Modelling the Effects of Variation on the Transmission of Antibiotic Resistant Salmonella Typhimurium in Pigs Using Stochastic Simulation

Kavanagh, Kimberley

University Of Strathclyde

The emergence of antibiotic resistant Salmonella Typhimurium (STM) in pigs raises concern due to the possible transfer of resistance to humans via contaminated meat products. Such additional exposure to resistance genes may lead to treatment failure in humans. This would have severe public health implications. A mathematical model has been constructed to describe the dynamics of resistant infection in grower-finisher pigs and identify the key determinants in the emergence of resistant STM. This model assesses the effect of antibiotic treatment and various control strategies on the observed levels of resistance. In particular, this enables the most effective control and treatment strategies leading to the minimum levels of resistant infection to be identified. The output from the model would be ideally suited to integration into a farm-to-table risk assessment for resistant STM in pork products. Such an assessment could then be used to aid in reducing the risk of treatment failure.