

Outbreak of *Salmonella* Worthington infection in elderly people due to contaminated milk powder, France, January-July 2005

Institut de Veille Sanitaire (InVS), Saint-Maurice, France, on behalf of the outbreak investigation group*

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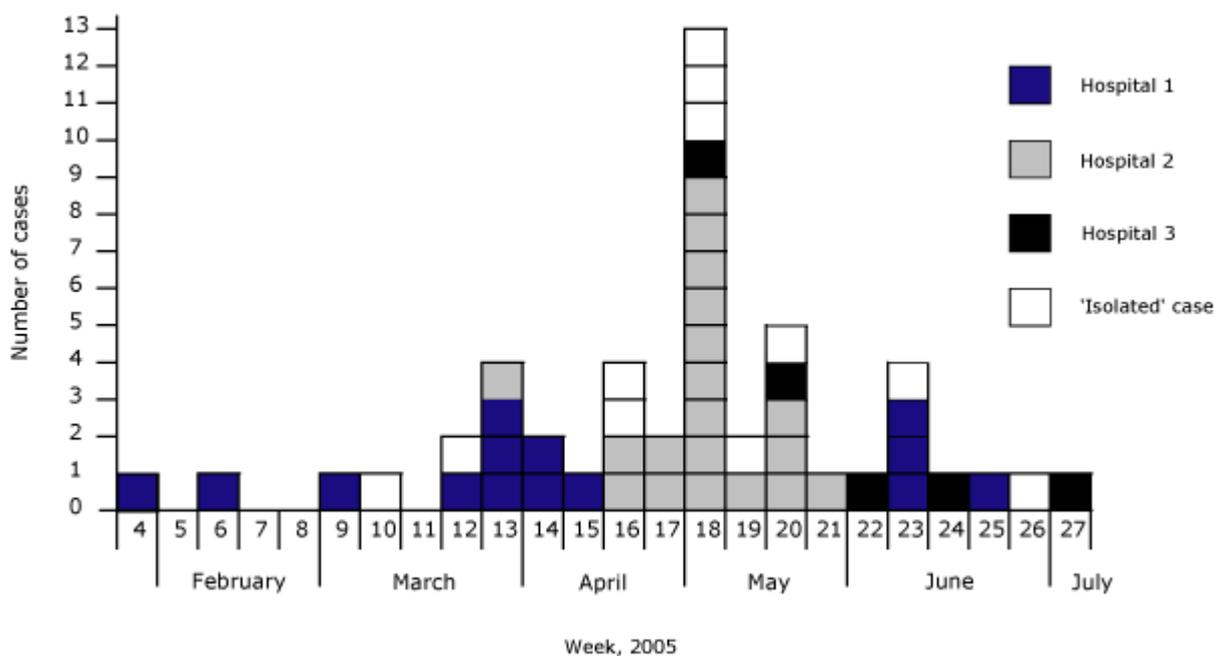
In May 2005, InVS was informed of a cluster of 6 cases of *Salmonella* Worthington infections in one hospital by the Centre de Coordination de la Lutte contre les Infections Nosocomiales (CCLIN, Coordination centre for nosocomial infection control) in Bordeaux (southwest France). The hospital was located in the administrative département of Haute-Garonne (southwest France) and the first case had symptom onset on 29 January. During the same period the Centre national de référence des *Salmonella* (national *Salmonella* reference centre, CNR) identified 13 cases of *S. Worthington* infections, far more than annual average of 5 cases detected in recent years.

An epidemiological investigation was conducted by the local health departments, the Cellules interrégionales d'épidémiologie (CIRE, interregional epidemiology teams) in Aquitaine and Midi-Pyrénées (southwest France), the infection control professionals of the hospitals concerned, and the Institut de veille sanitaire (InVS), to search for additional cases, identify the source and propose appropriate control measures

Results

To date, the investigation has identified 49 cases of *S. Worthington* with illness onset between 29 January and 5 July 2005 (Figure). Thirty eight cases were clustered in three hospitals located in three administrative districts, and 11 were isolated cases.

Figure. *S. Worthington* cases, by date of symptom onset, France, January-July 2005



The investigation results for the 3 clusters are detailed below.

Hospital 1 (Haute-Garonne, southwest France)

Fourteen cases were identified between 29 January and 21 June 2005. Ten cases occurred between 10 February and 14 April, followed by four cases between 7 and 21 June. The patients had been admitted to three different wards within the hospital (mostly for long term admission), and acquired their salmonella infections in hospital. Two patients died from causes unrelated to salmonella infection.

