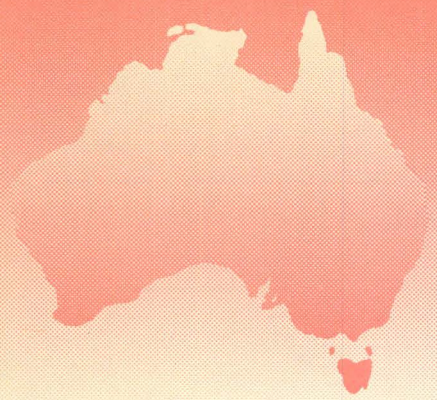

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THE DEVELOPMENT OF THE SOUTH AUSTRALIAN IMMUNISATION CAMPAIGN FROM ITS ORIGINS TO 1990

(John Carrangis, Communicable Diseases Control Unit, South Australian Health Commission, reprinted with acknowledgement from CDC Bulletin Volume 2 Number 3, August 1991)

This paper discusses changes that occurred in immunisation in South Australia between 1980 and 1990. It also discusses the campaign approaches (including communication strategies, network building and vaccine distribution), and it identifies important changes in thinking that have occurred during the period.

The campaign has been aimed at immunising against the major vaccine preventable diseases - measles, mumps, rubella, diphtheria, tetanus, pertussis, polio, and influenza in the aged. It has thus been aimed predominantly at children's immunisation.

South Australia has a population of 1.44 million. A total of 1.1 million live in Adelaide, 300,000 live in rural areas, and 40,000 live in pastoral - mining areas across the north of the State. Immunisation is presently provided by the following:

- local councils provide 60% of vaccinations
- general practitioners provide 35% of vaccinations
- the balance of 5% of vaccinations is provided by Community Health Care Centres, Adelaide Children's Hospital and Occupational Health Offices.

In 1980, the immunisation rates were:

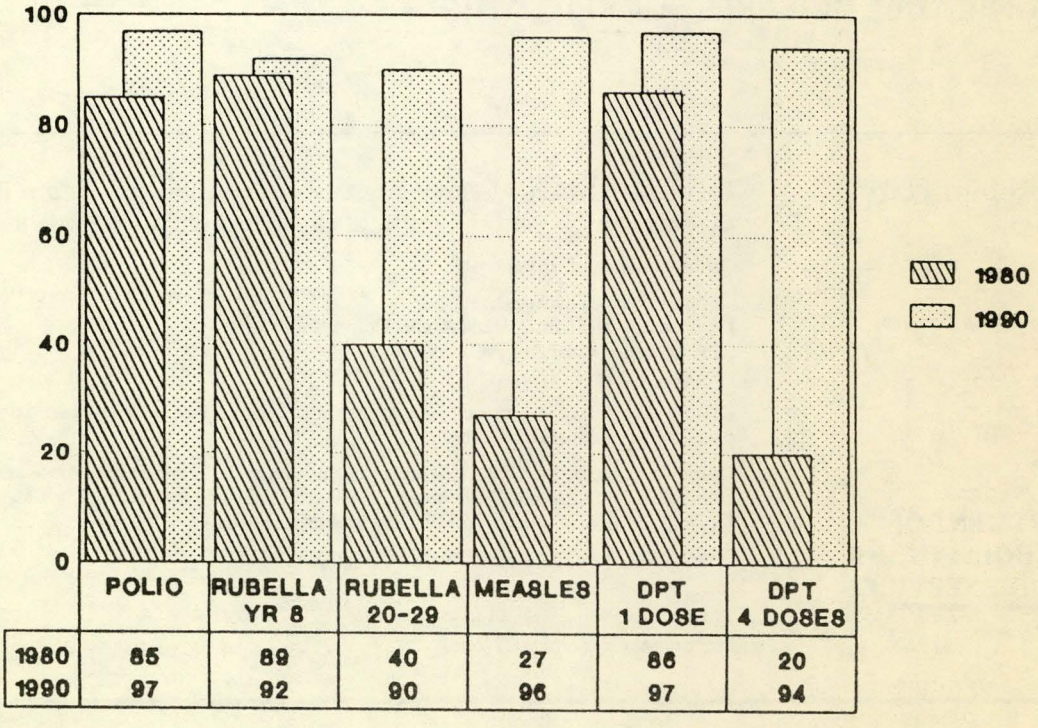
- Polio - 85-90% of the population immunised
- Rubella - 89% of Year 8 females immunised
  - 40% of 20-29 year old females immunised
- Measles - 25-30% of children aged 1-15 years immunised
- DTP - 86% of children had received at least one dose (diphtheria-tetanus-pertussis; triple antigen)
  - 20% of children had received 4 doses (compared to 60% nationally).

Measles-mumps and DTP were the primary targets for the campaign.

By 1990, the following had been achieved:

- Polio - 96.8% of pre-school children had received 3 doses of oral vaccine
- Rubella - 90% of women 20-29 years immunised

Figure 1. Immunisation rates for polio, rubella (year 8), rubella (20-29 years), measles, DTP (one dose) and DTP (four doses), 1980 and 1990



	POLIO	RUBELLA YR 8	RUBELLA 20-29	MEASLES	DPT 1 DOSE	DPT 4 DOSES
1980	85	89	40	27	86	20
1990	97	92	90	96	97	94

- Measles-mumps - 96% of pre-school children immunised

DTP - 93.7% of pre-school children had received 4 doses of vaccine (Figure 1).

(These statistics come from a census of pre-school children and the South Australian Health Commission *Health Omnibus*.)

The incidence of measles in South Australia, as reported by general practitioners over the period, has been as follows:

1970 - 35 cases per practitioner per year (Australian Survey)

1980 - 2.5 cases per practitioner per year (SA Sentinel)

1990 - <0.5 cases per practitioner per year (SA Sentinel).

(There are presently about 4,000 general practitioners in South Australia. Measles vaccine was introduced into the State in 1970.)

Campaign History

In 1980, the campaign was begun with a three week multi-media immunisation campaign with a 'ghetto-blaster approach'. The existing immunisation service provision and promotion outlets of doctors, local councils, community health centres and hospitals were used. Controversy was encouraged using slogans such as "he's got Dad's blue eyes and Mum's rubella".

The campaign did have shortcomings. The initial awareness raising and agenda setting could not be sustained because paid advertisements, particularly on television, are too expensive. The network supplying the immunisation service was not ideal. Not enough Councils were offering comprehensive, regular, convenient, free clinics. Not enough general practitioners and Community Health Centres were offering vaccines. This was especially so in rural areas. There was no infrastructure to promote immunisation in an ongoing routine manner.

