Estimating the number of undetected multi-resistant Salmonella Typhimurium DT104 infected pig herds in Denmark - DTU Orbit (30/12/2018)

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In Denmark, the detection of multi-resistant Salmonella Typhimurium DT104 (MRDT104)-infected pig herds relies on the national Salmonella surveillance programme at the farm and slaughterhouse levels of production. With the surveillance sampling protocol and the diagnostic methods currently used, some herds might remain undetected. The number of undetected Danish pig herds infected with MRDT104 in the period 1 August 2001-31 July 2002 was estimated and compared with the number of culture-confirmed detected herds. A flowchart was constructed to illustrate where infected herds will go undetected in the surveillance system and Monte Carlo simulation was used to model the actual number of pig herds infected with MRDT104. We estimated that 52 (90% CI [28, 178]) finisher herds were infected with MRDT104 compared to 23 (44%) detected. Among sow herds with production of weaners or growers, we estimated that 38 (90% CI [23, 74]) were infected with MRDT104 compared to 7 (18%) actually detected. Among breeder and multiplier herds, we estimated that five (90% CI [3, 8]) herds were infected with MRDT104 compared to three (60%) detected. In total, we estimated that 102 pig herds were infected with MRDT104 from 1 August 2001 till 31 July 2002 (90% CI [63, 228]). In comparison, 33 (32%) infected herds were detected in this period. The predicted proportion of undetected herds varied considerably with herd type. We infer that the proportion of detected MRDT104 infected herds depended on the intensity of the combined serological and bacteriological testing.

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