Surveillance and Control Program for Salmonella in Swine:
The Danish Action Plan

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The Danish national Salmonella surveillance and control program in swine, which has existed in its present form since January 1, 1995, is mandated by the Act of Zoonoses of December 21, 1994, and implements Paragraph 1, Article 8, of the Zoonosis Directive 92/117/EEC. The objective of the program is to reduce the prevalence of Salmonella in swine herds as well as in pork, and represents a comprehensive effort by the swine industry and the veterinary authorities. Results from the first year the program has been in effect were reported by Emborg et al. (1).

The Danish Salmonella action plan consists of three parts: (1) Monitoring of (i) herds producing more than 100 finishing pigs a year and (ii) breeding and multiplying herds; (2) Monitoring of animal feeds. In 1993 regulations were passed to make it mandatory for feed mills to submit a Salmonella monitoring scheme, including analysis of ready-mixed feed stuffs as well as process control (3). Monitoring of slaughterhouses including (i) slaughter carried out using special hygienic precautions, (ii) visible fecal contamination and (iii) meat end product. The herd monitoring scheme was described by Bager et al. (2). The serological technique used was developed by the Danish Veterinary Laboratory for use on serum and has been modified to be used on meat juice from the slaughtered pigs (3). (1.i) The surveillance program constitute representative sampling of 18,500 herds from which 850,000 samples are examined every year. On the basis of the proportion of samples reacting positively a herd is assigned to one of three levels. Level 1 with no or very few reactors and no intervention in the herd required. Level 2 herds contain a proportion of reactors and the owner is required to seek advice of how best to reduce the Salmonella prevalence in the herd. Level 3 herds contain a high proportion of reactors. As in Level 2, the owner is required to seek advice, and pigs from that herd have to be slaughtered using special precautions to avoid contamination of meat, to minimize the risk of salmonella contamination. (1.ii) The voluntary Salmonella surveillance program for breeding and multiplier herds requires that a random sample of 20 blood samples be collected once a month and tested for the presence of salmonella antibodies (3.i). Contamination of the carcass occurs principally when the gastrointestinal tract is removed (1). A plastic bag is everted over the anus and posterior rectum, after it has been cut loose by a rotating knife, thereby minimizing contamination. In addition pigs are not to be fed within 12 hours of slaughter so as to reduce contamination of carcasses by stomach contents. Swine delivered from Level 3 herds have to be slaughtered as late in the day as possible. The heads of the carcasses are not split during dressing, and the thoracic and abdominal viscera are either rejected or heat treated. The carcasses are also tested at random microbiologically by swabbing 1400 cm² area of the skin to determine if Salmonellas have been transferred to the carcass during dressing. If more than 25% are positive, all subgroups of pigs from that day’s special precautionary slaughter will be subjected to heat treatment. (3.ii) All slaughter plants are required to monitor fecal contamination of carcasses twice a day on a random basis. The results are reported to the Danish Veterinary Directorate’s Department of Meat Control. (3.iii) Monitoring of pig meat end products happens by rolling surveillance of about 2200 random samples every month, and is an indication of the effectiveness of the Danish Salmonella surveillance program. The number of samples collected is determined by the number of pigs slaughtered in that plant.
References