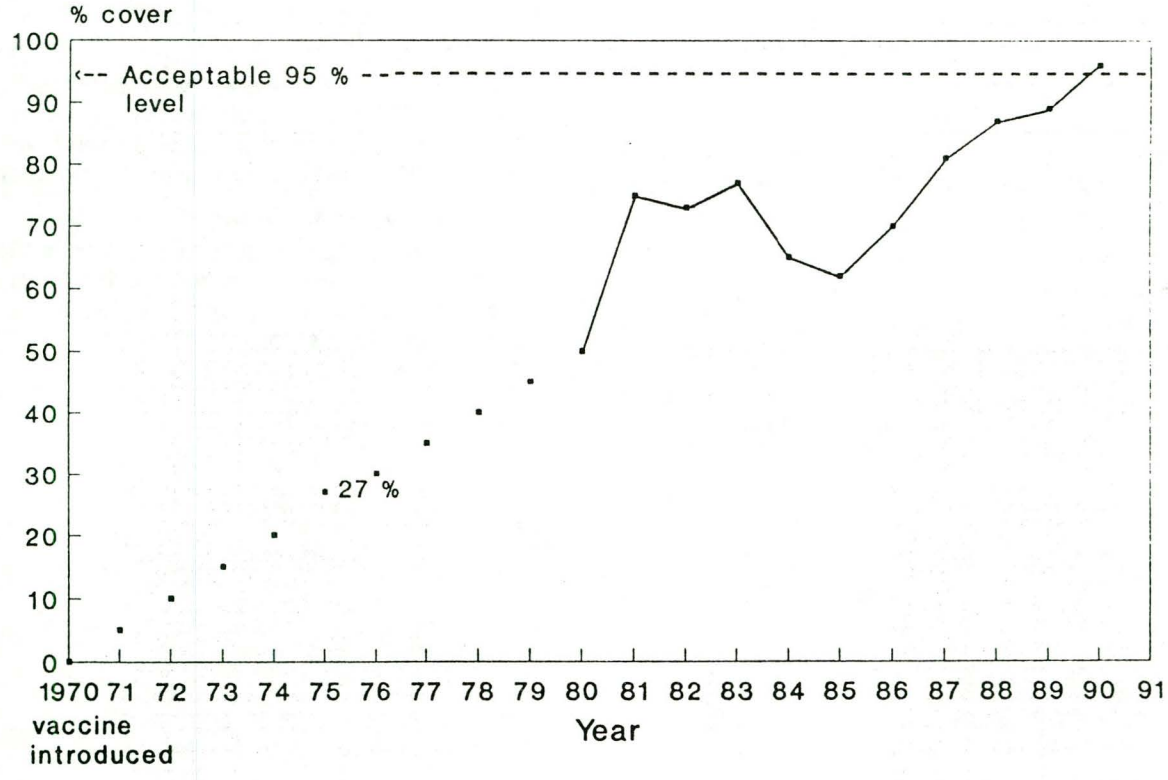
Immunisation levels took off initially, increasing from 50% to 75% cover (Figure 2). However, after 1982-83, immunisation rates began to drop again. Public opinion swayed away from immunisation, and ignorance and apathy took over.

Nothing significant was done about this until 1985, when the South Australian Health Commission identified immunisation, behind smoking control and blood pressure control, as health promotion priorities.

What was needed was a commitment to an ongoing management of immunisation promotion by central government, a good information distribution and supply network, and continuity of communication, targeting specific needs of specific groups.

Actions which were taken included implementation of the ongoing 'mini media campaign', addressing the supply and demand of 'clients', public, media and edu-

Figure 2. Estimated measles immunisation cover (per cent) - year 1 students, South Australia (South Australian Health Commission, 1991)



cators. Clients included all involved with immunisation service provision and promotion.

Products for the mini media campaign were developed in consultation with market researchers, advertising agencies and health workers, and include:

- posters
- pamphlets
- stickers
- cold chain thermometers and calendars
- school calendars
- balloons
- banners
- sandwich boards
- rulers
- pencils.

They were directed to the general public, kindergartens and schools, specific groups, health workers and the media.

- A 'Do-It-Yourself' immunisation kit was developed for local authorities, identifying the problem, giving notes on the diseases, what to do about them, how to promote locally, how to set up or expand services and how to plug into the vaccine supply network. Key personnel were trained in using the kit.
- Many school entry children were surveyed in areas where services were not being provided. The figures were published and the information was fed back to local government.
- Nursing assistance was given in areas where services were inadequate or non-existent.
- The CDC Bulletin was developed, with immunisation procedures, trends and promotion ideas from local, interstate and overseas sources. This Bulletin is the major written communication that the health service promoters and immunisation service providers receive.
- Back to school immunisation campaigns were conducted through radio, newsprint and direct mail to all students at school (school year calendar gift).
- Regional meetings were provided as 'talk-fests' for immunisation service providers and promoters.
- Paid and unpaid advertising was sought using radio, television, newspapers, bulletins, magazines and newsletters. Various combinations of media have been used depending on available funds.
- The Immunisation Services Directory of all free services was compiled and produced annually.
- An *Immunisation Manual for Professionals* was developed.
- The guidelines *Infectious Diseases in Early Childhood Settings* was produced and distributed to every centre (1500). This publication has enabled educators and health workers to be equipped to pass on accurate information to the public.
- A pre-schoolers immunisation campaign was conducted and a pre-school immunisation level assessment and referral service was introduced.
- A school entry immunisation record card was developed. Immunization service providers assess the records and refer or provide vaccine for un-immunised children.
- The vaccine supply and distribution network has been promoted to maintain the potency of vaccines. A cold chain dial thermometer and a calendar for monitoring temperatures were developed.

By 1990, the measles immunisation rate in Year 1 students had increased substantially (Figure 2). There had been a move to de-centralisation; the central agency (South Australian Health Commission) 'oils the wheels' and is responsible for ongoing promotion (responding to and creating opportunities). Local authorities undertake their own promotion and programs supported by the central agency. The network incorporates the central health agency, local councils, doctors, health workers, schools, pre-schools, industry, the public and the media.

A comprehensive statewide immunisation service with fewer gaps has been established. There is an ongoing low-key mini media campaign at a local level and the public have become better informed consumers.

In summary, good immunisation levels can be achieved. A sound structure needs to be in place, continuous management is essential, activity needs to be sustained and reinforced, and ongoing monitoring of immunisation levels is imperative.

WESTERN AUSTRALIAN SENTINEL SCHOOLS SURVEILLANCE PROGRAM FOR IMMUNISATION STATUS AND VACCINE - PREVENTABLE DISEASES

(Reprinted from Western Australian Notifiable Diseases Bulletin Volume 1 (8):6-7, 27 September 1991, Editors Robert Condon, Martin Roberts and Ian Rouse)

On 20 January 1986 the Health Department of Western Australia launched a two year campaign to increase community immunisation levels. The stated objectives of the campaign were to:

1. raise awareness of the need for immunisation,
2. promote awareness of the safety of immunisation,
3. increase by five per cent the proportion of five year olds who had completed the immunisations recommended for their age group,
4. increase by ten per cent the proportion of two year olds who had received measles/mumps vaccine,
5. increase by five per cent the proportion of women who had rubella antibody tests prior to pregnancy,
6. increase the percentage of women in the fifteen to thirty four years age group who had received rubella vaccine.

In January 1985, the Department established a Sentinel School Surveillance Working Group to assist in the evaluation of objectives 3 and 4, and to provide a means of long-term surveillance of childhood immunisation status. The group established a five year program to monitor, by a series of annual surveys, the immunisation status and histories of vaccine preventable disease (VPD) in year one primary school children in Western Australia.

The surveys were conducted in October 1985, 1986, 1987, 1988, and 1989.

This is a summary of the final report in the series.

The surveyed subjects comprised a selected five per cent random cluster sample of all year one primary school children in Western Australia. All the year one primary students at each sentinel school were surveyed, except in the larger schools, where only one class was selected. The same classes were surveyed in each year of the study.

In October of each year the community nurse attending the selected schools arranged for the parents or guardians of the children to receive an explanatory letter and simple questionnaire. This was to be completed and returned to the nurse.

The overall response was 92.2 per cent.

