

The Lyssavirus Expert Group noted that inapparent exposure to lyssavirus could occur⁶. The current guidelines do not offer any definite advice for people who have been exposed to a lyssavirus-positive bat, but who are not aware of receiving any penetrating wound or contamination of mucous membranes with secretions⁵. We suggest that such persons should receive the standard five-inoculation

post-exposure regime using killed human diploid cell rabies vaccine.

References

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Salmonella in Victoria, 1997: the story so far

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Abstract

The Infectious Diseases Unit of the Department of Human Services, Victoria, reported an increased incidence of *Salmonella* infections in early 1997. To 21 April 1997, 944 notifications had been received, passing the previous year's total of 915. Five outbreaks of five separate serovars have been investigated and traced to their sources. The outbreaks, their sources and the control measures undertaken are described. Further clusters of other *Salmonella* serovars are being investigated. *Comm Dis Intell* 1997;21:120-122.

Introduction

The number of notified cases of *Salmonella* infections in Victoria has varied between 712 and 1,062 in the years 1991 to 1996. Notification rates per 100,000 population have been 23.7, 21.7 and 20.4 for 1994, 1995 and 1996 respectively. Notification rates to the National *Salmonella* Surveillance Scheme for the same three years were 21.7, 19.7 and 18.1 per 100,000 population. The Australian average notification rate in 1996 was 31.0 per 100,000 population.

To 21 April 1997, 944 notifications of *Salmonella* had been received in Victoria, passing the previous year's total of 915. A number of clusters were investigated.

Notable outbreaks which have been traced to a source in the past have included 47 cases of *Salmonella* Typhimurium 135 in 1991 associated with Italian-style ice cream (using uncooked eggs), and 54 cases of *Salmonella* Mbandaka in 1996 associated with peanut butter.

In late 1996, there was an outbreak of 36 cases of *Salmonella* Typhimurium RDNC A015 traced to a cafe in an outer suburban shopping centre. The implicated food in this outbreak was mayonnaise, which was made on the premises using raw eggs.

Methods

Investigations of *Salmonella* clusters begin with a weekly review of all notifications, including *Salmonella*, compared with historical data. Once it is identified that there is a cluster of

cases of the same serovar, an outbreak investigation is commenced. A standard questionnaire is administered by telephone to all notified cases in the cluster by staff of the Infectious Diseases Unit of the Department of Human Services. The questionnaire asks about the person's food history in the three days prior to becoming ill, and about foods consumed as part of their routine diet. Premises nominated by cases where foods have been purchased are also recorded. The data are constantly reviewed for possible links, and food sampling either from cases' homes or from nominated premises is undertaken as appropriate.

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Outbreaks in 1997

Salmonella Muenchen

Twenty-four cases of *Salmonella* Muenchen were notified to the Department of Human Services from mid-February to mid-March 1997. This is a relatively uncommon serovar, with three to seven cases notified per year in recent years. Dates of onset of illness varied from 21 January to 30 March 1997. We were also notified that seven cases had been reported in South Australia.

The ages of cases ranged from one year to 95 years. There were relatively few young children notified compared with the notification rates for all *Salmonella*. There were two deaths associated with this outbreak: a 79 year old male and an 86 year old female.

In their food histories, three cases mentioned a retail butcher in the northern suburbs of Melbourne. Among samples obtained from this butcher, sliced corned beef was positive for *Salmonella* Muenchen. The source of the corned beef was a smallgoods manufacturer in the northern suburbs. This supplier sold products directly from a retail shop, as well as distributing products to delicatessens and small supermarkets. A few customers then sold products to other outlets. Extensive samples and environmental swabs were obtained from the smallgoods supplier and a distribution list for outlets was obtained.

Of the 24 cases, 22 mentioned ham and/or corned beef either in their specific three day food history, or in the list of foods generally eaten. Of these, 15 cases were shown to have purchased sliced meats from premises on the distribution list. Samples and swabs from the smallgoods supplier were negative. However, the epidemiological evidence was such that a recall of the implicated product was considered necessary. A voluntary recall of corned beef and two types of ham, with a public announcement to discard these products if the source was unknown, was undertaken on 21 March 1997. Preparation of these products involved handling and repackaging after cooking, and therefore provided the potential for post-cooking contamination.

Since the recall, *Salmonella* Muenchen has also been isolated from unopened packages of corned beef from the factory, both in Victoria and South Australia.

