



Surveillance of notifiable infectious diseases in Victoria, 2003

Public Health Group 2005

Published by the Communicable Diseases Section, Rural & Regional Health and Aged Care Services, Victorian Department of Human Services, 2005.

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ISBN 0 7311 6089 4

Printed by Print Media Group,
38–40 Sheehan Rd, Heidelberg West.

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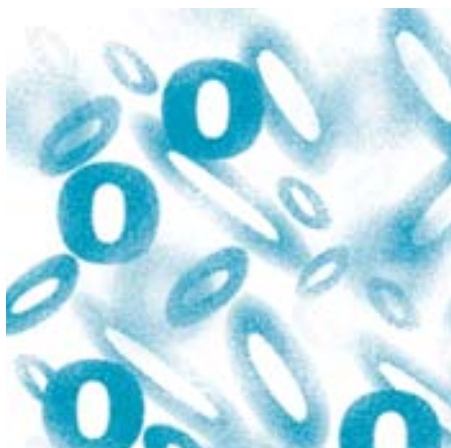
Acknowledgements

We thank the following individuals, groups and organisations for the provision of data and assistance in the preparation of this report:

- Clinicians and laboratory staff for providing the data on which this report is based.
- Medical Officers of Health and environmental health officers for helping follow up cases and contacts.
- The staff of the Microbiological Diagnostic Unit, University of Melbourne, and the Victorian Infectious Diseases Reference Laboratory for providing advice, and helping investigate sporadic cases and outbreaks of infection.
- The Macfarlane Burnet Institute for Medical Research and Public Health for contributing to the surveillance of HIV/AIDS.

Notes

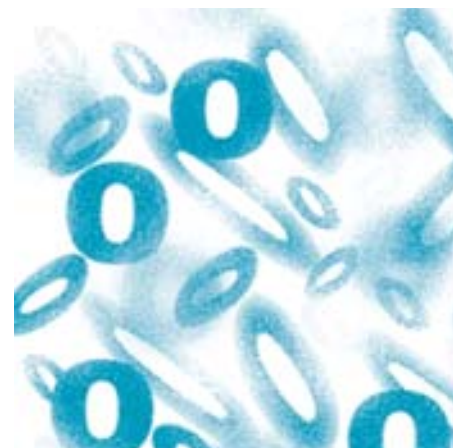
- Data presented in this report relate to notifications received by the Department of Human Services and do not necessarily reflect the true incidence of disease.
- The analyses in this report were performed on data extracted on 30 June 2004. Due to ongoing database management, differences may be observed between this report and those produced in 2004.



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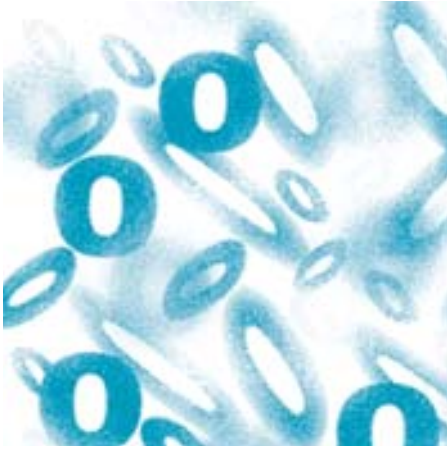
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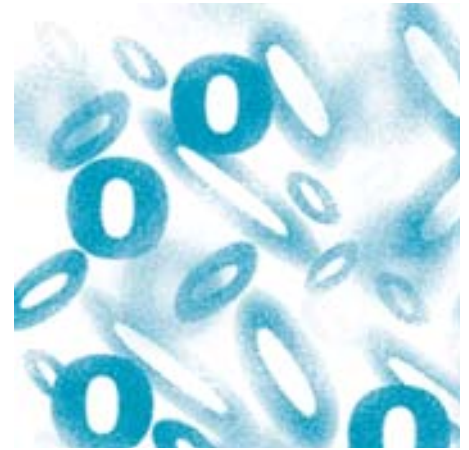
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Executive summary

Dr Rosemary Lester, Acting Manager, Communicable Diseases Section

In 2003, a previously unknown human coronavirus emerged that causes severe acute respiratory syndrome (SARS). The virus was later called SARS associated coronavirus, or HCoV-SARS. In partnership with several national and state organisations, the Department of Human Services began surveillance for SARS in Victoria on 14 March 2003, two days after the global alert issued by the World Health Organization. Victoria's prompt response to SARS demonstrates the Department's ability to rapidly establish an effective surveillance system for a new global public health threat.

Other achievements of note in 2003 included a decline in the number of cases of invasive meningococcal group C disease and a fall in notifications of human immunodeficiency virus (HIV). The reduction in invasive meningococcal group C disease was attributable to the introduction of the National Meningococcal C Immunisation Program, which commenced in January 2003. While the decrease in cases of HIV was modest, it might be the start of a reversal of the upward trend in infections that began in 1999.

Sexually transmissible infections are a major concern, as notifications of chlamydia, gonorrhoea and infectious syphilis continued to rise. There is an urgent need to revitalise our efforts to reduce the transmission of these diseases by ensuring previously successful programs and campaigns are re-focused to reach individuals most at risk. Revitalised strategies are being guided by the latest findings in social and

behavioural research, and conducted in partnership with the affected communities and other relevant stakeholders.

In 2003, the Department received one notification of *Haemophilus influenzae* type b (Hib) disease. The case was a one year old female with cellulitis whose family were conscientious objectors to immunisation. Hib is now an extremely rare disease due to the successful introduction of the conjugate vaccine in 1992. High immunisation coverage rates are critical to maintaining low levels of infection and transmission in the community.

Notifications of invasive pneumococcal disease were marginally higher in 2003 than the total for 2002, and children aged under two years and the elderly were most vulnerable. Both mumps and rubella maintained the downward trend evident since 1999, highlighting the importance of obtaining laboratory confirmation where possible. Notifications of pertussis also declined compared with levels in the previous five years. Measles continued to occur in young adults, particularly those born between 1968 and 1981, and unvaccinated children. In 2003, the Department investigated two separate outbreaks caused by genotypically different strains imported from overseas.

Notifications of legionellosis were lower in 2003 than in 2002, but remained higher than the numbers in 1998 and 1999, possibly reflecting the greater awareness and diagnostic testing among doctors since the Melbourne Aquarium outbreak in 2000. Confirmed infections

caused by *Legionella pneumophila* serogroup 1 continued to decline, possibly as a result of the greater environmental controls implemented by the Department in 2001.

Compared with 2002, the number of outbreaks of gastrointestinal illness notified to the Department in 2003 declined by one third. Notifications of hepatitis A, however, rose moderately in 2003, although not to the level evident before 2001. There is an effective vaccine for this disease, and vaccination should be encouraged for people intending to travel overseas to endemic areas and for those in high risk occupations such as childcare workers and healthcare professionals.

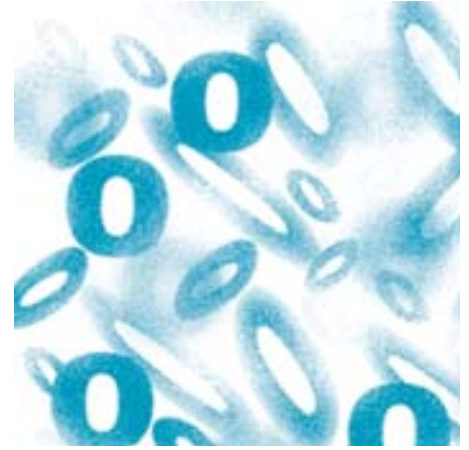
In 2003, notifications of tuberculosis rose moderately, giving rise to a crude notification rate of 7.1 per 100 000—one of the highest rates in the past 10 years. As in previous years, the majority of notifications were for overseas born persons. Health care providers should be aware of the increased risk of tuberculosis in newly arrived refugees and migrants, and of the cultural issues that influence the health seeking behaviours of this group.

For zoonotic diseases, notifications of Q fever fell sharply while those of psittacosis increased considerably compared with numbers in 2002. The decrease in Q fever reflected better awareness and vaccination of at-risk populations as a result of Victoria's Q fever vaccination and doctor training program, and the subsequent introduction of a national initiative. The

Victorian program was championed by Doctor Kath Taylor, a passionate public health practitioner who passed away in March 2004 after a long battle with cancer.

Also in 2003, the decline in Ross River virus disease (since 1991) continued. Notifications of Barmah Forest virus disease fell as well. No outbreaks were detected for either disease.

The Department would like to thank all those doctors and laboratory personnel who notified scheduled infectious diseases to the Department's Communicable Diseases Section in a timely manner. Without this participation, the Department's ability to respond to public health threats would be significantly hampered. A special thanks also to the staff of Victorian public health laboratories, the Victorian Infectious Diseases Reference Laboratory, the Microbiological Diagnostic Unit (University of Melbourne) and the Macfarlane Burnet Institute for Medical Research and Public Health, whose expertise and assistance were invaluable.



1. Introduction

This report details the results of the communicable disease surveillance and investigations conducted by the Department of Human Services (DHS) in 2003. This work was carried out by staff of the Communicable Diseases Section of DHS in collaboration with regional public health officers, local government environmental health officers, the Macfarlane Burnet Institute for Medical Research and Public Health, the Microbiological Diagnostic Unit (MDU) and the Victorian Infectious Diseases Reference Laboratory (VIDRL). Additionally, this work would not have been possible without the assistance of

the myriad of health professionals in laboratories, clinics, hospitals and regions throughout the state.

In 2003 there were 24 745 notifications received, representing a seven percent increase on notifications in 2002. These data do not include the multitude of notifications received, which did not meet the case definitions for surveillance or were duplicates. There were no notifications of anthrax, botulism, cholera, diphtheria, Japanese encephalitis, lyssavirus infections, Murray Valley encephalitis, plague, poliomyelitis, rabies, viral haemorrhagic fevers or yellow fever.

Prompt notification of infectious diseases is an integral component of responsive public health action. Doctors and laboratories can notify infectious diseases by telephone on **1300 651 160** or facsimile on **1300 651 170**.

General information on infectious diseases appears on the Department of Human Services web site <http://www.health.vic.gov.au/ideas>, which also includes specific details about the notification process and control of infectious diseases, and daily, quarterly and annual reports.

2. Methods

Surveillance for communicable diseases occurs under the authority of the Health (Infectious Diseases) Regulations 2001. These Regulations require medical practitioners and pathology laboratories to notify the Department of the probable presence of scheduled communicable diseases.

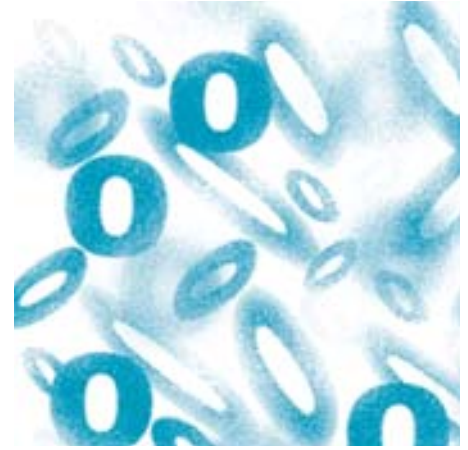
Notifiable diseases are classified in the Regulations under four categories; Groups A, B, C and D. Group A diseases are those which require an immediate public health response and all notifications are followed up to confirm the diagnosis, identify risk factors and sources of infection, and to prevent the further transmission of disease. Responses to Group B diseases are defined by disease specific protocols; some diseases have enhanced surveillance procedures, responses to others may occur only if a cluster, outbreak or other unusual event is detected. Information may be collected from either the patient, the notifying doctor or both. Enhanced surveillance systems implemented in Victoria are reported in the relevant sections.

Group C diseases are the sexually transmissible infections (excluding HIV/AIDS). As complete identifiers are

not required for these diseases, further information regarding the notification is only obtained from the notifying doctor. Group D diseases are HIV infection and AIDS, for which Departmental contact tracers follow-up all notifications.

Victoria utilises the surveillance case definitions which were developed by the Communicable Diseases Network of Australia. Interim surveillance case definitions can be found on the Department of Health and Ageing's website <http://www.cda.gov.au/surveil/nndss/casedefs/pdf/casedef.pdf>. Analyses in this report are based on the notification date, that is, the date on which the notification was first received at the Communicable Diseases Section. Population notification rates were calculated using the 2002 mid-year estimated resident population (ERP) obtained from the Australian Bureau of Statistics (ABS).

Notifications were counted in the Victorian dataset if the postcode of the diagnosing doctor was in Victoria. Postcodes of residence of the case and doctor do not, however, necessarily reflect the place of acquisition of infection and therefore regional rates should be interpreted with caution. This



is particularly important in small areas where the actual numbers reported may be too small for rates to be meaningful.

In 2003 the DHS had nine health regions in Victoria, four metropolitan and five regional areas (Figure 2). Notifications are geocoded to local government areas (LGA) by postcode and then allocated to a DHS region. The denominators for regional incidence rates were the 2002 mid-year ERP population from the ABS for the combined LGAs. Appendix 1 outlines the LGAs contained within each DHS region.

Changes have occurred in the number of notifications reported in previous annual reports for some diseases. This was due to the ongoing maintenance and update of notification datasets as new information became available, or as errors were detected through data cleaning processes. In addition, the Communicable Diseases Network Australia, in collaboration with states and territories, revised the surveillance case definitions for nationally notifiable diseases in Australia. Therefore some changes in total notifications may reflect a more sensitive or specific case-definition.

Figure 1: Department of Human Services regions, Victoria.