The results of the sentinel schools surveys between 1985 and 1989 indicate that there has been some improvement in the level of immunisation (Table 1). The areas of greatest improvement were for CDT (com-

Table 1. Change in prevalence of immunisation and history of vaccine-preventable diseases in year 1 primary school children in Western Australia from 1985 to 1989

			Prevalence (%)					Prevalence Ratio 1989/1985	
			1985	1986	1987	1988	1989	(95% Confidence interval)	
Immunisation Status									
DTP/CDT		1st	97	99	98	98	99	1.02	(0.94 - 1.07)
		2nd	96	98	96	96	98	1.02	(0.97 - 1.07)
		3rd	94	96	94	95	97	1.03	(0.92 - 1.14)
	Booster	18 months	78	85	81	84	97	1.28	(1.04 - 1.52)
	Booster	5yrs	74	80	81	82	95	1.28	(1.03 - 1.53)
Sabin (oral polio)		1st	92	96	92	93	95	1.03	(0.91 - 1.15)
		2nd	85	94	88	89	94	1.10	(0.98 - 1.22)
		3rd	84	93	86	88	89	1.06	(0.95 - 1.17)
	Booster	5yrs	73	80	84	84	88	1.21	(1.01 - 1.40)
Measles			77	81	85	91	89	1.15	(1.01 - 1.29)
Mumps			28	38	55	78	81	2.89	(2.76 - 3.01)
History of Vaccine-Preventable Disease									
Pertussis			7	6	9	4	5	0.71	(0.36 - 0.92)
Measles			24	18	21	14	16	0.66	(0.46 - 0.82)
Mumps			19	11	11	4	5	0.26	(0.12 - 0.47)
Rubella			15	13	19	11	13	0.86	(0.62 - 0.96)

bined diphtheria and tetanus) and Sabin (oral polio) vaccine boosters (five years) and for measles/mumps vaccine.

Over this time there has been a lower prevalence of VPDs, particularly mumps. It is likely that this reduction is a result of increased use of the combined measles and mumps vaccine.

These improvements may have been partly due to the Health Department's "Immunise Now" campaign. The continued improvement in the number of five year booster shots, mainly in 1987, supports this view. Most children in the 1987 survey turned five years of age during the campaign's first year and therefore any improvements in the uptake of the five year booster shots would be expected on or after this year.

The design of this survey precludes its direct comparison with past surveys of the Australian Bureau of Statistics, which involved the sampling of two to five year olds based upon household interviews.

Many parents remain confused about the vaccines their children are given. In some schools it was necessary to review alternative immunisation records to determine whether a child had been given DTP (diphtheria, tetanus, pertussis - triple antigen) or CDT in the primary course. The parents' responses on the questionnaire indicated that both had been given.

In 1989 the percentage of children receiving their five year Sabin booster was 88 per cent. This was lower than the 95 per cent who received their five year DTP/CDT booster. This was unexpected as the two are normally given together. A possible reason for this difference could be that parents were confused or could not remember the Sabin, which is less traumatic to receive. The Sabin booster may also have been withheld for medical reasons.

Even with the upgrading of coverage there are still some areas in which improvement could occur. With continued awareness and the high level of commitment to immunisation by health professionals in Western Australia, it is very likely that further improvements will be achieved.

A copy of the full report is available from the Epidemiology and Research Branch of the Health Department of Western Australia.

SALMONELLA ANATUM FOODBORNE OUTBREAK, SOUTH AUSTRALIA

(Ian Baldwin, Peter Hobson, Philip Weinstein, Scott Cameron, Public and Environmental Health Division, South Australian Health Commission)

Introduction

In February 1991, the South Australian Health Commission (SAHC) was advised of a suspected food poisoning outbreak by an Environmental Health Officer employed by a large western metropolitan local government authority. The Officer had received a complaint from the father of a bride, whose wedding reception was held at a venue within the authority's locality. The father reported that up to one hundred of the four hundred guests, including the bride, had been ill subsequent to the reception.

Coincidental to the investigation of the above food poisoning outbreak a number of sporadic cases implicating the same aetiological agent, Salmonella Anatum, were reported from the wider community.

The simultaneous investigation of all cases demonstrated a link with the consumption of a salami smallgoods product made locally.

Materials and Methods

The guest list and menu for the wedding reception was supplied by the bride's father. A questionnaire was prepared using this information to standardise the collection of data on the symptomatology and food consumption of people attending the function. The questionnaire was completed by eighty one guests, both ill and well.

Contact was made by telephone and information on food consumption was tabulated. The guests were treated as a representative cohort and the relative risk of becoming ill after consuming suspected foods was calculated by contingency table analysis. An ill case was defined as suffering from diarrhoea associated with one or more of the following: abdominal cramps, nausea, headache, fever.

A number of samples of the suspect food types were collected from the caterer, retail outlets and manufacturer. Results of microbiological examination of various batches and sizes of the suspected food type undertaken by the manufacturer were also obtained.

Faecal specimens were collected from four of the wedding guests and from six others who had attended functions catered for simultaneously by the same company.

Over a period of eleven weeks following the wedding, the SAHC was advised, through laboratory notification, of twenty five isolated cases of Salmonella Anatum food poisoning from the wider community. Cases were contacted by phone and questioned on food consumption and symptoms. Faecal samples were submitted for each of the isolated cases.

Food specimens were processed by the Institute of Medical and Veterinary Science (IMVS). Faecal specimens were processed by the IMVS and a number of private pathology laboratories. Faecal samples and

suspected isolates were analysed by microscopy and culture techniques, and serotyped. Bacterial isolates from food samples were also characterised.

Food storage and food handling procedures used by catering staff were investigated.

Ambient temperatures on the wedding day were recorded and the time that food was not stored under refrigeration (that is, during transportation to the venue, preparation and serving) was determined.

Results

Twenty-seven of the eighty one interviewed guests fulfilled the case definition, giving an Attack Rate (AR) of 33%. The median incubation period was twenty-five hours (range 1 - 203.5 hours). Symptoms reported included diarrhoea, abdominal cramps and nausea (Table 1).

Table 1. Symptoms reported by the 27 guests who fulfilled the case definition

Symptom	% with Symptom
Diarrhoea	100
Abdominal cramps	93
Nausea	85
Headache	70
Fever	70
Aching muscles	52
Vomiting	48
Sore throat	22
Bloody stools	7

Thirty-nine different foods were included in the menu for the wedding reception. The foods were divided into groups according to their likelihood of consumption. Food specific attack rates (AR) were calculated for each of the foods (Table 2).

The relative risk of becoming ill (RR) was calculated using Epi Info[1] for foods fulfilling the following criteria:

(a) a large difference in attack rates between guests who ate the food and did not eat the food; and

(b) consumption of food could account for most of the cases.

Mortadella, salami and panini (bread rolls) were identified as possible sources of a food poisoning organism. The RR values for these foods indicate that mortadella was the most likely source (Table 3).

Faecal specimens from the four wedding guest and six people who attended other functions catered for by the same business were all found to contain Salmonella Anatum.

The detection of Salmonella Anatum in faecal samples of affected people led to food samples being examined for this organism. Analysis of samples collected by the SAHC from the caterer showed Salmonella Anatum to be present in two samples of salami (understood to be from the same batch as that served at the reception) but Salmonella Anatum was not detected in two samples of mortadella (one of which was left over from the wedding reception)(Table 4). Salmonella Anatum was detected in a single slice of salami purchased from a retail outlet (concentration of less than one organism per gram) and Salmonella Infantis was found in a sample of salami obtained from the manufacturer (concentration of less than one organism per gram).

