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Articles

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Danish programme for control of *Salmonella* in poultry has resulted in fewer cases in both poultry and humans

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The Danish National *Salmonella* Control Programme, launched in December 1996, was reviewed in March 2003 [1,2]. The control programme was designed to be a 'top-down' effort based on an elimination strategy, whereby infected poultry flocks were eradicated by compulsory slaughter. Public funding for the programme expired in 2002, after which the poultry industry took over administrative and financial responsibility, while *Salmonella* control and prevention continues to be under public regulation and surveillance. The Fødevaredirektoratet (Danish Veterinary and Food Administration, <http://www.fdir.dk>) has overall control of the programme, and the public sector will continue to set the goals of the continued efforts.

The National *Salmonella* Control Programme covers all *Salmonella* serotypes (except for the host-specific serotypes *S. Pullorum* and *S. Gallinarum*), and both the layer and broiler production systems at all levels. Infected flocks are detected as early as possible by sampling and testing, including serological and bacteriological analyses.

Results for broiler production

As a result of this elimination strategy, the percentage of broiler flocks positive for *Salmonella* before slaughter has declined from 12.9% in 1997 to 1.5% in 2002.

Results for breeding flocks

Since the launch of the programme, the percentage of breeding flocks infected with *Salmonella* has hovered around 1.2%, since Denmark like most other member states, has had a control plan for *S. Enteritidis* and *S. Typhimurium* in breeding flocks since the early 1990s, as a result of Directive 92/117 [3]. None of these flocks have transmitted *Salmonella* down through the production pyramid, because the detection of infection results in flock eradication. This is very important, because Denmark has only a few breeding flocks supplying many production flocks.

Results for egg-producing ('layer') flocks

The percentage of infected flocks providing table eggs has declined from 13.4% in 1998 to 2.6% in 2002; the dominant serotype has been *S. Enteritidis* phage type 8.

Impact on human cases

This improvement in primary production is reflected in a striking 59% decline in the number of registered human *Salmonella* cases, from 5015 in 1997 to 2071 in 2002. In 2003, only 1712 cases were recorded. The estimated number of human cases attributable to eggs has been reduced by 80% from 1997 to 2002. While 60% of the infections (a total of 3009) in Denmark were egg-related in 1997, only 31% (a total of 636) in 2002 were attributable to eggs. The majority (some 75%) of chicken and nearly all eggs consumed in Denmark are produced there, and it is therefore likely that the decrease in the number of human infections is a direct result of the control programme.

The full report: *The National Salmonella Programme for the Production of Table Eggs and Broilers, 1996 - 2002* is available at <http://www.foedevaredirektoratet.dk/FDir/Publications/2004006/Rapport.pdf>.

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2. Danish Veterinary and Food Administration. Symposium on *Salmonella* Control. 27 February 2004. (online) (http://www.uk.foedevaredirektoratet.dk/Animal/Zoonoses/Symposium_on_Salmonella_Control.htm) [accessed 25 May 2004]
3. Council Directive 92/117/EEC of 17 December 1992 concerning measures for protection against specified zoonoses and specified zoonotic agents in animals and products of animal origin in order to prevent outbreaks of food-borne infections and intoxications. *Official Journal of the European Communities* 1993; **L062**: 15/03/1993, pages 38-48. (http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31992L0117&model=guichett)

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