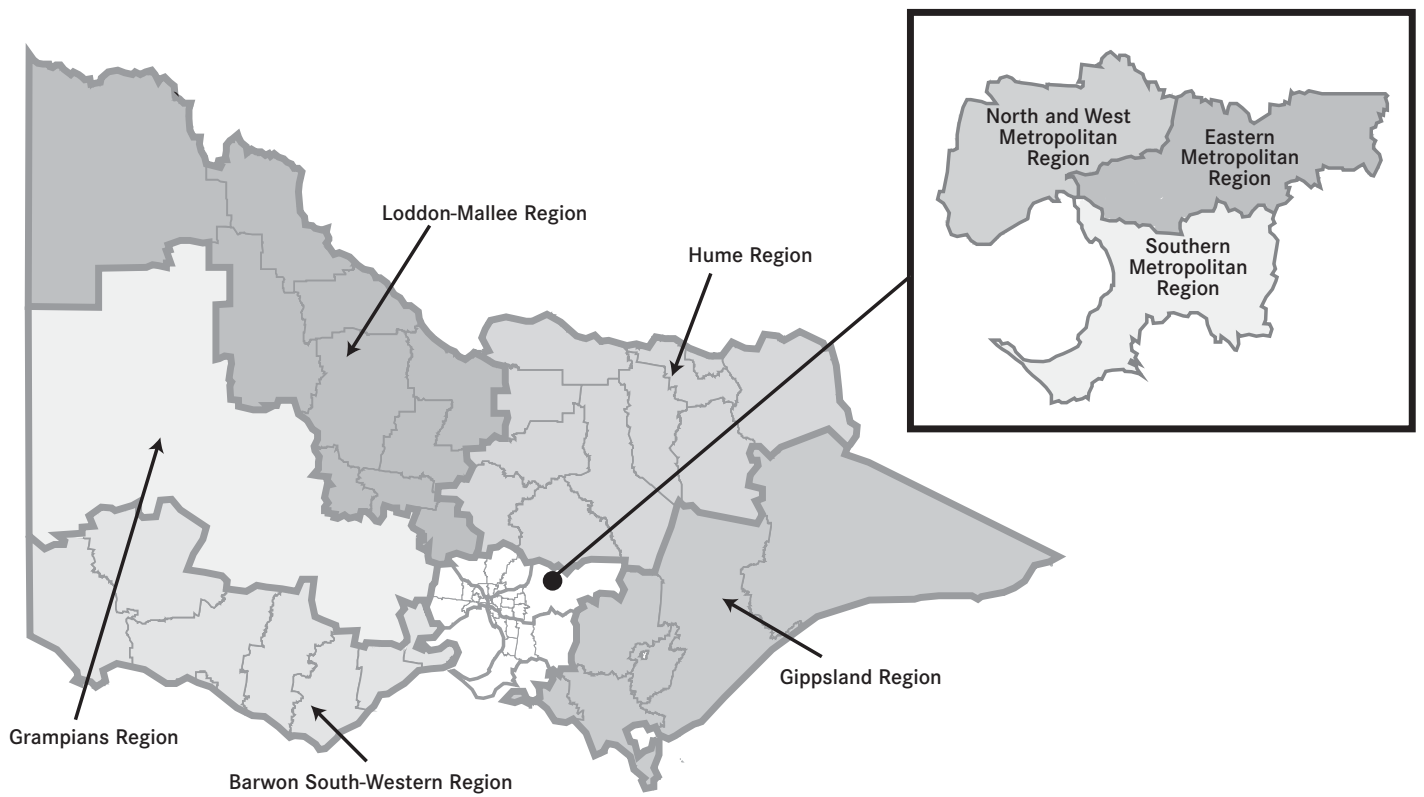


Table 1: Notified infectious diseases, Victoria, 1999–2003

	1999	2000	2001	2002	2003
Blood borne diseases					
Hepatitis B – acute	85	112	196	196	158
Hepatitis B – chronic/unknown	1848	1813	1888	1830	1611
Hepatitis C – newly acquired	73	81	93	109	112
Hepatitis C – not further specified	6030	5513	4900	4059	3641
Hepatitis D	0	12	7	9	13
Enteric diseases					
Botulism	0	1	1	0	0
<i>Campylobacter</i> infection	4428	4995	5467	4941	5644
Cholera	1	0	1	1	0
Cryptosporidiosis ¹	93	119	445	284	214
Food/water/environmental – other	317	222	394	376	476
Giardiasis	856	860	858	710	772
Haemolytic uraemic syndrome	8	2	1	4	4
Hepatitis A	255	198	102	67	4
Hepatitis E	1	0	3	2	4
Listeriosis	12	11	9	15	21
Paratyphoid	4	4	9	14	10
Salmonellosis	1072	1005	1090	1207	1263
Shigellosis	100	115	98	66	50
Typhoid	13	12	14	21	19
Vero toxin producing <i>E.coli</i>	4	0	4	5	3
Other notifiable diseases					
Invasive meningococcal disease	134	162	163	208	129
Legionellosis	62	246	121	108	90
Leprosy	1	0	0	2	2
Tuberculosis	324	289	298	280	329
Sexually transmitted infections					
Acquired immunodeficiency syndrome	33	67	52	45	49
Human immunodeficiency virus	140	197	219	234	225
<i>Chlamydia</i>	2952	3257	4110	4846	6473
Gonococcal infection	702	742	721	802	1165
Syphilis – infectious	2	8	16	28	55
Syphilis – other	208	230	306	345	302

Table 1: Notified infectious diseases, Victoria, 1999–2003 continued

	1999	2000	2001	2002	2003
Vaccine preventable diseases					
<i>Haemophilus influenzae</i> type b	4	3	2	2	1
Influenza – laboratory confirmed ²	NN	NN	176	596	658
Invasive pneumococcal disease ³	NN	14	321	454	468
Measles	109	21	82	13	38
Mumps	72	43	40	9	4
Pertussis	922	735	844	888	610
Rubella	117	66	60	15	3
Tetanus	0	1	1	0	1
Vector borne diseases					
Arbovirus – alphavirus	241	331	377	92	23
Arbovirus – flavivirus	1	13	17	13	18
Arbovirus – not further specified	33	16	5	0	0
Malaria	71	119	87	64	59
Zoonoses					
Brucellosis	3	0	1	2	4
Leptospirosis	26	36	38	17	10
Psittacosis	65	83	74	34	89
Q fever	26	23	62	83	18
	21509	21907	23778	23099	24745

NN – not notifiable

1. Notification of cryptosporidiosis was voluntary until 16 May 2001

2. Laboratory confirmed influenza became notifiable on 16 May 2001

3. Notification of invasive pneumococcal disease was voluntary from December 2000 to 16 May 2001

3. Blood-borne viruses

Hepatitis B

Acute hepatitis B

Summary of notifications

There were 158 notifications of acute hepatitis B infections in 2003, a reduction of 19 per cent on the number of notifications in 2002. Of these, 105 (66 per cent) were for males. Notification rates per 100 000 population were highest for those aged 15–24 years (figure 2). Seventy-two per cent of persons notified were Australian born.

Notifications were most frequently received from the Southern Metropolitan Region, however, notification rates per 100 000 population were highest for the Western Metropolitan Region (figure 3). There were three notifications for interstate residents. While the 2003 total was lower than the number of notifications in 2001 and 2002, it was still approximately 72 per cent higher than the annual average for the period 1998–2000 (table 3).

Thirty-eight persons (24 per cent) were hospitalised, with no deaths recorded. Thirty-six people were found to have co-infections in 2003 (table 2).

Risk factors

In 2003, injecting drug use (IDU) was identified as a risk factor in 80 cases (51 per cent) compared to 58 per cent in 2002 (table 3). Information acquired during case follow-up suggested that the risk behaviours of sharing of needles, syringes and other equipment among injecting drug users continues.

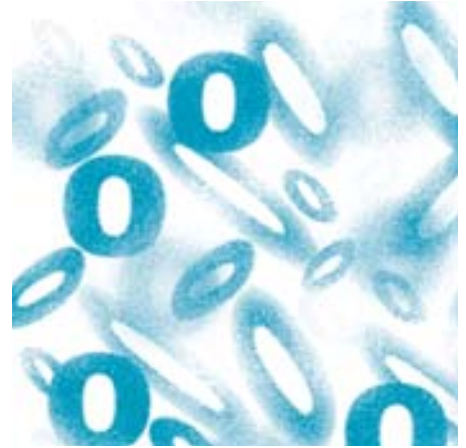


Figure 2: Notifications of acute hepatitis B, by age group and sex and rate per 100 000 population, Victoria, 2003

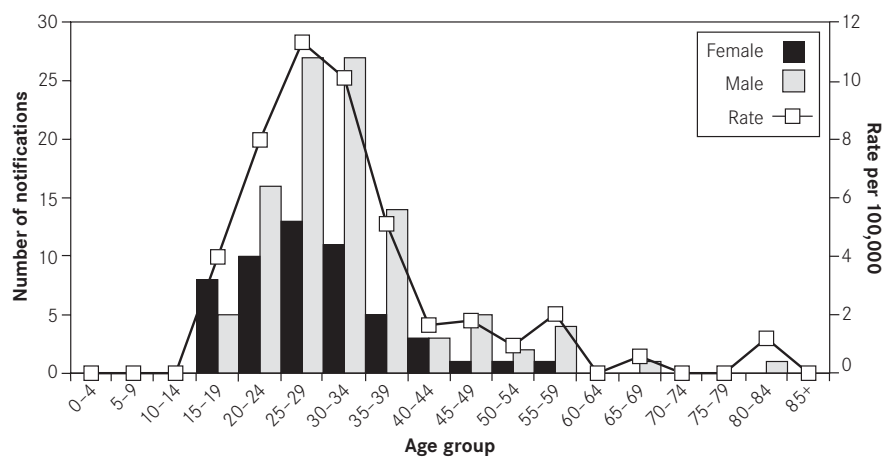


Table 2: Co-infections with acute hepatitis B, Victoria, 2001–2003

	2001	2002	2003
Total cases	197	196	158
Co-infections n (%)			
Hepatitis C	75 (38)	58 (30)	35 (22)
Hepatitis D	0 (0)	1 (1)	1 (1)
HIV	2 (1)	0 (0)	0 (0)
Hepatitis A	1 (0)	1 (1)	0 (0)

Figure 3: Notifications of acute Hepatitis B, by region and rate per 100 000, Victoria, 2003

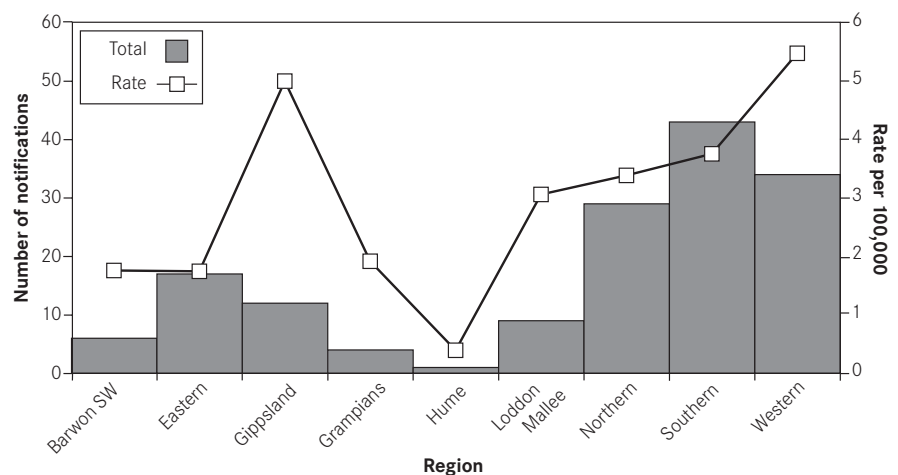


Table 3: Risk factors for acquiring acute hepatitis B notifications, Victoria, 1997–2003

	1997	1998	1999	2000	2001	2002	2003
Total cases	123	79	85	112	197	196	158
Risk Factor* n (%)							
Injecting drug use	40 (32)	28 (35)	50 (59)	65 (58)	119 (60)	114 (58)	80 (51)
Unsafe sex	38 (31)	38 (48)	28 (33)	31 (28)	72 (36)	72 (37)	68 (43)
Other	12 (10)	4 (5)	3 (3)	3 (3)	17 (9)	20 (10)	1 (1)
No risk	33 (27)	22 (28)	19 (22)	17 (15)	13 (7)	18 (9)	27 (17)

*People may have more than one risk factor

Outbreaks and other investigations

No outbreaks were identified in 2003.

Comment

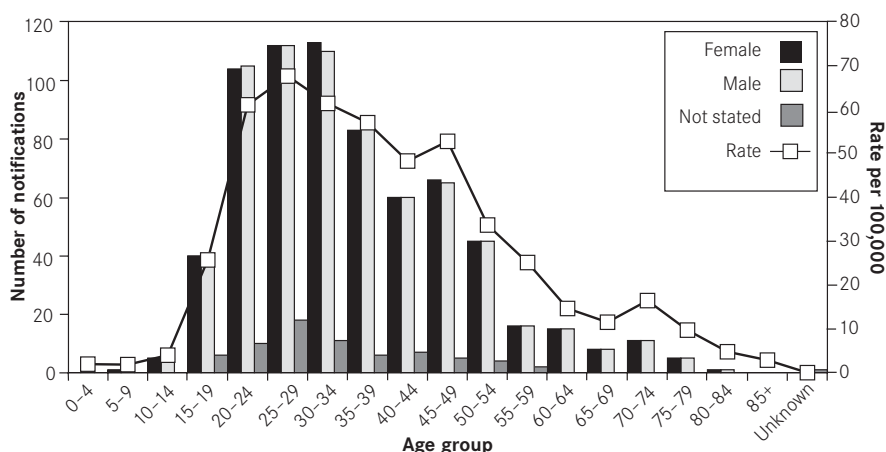
Vaccination of high-risk populations is the priority for disease control because once the pool of infection is established it is very difficult to control.

Chronic hepatitis B

Summary of notifications

There were 1609 notifications of chronic hepatitis B infection received in 2003 for 851 males (53 per cent) and 688 females (43 per cent). Sex was not specified for 70 notifications. Notification rates were highest for those aged 20–54 years (figure 4).

Figure 4: Notifications of chronic hepatitis B, by age group and sex and rate per 100 000, Victoria, 2003



Hepatitis C

Newly acquired hepatitis C

Summary of notifications

The majority of newly acquired hepatitis C infections are asymptomatic and, without serological assays that distinguish between acute and chronic infections, incident cases are difficult to identify.

The Department of Human Services received 112 notifications of newly acquired hepatitis C infection in 2003 (3 per cent of all hepatitis C notifications), compared with 109 notifications in 2002. In 2003, 69 (62 per cent) were male, and the median age was 25 years (range: 0–48 years). Notification rates were highest for those aged 15–29 years (figure 5). Four persons were reported as being of Aboriginal and/or Torres Strait Islander origin.

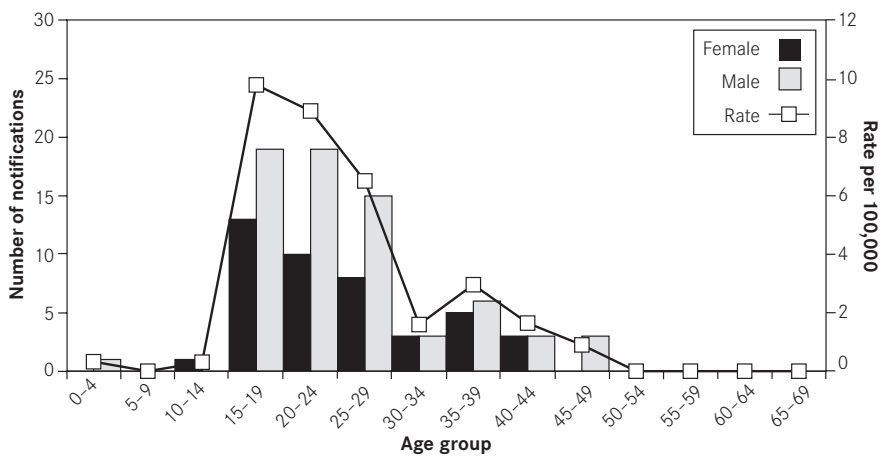
Eighty-three (74 per cent) notifications were diagnosed on the basis of a demonstrated seroconversion to hepatitis C virus within the preceding 24 months.

Notifications occurred sporadically throughout the year and were received from all Departmental regions. The majority (67 per cent) of notifications for whom the postcode of residence was provided were received from metropolitan regions. These data should be interpreted with caution, because accurate residential addresses are not always supplied.

Risk factors

Risk factor information is obtained from the diagnosing doctor. Injecting drug use and a history of imprisonment continue

Figure 5: Notifications of newly acquired hepatitis C, by age group and sex, and rate per 100 000 population, Victoria, 2003



to be the highest reported risk factors for newly acquired hepatitis C infection (table 4). Information about country of birth was not readily provided to the Department. One child aged 8 months was notified as acquiring hepatitis C through a perinatal transmission and another minor aged 14 years reported injecting drug use within the previous two years as a risk factor.

Outbreak and other investigations

No outbreaks were identified.

Table 4: Reported risk factors for newly acquired hepatitis C, Victoria, 2003

Risk factor*	Number
Injecting drug use	90
Sexual partner hepatitis C positive	0
Incarceration	30
Tattoo	7
Piercing	8

* Multiple risk factors may be reported for each individual.

Hepatitis C (not further specified)

Summary of notifications

The Department received 3641 notifications of hepatitis C not further specified in 2003. This is a 10.3 per cent decrease from the number of notifications in 2002, probably reflecting a fall in the pool of persons undiagnosed. Of the total notified cases, 2226 were male and 1343 were female; sex was not specified for 72 notifications. Notifications were highest for males aged 20–54 years (figure 6).

