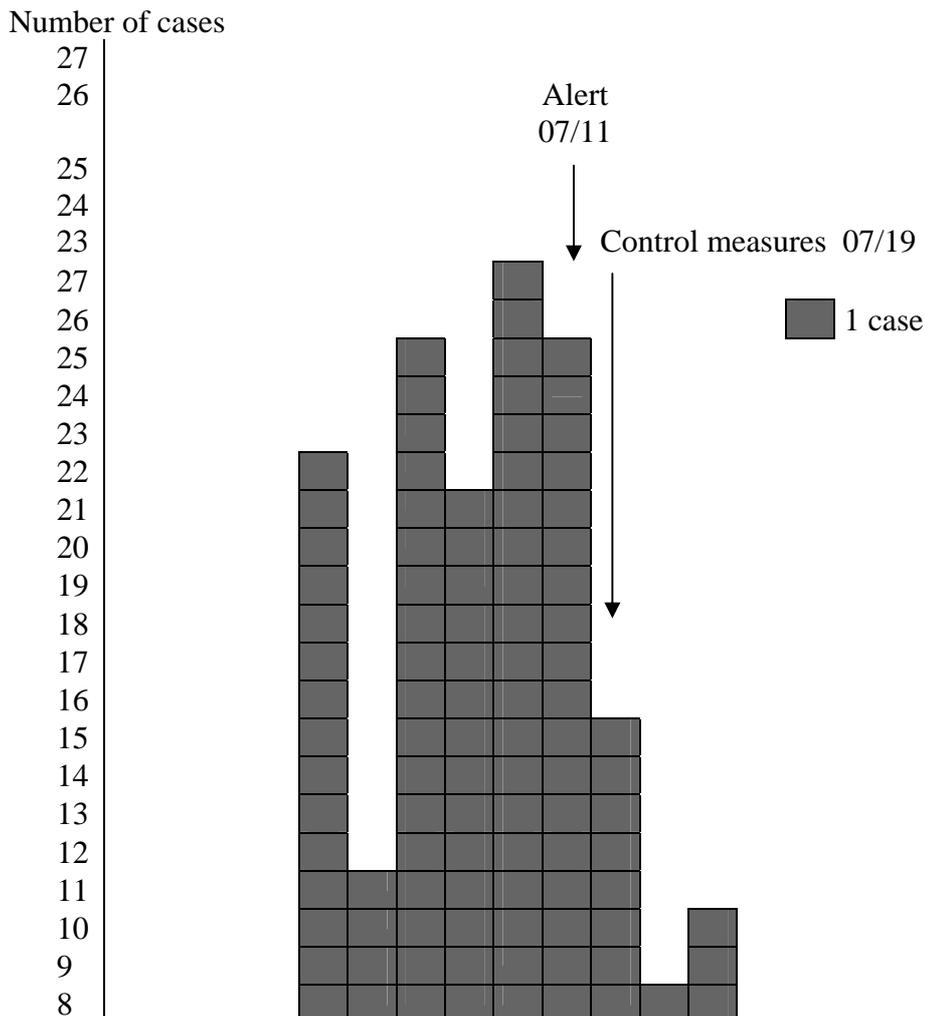


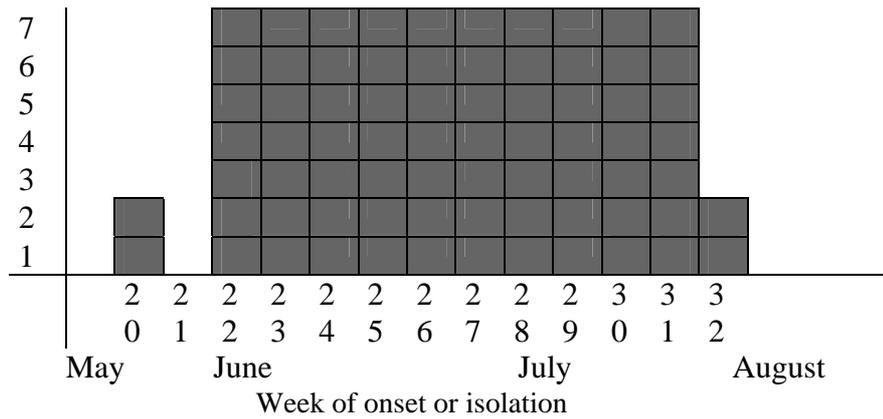
Salmonella enteritidis outbreak phage type 8 in southwest France from contaminated Cantal cheese

In mid July 2001, microbiologists from three medical laboratories and a general practitioner alerted the health office of Aveyron, a district in southwest France, to an increase in the number of cases of *Salmonella enteritidis* infection. To identify the vehicle and source of the outbreak, a descriptive exploratory study was conducted, followed by a case-control study. A case was defined as a resident of Aveyron or its neighbouring districts, Lot or Cantal, with fever ($\geq 38^{\circ}\text{C}$) or diarrhoea (\geq two episodes in 24 hours), from whom *S. enteritidis* had been isolated since 1 June. Cases were identified by contacting the public and private medical laboratories in the three districts, and the Centre National de Référence des Salmonelles et des Shigelles (the national reference centre for salmonella and shigella). Controls were randomly selected from the telephone directory of the places of residence of the cases. Cases and controls were interviewed by telephone using a standard questionnaire. The supply channels of the stores where cases had purchased the implicated product were investigated in order to identify a common supplier.

To date, a total of 177 cases have been identified with dates of onset of symptoms between 1 June and 9 August 2001: 147 in Aveyron, 19 in Cantal, and 11 in Lot. Cases were between 10 months and 88 years of age; the male:female sex ratio was 1.5. Cases were more likely than controls to have eaten Cantal cheese: 44 (94%) of the cases and 42 (66%) of the controls reported its consumption (odds ratio 8.4, 95% confidence interval 2.2 to 46). No other food was associated with infection.

Distribution of cases of salmonellosis by week of onset or isolation and time sequence of investigation and control measures. *Salmonella enteritidis*, France (Aveyron, Cantal, Lot), June-July 2001





Cantal cheese is made from cow's milk, and has a consistency similar to cheddar. Usually it is made from raw milk, as was the case for the Cantal implicated in this outbreak. It is aged for about 1 to 2 months for young cheese, 2 to 4 for medium cheese, and 4 to 6 for mature cheese. In this outbreak, most cases reported eating the younger cheese.

The analysis of distribution channels implicated a single common processing plant. *S. enteritidis* was subsequently isolated from the implicated brand of Cantal cheese at the production site and at retail outlets. The strain isolated from food and human cases was phage type 8 and had the same pulsed field gel electrophoresis pattern. On 19 July all Cantal cheeses from that particular producer were withdrawn from the market, and production at the implicated site was stopped. The producer did not export abroad.

Reported by Sylvie Haeghebaert (s.haeghebaert@invs.sante.fr), Véronique Vaillant, Patrick Sulem, Institut de Veille Sanitaire, Saint-Maurice, France; Francine Grimont, Centre National de Référence pour le typage des entérobactéries, Paris, France; Philippe Bouvet, Centre National de Référence des Salmonelles et des Shigelles, Paris, France; Anne Brisabois, Agence Française de Sécurité Sanitaire des Aliments, Maisons-Alfort, France.