Effects of Antimicrobial Use in Agricultural Animals on Drug-resistant Foodborne Salmonellosis in Humans: A Systematic Literature Review

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Abstract

Controversy continues concerning antimicrobial use in food animals and its relationship to drug-resistant infections in humans. We systematically reviewed published literature for evidence of a relationship between antimicrobial use in agricultural animals and drug-resistant meat or dairy-borne non-typhoidal salmonellosis in humans. Based on publications from the United States (U.S.), Canada, and Denmark from January 2010 to July 2014, 858 articles received title and abstract review, 104 met study criteria for full article review with 68 retained for which data are presented. Antibiotic exposure in both cattle and humans found an increased likelihood of Salmonella colonization, whereas in chickens, animals not exposed to antibiotics (organic) were more likely to be Salmonella positive and those that had antibiotic exposure were more likely to harbor antimicrobial resistant Salmonella organisms. In swine literature, only tylosin exposure was examined and no correlation was found among exposure, Salmonella colonization, or antimicrobial resistance. No studies that identified farm antimicrobial use also traced antimicrobial-resistant Salmonella from farm to fork.

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