Risk factors

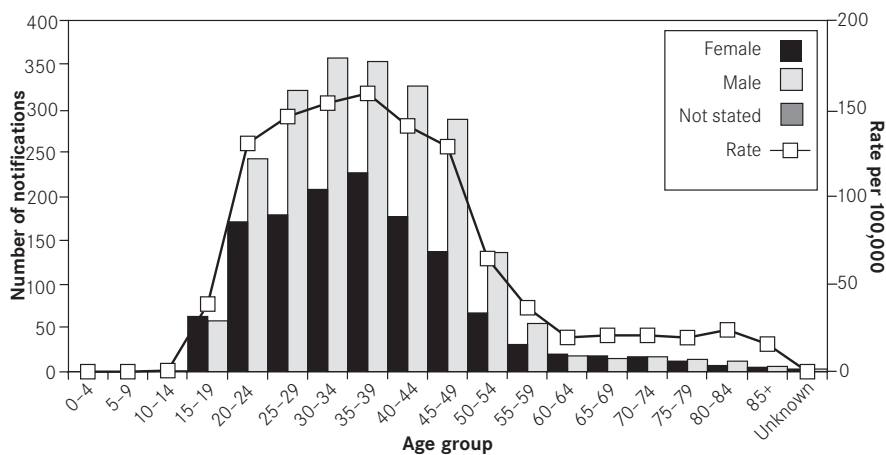
The majority of notifications are received from laboratories, so risk factor information is not routinely provided.

Comment

The three per cent of cases notified in 2003 as newly acquired infections probably under-represents the burden of newly acquired hepatitis C infections in Victoria. Given the nature of the disease and the risk behaviour associated with it, the probability of obtaining better data on the newly acquired cases is limited.

The continuing decline in notifications of hepatitis C not further specified over recent years is reflected nationally, but the high prevalence of hepatitis C among people who currently inject drugs and the high infectiousness of hepatitis C pose major challenges to efforts to reduce transmission in the Victorian community.

Figure 6: Notifications of hepatitis C not further specified, by age group and sex, and rate per 100 000 population, Victoria, 2003



The Victorian hepatitis C strategy 2002-2004 provides goals and direction for prevention, education and the treatment, care and support of people affected by hepatitis C. The strategy aims to help strengthen Victoria's response to the current and emerging challenges of the hepatitis C epidemic. A key priority area identified in this document is research and surveillance. For further information on the strategy, see http://www.health.vic.gov.au/ideas/diseases/hepc_strategy.htm.

Hepatitis delta virus

Summary of notifications

There were 13 notifications of hepatitis delta virus (HDV) infection in 2003, for nine males and four females, compared to nine notifications in 2002. The age range of persons notified was 17-61 years. The majority of notifications (85 per cent) were residents of the metropolitan regions.

Risk factors

Risk factor information is not routinely collected.

Outbreaks and other investigations

There were no outbreaks detected.

Comment

Hepatitis delta virus and hepatitis B virus may co infect, or delta virus infection may occur in persons with chronic hepatitis B. Delta virus can be misdiagnosed as an exacerbation of chronic hepatitis B infection. Prevention of hepatitis B infection with vaccination therefore prevents infection with delta virus. Chronic carriers of hepatitis B can avoid exposure to delta virus by adopting safe sexual and injecting behaviours.

4. Enteric diseases

Campylobacter infection

Summary of notifications

The Department received 5644 notifications of *Campylobacter* infection in 2003, for 3055 males (54 per cent) and 2519 females (45 per cent); sex was not specified in 70 notifications (1 per cent). The median age of persons notified was 29 years (range: 1 month–103 years) and notification rates per 100 000 population were highest for children aged under 5 years (figure 7). Notification rates were highest for the Gippsland region (figure 8). As in previous years, notifications were more frequent during the warmer months.

Risk factors

Risk factor information was not routinely collected.

Outbreak investigations

Two point source outbreaks of *Campylobacter* were investigated in 2003. In February, the Communicable Diseases Section was notified of an outbreak of *Campylobacter* in a 50-bed nursing home. Three cases were residents who were all hospitalised, and one case was a personal carer who cleaned up after one of the sick residents. This outbreak appeared to have been spread by person-to-person transmission. Clean-up and control measures were implemented when the outbreak was notified, and no further cases were identified.

The second *Campylobacter* outbreak occurred among a group of school excursion attendees. In November 2003,

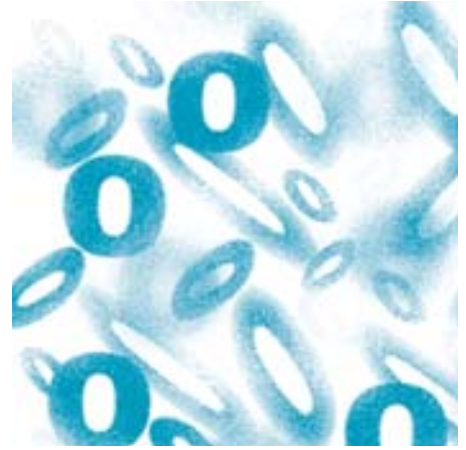


Figure 7: Notifications of *Campylobacter* infection, by age group and rate per 100 000 population, Victoria, 2003

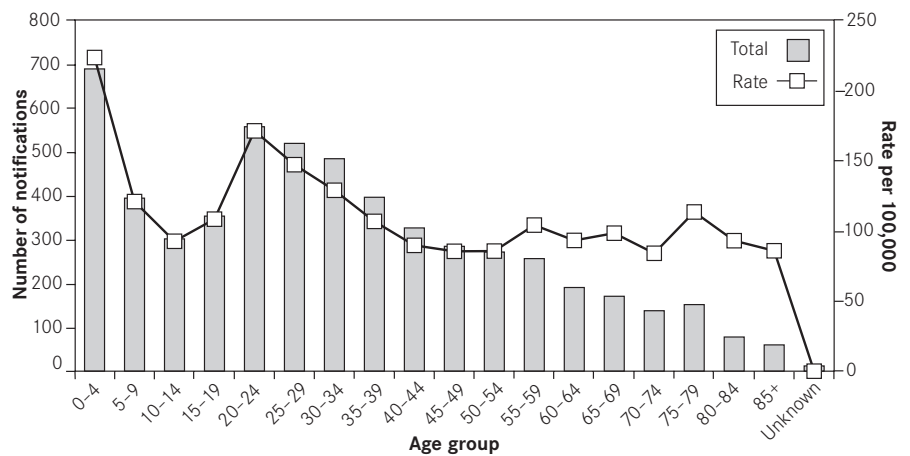
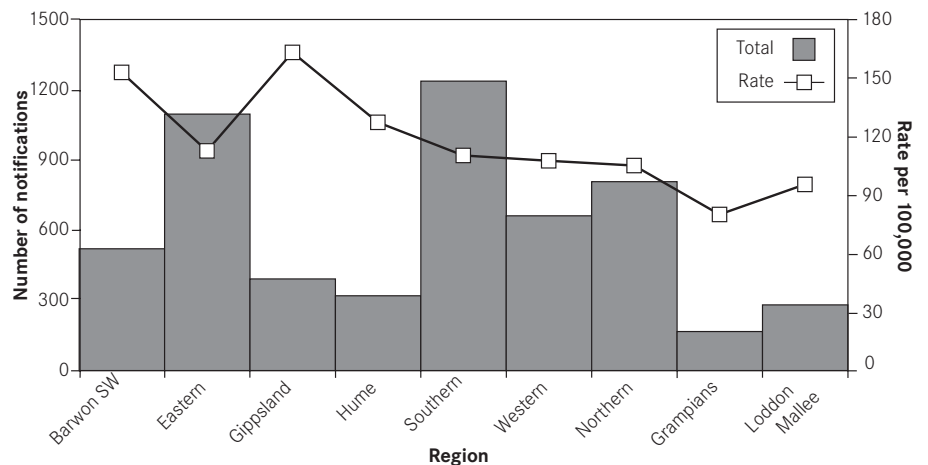


Figure 8: Notifications of *Campylobacter* infection, by region and rate per 100 000 population, Victoria, 2003



the Department was notified of two cases of *Campylobacter* infection in primary school children. Both children had attended the same excursion to a dairy farm before the onset of their illness. Investigations revealed additional cases of illness among excursion attendees. Children and adults on the excursion had undertaken a range of activities, including handling farm animals

and drinking unpasteurised milk. The milk was also taken back to the school and used to prepare a milk shake that some of the school children consumed.

A cohort study of all excursion attendees was conducted. Thirteen (all school children) of 38 attendees became ill, with two additional secondary cases of infection identified among younger

siblings of cases. The risk of illness was 3.7 times higher among people who had drunk any unpasteurised milk, although this risk was not statistically significant due to the small cohort. Only one person who became ill had not drunk any of the unpasteurised milk.

Attendees were also asked if they had washed their hands before eating. This practice was found to be protective (relative risk of 0.3), indicating that transmission for some cases might also have been animal-to-person rather than food borne. Schools need to be aware that children attending farms as part of camps and excursions should not drink unpasteurised milk. Further, farms should provide facilities for children and adults to wash their hands after handling animals.

Comment

Campylobacter is a major cause of enteric disease and is thought to be responsible for the majority of food-borne disease in developed countries. Prevention of infection depends on good personal and food hygiene, particularly the adequate washing of vegetables and cooking of raw meats.

Drinking unpasteurised milk and not washing hands after handling farm animals have been documented as causing outbreaks of *Campylobacter* infection and other enteric diseases with more serious complications, such as verotoxin producing *E. coli* infections. The Department’s brochure ‘Reducing the risk of gastroenteritis at open farms, petting zoos and animal exhibits’ is available at <http://www.health.vic.gov.au/ideas/regulations/animal.htm>

Cryptosporidiosis

Summary of notifications

The Department of Human Services received 214 notifications of cryptosporidiosis in 2003—a 25 per cent decrease on the number of notifications for 2002. There were 112 males (52 per cent) and 100 females (47 per cent) notified; sex was not stated for two notifications. The median age was 6

years (range: 0–81) and notification rates were highest for persons aged 0–4 years (figure 9). Notification rates were highest for the Gippsland region (figure 10).

Risk factors

Risk factor information was not routinely collected.

Figure 9: Notifications of cryptosporidiosis, by age group and rate per 100 000 population, Victoria, 2003

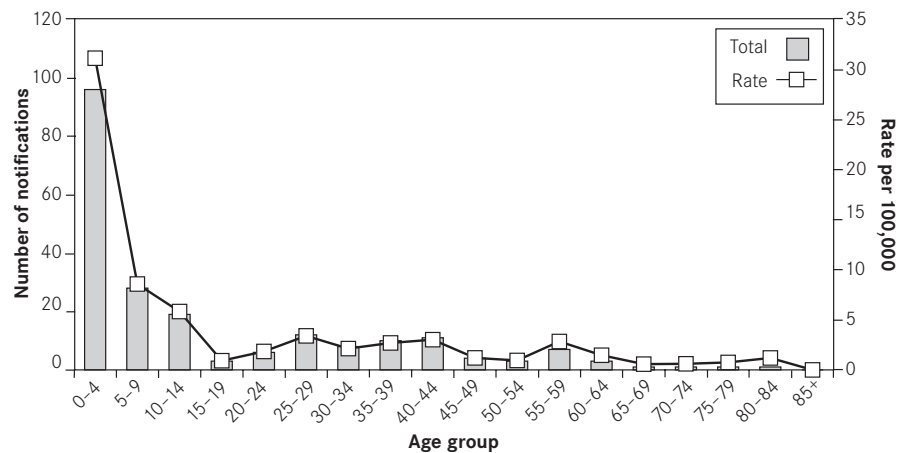
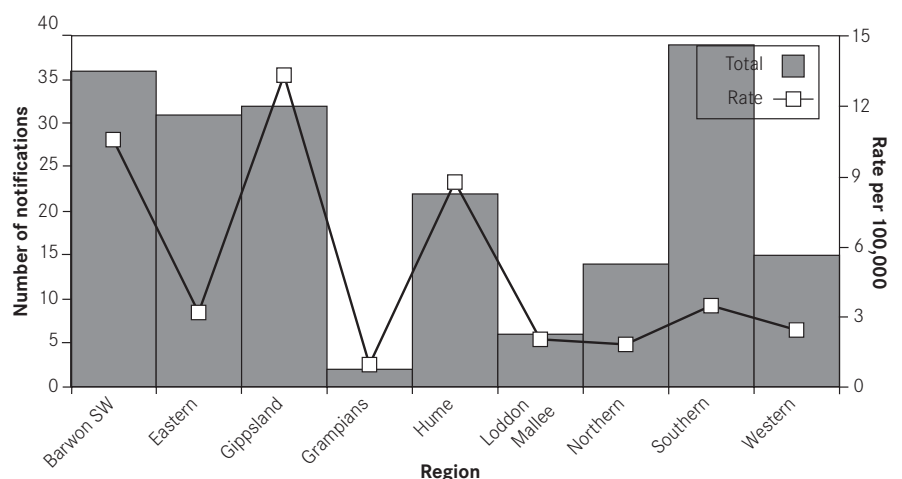


Figure 10: Notifications of cryptosporidiosis, by region and rate per 100 000 population, Victoria, 2003



Outbreak and other investigations

No point source outbreaks occurred in 2003. Between July and August, 17 cases were notified in the Barwon South Western region. Twelve of these cases could be contacted and 10 reported either direct contact with cattle or close contact with family members who had direct contact with cattle. Eight of the cases lived on dairy farms. It is calving season in the area during these months and the increase in cryptosporidiosis was likely due to contact with cattle. The Department prepared and forwarded a media release to local councils in the region for local media to use during the calving season. The media release, aimed at dairy farmers in the region, explains the risks of close animal contact and diseases such as cryptosporidiosis, and describes the means for prevention.

Comment

Major outbreaks of cryptosporidiosis have been attributed to both contaminated drinking water and recreational water use. Sporadic cryptosporidiosis can be avoided by educating people about personal hygiene, excluding people with diarrhoea from swimming in pools until symptoms have subsided, and ensuring swimming pool owners are aware of pool hygiene procedures. Infection in rural areas appears to be predominantly associated with contact with farm animals and is more frequent during the calving season.

Food- and water-borne illness

Medical practitioners are required to notify the Department of Human Services of suspected cases or outbreaks of food- and water-borne illness, regardless of aetiology. This allows for the early investigation of possible sources of illness where food or water is suspected, which is important for preventing further cases. These notifications are classified as 'group A' and must be notified within 24 hours.

Although the notification system was originally intended for situations of two or more related cases, the Department often receives single notifications when a medical practitioner suspects a particular food or water source was associated with the illness. Local government environmental health officers investigate sporadic cases. Pathogens that are not notifiable under the Health (Infectious Diseases) Regulations 2001, including rare gastrointestinal infections, are also recorded. Notifiable pathogens are covered in separate sections of this report.

Summary of notifications

In 2003, the Department received 476 notifications of specific organisms/agents (not reported elsewhere) associated with gastrointestinal illnesses potentially linked to food or water (table 5). This total represented an increase of 27 per cent on notifications in 2002.

Table 5: Notification of food- and water-borne illness, by causative organism/agent, Victoria, 2003

Organism/agent	Number
Norovirus	452
<i>Clostridium perfringens</i>	13
Rotavirus	7
Scombroid toxin	2
<i>Vibrio parahaemolyticus</i>	1
<i>Cyclospora</i> spp	1
Total	476

Outbreak and other investigations

In 2003, the Department was notified of 150 outbreaks of gastrointestinal illness affecting 3748 people. Of these outbreaks, 18 were considered to be food-borne or probable food-borne outbreaks, with the majority of the remainder being spread by person-to-person transmission. Settings in which outbreaks were reported included aged care facilities (67 outbreaks), hospitals (22), restaurants/hotels (18), overnight camps (10), disability/rehabilitation centres (9), private residences (4), childcare facilities (4), schools (3), play centres (2), reception centres (2), recreation (2), take-away food outlets (2), commercial caterers (2), a cruise (1), a prison (1) and a military institution (1).

