg from a Ground Turkey-Associated Outbreak in the United States in 2011

*Salmonella enterica* serotype Heidelberg is the fifth-most-common serotype that causes human disease in the United States, and it appears to be more invasive than other nontyphoidal serotypes (3, 6). In March 2011, a multistate outbreak of *Salmonella enterica* serotype Heidelberg infections was investigated (2). Pulsed-field gel electrophoresis (PFGE) analysis of isolates from suspected cases and an epidemiologic investigation identified 136 case patients from 34 states from February to September. Two closely related XbaI PFGE patterns were identified among the outbreak isolates. Additional information was available on 94 ill persons. Their ages ranged from <1 to 90 years of age, and the median age was 23. Thirty-nine percent of patients were hospitalized. One death was reported. A collaborative effort by national, state, and local agencies identified ground turkey as the source of infection. *S. enterica* serotype Heidelberg isolates matching the outbreak pattern were identified among ground turkey products from retail establishments, and these products originated from a common food production establishment (5).

Nineteen outbreak isolates from ill persons or retail meat samples were sent to the National Antimicrobial Resistance Monitoring System (NARMS) at Centers for Disease Control and Prevention (CDC) for antimicrobial susceptibility testing (AST). MICs were determined for amikacin, ampicillin, amoxicillin-clavulanic acid, cefotaxime, ceftriaxone, chloramphenicol, ciprofloxacin, gentamicin, kanamycin, nalidixic acid, streptomycin, sulfisoxazole, tetracycline, and trimethoprim-sulfamethoxazole by broth microdilution (Susceptibility Trek Diagnostics, Westlake, OH). Resistance was defined by the Clinical and Laboratory Standards Institute (CLSI) interpretive standards, when available (5). For streptomycin, where no CLSI interpretive criteria for human isolates exist, the resistance breakpoint is 64 mg/liter. All of the isolates were resistant (Sensititre; Trek Diagnostics, Westlake, OH). Resistance was confirmed plasmids of approximately 100 kb in size in both *Salmonella* isolates matching the outbreak pattern, AST pattern, and plasmid characteristics (AR genes, Inc type, ST, and size) (7, 13).

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