Attention was therefore refocused on salami as being the probable source of the food poisoning organism. Several different batches and sizes of the suspect salami were produced by the manufacturer. Microbiological analysis of various batches undertaken by the manufacturer resulted in Salmonella Singapore being detected in seven samples of a single batch of salami, ranging from a concentration of less than one organism per gram to greater than 18 organisms per gram. Salmonella Derby was found in a single sample of salami in a concentration of 2 organisms per gram (Table 5).

Contact with twenty-five cases of Salmonella Anatum food poisoning from the wider community revealed that six had consumed products made by the manufacturer under investigation and four confirmed consumption of the same salami as served at the wedding reception. Six other cases reported consumption of manufactured meat products which were not produced by the same manufacturer. One case was considered to be a secondary infection transmitted by a guest to a family member. No common association was found with the remaining cases investigated.

Investigation of food storage and food handling procedures adopted by wedding reception catering staff failed to reveal any practice which may have led to a significant increase in the proliferation of Salmonella Anatum within the food prepared for the function.

The maximum temperature experienced on the day of the function was 23°C.

In accordance with Section 25 of the South Australian Food Act, 1985, orders were issued on the manufacturer prohibiting the sale, movement or disposal of suspect salami and subsequent batches until microbiological evidence was presented to the SAHC justifying revocation of the orders.

Environmental Health Officers from the SAHC and local authority conducted a thorough inspection of the manufacturer's premises resulting in recommendations being made on process procedures, general hygiene, product batch identification, labelling and storage.

Table 2. Number of ill and well guests who ate and did not eat the foods served at the wedding, and food specific attack rates (AR)

Food Item	Ate this Food			Did Not Eat this Food		
	Ill	Well	AR (%)	Ill	Well	AR (%)
Ham	23	42	35.4	4	11	26.7
Salami	24	40	37.5	3	13	18.8
Provolone	22	45	32.8	5	8	38.5
Giardiniera	7	23	23.3	20	30	40.0
Olive verde	15	31	32.6	12	22	35.3
Olive nere	17	34	33.3	10	19	34.5
Prosciutto	18	34	34.6	9	19	32.1
Capicollo	19	35	35.2	8	18	30.8
Mortadella	24	34	41.4	3	19	13.6
Prawns	23	46	33.3	4	7	36.4
Anchovy salad	4	14	22.2	23	39	37.1
Panini	23	37	38.3	4	16	20.0
Pinozze	14	27	34.2	13	26	33.3
Frutta	8	14	36.4	19	39	32.7
Pineapple	11	12	47.8	16	41	28.1
Potato crisps	9	25	26.5	18	28	39.1
Dinner mints	14	20	41.2	13	33	28.3
Spaghetti bolognaise	18	42	30.0	0	1	0
Veal parmigiana	15	36	29.4	0	3	0
Beans	9	33	21.4	6	6	50.0
Peas	10	32	23.8	5	7	41.7
Baby carrots	10	33	23.3	5	6	45.5
Fried chips	8	30	21.1	7	9	43.8
Icecream and salad	15	25	37.6	4	11	26.7
Prosciutto crudo	1	6	14.3	18	30	37.5
Lupinni	7	12	36.8	12	24	33.3
Canolli	4	3	57.1	15	33	31.3
Italian coffee	3	7	30.0	16	29	35.6
Melon	2	10	16.7	17	26	39.5
Liquore	4	15	21.1	3	10	23.1
Rosso antico	0	3	0	7	22	24.1
Biscotti	5	8	38.5	2	17	10.5
Sugar almonds	1	6	14.3	6	19	24.0
Spirits	2	2	50.0	25	52	32.5
Beer	11	28	28.2	16	26	38.1
Wine	10	21	32.2	17	33	34.0
Soft drinks	19	30	38.8	8	24	25.0
Spumante	6	25	19.4	21	29	42.0
Wedding cake	7	14	33.3	20	40	33.3

Table 3. Relative Risk values for foods identified as being a possible source of the food poisoning organism

Food	Relative Risk (RR)	Confidence Interval (CI)
Mortadella	3.03	$1.01 < RR < 9.07$
Salami	2.00	$0.69 < RR < 5.82$
Panini (bread roll)	1.92	$0.75 < RR < 4.87$

Table 4. Microbiological examination results for samples of smallgoods

Source	Sample	Result
Caterer	Mortadella	Salmonella not detected in two 25 g samples
	Salami	Less than 1 Salmonella Anatum per gram (2 samples)
Retailer	Mortadella	Salmonella not detected in three 25 g samples
	Salami (sample 1)	Less than 1 Salmonella Anatum per gram
	Salami (sample 2)	Salmonella not detected in 25 g
Manufacturer	Salami	Less than 1 Salmonella infantis per gram
	Capicollo (fermented meat)	Salmonella not detected in 25 g
	Prosciutto (manufactured meat)	Salmonella not detected in 25 g
	Round leg ham	Salmonella not detected in 25 g
	Mortadella	Salmonella not detected in 25 g

Table 5. Microbiological analysis of salami samples undertaken by the manufacturer

Batch	Product Size (g)	Result
A	375	2 Salmonella Derby per gram
B	500	Salmonella not detected in 125g
C	500	Salmonella not detected in 125g
	1000	Salmonella not detected in 125g
	-	Salmonella not detected in 125g
D	500	Salmonella Singapore detected in 125g
	500	16 Salmonella Singapore per gram
	500	More than 18 Salmonella Singapore per gram
	500	More than 18 Salmonella Singapore per gram
	1000	1 Salmonella Singapore per gram
	1000	Less than 1 Salmonella Singapore per gram
	1000	1 Salmonella Singapore per gram
E	1000	Salmonella not detected in 125g
F	375	Salmonella not detected in 125g
G	500	Salmonella not detected in 125g
	1000	Salmonella not detected in 125g

Discussion

Dry and semi-dry fermented sausages have rarely been implicated in foodborne illness, but outbreaks have been associated mostly with staphylococcal toxin or Salmonella contamination[2]. Overseas outbreaks of Salmonella food poisoning associated with salami include an incident of Salmonella Typhimurium DT 124 infection which affected 101 people in England in 1988[3] and an outbreak of Salmonella Choleraesuis infection in Italy in 1963[3]. Australian outbreaks include a Victorian incident of Salmonella Newport in 1982 which affected 279 people[3] and a South Australian epidemic in 1981 which affected 75 persons and involved Salmonella Typhimurium and Salmonella Bovismorbificans[4].

Delays in the initial notification of the food poisioning outbreak complicated the task of contacting guests and obtaining accurate data on foods consumed at the wedding reception. This was also true for the isolated cases of Salmonella Anatum food poisoning identified in the wider community.

Food handling practices adopted by the caterer in preparing food for the wedding reception were not considered to be significant in promoting the growth of Salmonella Anatum on salami consumed by guests. External ambient temperatures experienced on the day of the function were not excessive.

Sliced mortadella and sliced salami were served at the beginning of the meal as part of the antipasto, which included smallgoods, cheese, olives and pickled vegetables. It is possible that cross contamination may have occurred between the salami and mortadella during the slicing process. It is also probable that bread rolls were eaten in conjunction with mortadella and salami, thus explaining why all three foods had been implicated.