Organisms/agents responsible for the 150 outbreaks were norovirus (57 outbreaks), *Salmonella* (7), rotavirus (2), *Clostridium perfringens* (2), *Campylobacter* (2), *Shigella* (1), fish wax ester (1) and hepatitis A (1). In 77 outbreaks, the organism/agent responsible was unknown, but 53 of

these outbreaks were suspected to have been viral.

Eighty-eight per cent (n = 50) of the reported outbreaks caused by norovirus were reported in the second half of the year. Forty-eight of these occurred in hospitals, disability or aged care facilities, and over 1700 residents and staff were affected.

Salmonella, Campylobacter, Cryptosporidium, hepatitis A and Shigella outbreaks are discussed further in the respective sections of this report.

Giardiasis

Summary of notifications

The Department of Human Services received 772 notifications of giardiasis in 2003 (compared with 710 cases notified in 2002), for 410 males (53 per cent) and 352 females (46 per cent); sex was not specified for 10 notifications. Notification rates were highest among those aged

0–4 years, with a secondary peak in adults aged 30–34 years (figure 11). Notification rates were highest for the Western Metropolitan region (figure 12).

Risk factors

Risk factor information was not routinely collected.

Figure 11: Notifications of giardiasis, by age group and rate per 100 000 population Victoria, 2003

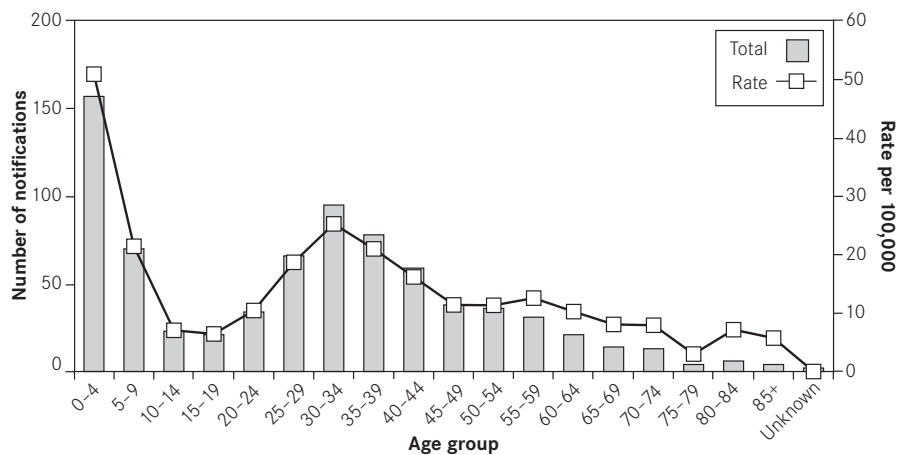
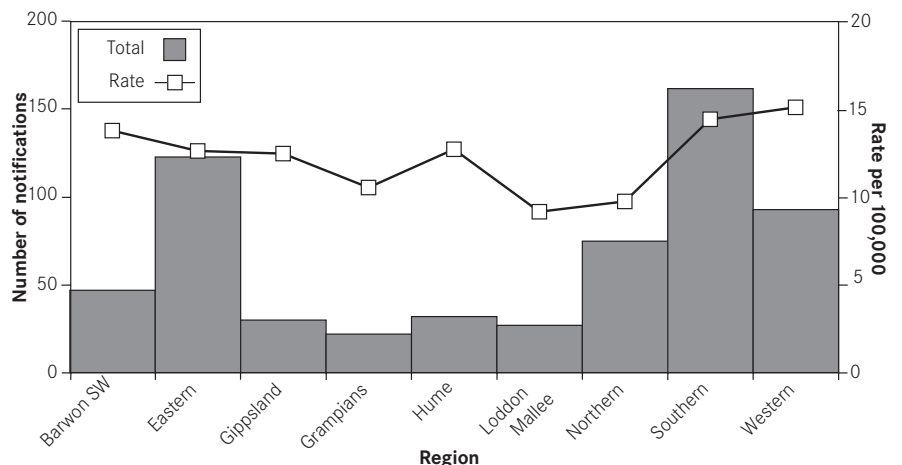


Figure 12: Notifications of giardiasis, by region and rate per 100 000 population Victoria, 2003



Outbreak and other investigations

No outbreaks were identified in 2003.

Comment

Giardiasis spreads rapidly in childcare centres and institutions. Personal hygiene, particularly hand washing before eating and handling food, and after toilet use and changing nappies, is critical to the control of this disease.

Haemolytic uraemic syndrome and verotoxin-producing *E. coli*

Escherichia coli are common bacteria normally found in the gut of warm blooded animals. There are many strains of *E. coli*, most of which are harmless. Some strains, however, can produce toxins that are pathogenic in humans; one type is known as verotoxin-producing *E. coli* (VTEC), also referred to as shiga-like toxin-producing *E. coli* (STEC). The most common symptom is diarrhoea, which can range from mild to severe, and may be bloody and accompanied by stomach cramps. Symptoms can be severe in children and people with reduced immunity.

Haemolytic uraemic syndrome (HUS) is a rare condition affecting the kidneys and bloodstream that can be caused by VTEC. Abdominal pains and bloody diarrhoea mark the onset of a prodromal illness, which progresses to kidney failure and anaemia.

Table 6: Notification of verotoxigenic *E. coli* (VTEC) and haemolytic uraemic syndrome (HUS), by serogroup and phage type, Victoria, 2003

E. coli serogroup and phage type	VTEC	HUS
E. coli O28:H	1	0
E. coli O5:H-	1	0
E. coli O157 H:-	1	0
No <i>E. coli</i> isolated clinical diagnosis	0	4
Total	3	4

Verotoxigenic *E. coli*

Summary of notifications

The Department of Human Services received three notifications of VTEC in 2003, for two males and one female. In Victoria, if a case of HUS also meets the case definition of VTEC, it will be counted only once (as a case of HUS). The cases ranged in age from 3 to 54 years (median age of 43 years). Table 6 lists the various serogroups and phage types.

Risk factors

One case was immunosuppressed and one case had contact with farm animals during the incubation period. The third case was asymptomatic, and *E. coli* was detected in screens of the family contacts of a HUS case for whom VTEC was not isolated.

Outbreak and other investigations

No outbreaks were identified and no links were found among the cases. A source could not be positively identified for any of the cases.

Comment

Symptoms of VTEC infection can be severe in children and people with reduced immunity. Once a case is identified, person-to-person transmission must be prevented by being careful with personal hygiene and excluding cases from food and beverage preparation. Infection can be prevented by adequately cooking meat products (particularly minced beef) and not consuming unpasteurised milk and dairy products.

Haemolytic uraemic syndrome

Summary of notifications

The Department received four notifications of HUS in 2003, for three males and one female. Cases ranged in age from 11 months to 10 years, with a median age of 5 years. VTEC was not isolated from faecal specimens in any of the cases, although the mother of one case, who was asymptomatic, had *E. coli* O28:H- isolated from her faecal specimen.

Risk factors

Two cases lived on cattle farms. No risk factors were identified for the other two cases.

Outbreak and other investigations

The cases were not epidemiologically linked, and a definitive source for each of the infections was not identified.

Comment

Children under 5 years of age are at the greatest risk of developing HUS, and outbreaks have been associated with the consumption of food contaminated with VTEC.

Hepatitis A

Summary of notifications

In 2003, there were 93 notifications of hepatitis A, (91 confirmed and 2 probable) an increase of 39 per cent compared with 67 notifications in 2002. There were 52 (56 per cent) notifications for males and 41 (44 per cent) for females. Notification rates were highest for those aged 20–24 years and 25–29

years (figure 14). There were 27 hospitalisations.

The Department received notifications of hepatitis A sporadically throughout the year, with a sharp increase observed in July due to the two outbreaks (figure 13). Notification numbers were highest in the Southern Metropolitan Region, however, notification rates per 100 000 were highest in the Hume Region (figure 15).

Figure 13: Notifications of hepatitis A, by month of notification, Victoria, 1999–2003

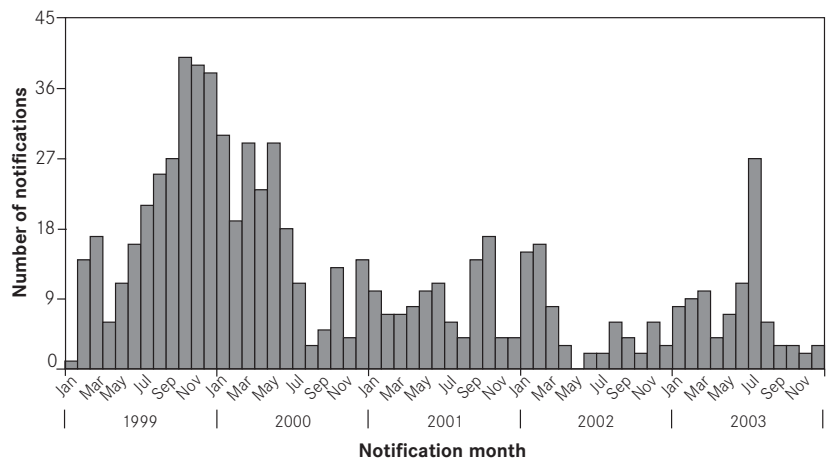


Figure 14: Notifications of hepatitis A, by age group and rate per 100 000 population, Victoria, 2003

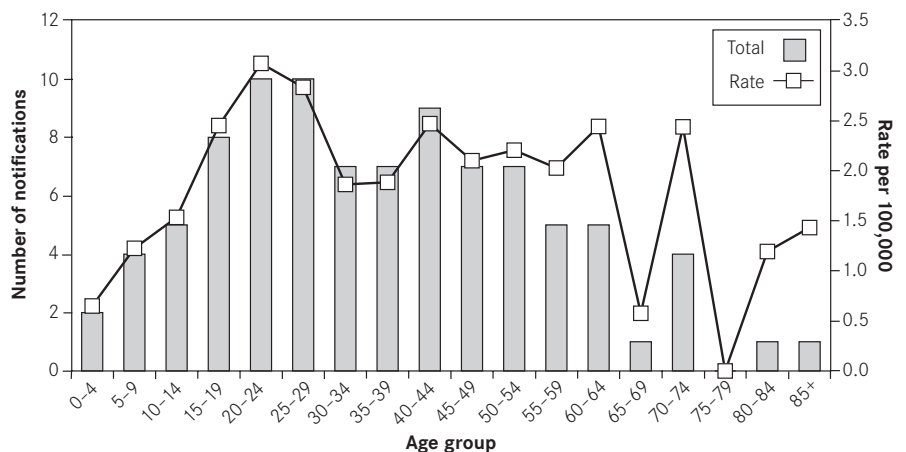
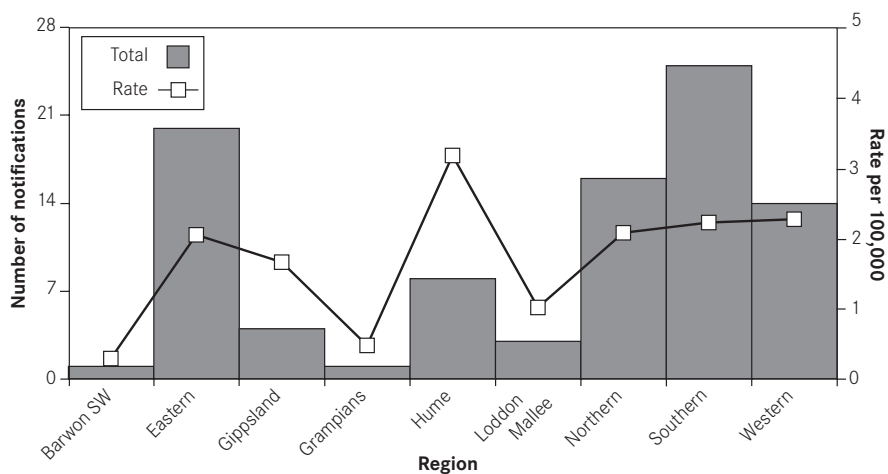


Figure 15: Notifications of hepatitis A, by region and rate per 100 000 population, Victoria, 2003



Risk factors

Overseas travel was the most frequently identified risk factor, accounting for 24 cases (26 per cent) (table 7). Risk factor information was available for 88 cases (94 per cent) but in most cases the source of the infection could not be identified.

Outbreaks and other investigations

In April, a group of people from most states and territories in Australia attended a youth camp in the Northern Territory. By early June, cases of Hepatitis A had been identified in participants of the camp. There were four confirmed cases of Hepatitis A in participants from Victoria. Despite a multi- state

investigation being conducted, which included interviewing over 200 people, a source was not definitively identified.

In July, a cluster of cases in an extended family group was investigated. The index case became ill in late May and infected two household contacts who were notified in early July. Three non-household family members were probably infected at a family function that the index case attended on the date of her onset of illness. A further case was identified in a work colleague of one of the cases.

In the first week of July, three cases of hepatitis A were notified to DHS in a group of ten people who attended a restaurant together in late May. An investigation was conducted in an attempt to identify the source. A further case of hepatitis A was confirmed in another member of the group, who was ill on the evening of the function. Blood and liver function test results, however, were not able to confirm her as the index case and she may have been co-infected with the other cases. Food handlers were tested and all found to be IgM negative and no food source could be identified. Person to person transmission at the dinner remains the most likely explanation but this could not be confirmed.

Comment

Hepatitis A notifications continued to decline both in Victoria (figure 13) and nationally. The reasons for this are unclear and may reflect either a decline in travel to endemic areas, greater awareness amongst travellers and other at-risk groups, and improved uptake of the vaccine. Vaccination should be

Table 7: Risk factors for acquiring hepatitis A infections, Victoria, 2003

Risk factor (suspected source)	Number	Per cent
Overseas travel	24	26
Parent of a child in childcare	8	9
Non household contact with a case	6	7
Interstate travel	2	2
Household contact with case	3	3
Workplace contact	1	1
Occupational exposure	1	1
Outbreak – source unknown	4	4
Source unknown	39	42
Unable to contact	5	5
Total	93	100

encouraged for people intending to travel overseas and those in high-risk occupations such as childcare workers and health care professionals.

Hepatitis E

Summary of notifications

The Department of Human Services received four notifications of hepatitis E in 2003, in three females and one male, aged between 19 and 59 years (with age not stated for one case). All diagnoses were confirmed by the detection of IgG in serum by enzyme immunoassay in the presence of a clinically compatible illness. One case, a returned traveller, also had concurrent infections with *Campylobacter* and *Giardia*.

Risk factors

The Department was able to contact two of the cases and confirmed that they had acquired their infections overseas (one case from India and one from Papua New Guinea). The other two cases were suspected to have also acquired their infections overseas, but this suspicion could not be confirmed.

Outbreak and other investigations

No links were identified among the cases.

Comment

Hepatitis E is an acute enteric illness with a clinical course similar to that of hepatitis A. Infection should be considered in persons with acute hepatitis and a history of travel to endemic areas. Persons intending to travel to endemic regions should be advised to take care with personal hygiene and avoid the consumption of undercooked foods and untreated water.

Listeriosis

Summary of notifications

The Department of Human Services received 21 notifications of listeriosis in 2003, for 13 males and eight females. The median age of cases was 72 years (range: 0 days–82 years). There were five materno-foetal cases, with one foetal death reported, giving a materno-foetal case fatality rate of 20 per cent.

Of the 16 non-materno-foetal cases, five died as a result of their infection—a case fatality rate of 31 per cent. Two of the cases presented with meningitis, *Listeria* was isolated from pericardial fluid from a cardiac bypass graft from one case, and the organism was grown from synovial fluid of a fourth case. The remaining cases (75 per cent) presented with septicaemia.

