

## **Erratum: Annual Report on Zoonoses in Denmark 2004 (p. 11-12)**

*Vi har beklageligvis opdaget en fejl i S. Typhimurium data for smittetilregnskabet 2004 og dermed det antal tilfælde vi tilskriver de kilder, hvori S. Typhimurium forekommer. De væsentligste ændringer er, at importeret svinekød og dansk kyllinge- og svinekød tilskrives flere tilfælde, mens dansk oksekød samt importeret oksekød og fjerkræ (særligt udenlandske ænder) tilskrives færre tilfælde. Fejlen er rettet og de nye resultater er indsat nedenfor i det relevante afsnit i 2004 rapporten.*

We have unfortunately discovered an error in the food and animal data for *S. Typhimurium* used in the 2004 Salmonella source account. The most important changes are that more human cases are attributed to imported pork, and Danish broiler meat and pork, whereas fewer cases are attributed to Danish beef, and imported beef and poultry. The relevant pages of the Annual Report 2004 are presented below including the corrected results.

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### **2.2 Trends and sources of human salmonellosis**

To obtain a better understanding of the dynamics of the occurrence of human *Salmonella* infections, the DZC has applied a mathematical model to estimate the contribution of the major animal and food sources to human infections with *Salmonella*. This model is based on a comparison of the number of human cases caused by different *Salmonella* sero- and phage-types with the prevalence of the *Salmonella* types isolated from the various animal-food sources, weighted by the amount of food source consumed. Resistance profiles of *S. Typhimurium* isolates were also included to further distinguish between similar phage types found in animals, food and humans.

In 2004, the estimated mean number of human cases (per 100,000 inhabitants) that could be attributed to various sources, was as follows: table eggs: 1.8; broilers: 1.2; pork: 2.6; turkeys: 0; ducks: 0.2; beef: 0.4; imported poultry products: 3.7; imported beef: 0.2; imported pork: 1.8; cases related to outbreaks: 0.9; travel: 7.7 (see comment below); unknown source: 7.9 (Figure 6). Figure 7 shows the estimated number of cases caused by three major infection sources (broilers, eggs and pork) from 1988 to 2004. Compared to 2003, the number of egg-associated cases continued to decline, which is believed to be a result of the surveillance and control programme implemented in the table-egg production in 1997. Cases related to domestically produced pork also decreased from 3.8 cases per 100,000 inhabitants to 2.6. Since 2002, the estimated number of cases related to domestically produced pork has varied between 1.1 and 3.8 cases per 100,000 inhabitants. This represents a significant decrease from 22.0 cases per 100,000 inhabitants estimated in 1993 and is approximately at the same level as found before 1990. The number of broiler-associated cases has increased to the level of 2000.

In 2004, *S. Typhimurium* phage types were the cause of all outbreak-related cases of human salmonellosis. Thirty-four cases were traced to domestic pork, 10 to imported pork products and for 51 cases the source was not identified. The number of cases reported as travel-related is known to be underreported. In previous years, the number of travel-related cases among patients with unknown travel history was estimated using data from cases with a known travel history (i.e. responding yes or no to travel). As in 2003, this approach proved extremely difficult in 2004, since 78% of all patients had no travel information. Furthermore, this proportion varied between *Salmonella* types. For patients infected with a resistant *S. Typhimurium* infection, travel information was missing for around 30% of the cases, whereas this proportion was 78% for *S. Enteritidis* cases, and 90% for cases infected with fully susceptible *S. Typhimurium* or with other serotypes. Consequently, estimation of the total number of travel-associated cases in 2004 was based on data from 2002, assuming that travel behaviour had not changed significantly over the last few years. The analyses were further complicated by the fact that similar *S. Enteritidis* phage types were found in imported chicken and travel-associated cases. For 2004, we estimated that approximately 415 (7.7 per 100,000) cases were travel related. Of these, 179 cases had positively reported travelling before disease onset.