Hospital 2 (Pyrénées-Atlantiques, southwest France)

Nineteen cases were identified between 3 April and 23 May 2005. The patients had been admitted to hospital in long term care wards at two different sites.

Hospital 3 (Val-de-Marne, northern France)

Five cases were identified between 6 May and 5 July 2005. These patients had been admitted to hospital at three different wards. Two patients died from causes unrelated to salmonella infection.

'Isolated' cases identified by the CNR

Eleven cases were identified between 8 March and 30 June 2005. These cases occurred in 10 different administrative districts. At the time of their salmonella infection, seven of the patients had been admitted to seven different hospitals, and 4 patients were living at home. One of the hospitalised patients died from causes unrelated to salmonella infection.

Case summary

Forty five of the 49 cases (92%) were identified in patients who had already been admitted to hospital for other reasons, and two thirds of these hospital cases were hospitalised in long term care wards (table 1). The mean age for the hospital cases was 79 years (range: 29-104 years); the mean age of the cases that had not already been admitted to hospital was 63 years (range: 15-90 years).

Table 1. Number of cases by type of residence and hospital ward. S. Worthington, France, January-July 2005.

Accommodation	Ward type	Ward type				Total
		Acute care	Rehabilitation	Long term care	Unknown	
Hospital, clustered cases	Hospital 1	1	2	11	0	14
	Hospital 2	0	0	19	0	19
	Hospital 3	0	4	1	0	5
Hospital, isolated cases		4	1	1	1	7
Hospital total		5 (11%)	7 (16%)	32 (71%)	1 (2%)	45
Home, isolated cases						4
Total						49

Symptoms were less severe than those usually observed for salmonellosis (table 2) : 28% of cases presented with fever, and for 44% of cases, the only symptoms seen were a change in stools (loose stools).

Table 2. Symptoms of the cases (n=41) *S. Worthington*. France, January-July 2005

Symptom	No. of cases	%
Fever	11	28%
Nausea	3	7%
Vomiting	5	12%
Diarrhoea	20	50%
Loose stools	18	44%

The investigation into cases' food consumption in the week before symptom onset did not find evidence of any common dishes or other food preparation or dietary supplements. However, an analysis of the ingredients used in food preparation found that the majority of patients had consumed powdered milk from the same manufacturer, used to enrich or alter food texture to make it easier to eat for elderly and malnourished patients. Among the 37 hospital cases for whom information was available, 37 (100%) had definitely (23 cases) or probably* (14 cases) eaten food prepared with powdered milk during the 7 days before symptom onset. None of the 4 cases who became ill while living at home had consumed powdered milk.

The investigation conducted by the local veterinary services in June isolated *S. Worthington* from environmental samples taken at the manufacturing plant, in milk powder produced in March 2005 sampled from one of the hospitals and from a sample of milk powder produced in December 2004 that was stored in the manufacturing plant.

It was concluded that the outbreak of cases of *S. Worthington* identified in hospitals in the first 6 months of 2005 was due to the consumption of this contaminated powdered milk.

Control measures

Hygiene control measures (hand hygiene and disinfection of equipment and premises) were reinforced in the three hospitals from the beginning of the investigation, with the help of CCLIN and CIRE.

A communication was sent from InVS to the five French CCLINs on 24 June to reinforce vigilance for salmonella caused by *S. Worthington* in hospitals in the areas affected, particularly facilities with long term care wards.

On 7 July, the suspected batches of milk were withdrawn by the manufacturer, through the distributors, in collaboration with the local veterinary services and the directorate-general for food products. The production of milk powder was topped on 6 July at the manufacturing plant and cleaning and disinfection were carried out there. The manufacturing process was reviewed in collaboration with the local veterinary services and an external expert.

Because this powdered milk was distributed nationwide for institutional use (hospitals, residential homes, schools and daycare centres), and cases were seen mainly in elderly, hospitalised people, a communication about the withdrawal of these products was sent out on 7 July to all hospitals by the ministry of health. Reminders about recommendations for the use of powdered milk were made: hand hygiene, respecting the cold chain, and application of the Hazard Analysis Critical Control Points (HACCP) risk management system when preparing food.

*Use of powdered milk as food supplement by the establishment and a patient who ate foods that could have been prepared using this powdered milk

References:

1. INVS. Janvier-juin 2005, France. Point rédigé par l'InVS au 8 juillet 2005, pour le groupe d'investigation. 8 July 2005. (http://www.invs.sante.fr/display/?doc=presse/2005/le_point_sur/salmonella_worthington_080705/index.html)