Risk factors

High risk foods identified in case follow-up included sliced cold meats, soft cheese, and freshly squeezed fruit and vegetable juices. Risk factors were identified for 14 of the 16 non-materno-foetal cases. These included cancer (nine cases), renal disease (one case), diabetes (one case), cortisone therapy (one case), myelodysplasia (one case) and heart disease (one case).

Outbreak and other investigations

To inform epidemiological investigations, the Microbiological Diagnostic Unit of the University of Melbourne routinely conducts molecular typing using pulse-field gel electrophoresis (PFGE) on all isolates from notified cases. PFGE is also routinely conducted on any food samples

submitted in relation to cases in which *L. monocytogenes* is detected.

Fourteen different patterns were found in the isolates from 19 cases in 2003; three PFGE types were shared by eight cases, but no epidemiological links among these cases were identified. No source was identified for any of the cases notified.

Comment

Advice on food hygiene and appropriate diet should be given to susceptible groups, particularly pregnant women, the elderly and the immunocompromised. Current information available includes the National Health and Medical Research Council (NHMRC) statement on *Listeria* for medical practitioners. Pamphlets available include the Food Standards Australia New Zealand (FSANZ) pamphlet 'Important health message, *Listeria* and pregnancy' and the Department's *Listeria* poster and pamphlet, which are available in seven languages. The Department's pamphlet is available online at http://www.health.vic.gov.au/ideas/diseases/listeria_facts.htm.

In recent years, notifications of materno-foetal cases of listeriosis have fallen, largely as a result of the increase in information provided to pregnant women about the risk of *Listeria* infection and the foods to be avoided during pregnancy. In 2004, the Department will implement a *Listeria* awareness and education program for doctors and carers of patients at high risk of acquiring listeriosis.

Salmonellosis

Summary of notifications

The Department of Human Services received 1263 notifications of salmonellosis in 2003, an increase of 5 per cent on the total in 2002. Among the cases, the male-to-female ratio was 1:1 and the median age was 23 years (range: 11 days–93 years). Notification rates were highest among those aged 0–4

years (82 cases per 100 000), accounting for 20 per cent of the total notifications for the year (figure 16).

Figure 17 shows the geographic distribution of cases across the nine Department regions. Notification rates were highest for the Western Metropolitan Region, Gippsland Region and Barwon South Western Region (38, 33 and 31 per 100 000 respectively).

Figure 16: Notifications of salmonellosis, by age group and rate per 100 000 population, Victoria, 2003

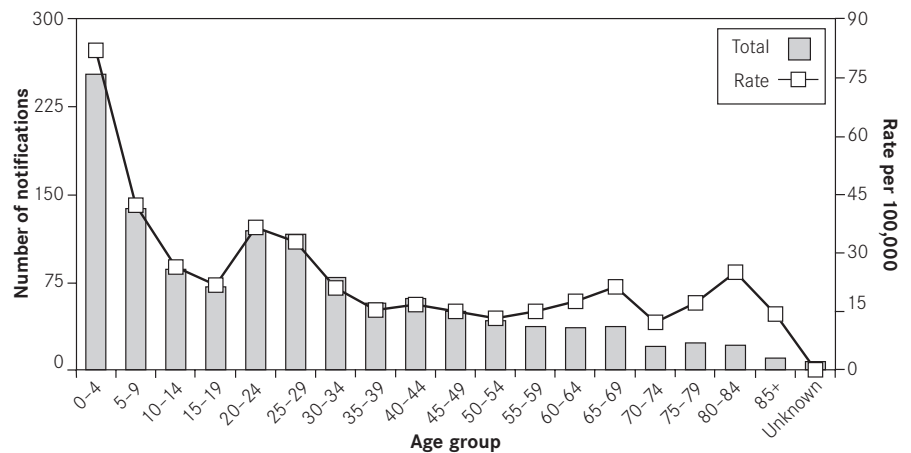


Figure 17: Notifications of salmonellosis, by region and rate per 100 000 population, Victoria, 2003

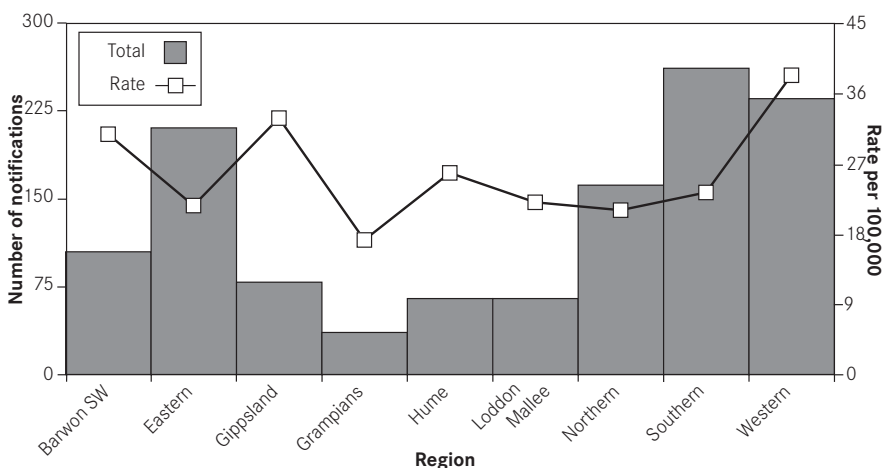


Table 8: Ten most common types of *Salmonella* notified, Victoria, 2003

Salmonella serotype and phage type	Number	Per cent
<i>S. typhimurium</i> 135	233	18
<i>S. typhimurium</i> 9	159	13
<i>S. typhimurium</i> 170	125	10
<i>S. typhimurium</i> u290	88	7
<i>S. infantis</i>	54	4
<i>S. typhimurium</i> 197	21	2
<i>S. stanley</i>	19	2
<i>S. typhimurium</i> 12	19	2
<i>S. typhimurium</i> 126	18	1
<i>S. saintpaul</i>	17	1
<i>S. agona</i>	14	1
Other	496	39
Total	1263	100

The Microbiological Diagnostic Unit at the University of Melbourne performs identification of *Salmonella* isolates in Victoria. In 2003, *S. typhimurium* 135 (STM 135) was the most common serotype/phage type identified, accounting for 18 per cent of the total *Salmonella* notifications received for the year (table 8). One single outbreak of

STM 135 had 125 confirmed cases (see below). STM 135 was also the most commonly notified *Salmonella* in 2002.

Salmonella enteritidis

S. enteritidis is not endemic in Australia, except for phage type 26, which occurs in Queensland. It is a significant *Salmonella* serovar in that the organism vertically

transmits from the chicken to the egg. Common overseas, it has been responsible for large outbreaks of disease associated with undercooked eggs and products containing eggs. In Victoria, the Department follows up all cases of *S. enteritidis* to ascertain whether the infection was acquired overseas.

The Department received 51 notifications of *S. enteritidis* in 2003, compared with 47 notifications in 2002. As in previous years, Indonesia was most frequently reported as the country of acquisition, accounting for 51 per cent of notifications (table 9).

Outbreak and other investigations

Three point source outbreaks of *S. typhimurium* 170 (46 cases) and one outbreak of *S. typhimurium* 135 (125 cases) occurred during 2003. Three other *Salmonella* outbreaks were also reported, of which two were person-to-person transmissions in health care institutions (*S. typhimurium* 170 and *S. agona*) and one was an outbreak of *S. typhimurium* 160 on a cruise ship docked in Melbourne (table 10). Summaries of these outbreaks can be found in the *Victorian infectious diseases bulletin* online at <http://www.health.vic.gov.au/ideas/surveillance/bulletin.htm>

Table 9: Notifications of *S. enteritidis*, by country of source of infection, Victoria, 2003

Country/region	Number	Per cent
Indonesia	26	51
Other Asian countries	12	23
European countries	6	12
Pacific islands	1	2
Caribbean	1	2
Middle East	1	2
Overseas unspecified	1	2
Interstate	1	2
Unknown	2	4
Total	51	100

In addition, 18 separate investigations of clusters of *Salmonella* serovars were conducted. In this report, a 'cluster' is an unusual number of notifications of a particular serovar either in time and/or place that are not, at the outset of the investigation, clearly associated with a point source. The 2003 serovars investigation included *S. typhimurium* 135 (trimethoprim resistant), *S. typhimurium* 170, *S. Infantis*, *S. typhimurium* 140 var 1, *S. muenchen*, *S. kottbus*, *S. chester*, *S. stanley*, *S. agona*, *S. typhimurium* u290, *S. saintpaul*, *S. typhimurium* 197, *S. typhimurium* 9, *S. havana*, *S. anatum*, *S. litchfield*, *S. kinondoni* and *S. montevideo*.

Two of the three cases of *S. montevideo* investigated had consumed a brand of tahini that was contaminated with the same serotype of *Salmonella* and was later recalled from sale. A source of infection was not identified in the remainder of these investigations.

Shigellosis

Summary of notifications

The Department of Human Services received 50 notifications of shigellosis in 2003, down 24 per cent from the number in 2002. Of the 50 notifications, 24 (48 per cent) were for males and 26 (52 per cent) were for females. The median age of persons notified was 27.5 years (range: 1–74 years). Notification rates were highest among those aged 25–29 years (figure 18). The table below contains the species and type of *Shigella* (table 11).

Notifications occurred sporadically throughout the year, and no seasonal patterns were identified. The highest number and rate of notifications were for residents of the Northern Metropolitan Region (figure 19).

Risk factors

Thirty-four persons (68 per cent) were known to have acquired their infection overseas (table 12), and one case most likely acquired infection from close contact with a returned overseas

Table 11: Notifications of shigellosis, by species and type, Victoria, 2003

Species	Number
<i>Shigella sonnei</i> biotype g	18
<i>Shigella sonnei</i> biotype a	5
<i>Shigella flexneri</i> 1 b	1
<i>Shigella flexneri</i> 3a	2
<i>Shigella flexneri</i> 6	1
<i>Shigella flexneri</i> 2a	13
<i>Shigella flexneri</i> 2b	1
<i>Shigella flexneri</i> 7	2
<i>Shigella boydii</i> 1	1
<i>Shigella dysenteriae</i> 3	1
<i>Shigella flexneri</i> 4a	1
<i>Shigella flexneri</i> var y	1
<i>Shigella flexneri</i> var x	2
<i>Shigella</i> untypable	1
Total	50

traveller who had been ill. Of the remainder, two cases occurred through sexual contact and two cases were linked to the outbreak described below. For the remaining 11 cases, the source of

Table 10: Salmonellosis outbreaks, by *Salmonella* type, setting and source, Victoria, 2003

<i>Salmonella</i> type	Setting	Source	Published
<i>S. typhimurium</i> 170	Private residence	Roast pork	VIDB vol. 6, no. 2
<i>S. typhimurium</i> 170	Private residence	Roast pork	VIDB vol. 6, no. 2
<i>S. typhimurium</i> 170	Hotel restaurant	Suspect raw eggs	VIDB vol. 7, no. 2
<i>S. typhimurium</i> 170	Health care institution	Unknown, person-to- person transmission	No
<i>S. typhimurium</i> 135	Restaurant/take-away	Pork rolls	VIDB vol. 6, no. 2
<i>S. typhimurium</i> 160	Cruise ship	Unknown	No
<i>S. agona</i>	Health care institution	Unknown, person-to- person transmission	No

Figure 18: Notifications of shigellosis, by age group and rate per 100 000 population, Victoria, 2003

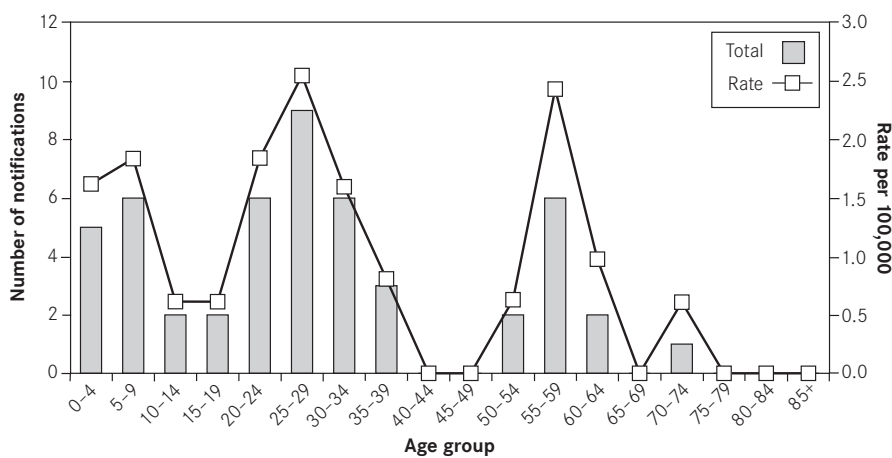


Figure 19: Notifications of shigellosis, by region and rate per 100 000 population, Victoria, 2003

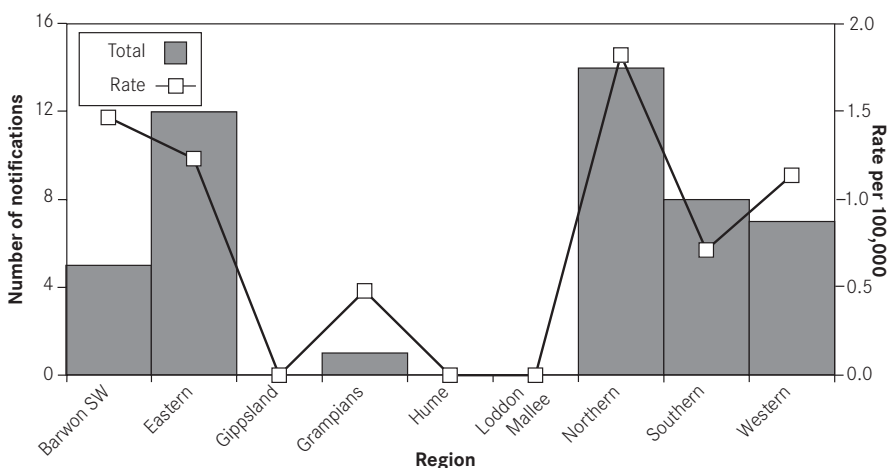


Table 12: Notifications of shigellosis, by risk factor, Victoria, 2003

Risk factor	Number
Overseas travel	
Southern/South East Asia	26
Pacific	1
Middle East	1
Africa	6
Other risk factors	
Unknown	11
Homosexual contact	2
Outbreak	2
Contact with ill overseas traveller	1
Total	50

onset of the confirmed cases. A further two suspected cases were identified, although no faecal specimens were submitted for analysis. The two suspected cases were a sibling and a classroom contact of the two confirmed cases respectively. Both suspected cases had onsets after the confirmed cases, and the investigation did not identify any symptomatic person with onset before the confirmed cases. Given that both cases were confirmed with *Shigella flexneri* 2a, they were assumed to have acquired their infection at school, although the source was not identified.

Comment

Shigellae have a low infectious dose. Infection spreads when a person ingests bacteria through direct or indirect contact with the faeces of a human case. Awareness of the need for increased personal hygiene while travelling and at home will help prevent shigellosis.

infection was unknown because four could not be contacted and seven had no obvious risk factors.

Outbreak and other investigations

One *Shigella* outbreak was investigated in 2003. Two cases were notified in seven-year old children who attended the same

primary school but were not in the same class and did not have direct contact with each other. Both cases had onset of diarrhoea on the same day, indicating there might have been another symptomatic child at the school. Case finding was conducted by interviewing the parents of all absentees from these two classes just before and just after the

Typhoid and paratyphoid

Summary of notifications

The Department of Human Services received 19 notifications of typhoid in 2003. The age range of cases was 1–56 years, and the male:female ratio was 1.4:1. Fourteen cases acquired their infection overseas.

Ten cases of paratyphoid were notified in 2003. The age range of cases was 5–50 years, and the male to female ratio was 1:5. Nine cases of paratyphoid acquired their infection overseas; the remaining case of paratyphoid was investigated, but a source of the illness could not be identified (table 13).