Samples of salami from the same batch as served at the wedding were analysed 18 days after the function and low levels of Salmonella Anatum were detected. It is considered that the fermentation process and maturation of the product would have reduced the level of contamination significantly between the times of consumption and analysis.

The presence of a number of different Salmonella serotypes in other batches of salami highlighted concerns with the manufacturer's processing procedures and quality control practices. The salami was therefore probably contaminated with Salmonella Anatum at the time the caterer purchased the product from the manufacturer.

A possible cause for the presence of Salmonella in fermented sausage is the use of contaminated meat. The lactic acid fermentation process acts to destroy pathogens present but survival and growth of these organisms might be expected in the event of a weak lactic acid fermentation. The manufacturer was advised to implement a quality control program to ensure the safety of the product prior to its release for sale for human consumption.

Circumstantial evidence indicates that the most probable cause for the food poisoning outbreak suffered by guests attending the catered functions and another four cases reported from the wider community was the consumption of salami containing Salmonella Anatum.

Acknowledgements

We wish to thank the Institute of Medical and Veterinary Science, Adelaide, and the Public and Environmental Health Service, South Australian Health Commission, for their participation and support.

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OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization, Australian diplomatic missions, the United States' Department of Health and Human Services, and the Institut Pasteur, Paris.

Cholera Update

The outbreak of cholera in **Argentina** has spread to the Province of Jujuy and there has been one case in greater Buenos Aires. The outbreak does, however, appear to be under control; a total of 187 cases and 11 deaths were reported to 14 February.

Peru continues to reports large numbers of cases. From 4 January to 1 February, there were 30,699 cases and 125 deaths. Cases have also been reported for December from **Benin, India,** and **Tanzania,** for January from **Bolivia, Ecuador, Mexico** and **Peru,** and for February from **Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Panama** and **Venezuela.**

Influenza in the Northern Hemisphere Update

Influenza activity is now decreasing in all countries which have been affected this season. Influenza A(H3N2) continues to be the most common isolate, but influenza A(H1N1) is now a little more frequent and new influenza B isolates have been reported from France and Switzerland.

Meningococcal Infection in Canada

In December and January, an increased number of cases of meningococcal disease were reported from several areas of eastern Canada - the Ottowa-Carlton area, the Laurentides region north of Montreal, the Lanaudiere region, the Outaouais area in West Quebec, and Prince Edward Island.

Group C *Neisseria meningitidis* has been isolated from some of the cases, which were mostly in high school age persons; rates of disease for that age group were about 18 cases per 100,000, or about 20 times the usual rate. A program to vaccinate 400,000 young persons was instituted in the affected areas. The risk of disease for travellers is described as being very low, however, the United States' Public Health Service recommends that vaccination should be considered for children aged between 2 and 19 years who are travelling to the affected areas, for children who will be in very close contact with local school-aged children.

Pilgrimage to Saudi Arabia

The Saudi Arabian Government has issued its requirements for pilgrims for the 1992 Hajj season and Umra visitors. Every pilgrim or Umra visitor is required to have a valid vaccination certificate against meningococcal meningitis, stating that this vaccination took place ten days to two years previously. Foodstuffs will not be allowed to be brought into the country, except in small quantities to be used by the travellers on their journeys, in small containers that are easy to open and inspect. Certification that the pilgrims are free from HIV/AIDS is not required.

CDI NOTICE TO READERS

Indexing of *CDI*

Indexing of *CDI* by the Australasian Medical Index (AMI) has recently been arranged. The indexing will include all issues published since the beginning of 1990 and will continue indefinitely.

The AMI is a database which is supplementary to MEDLARS, covering Australian and New Zealand health and medical literature not covered by MEDLINE. It is online to the Australian MEDLINE network, is MEDLINE-compatible, and records in the AMI file are searchable in exactly the same way as those in MEDLARS.

Further information on the AMI can be obtained from the Australian MEDLINE Network at the National Library of Australia.

COMMUNICABLE DISEASES SURVEILLANCE

Laboratory Reporting Schemes

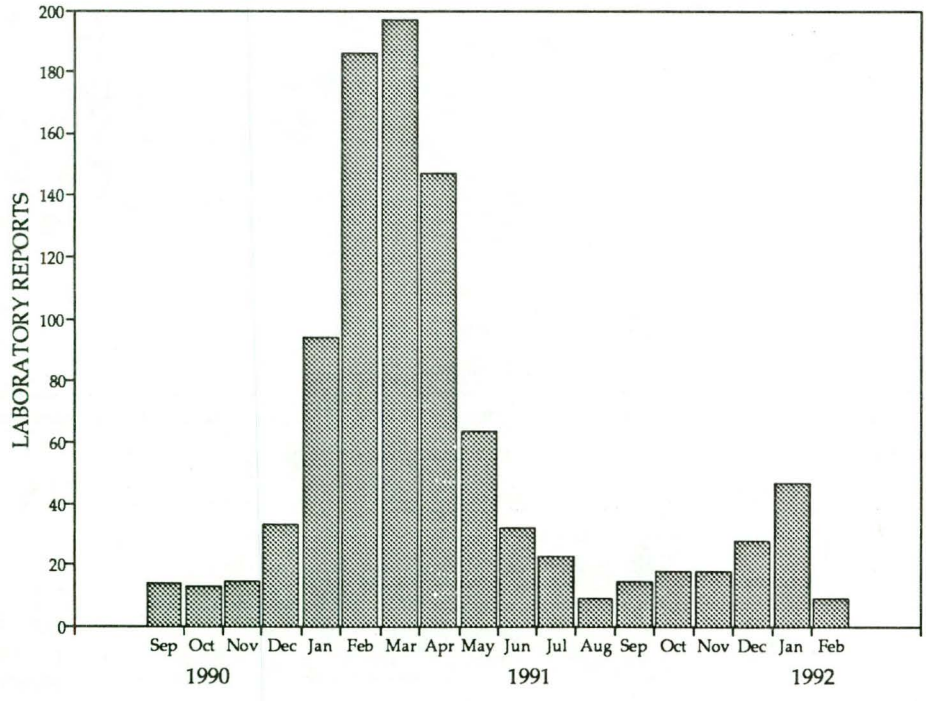
There was a total of 834 reports received in the *CDI* laboratory reporting schemes this fortnight (Tables 5, 6 and 7).

- There were 28 reports of **Ross River virus** infection. Nineteen were from Western Australia (Busselton, Geraldton, Mandurah), there were 3 from the Rockhampton area of Queensland, 3 from New South Wales (Goonellabah, Gulargambone, Lavington), 2 from Victoria and one from Oenpelli in the Northern Territory. Very few reports have been received for the season so far (Figure 1), making it the quietest Ross River virus season (to date) since 1987-88.

  The clinical information for the report of Ross River virus encephalitis last fortnight has been amended. The patient had had headaches, but his CSF was clear, so it was concluded that it had not been an encephalitis.

- The case of **Kunjin virus** infection was in the person with Ross River virus infection in Oenpelli, Northern Territory. The patient was a 28 year old female who had muscle/joint disease and general malaise.