Specifically, for the 467 reported *S. Typhimurium* cases, 44 were estimated to be associated with travelling and 95 were outbreak related. Of the domestically and sporadically occurring cases, 132 were associated with Danish produced food and 89 with imported food, whereas the remaining 107 cases had an unknown source of origin. Based on the antimicrobial susceptibility testing, it was estimated that 2% of infections from Danish produced food were multi-drug resistant (resistant to four or more drugs), none were quinolone resistant, 30% resistant (resistant to less than four drugs) and 68% susceptible. In the imported food, 27% were multi-drug resistant, 3% were quinolone resistant, 46% were resistant and 23% were susceptible. Overall, this indicates that more than 90% of all multi-drug resistant and/or quinolone resistant *S. Typhimurium* infections are acquired from food produced outside Denmark i.e. either from imported food or from travelling abroad.

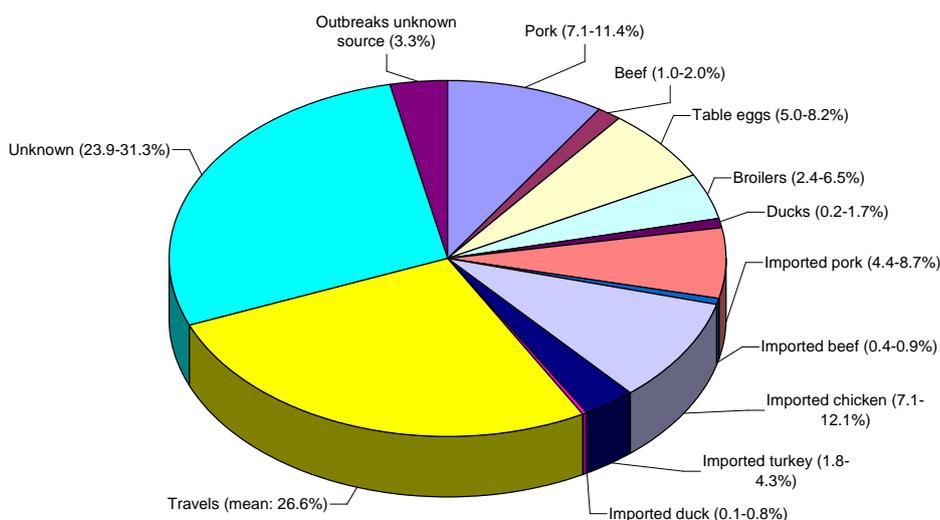


Figure 6. Estimated sources of 1,538 cases of human salmonellosis in Denmark, 2004. The estimated mean number of cases per source: 147 from imported chicken, 46 from imported turkey, 5 from imported duck, 98 from imported pork, 10 from imported beef, 415 travel associated\*, 142 from pork, 22 from beef, 66 from broilers, 11 from ducks, 100 from table eggs, 51 from outbreaks and 425 of unknown origin.

\* The estimate of travel-associated cases should be interpreted carefully, since data concerning travel history were very poor in 2004. Source: DZC.

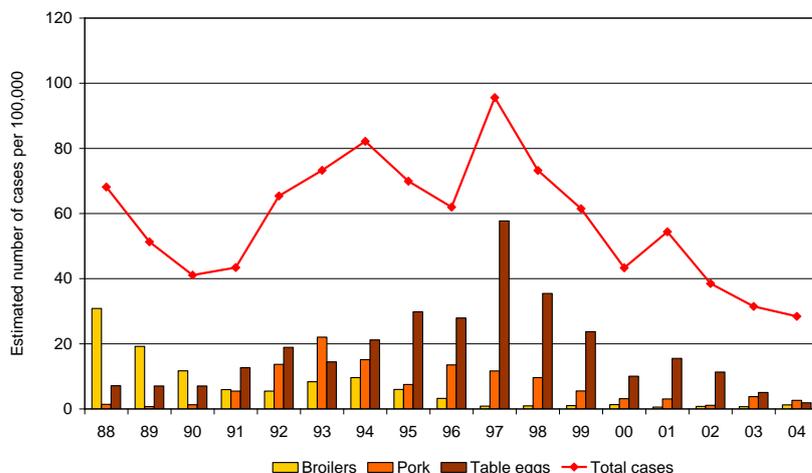


Figure 7. Trends and sources of human salmonellosis in Denmark, 1988-2004. Source: DZC