Risk factors

Table 13 shows the country of acquisition for the cases.

Outbreak and other investigations

A cluster of four cases of typhoid was investigated after the initial case reported no history of overseas travel.

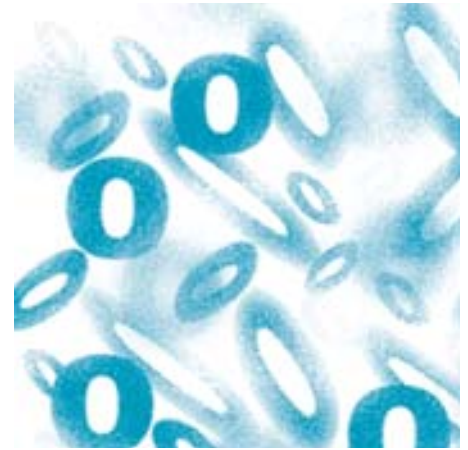
Investigation of this case revealed that she had attended a family function a few weeks before the onset of her illness and that other family members were sick with a similar illness. All attendees at the family function were screened, and a long-term carrier was discovered to have infected four family members, most likely through food served at the function.

Comment

Effective immunisation is available for travellers intending to travel to high-risk areas, but medical practitioners must remind their patients to exercise care in eating and drinking in endemic areas, regardless of immunisation status.

Table 13: Notification of typhoid and paratyphoid, by country of acquisition, Victoria, 2003

Country of acquisition	Typhoid	Paratyphoid
Indonesia	3	3
India	6	5
Pakistan	2	0
Philippines	2	0
Nigeria	1	0
Malaysia	0	1
Carrier	1	0
Infected by a carrier	4	0
Source unknown	0	1
Total	19	10



5. Legionellosis

Summary of notifications

The Department of Human Services received 90 notifications of legionellosis in 2003, a 17 per cent decline on cases notified in 2002. Of the 90 cases, 56 (62 per cent) were male and 34 (38 per cent) were female, with a male:female ratio of 1.6:1. The notification rate was 1.62 per 100 000 population. The median age of cases notified was 60 years, range being 19–89 years. Age-specific notification rates rose steadily with age from 0.3 per 100 000 people aged 25–29 years, to 8.9 per 100 000 people aged 75–79 years (figure 20).

There were 33 cases of *Legionella pneumophila* serogroup 1 (37 per cent of total notifications), making it the most common species and serogroup reported (table 14). There were 31 notifications of *L. pneumophila* of indeterminate serogroup, that is, serological testing could not distinguish the serogroups of the species.

Three deaths were reported, for a total case fatality rate of 3.3 per cent. Two deaths were due to *L. pneumophila* serogroup 1 and the third was not typed beyond *L. pneumophila*.

Table 14: Notifications of legionellosis, by species/serogroup, Victoria, 2003

Species/serogroup	Number	Per cent
<i>L. pneumophila</i> serogroup 1	33	37
<i>L. pneumophila</i> serogroup 3	1	1
<i>L. pneumophila</i> other	31	34
<i>L. longbeachae</i>	23	26
<i>L. micdadei</i>	1	1
<i>L. bozemanii</i>	1	1
Total	90	100

Figure 20: Notifications of legionellosis, by age group and sex, and rate per 100 000 population, Victoria, 2003

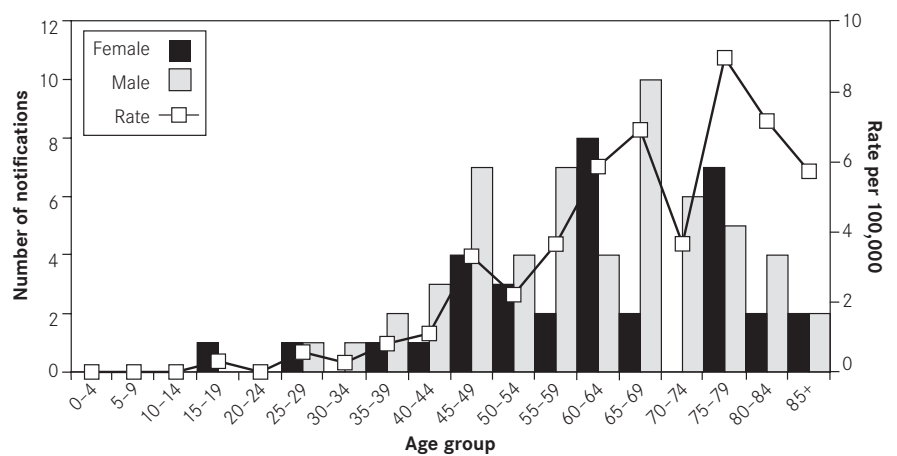
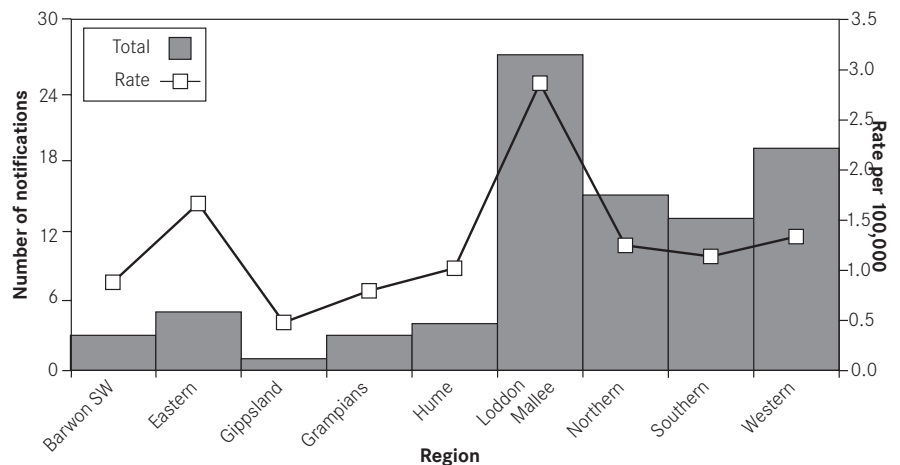


Figure 21: Notifications of legionellosis, by region and rate per 100 000 population Victoria 2003



The highest notification rates were for the Northern Metropolitan Region (2.9 per 100 000). Notification rates for residents of non-metropolitan regions ranged from 0.5 per 100 000 to 1.7 per 100 000 (figure 21).

Risk factors

Information on employment/occupational status was available for 87 cases (97 per cent). Forty-six notified cases (51 per cent) were retirees and/or pensioners. The most common occupations nominated by cases were office work, trades and manufacturing (table 15).

Table 15: Notifications of legionellosis, by employment/occupation status, Victoria, 2003

Occupation/ employment status	Number	Per cent
Retiree/pensioner	46	51
Office worker	13	14
Tradesperson/ manufacturing	10	11
Home duties	6	7
Driver	4	4
Unemployed	3	3
Not stated/unknown	3	3
Education services	1	1
Gardener	1	1
Hospitality	1	1
Student	1	1
Farmer	1	1
Total	90	100

Outbreak and other investigations

There were three outbreaks in 2003. All were *L. pneumophila* serogroup 1 and occurred in metropolitan regions. The first outbreak occurred in March. It involved two cases, a 55 year old female and a 30 year old male. No source was identified for either case.

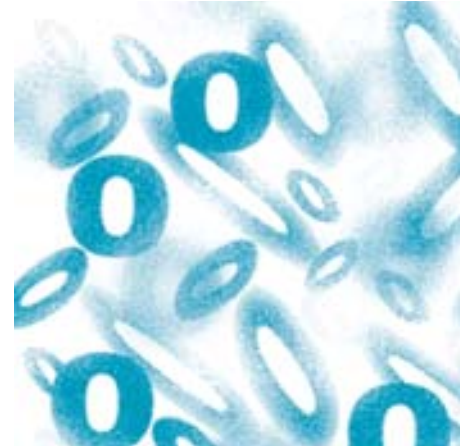
The second outbreak occurred in April and was associated with two cases, a 75 year old male and an 83 year old female. *L. pneumophila* serogroup 1 was subsequently grown in water samples taken from the cooling tower of a country club visited by both cases during their incubation. Molecular sub-typing was available for the *L. pneumophila* sg1 species cultured from the *Legionella*-positive cooling tower systems during the investigation. However, there were no clinical isolates of *Legionella* sg1 from patients that could be matched to the environmental isolates. Therefore it was

not possible to determine whether these were of the same subtype.

The third outbreak in October involved three cases, two males and one female, all aged between 54 and 64 years. No source was identified for this outbreak.

Comment

Notifications of legionellosis have declined since 2001. Low positive *Legionella* titres are frequently found in patients who do not have acute infections, possibly reflecting past exposure or cross-reactivity with other organisms. Medical practitioners considering legionellosis in the differential diagnosis are advised to consider confirmation with a *Legionella* urinary antigen test and to arrange collection of a second (convalescent) serum sample three to six weeks after the onset of symptoms. This second sample should ideally be sent to the same laboratory as the first sample so that both samples can be tested in parallel.



6. Invasive meningococcal disease

Summary of notifications

In 2003, the Department of Human Services received 129 notifications of invasive meningococcal disease, 61 males (47 per cent) and 68 females (53 per cent). This compared with 208 cases in the previous year. The total notification rate was 3.5 per 100 000. There were six deaths (a case fatality rate of 4.7 per cent). The median age of persons notified was 20 years (range: 2 months–83 years). Notifications by age group are presented in figure 22.

Notifications peaked in late winter and early spring, with 48 cases (37 per cent) notified in August, September and October. Notification rates were highest for the Barwon South Western and Loddon Mallee regions (figure 23).

The majority of cases (114, or 88 per cent) were confirmed by laboratory tests. There were more serogroup B cases than serogroup C cases. Serogroup B was confirmed in 55 cases (an overall notification rate of 1.1 per 100 000), with two deaths (a case fatality rate of 3.6 per cent). Serogroup C was confirmed in 47 cases (an overall notification rate of 1.0 per 100 000), with four deaths (a case fatality rate of 8.5 per cent). There were two serogroup Y and two serogroup W135 cases. Seven further cases of unidentified serogroup were laboratory confirmed (for example, gram negative diplococci identified in cerebrospinal fluid), and there were 16 clinical cases.

Serogroup C disease occurred in an older age group (median age of 29 years) than did serogroup B disease (median age of 19 years). The proportion of cases aged under 15 years was higher for

Figure 22: Notifications of invasive meningococcal disease, by age group and rate per 100 000 population, Victoria, 2003

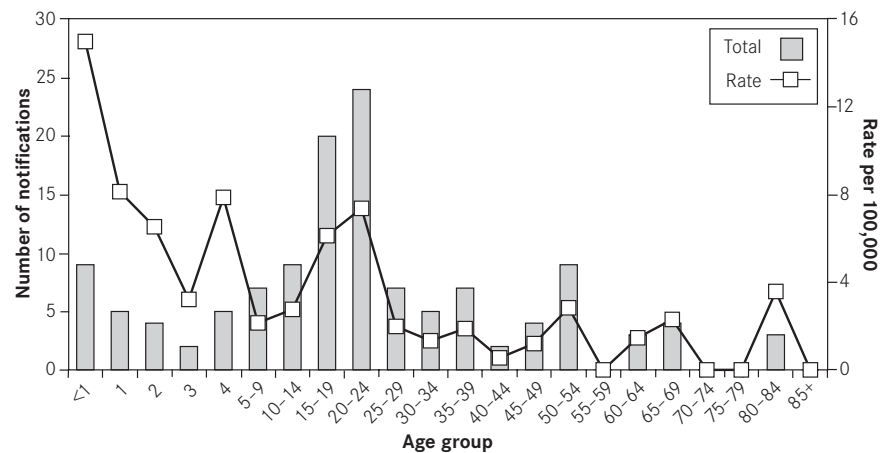
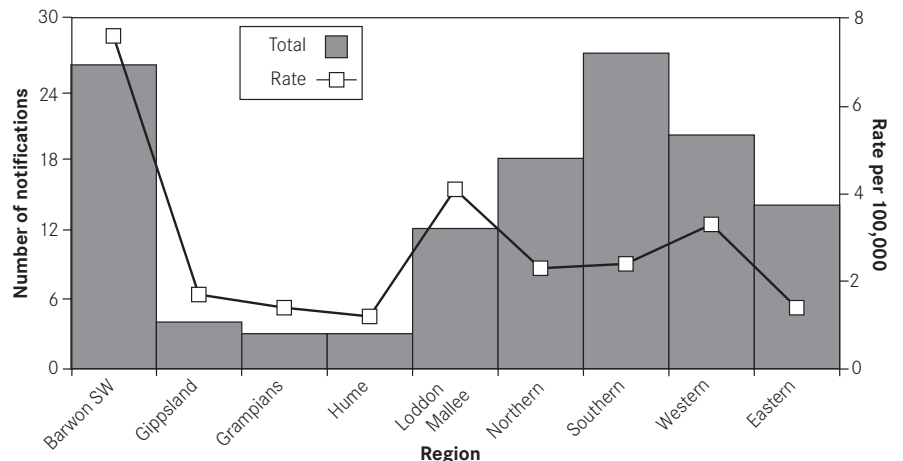


Figure 23: Notifications of invasive meningococcal disease, by region and rate per 100 000 population, Victoria, 2003



serogroup B than for serogroup C (20 per cent and 17 per cent respectively).

The number of notifications of invasive meningococcal group C disease in 2003 was lower than that in 2002 (47 and 88 respectively). The reduction (47 per cent) in the number of notifications for group C disease was probably attributable to the introduction of the National Meningococcal C Immunisation Program in 2003. The reduction was evident in all

age groups, except the under one year old age group.

Risk factors

Risk factor information was not routinely collected.

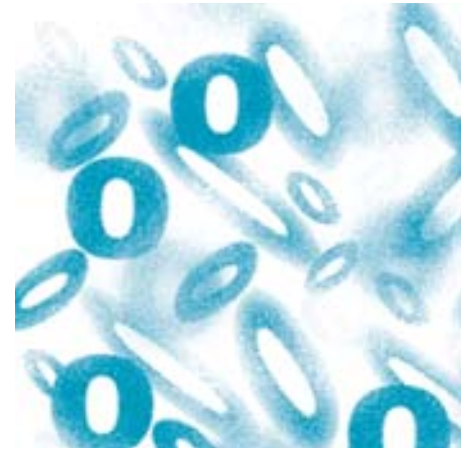
Outbreak and other investigations

Two outbreaks of serogroup C were identified in 2003, along with one

outbreak of serogroup B. Each of the two serogroup C outbreaks involved two cases, with one in a childcare centre and the other at a university. The serogroup B outbreak (four cases) occurred in a secondary school.

Comment

Early treatment of meningococcal disease improves outcome, and administration of antibiotics should not be delayed for any reason. While no vaccines protect against serogroup B disease, there are effective vaccines that cover against serogroup C for all age groups.



7. Sexually transmissible infections

Acquired immunodeficiency syndrome

Summary of notifications

There were 49 individuals diagnosed with AIDS in Victoria in 2003, 44 males, and 5 females, compared with 45 cases in 2002. The median age for males was 42 years (range being 21 to 71 years). Between 1983 and 2002, 42 per cent of individuals were aged between 30 and 39 years (table 16).

In 2003, 24 people (49 per cent) who presented with AIDS were diagnosed within 12 months of their HIV diagnosis.

Clinical presentation of those diagnosed with AIDS in Victoria in 2003

Approximately 50 percent of people diagnosed with AIDS each year in Victoria present with CD4 counts of less than 100 per ml. This has been a consistent finding over the last 20 years (table 17).

Pneumocystis carinii pneumonia (PCP) as an AIDS defining illness was reported for 20 per cent of those diagnosed during 2003. Oesophageal candidiasis was the next most common, reported by 19 per cent (table 18).