Figure 1. Ross River virus laboratory reports, September 1990 to February 1992, by month

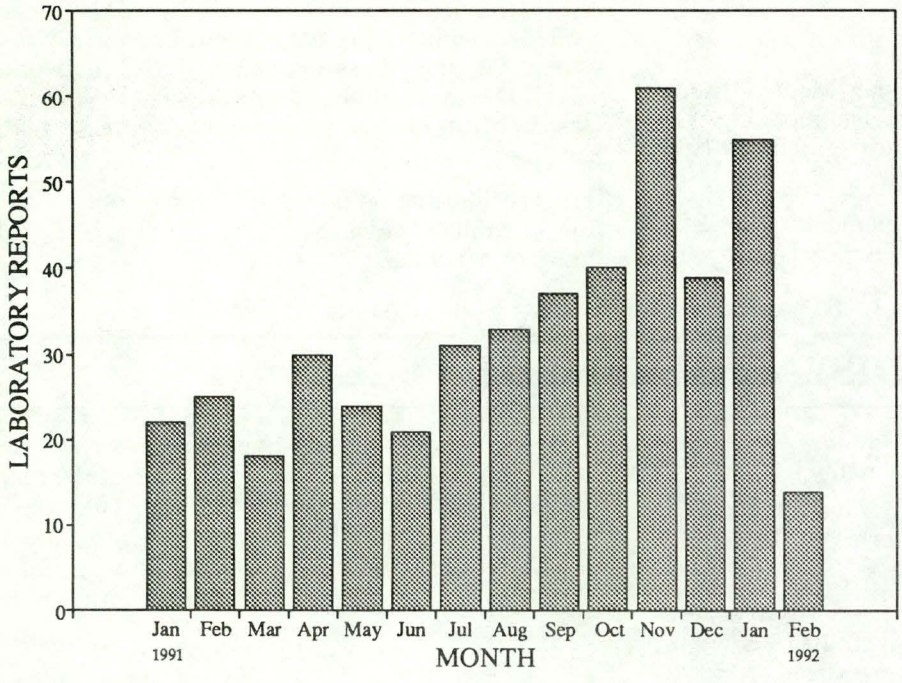


- The untyped **Dengue** case reported was in a 34 year old male returned traveller.

- **Parainfluenza type 1** was reported 9 times this fortnight, bringing the total for the year to 34 reports, which is more than usual for this time of year. The seasonal peak in parainfluenza type 1 usually occurs in the autumn in Australia.

- There were 28 reports of ***Mycoplasma pnuemoniae*** this fortnight, with 12 from Western Australia and 10 from Victoria. There have been 55 reported cases with onset of symptoms in January, after a smaller number in December (Figure 2). The seasonal peak in these reports usually occurs in spring in Australia.

Figure 2. *Mycoplasma pneumoniae* **laboratory reports, January 1991 to February, 1992, by month**



- A case of **SSPE** was reported by a Sydney laboratory in a 20 year old female. The diagnosis was made clinically and high titres of **measles** antibody were detected in CSF and serum samples.
- Three further reports of **echovirus type 17** were received. Two were from Victoria - a 31 year old male and a 27 year old male, both with meningitis. The third patient was an infant, aged less than one month, from New South Wales. The virus was isolated from the CSF for all three patients.
- There was one further case of **echovirus type 4** infection reported, bringing the total reported from Victoria recently to four. The patient was a 27 year old female with meningitis; the virus was isolated from CSF.
- Three further reports of **coxsackievirus type B5** were received from Fairfield Hospital, Melbourne. Meningitis was the reported syndrome for males aged 6 months and 1 month. Lower respiratory tract symptoms were reported for the third patient, an 11 month old male.
- **Cytomegalovirus** infection was reported for 55 patients. Included were 2 cases of congenital infection, a female who was 9 weeks pregnant, a heart transplant patient, and a 1 year old excretor with cerebral/cerebellar hydroplasia.
- There were 23 reports of **varicella-zoster virus** this fortnight, more than is usual for this time of year. Included was a case of encephalitis in an 8 year old male from New South Wales, and a case of meningitis in a 4 year old male from the Orange area (NSW). Hepatitic symptoms were reported for a 25 year old female from Gosford.
- Four reports of **ornithosis** were received, including a 49 year old female patient whose husband had psittacosis.
- Three cases of **parvovirus** were reported. One of the patients was a 29 year old female who was 8 weeks pregnant. Skin disease, arthralgia, arthritis and lymphadenopathy were the symptoms reported.
- Three reports of ***Haemophilus influenzae*** **type B** were reported from Queensland laboratories. The organism was isolated from the blood of a 33 month old female, from blood and an epiglottis swab of a 3 year old female with epiglottitis, and from CSF and blood of a 4 month old female with meningitis.

Table 1. Australian Sentinel Practice Research Network, Weeks 7, 8 and 9, 1992

Condition	Week 7, to 16 February 1992		Week 8, to 23 February 1992		Week 9 to 1 March 1992	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	11	1.69	16	2.50	26	4.87
Measles	0	0	0	0	0	0
Mumps	0	0	0	0	0	0
Rubella	1	0.15	1	0.16	0	0
Pertussis	0	0	1	0.16	0	0
Genital herpes	4	0.62	8	1.25	1	0.19
Gastroenteritis	0	0	0	0	0	0

Arbovirus outbreak in the Northern Territory

Ninety-one persons in Nhulunbuy in the Northern Territory have recently had the symptoms of skin rash, joint pains and tiredness. Five of these patients have had positive serology for Barmah Forest virus and 2 for Ross River virus. This is the first time that Barmah Forest virus has been associated with human disease in the Northern Territory. *Aedes vigilax* mosquitoes are thought to have acted as the vectors.

Residents from Nhulunbuy are currently being screened to determine the number of persons who have seroconverted, whether or not they have experienced any symptoms.
(Mahomed Patel and Peter Whelan, Northern Territory Department of Health and Community Services)