Salmonella Typhimurium 1

On 23 March 1997, the Department of Human Services was notified of large numbers of patients seeking treatment for gastroenteritis at two hospitals in the south-eastern suburbs of Melbourne. Many cases had eaten Vietnamese pork rolls from a particular hot bread shop in the area.

The Department of Human Services received 808 reports. Of these, 598 were reported from hospital emergency departments, and 79 cases required hospitalisation. To 21 April 1997, 415 isolations of *Salmonella* Typhimurium 1 had been officially notified to the department since the weekend of the outbreak. No deaths were reported in conjunction with this outbreak.

The hot bread shop identified as the source was closed on the evening of the day on which the outbreak was notified, and remains closed indefinitely. Seven hundred and seventy-four of the cases had a definite association with eating Vietnamese rolls. Three other premises which sold the rolls from the hot bread shop had cases associated with them.

Salmonella Anatum

Nineteen cases of *Salmonella* Anatum were notified to the Department of Human Services in March 1997. The age range of the cases was one to 74 years. Cases were scattered through the suburbs of Melbourne, and four cases were from two towns in north-eastern Victoria. None of the cases required hospitalisation, although one case acquired her infection while in hospital for an unrelated complaint. Dates of onset varied from 1 February to 13 March. Seventeen of the 19 cases mentioned consumption of ham in their specific three day food history; all 19 reported consumption of ham in their routine diet. Fourteen of the 19 also mentioned consumption of corned beef. Sampling of smallgoods from a delicatessen nominated by three of the cases revealed *Salmonella* Anatum in unopened corned beef and two types of ham. A recall of the

affected products was commenced on 2 April.

Six further cases have been notified since the recall was announced. Dates of onset are available for four of these cases; all were prior to the announcement of the recall.

Salmonella Chester

Five cases of *Salmonella* Chester infection occurred in the southern bayside suburbs of Melbourne in February - March 1997. One case required hospitalisation. Four of the five cases revealed a link with a delicatessen in a large local supermarket. The delicatessen was closed for cleaning and sanitising. Food and environmental samples and faecal specimens from staff were collected. Two further cases have been notified since the second cluster, but neither has links with the delicatessen.

Investigations into this outbreak are continuing and the delicatessen remains closed. A more complete description of this outbreak will be reported separately.

Salmonella Typhimurium 43

Seven cases of this serovar occurred in March 1997, with three of the cases being from one family. The seventh case was a notification from the State coroner. The organism was isolated from the bowel of a 27 year old man at post mortem. This man had a four day history of moderate gastroenteritis. He had visited his general practitioner on two occasions in the several days prior to being found dead at home. The cause of death as reported by the coroner was indeterminate, as there was no evidence that the *Salmonella* infection was the cause.

Five of the cases had a definite history of having eaten at a Vietnamese/Chinese restaurant in the south-eastern suburbs of Melbourne. The deceased man had recently been employed at a fish shop two doors away from this restaurant. The owners of the fish shop used to regularly order food for their employees, or send them to this restaurant for lunch. No one could definitely confirm whether this man had eaten food from the restaurant before becoming ill, but this seems likely to have occurred. The seventh case reported no association with the restaurant. The shop was closed for

cleaning and sanitising, and faecal tests on staff were carried out.

Conclusions

Detailed investigation of *Salmonella* clusters by a team of public health officers has shown that successful results can be obtained, even when the source of an outbreak is an unlabelled, distributed product, as was the case with the two outbreaks involving smallgoods. The time taken to find the source in these two outbreaks contrasts with the ease of finding a cause in the case of a point source outbreak with a very high attack rate.

The high incidence of *Salmonella* in Victoria in 1997 may be due to a higher load of organisms being present in meat coming from abattoirs. This has been combined with gross errors of food handling in some cases, and minor errors in others. Undoubtedly, mishandling by consumers has also contributed to

the increased incidence. The majority of these outbreaks occurred during and shortly after the hottest summer ever recorded in Melbourne.

The high success rate in tracking the sources of outbreaks, and the associated publicity, probably led to more testing and more reporting of outbreaks which may previously have gone unreported. A lowered threshold of suspicion has led to investigation of small clusters with successful results, as with *Salmonella* Typhimurium 43. All such successes add to our knowledge of the epidemiology of this type of food-borne disease, and add to prospects for prevention.

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