People living with AIDS in Victoria in 2003

At the end of 2003, there were an estimated 572 people living with AIDS in Victoria – 534 males, 36 females and 2 transgender individuals. Of these, 303 (53 per cent) resided in metropolitan Melbourne, with the largest number in the Southern Metropolitan Region (table 19).

Table 16: AIDS diagnoses by age group and sex, Victoria, 1983–2003

Age group	AIDS diagnoses 2003q				AIDS diagnoses 1983–2003			
	Male	Female	Total		Male	Female	Total	
			n	%			n	%
<20	0	0	0	0	11	5	16	1
20–29	2	0	2	4	322	24	346	17
30–39	15	3	18	37	816	41	857	41
40–49	15	2	17	35	541	11	552	27
50–59	6	0	6	12	191	12	203	10
60+	6	0	6	12	85	3	88	4
Total	44	5	49	100	1966	96	2065*	100

*Includes 3 people whose sex was reported as transgender

Table 17: AIDS diagnoses, by CD4 count, Victoria, 1983–2003

CD4 count per µl at AIDS diagnosis	Year of AIDS diagnosis										Total	
	≤1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	n	%
	<100	555	129	104	47	41	20	38	31	26		
100 to 199	157	32	14	13	13	6	11	15	8	8	277	13
200 to 499	101	13	23	14	10	7	14	5	9	8	204	10
500		22	4	4	4	1	0	3	1	2	41	2
Unavailable	498	1	7	6	3	0	1	3	0	6	525	25
Total	1333	179	152	84	68	33	67	55	45	49	2065	100

Risk factors

The proportion of all AIDS diagnoses in which male-to-male sexual contact (homosexual and bisexual) was reported as the principle risk factor for infection fell from over 86 per cent prior to 1995 to 63 per cent between 2000 and 2003. The proportion of all AIDS diagnoses attributable to origin from a high prevalence country increased from less than one per cent prior to 1995 to eight per cent between 2000 and 2003 (table 20).

Deaths following an AIDS diagnosis

There have been a total of 1488 deaths following diagnosis with AIDS notified in Victoria since 1983, 1420 males, 59 females and 9 transgender individuals. The number of deaths following AIDS has steadily decreased over the last decade from 173 deaths in 1994 to 20 in 2003 (table 21).

Table 18: AIDS diagnoses by AIDS defining illness, Victoria, 1993–2003

AIDS defining illness	Year of AIDS diagnosis										Total	
	£ 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	n	% ¹
PCP	559	42	47	29	23	9	28	24	19	12	792	34
Kaposi's sarcoma	222	23	18	13	5	3	7	3	5	4	303	13
Oesophageal candidiasis	147	40	27	13	14	6	16	6	10	11	290	13
Herpes simplex	62	5	4	2	1	1	2	1	1	0	79	3
Toxoplasmosis	76	10	6	4	3	0	1	2	3	4	109	5
Mycobacterial disease	107	21	16	14	3	5	5	2	0	3	176	8
Cytomegalovirus	59	7	14	1	4	3	2	1	0	0	91	4
Non-Hodgkin's Lymphoma	63	8	16	4	5	3	4	4	3	5	115	5
Myelopathy	60	9	6	7	1	2	4	0	2	3	94	4
Cryptosporidiosis	39	8	3	1	3	0	2	2	1	3	62	3
Cryptococcus	41	9	2	1	3	3	2	0	2	4	67	3
HIV encephalopathy	27	3	6	3	5	0	2	5	1	1	53	2
Pulmonary tuberculosis ²	2	0	1	2	3	1	4	4	3	3	23	1
Recurrent pneumonia ²	2	0	0	3	0	0	0	2	1	0	8	0
Cervical cancer ²	1	0	0	2	0	0	0	0	0	0	3	0
Other	12	3	3	1	8	2	2	6	4	0	41	2
Total	1479	188	169	100	81	38	81	62	55	53	2309	100

¹ Proportion of all notifications with the AIDS defining illness. Individuals may have presented with more than one AIDS defining illness

² Included as an AIDS defining illness in Australia from January 1993

Table 19: People living with AIDS, by sex and region, Victoria (as at Dec 2003)

Region	Sex		Total	
	Males	Females	n	%
Barwon-South Western	11	1	12	2
Grampians	6	0	6	1
Loddon Mallee	9	1	10	2
Hume	6	2	8	1
Gippsland	11	0	11	2
Western Metropolitan	48	8	56	10
Northern Metropolitan	69	6	75	13
Eastern Metropolitan	50	2	52	9
Southern Metropolitan	112	8	120	21
Unknown	214	8	222	39
Total	5361	36	572¹	100

¹ Includes 2 people whose sex was reported as transgender

Table 20: AIDS diagnoses, by sex and exposure category, Victoria, 1983–2003

AIDS exposure category	Sex	Year of AIDS diagnosis										Total N
		£1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Male homosexual/bisexual	M	1140	130	124	58	41	17	47	29	26	29	1641
	F	-	-	-	-	-	-	-	-	-	-	-
Male homosexual/bisexual and injecting drug use	M	63	14	13	4	2	0	3	1	5	2	107
	F	-	-	-	-	-	-	-	-	-	-	-
Injecting drug use	M	8	6	0	1	3	0	4	3	0	1	26
	F	4	2	1	2	1	1	1	0	0	1	13
Heterosexual contact	M	26	8	4	3	11	5	2	6	5	4	74
	F	29	7	5	5	1	3	1	2	1	5	59
Person from high prevalence country	M	6	1	1	3	0	2	4	3	5	2	27
	F	4	1	0	1	1	0	1	2	1	0	11
Haemophilia/coagulation disorder	M	25	8	2	1	1	1	1	0	1	1	41
	F	1	0	0	0	0	0	0	0	0	0	1
Receipt of blood/tissue	M	6	0	1	0	1	0	0	1	0	0	9
	F	5	0	0	0	0	0	0	0	1	0	6
Other	M	4	0	1	4	2	1	0	0	0	4	16
	F	0	1	0	0	0	0	0	1	0	0	2
Unavailable	M	2	0	0	2	4	2	3	4	0	0	17
	F	2	0	0	0	0	0	0	2	0	0	4
Total		1333¹	179¹	152	84	68	331	67	55¹	45	49	2065

¹ Includes 11 people in total whose sex was reported as transgender

Table 21: Deaths following AIDS diagnosis, by sex, Victoria, 1983–2003

Region	Sex		Total	
	Males	Females	n	%
£1994	933	21	961	64.54
1995	148	15	163	10.95
1996	122	5	127	8.53
1997	66	6	73	4.90
1998	38	3	42	2.82
1999	36	2	39 ¹	2.62
2000	28	1	29	1.95
2001	19	5	24	1.61
2002	11	0	11	0.74
2003	19	1	20	1.34
Total	1420	59	1489¹	100

¹ Includes 9 people whose sex was reported as transgender

Human immunodeficiency virus

Summary of notifications

In 2003, 225 cases of HIV were diagnosed in Victoria. This total represents a three per cent fall from the 233 in 2002, but a 61 per cent increase on the 140 in 1999 (figure 24).

Of the 225 cases, 206 (92 per cent) were males and 19 (8 per cent) were females. The median age at diagnosis was 35 years for both males (range being 17–73 years) and females (range being 18–58 years). Forty-two per cent of diagnoses in 2003 were among individuals aged 30–39 years (figure 25).

Eighty-six per cent of cases diagnosed in 2003 lived in metropolitan Melbourne (table 22), with the largest number residing in the Southern Metropolitan Region (97, or 43 per cent).

Males diagnosed with HIV in 2003

There were 206 males diagnosed with HIV infection in 2003, similar to the 202 total of 207 in 2002 (table 23). Male-to-male sexual contact (homosexual and bisexual) was the most common risk factor (163, or 79 per cent), similar to the 162 males diagnosed in this category in 2002 but 104 per cent more than the 80 males in 1999. Of the 163 males with a history of homosexual contact, 100 (61 per cent) reported they had acquired their infection from a casual or anonymous partner, and 26 (16 per cent) reported acquiring infection from a regular partner. The majority (131, or 80 per cent) reported having acquired their infection in Australia.

Figure 24: Notifications of HIV and AIDS diagnoses, Victoria

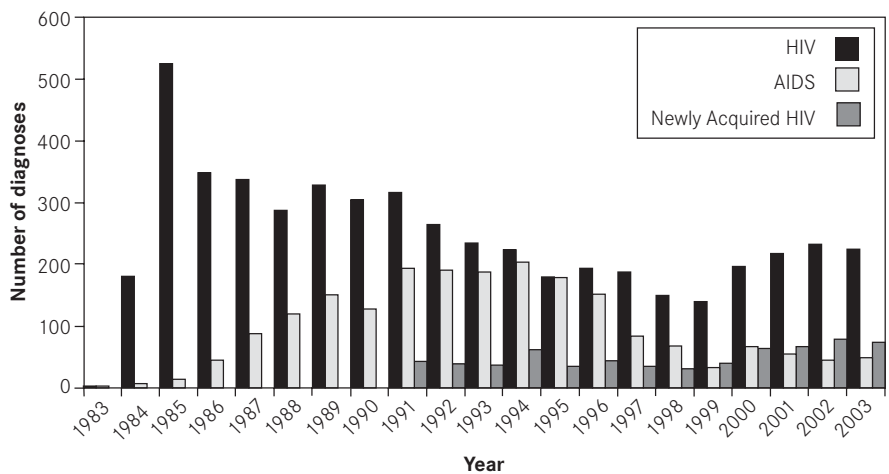
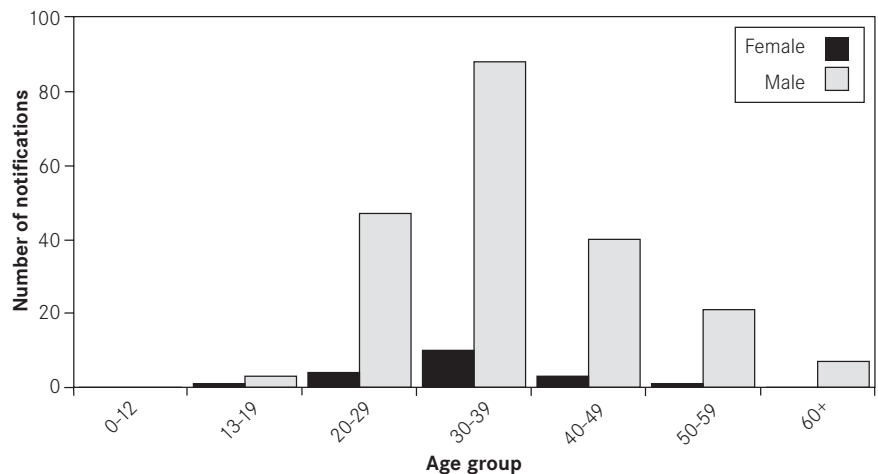


Figure 25: Notifications of HIV diagnoses, by age group and sex, Victoria, 2003



Sixteen males (8 per cent) reported heterosexual contact as a risk factor in 2003, compared with 19 in 2002 (table 23). Of these 16 males, eight (50 per cent) reported having acquired their infection overseas.

There was a decrease in the number of males diagnosed with HIV who originated from a high prevalence country. These

countries include those in sub-Saharan Africa, the Caribbean and specified countries in South East Asia (Cambodia, Myanmar and Thailand) where HIV is transmitted predominantly by heterosexual contact. Six (3 per cent) such males were diagnosed in 2003, compared with 12 (6 per cent) in 2002 (table 23). All six males reported having acquired their infection overseas.

Table 22: Notifications of HIV diagnoses, by region and sex, Victoria, 1994–2003

Department of Human Services region		Year of diagnosis										Total
Sex	<=1994	1995	1996	1997	1998	1999	2000	2001	2002	2003		
Barwon SW	M	4	4	5	6	4	2	3	5	4	4	41
	F	1	0	0	0	0	0	2	1	0	1	5
Grampians	M	5	0	1	1	1	5	6	1	2	3	25
	F	1	0	0	0	0	0	2	0	0	0	3
Loddon Mallee	M	3	0	8	3	1	1	2	6	3	5	32
	F	2	2	0	0	0	0	0	1	2	0	7
Hume	M	4	5	1	2	2	5	4	4	3	5	35
	F	4	0	0	1	1	0	0	0	0	0	6
Gippsland	M	7	0	3	2	4	4	5	0	2	1	28
	F	0	0	1	1	0	0	0	0	0	0	2
Western	M	43	18	30	18	27	21	25	25	46	36	289
	F	10	2	3	3	2	0	3	4	7	5	39
Northern	M	80	32	26	48	27	23	42	48	42	33	401
	F	18	2	5	2	0	5	3	5	2	5	47
Eastern	M	43	20	23	25	18	11	23	21	18	25	227
	F	15	1	4	4	1	1	4	3	5	0	38
Southern	M	130	73	75	63	44	40	53	72	82	89	721
	F	23	4	2	3	2	4	2	6	5	8	59
Unavailable	M	2,850	16	7	5	14	16	13	11	5	5	2,942
	F	79	1	0	0	2	2	4	3	3	0	94
Total		3360¹	180	194	188¹	150	140	197¹	218¹	233¹	225¹	5,085*

¹ Includes 19 people whose sex was reported as transgender and 25 people whose sex was unknown.

Females diagnosed with HIV in 2003

There were 19 new HIV diagnoses among females in Victoria in 2003, similar to the total in previous years (24 in 2002, 23 in 2001 and 20 in 2000) (table 23). Of the 10 females with a history of heterosexual contact, the majority (8, or 80 per cent) reported having acquired their infection in Australia. Of the seven females born in a high prevalence country, the majority (6, or 86 per cent) reported having acquired their infection overseas.

HIV among sex workers

In 2003, five new cases of HIV infection were reported among sex workers in Victoria. Three were male and two were female, and all reported a history of male sex work. Two of the males and one female also reported a history of injecting drug use. All were Australian born.

HIV among injecting drug users

During 2003, 20 individuals diagnosed with HIV had a history of injecting drug use (table 23); 10 also reported a history

of male-to-male sexual contact. Of the 10 individuals (eight males) with a history of drug use only, four were born in Australia, five in South East Asia and one in Russia. The median age of injecting drug users in 2003 (without male-to-male sexual contact) was 31 years (range being 17–55 years).

Between 2000 and 2003, 36 cases with a history of injecting drug use only were reported. Half were born in Asia, 36 per cent in Australia and the remaining in other countries.

Table 23: Notifications of HIV diagnoses, by sex and exposure category, Victoria, 1983–2003

		Year of HIV diagnosis										
	Sex	≤1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total
Sex	M	3169	168	179	173	142	128	176	193	207	206	4741
	F	153	12	15	14	8	12	20	23	24	19	300
HIV exposure category												
Male homosexual	M	2635	135	146	137	99	80	126	150	162	163	3833
	F	–	–	–	–	–	–	–	–	–	–	0
Male homosexual and injecting drug use	M	147	7	10	8	9	12	8	7	8	10	226
	F	–	–	–	–	–	–	–	–	–	–	0
Injecting drug use only	M	82	7	2	5	5	5	11	8	4	8	137
	F	29	1	2	2	1	0	1	2	0	2	40
Heterosexual contact	M	84	10	11	14	16	16	13	17	19	16	216
	F	93	6	11	7	6	4	7	12	13	10	169
Person from high prevalence country	M	27	4	9	3	5	9	11	5	12	6	91
	F	10	4	2	4	1	6	12	7	11	7	64
Haemophilia/coagulation disorder	M	98	0	0	0	1	1	0	1	0	0	101
	F	1	0	0	0	0	0	0	0	0	0	1
Receipt of blood/tissue	M	19	0	0	0	0	1	0	0	0	0	20
	F	12	0	0	1	0	2	0	0	0	0	15
Other	M	2	1	0	0	0	4	0	0	2	3	12
	F	6	1	0	0	0	0	0	2	0	0	9
Unavailable	M	75	4	1	6	7	0	7	5	0	0	105
	F	2	0	0	0	0	0	0	0	0	0	2
Total		3360*	180	194	188*	150	140	197*	218*	233*	225*	5085*

* Includes 19 people whose sex was reported as transgender and 25 people whose sex was unknown.