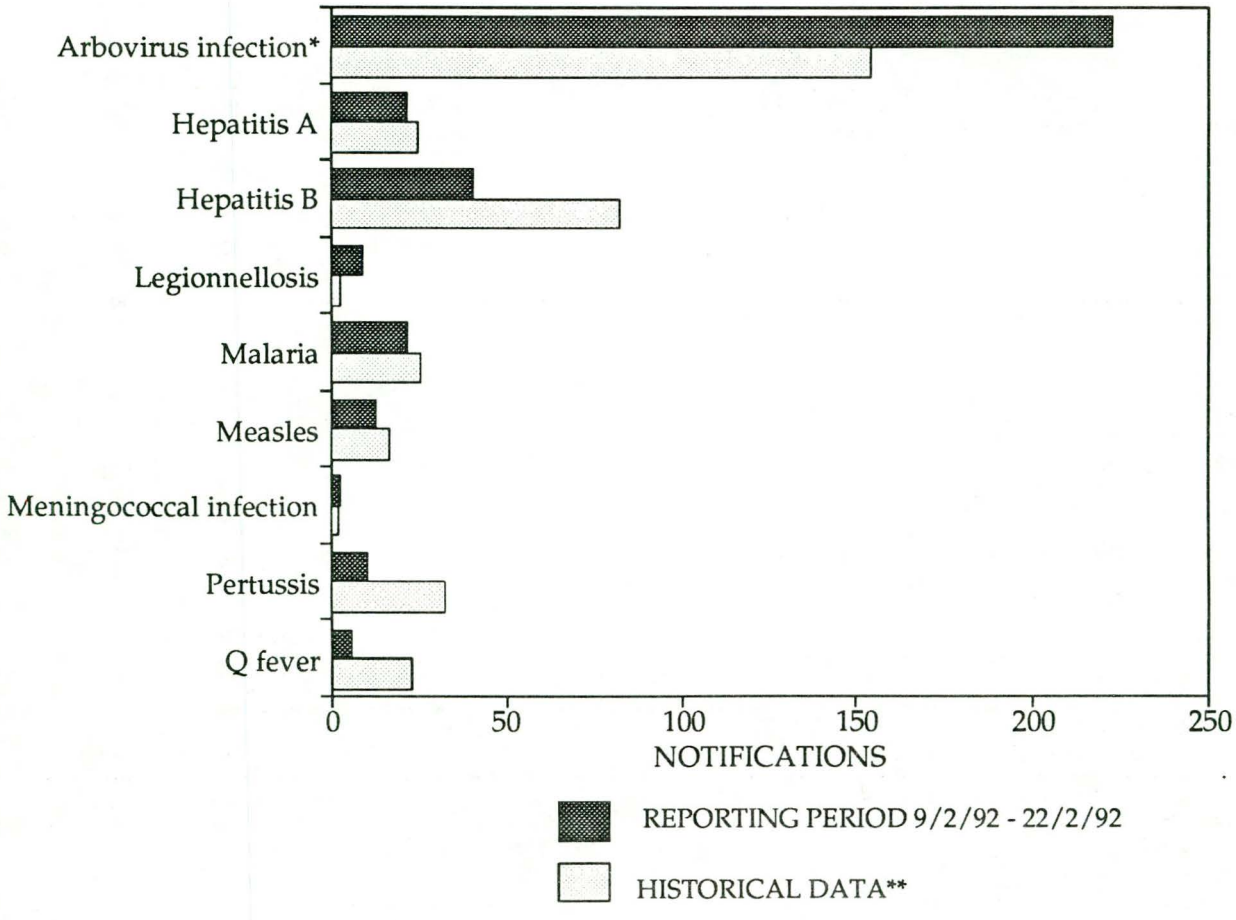
Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network collected data from 6502 patient encounters in Week 7, 6411 patient encounters in Week 8, and 5341 patient encounters in Week 9 of 1992 (Table 1). Influenza activity remains low but there has been a steady increase in the number of cases reported, to 26 cases in Week 9. No cases of gastroenteritis were diagnosed during this reporting period. There is currently only a two week delay from the time of reporting of ASPREN data to its presentation in *CDI*.

National Notifiable Diseases Reports, 9 February to 22 February 1992

A total of 1389 notifications were reported this fortnight (Tables 2, 3 and 4). Notifications from New South Wales and Tasmania were not available at the time of publication.

Figure 3. National Notifiable Diseases Reports, 9 Feburary to 22 Febrruary 1992 and historical data **



*Includes Ross River virus and Dengue

**The Historical data are the averages of the number of notifications in 6 previous 4-week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceding and following those.

Table 2. Diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, for the reporting period 9 to 22 February, 1992

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
									This Period 1992	This Period 1991	Year to Date 1992[1]	Year to Date 1991
Diphtheria	0		0	0	0		0	0	0	1	2	2
Measles	1		1	5	6		5	0	18	36	84	115
Mumps	NN		NN	NN	NN	NN	0	NN	0	NN	0	NN
Pertussis	NN		0	3	3		4	4	14	21	59	69
Poliomyelitis	0		0	0	0		0	0	0	0	0	0
Rubella[2]	1		0	8	0		5	0	14	24	51	57
Tetanus	0		0	NN	0		0	0	0	0	0	1

1. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
2. NT, Tas, WA: CRS only; ACT, NSW, Qld: rubella only; SA, Vic: rubella and CRS

NN Not Notifiable.

Table 3. Other Notifiable Diseases[1], for the reporting period 9 to 22 February 1992

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
									This Period 1992	This Period 1991	Year to Date 1992[2]	Year to Date 1991
Arbovirus infection (NEC)[3]	0		NN	1	0		1	0	2	27	15	88
Ross River virus infection	NN	-	17	185	0	NN	2	20	224	337	512	634
Dengue	NN	-	0	0	-	NN	0	NN	0	31	1	31
Campylobacteriosis[4]	2	-	12	153	56		27	6	256	248	1219	863
Chlamydial infection (NEC)[5]	2	NN	4	116	0		18	0	140	144	650	520
Donovanosis	0	NN	1	1	NN	NN	0	0	2	4	6	8
Gonococcal infection[6]	1		7	20	0		9	0	37	74	241	273
Haemophilus influenzae type b[7]	NN		NN	2	9		3	NN	14	4	55	25
Hepatitis A	2		3	16	0		10	1	32	36	156	134
Hepatitis B	0		1	33	2		30	5	71	124	426	443
Hepatitis C	1		1	89	NN		29	NN	120	28	813	248
Hepatitis (NEC)	NN		0	31	0		0	NN	31	2	90	8
HIV infection[8]	2		0	0	0		0	0	2	3	9	4
Legionellosis	NN		1	6	2		1	0	10	7	13	13
Leptospirosis	0		0	0	0		2	0	2	14	20	18
Listeriosis	NN		NN	0	NN		0	0	0	2	2	6
Malaria	2		0	20	0		11	0	33	28	90	108
Meningococcal infection	0		0	2	1		3	0	6	3	22	36
Ornithosis	0	NN	0	0	0		11	0	11	3	18	6
Q fever	0		0	6	0		0	0	6	73	35	104
Salmonellosis (NEC)	0		19	124	12		13	17	185	300	708	825
Shigellosis[4]	0	-	6	3	1		0	2	12	48	84	125
Syphilis	0		6	22	0		18	0	46	128	231	334
Tuberculosis	2		0	2	9		0	0	13	18	34	60
Typhoid[9]	0		0	1	1		0	0	2	4	6	6
Yersiniosis[4]	NN	-	1	28	4		1	0	34	22	104	63

1. For rarely notified diseases, see Table 4.
2. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of notifications and the increment in the cumulative figure from the previous period.
3. NSW and SA: includes Ross River virus and dengue.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. ACT: trachoma only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. SA: only as 'bacterial meningitis'; meningococcal infection is separately notified; Tas: only as 'non-meningococcal meningitis'; Vic: eppiglottitis and meningitis only.
8. More complete data on new diagnoses of HIV infections are presented in the monthly *Australian HIV Surveillance Report*. ACT: AIDS only.
9. NSW and Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elswhere Classified.

- Elsewhere Classified.

Table 4. Rarely Notified Diseases[1], for the reporting period 9 to 22 February 1992

DISEASES	Total This Period	Reporting States or Territories, This Period	Total for 1992 to Date
Botulism			0
Brucellosis	1	Qld	1
Cholera			0
Chancroid			0
Hydatid infection			0
Leprosy			2
Lymphogranuloma venereum			1
Plague			0
Rabies			0
Yellow fever			0
Other viral haemorrhagic fevers			0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1986 to 1991.

Table 5. Laboratory reports by State or Territory of reporting laboratory for the reporting period 12 February to 25 February 1992, historical data[1] and total reports for the year

	STATE OR TERRITORY OF REPORTING LABORATORY					Total This Fortnight	Historical Data[1]	Total Reported This Year
	ACT	NSW	Qld	Vic	WA			
MEASLES, MUMPS, RUBELLA								
Measles virus		2		1	1	4	6.5	52
Mumps virus		1			1	2	1.5	9
Rubella virus			1			1	14.0	53
HEPATITIS VIRUSES								
Hepatitis A virus	2	4	6		1	13	13.2	69
Hepatitis B virus	2	26	24	14	11	77	110.3	441
Hepatitis C virus			1		28	29	3.8	338
ARBOVIRUSES								
Ross River virus		3	3	2	20	28	25.8	101
Dengue not typed				1		1	.5	4
Kunjin virus					1	1	.2	4
ADENOVIRUSES								
Adenovirus type 1		6		4		10	3.7	33
Adenovirus type 2		3				3	4.8	27
Adenovirus type 3				2		2	6.8	10
Adenovirus type 40		2				2	.0	5
Adenovirus not typed/pending		9	6	8	8	31	24.3	194
HERPES VIRUSES								
Herpes simplex virus type 1	1	17	22	45	28	113	114.0	762
Herpes simplex virus type 2	1	24	18	42	49	134	141.2	891
Herpes simplex not typed/pending	1	25	4	3	1	34	61.0	165
Cytomegalovirus		21	5	24	5	55	59.2	422
Varicella-zoster virus	1	10	1	7	4	23	14.3	143
Epstein-Barr virus		13	10	10	11	44	35.8	317
Herpes virus group - not typed	1			1	2	4	9.0	21
OTHER DNA VIRUSES								
Parvovirus				3		3	.0	33
PICORNA VIRUS FAMILY								
Coxsackievirus A9		1				1	1.3	4
Coxsackievirus B1				1		1	.0	2

Table 5. Laboratory reports by State or Territory of reporting laboratory for the reporting period 12 February to 25 February 1992, historical data[1] and total reports for the year, continued

	STATE OR TERRITORY OF REPORTING LABORATORY					Total This Fortnight	Historical Data[1]	Total Reported This Year
	ACT	NSW	Qld	Vic	WA			
PICORNA VIRUS FAMILY								
Coxsackievirus B5				3		3	.2	15
Echovirus type 4				1		1	.2	4
Echovirus type 11		1				1	2.0	5
Echovirus type 14		2				2	.5	2
Echovirus type 16				2		2	.0	8
Echovirus type 17		1		2		3	.0	12
Echovirus type 18		1				1	.2	1
Poliovirus not typed/pending		5				5	3.8	19
Enterovirus not typed/pending		17	1	6	4	28	24.2	188
Poliovirus type 1 (uncharacterised)		3				3	1.7	10
Poliovirus type 2 (uncharacterised)		1		1		2	2.3	13
Poliovirus type 3 (uncharacterised)		1				1	1.2	5
Rhinovirus (all types)		1	4	8		13	14.7	144
ORTHO/PARAMYXOVIRUSES								
Influenza A virus				1	1	2	1.0	20
Influenza B virus					1	1	1.3	26
Parainfluenza virus type 1				7	2	9	2.5	34
Parainfluenza virus type 2				4	3	7	.2	16
Parainfluenza virus type 3		1		5	3	9	7.8	104
Parainfluenza virus typing pending				1		1	.7	14
Respiratory syncytial virus		1	1	2	4	8	7.2	100
OTHER RNA VIRUSES								
Rotavirus			4	2	2	8	12.7	238
Reovirus (unspecified)		1				1	.7	1
Coronavirus		2				2	.3	10
Astrovirus		1				1	.0	2
Calici virus		1				1	.0	8
HIV-1					3	3	2.7	6
OTHER								
Chlamydia trachomatis (unspecified)	3	13	8	19	22	65	105.5	584
Chlamydia psittaci (ornithosis)	1	2		1		4	3.8	34
Mycoplasma pneumoniae		12		10	6	28	13.8	143
Coxiella burnetii (Q fever)		2		1		3	6.7	45
TOTAL	13	236	119	244	222	834	869.0	5,911

1. The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last 2 years and the periods immediately preceeding and following those.

Table 6. Laboratory reports by clincial information for the reporting period 12 February to 25 February 1992

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Musde/joint	Genital	Other	Total
MEASLES, MUMPS, RUBELLA													
Measles virus			1					2				1	4
Mumps virus												2	2
Rubella virus								1					1
HEPATITIS VIRUSES													
Hepatitis A virus							12					1	13
Hepatitis B virus							29					48	77
Hepatitis C virus							3					26	29
ARBOVIRUSES													
Ross River virus								4		17		7	28
Dengue not typed												1	1
Kunjin virus										1			1
ADENOVIRUSES													
Adenovirus type 1	1				1	4		2				2	10
Adenovirus type 2						3							3
Adenovirus type 3					1				1				2
Adenovirus type 40						2							2
Adenovirus not typed/pending					8	19		1				3	31
HERPES VIRUSES													
Herpes simplex virus type 1					4			71	7		20	11	113
Herpes simplex virus type 2								61			69	4	134
Herpes simplex not typed/pending					1	1		18			4	10	34
Cytomegalovirus				2	10	1		3	2	2	2	33	55
Varicella-zoster virus	1	1				1	1	16				3	23
Epstein-Barr virus					5		1	1				37	44
Herpes virus group - not typed								3			1		4
OTHER DNA VIRUSES													
Parvovirus								1		2			3
PICORNA VIRUS FAMILY													
Coxsackievirus A9		1											1
Coxsackievirus B1		1											1
Coxsackievirus B5		2			1								3
Echovirus type 4		1											1
Echovirus type 11		1											1
Echovirus type 14		1										1	2
Echovirus type 16								1				1	2
Echovirus type 17		2										1	3
Echovirus type 18												1	1
Poliovirus not typed/pending						5							5
Enterovirus not typed/pending		3			5	9		1				10	28
Poliovirus type 1 (uncharacterised)						3							3
Poliovirus type 2 (uncharacterised)						2							2
Poliovirus type 3 (uncharacterised)						1							1
Rhinovirus (all types)					11							2	13

Table 6. Laboratory reports by clincial information for the reporting period 12 February to 25 February 1992, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other	Total
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					1							1	2
Influenza B virus					1								1
Parainfluenza virus type 1					8							1	9
Parainfluenza virus type 2					7								7
Parainfluenza virus type 3			1		8								9
Parainfluenza virus typing pending					1								1
Respiratory syncytial virus					7							1	8
OTHER RNA VIRUSES													
Rotavirus						6						2	8
Reovirus (unspecified)						1							1
Coronavirus						2							2
Astrovirus						1							1
Calici virus						1							1
HIV-1												3	3
OTHER													
Chlamydia trachomatis (unspecified)					2	1			4		48	10	65
Chlamydia psittaci (ornithosis)					3							1	4
Mycoplasma pneumoniae					23							5	28
Coxiella burnetii (Q fegver)							1					2	3
TOTAL	2	13	2	2	108	63	47	186	14	22	144	231	834

Table 7. Laboratory reports by contributing laboratories for the reporting period 12 February to 25 February 1992

STATE	LABORATORY	REPORTS
Australian Captial Territory	Woden Valley Hospital, Garran	13
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	142
	Prince Henry/Prince of Wales Hospitals, Sydney	77
	Royal Alexandra Hospital for Children, Camperdown	17
Queensland	Dr TB Lynch, Pathologist, Rockhampton	20
	State Health Laboratory, Brisbane	99
Victoria	Fairfield Hospital, Melbourne	179
	Microbiological Diagnostic Unit, University of Melbourne	15
	Royal Childrens Hospital, Melbourne	50
Western Australia	Princess Margaret Hospital, Perth	21
	State Health Laboratory Services, Perth	201
TOTAL		834