Between 1983 and 2003, 177 people (137 males and 40 females) reporting injecting drug use as a risk factor for infection had been notified with HIV, representing three per cent of all HIV diagnoses notified in Victoria.

Incident infections

Notifications are classified as newly acquired (incident infections) on the basis of a previous negative HIV test and/or a seroconversion illness within the 12 months preceding HIV diagnosis.

Incident infections provide information about who is currently being infected with HIV.

Of the 225 HIV diagnoses in 2003, 74 (33 per cent) were classified as incident infections, down six per cent from the 79 incident infections in 2002. Of the incident infections in 2003, 70 were males and four were females. Of the 70 males, 62 (89 per cent) reported male-to-male sexual contact. The median age of persons with incident infections who

reported male-to-male sexual contact was 33 years in 2003, compared with 35 years in 2002, and 34 years in 2001.

These results need to be interpreted with caution because the data rely on a history of a past negative test or seroconversion illness, which is biased by health seeking behaviour and HIV testing practices in clinics.

Outbreak and other investigations

In response to the increasing number of HIV diagnoses among men reporting male-to-male sexual contact, a case control study commenced in 2002. The aim of the study was to gain further information about risk behaviour among men who have sex with men and who were recently diagnosed with HIV, to inform future education prevention strategies. This study was completed in May 2003 and results are now available from the Department.

In response to the increase in diagnosis among heterosexual women, a case series commenced in 2003 to improve understanding of the mode of HIV acquisition, and access to and use of health services. Results from this study should be available in early 2005.

To enhance the current HIV surveillance system, a pilot 'linked' sentinel surveillance program aimed at men who have sex with men was implemented in April 2004. This system enables the timely collection of HIV testing numbers (denominator data) and detailed risk factor information.

Comment

The increase in HIV diagnoses since 1999 is a concern. During this period, there has been a marked increase in new diagnoses among men who have sex with men. These data highlight the urgent need for new strategies to augment current prevention efforts among this group.

Chlamydia

Summary of notifications

The Department of Human Services received 6473 notifications of *Chlamydia* in 2003, a 34 per cent increase on the total for 2002. Of these cases, 2640 (41 per cent) were male and 3778 (58 per cent) were female; for 55 cases sex was unknown. The median age was 29 years for males (range being 7–73 years) and 24 years for females (range being 11–60 years). Notification rates were highest for those aged 20–24 years (figure 26).

Notifications were received sporadically throughout the year. The highest number of notifications was for residents of the Southern Metropolitan region and the highest rate of notification was for residents of the Western region (figure 27). These data should be interpreted with caution, as residential addresses are not always provided.

Despite the legislative requirement for both clinicians and laboratories to notify *chlamydia* cases, the Department

received 598 (9.2 per cent) notifications from clinicians alone without laboratory evidence. Although these notifications did not fully meet the case definition, they were included as confirmed notifications as it is likely that they are cases and diagnosis is based on reporting by the diagnosing clinician.

The most common method of testing for *Chlamydia* reported by laboratories is a DNA amplification assay (table 24).

The reason for testing was obtained for 2467 notifications (38 per cent), with screening being reported as the most common reason, followed by clinical presentation (26 per cent) and contact tracing (12 per cent) (table 25). These results should be interpreted with caution because the reason for testing was unknown for the majority of notifications.

Risk factors

Victoria has a passive surveillance system for Chlamydia, which is enhanced by the collection of risk factor information obtained from clinicians. Laboratories

Figure 26: Notifications and rate per 100 000 population of *Chlamydia*, by age group and sex, Victoria, 2003

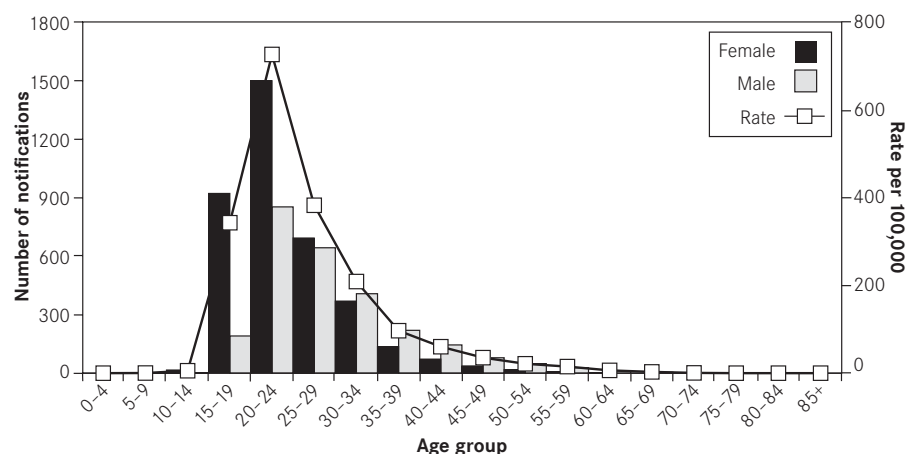
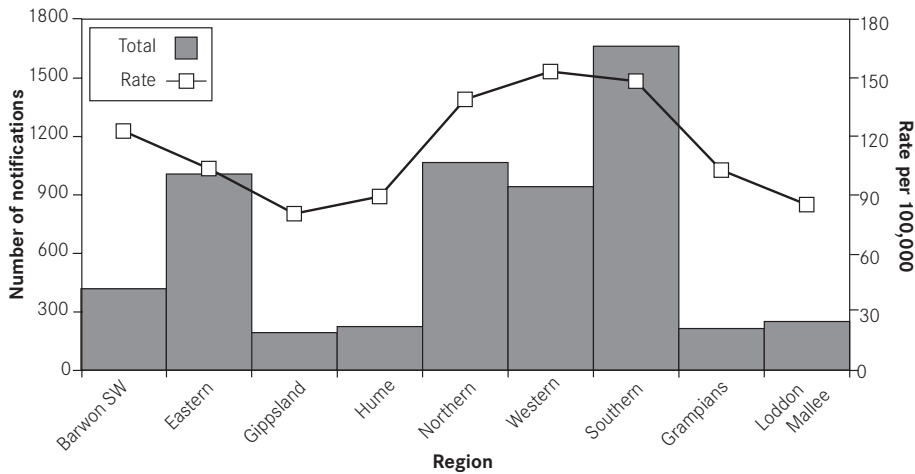


Figure 27: Notifications and rate per 100 000 population of *Chlamydia*, by region, Victoria, 2003*



* Excludes 452 notifications with missing data

Table 24: Testing method for *C. trachomatis* reported by laboratories, Victoria, 2003

Testing method	Number	Per cent
DNA amplification assay	5979	88.3
Direct immunofluorescence	15	0.2
Enzyme immunoassay	59	0.9
Culture	9	0.1
Not stated	712	10.5
Total	6774*	100

* Multiple tests might have been performed on some individuals.

Table 25: Reported reason for testing for chlamydia, Victoria, 2003

Reason for testing	Number	Per cent
Presented with symptoms	893	36
Contact tracing	303	12
Screening	1154	47
Other/not stated	117	5
Total	2467	100

send a Departmental questionnaire to diagnosing doctors to complete on behalf of their patients. There were 2451 (38 per cent) questionnaires returned in 2003.

Of the notifications for which enhanced data were received, the majority were for:

- persons born in Australia (1903 or 78 per cent)
- persons who reported a sexual partner of the opposite sex (1891 or 77 per cent)
- persons who acquired the infection from their regular partner (1129 or 46 per cent)
- persons who acquired their infection in Victoria (2024 or 83 per cent).

Outbreak and other investigations

No outbreaks were identified.

Comment

The *Chlamydia strategy for Victoria (2001-2004)* was distributed in late 2001. A copy is available at

http://www.health.vic.gov.au/ideas/diseases/chlamydia_strategy.htm

Gonorrhoea

Summary of notifications

The Department received 1165 notifications of gonorrhoea in 2003 (rate of 24 per 100 000), a 45 per cent increase on the 802 received in 2002. This is the largest increase in notifications of gonorrhoea recorded in Victoria since a 59 per cent increase seen in 1998. Of the total number of notified cases, 1065 were male (91 per cent) and 96 were female (8 per cent); sex was not specified for four cases. The median age was 34 years for males and 30 years for females, and 84 per cent of 890 male cases were aged 20–44 years (figure 28). Cases were clustered in Melbourne metropolitan regions, with notification rates highest for the Western Metropolitan region (figure 29). Of the 896 cases where country of birth was reported 89 per cent were born in Australia.

Almost all diagnoses of men who reported a female sexual partner were based on urethral or urine specimens (table 26). Among males who reported a male sexual partner, 56 per cent were detections from urethra swabs or urine, 23 per cent were from rectal swabs and 13 per cent were from pharyngeal swabs. Over half of the female cases had diagnostic specimens taken from the cervix or vagina.

Forty-four notifications of gonorrhoea were received from clinicians without laboratory confirmation. Although these cases did not meet the case definition, they were included as confirmed cases.

Figure 28: Notifications of gonorrhoea, by age group and sex, and rate per 100 000, Victoria, 2003

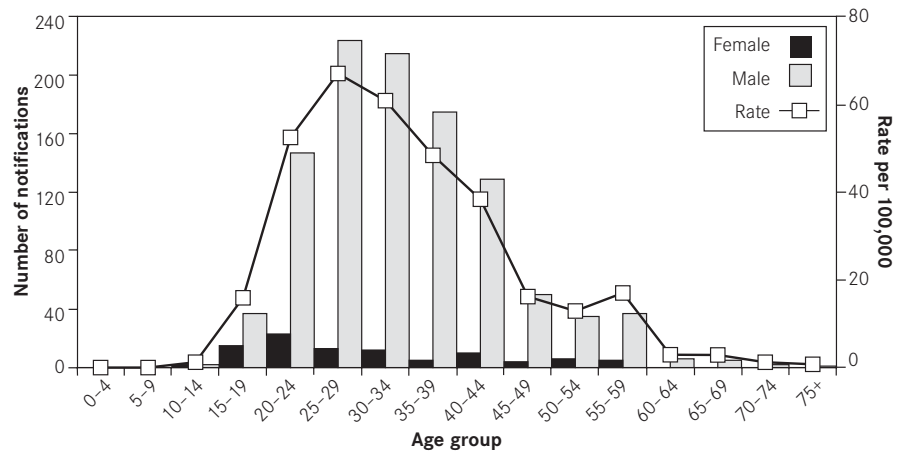
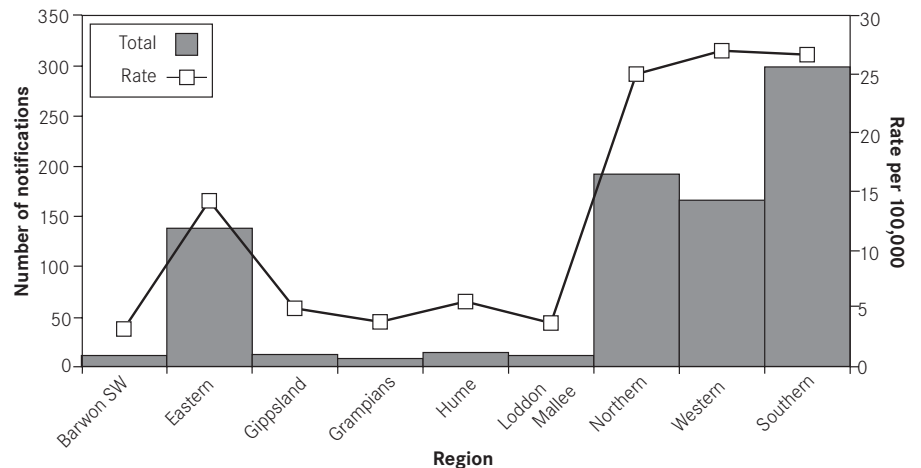


Figure 29: Notifications and rates per 100 000 population of gonorrhoea, by region, Victoria, 2003*



* Excludes 260 notifications for which the postcode was unknown, interstate or overseas.

Table 27 shows the results of routine antibiotic susceptibility testing of *N. gonorrhoeae* isolates conducted at the Microbiological Diagnostic Unit of the University of Melbourne. These data include multiple isolates from one or more anatomic sites during a single episode of infection. Diagnoses made by

nucleic acid amplification methods (such as polymerase chain reaction) only do not yield an isolate for antibiotic susceptibility testing.

Among isolates of *N. gonorrhoeae* acquired in Australia by males who reported a male sexual partner,

resistance to ciprofloxacin was reported in 14 per cent which is a marked increase on the resistance to ciprofloxacin among this group during 2002 (<1 per cent).

Among infections acquired heterosexually in Australia, the prevalence of ciprofloxacin resistant strains was 40 per cent. Similarly, 43 per cent of infections acquired overseas involved ciprofloxacin resistant strains. Isolates of *N. gonorrhoeae* remained universally sensitive to ceftriaxone.

Risk factors

Additional epidemiological data on cases of gonorrhoea are collected via a questionnaire sent to notifying doctors, and microbiological data from diagnostic specimens. In 2003, 1027 (88 per cent) enhanced surveillance questionnaires were returned, but not all questionnaires were complete.

Information on the sex of partners was available for 948 (89 per cent) of males, of whom 67 per cent (n = 639) reported having a male sexual partner and 24 (n = 223) per cent reported having a female sexual partner. This information was available for 77 (80 per cent) of females; 97 per cent (n=75) reported contact with a male partner and 3 per cent (n=2) reported contact with a female partner.

Complete data on the reported source of the infection were available for 872 (85 per cent) of cases for whom enhanced data were received (table 28). Of these, 77 per cent (n = 457) of males who reported having a male sexual partner

Table 26: Notifications of gonorrhoea, by sex, reported sexual orientation and site of detection, Victoria, 2003

	Male cases			Female cases	
	Male partner	Female partner	Transgender partner	Unknown	All partners
Blood	0	0	0	0	0
Urethra or urine	382	206	0	133	30
Cervix or vagina	0	0	0	0	59
Rectum	158	1	0	29	4
Pharynx	88	1	1	18	5
Other	9	4	0	4	2
Unknown	51	23	0	17	13
Total	688	235	1	201	113

* Multiple tests might have been performed on some individuals.

Table 27: Antibiotic susceptibility of *N. gonorrhoeae*, by sex, reported sexual orientation and place acquisition, Victoria, 2003

Sex	Gender of sexual partner	Place acquired	Ceftriaxone less sensitive or resistant (MIC > 0.06 mcg)	Ciprofloxacin less sensitive (MIC > 0.5 mcg/mL)	Ciprofloxacin resistant (MIC > 1.0 mcg/mL)	Number of isolates
Male	Male	Australia	0	11	66	459
		Overseas	0	0	0	7
		Unknown	0	0	6	28
	Female	Australia	0	7	46	112
		Overseas	0	4	26	56
		Unknown	0	0	1	4
	Unknown	Australia	0	1	10	44
		Overseas	0	0	4	4
		Unknown	0	2	16	95
Total	0	25	175	809		
Female	All	Australia	0	3	13	34
		Overseas	0	2	1	5
		Unknown	0	0	5	16
	Total	0	5	19	55	

MIC: Minimum inhibitory concentration.

Table 28: Notification of gonorrhoea, by sex, reported source partner and place of acquisition, Victoria, 2003*

Sex	Sex of partner	Reported source partner	Place acquired		
			Australia	Overseas	Unknown
Male	Male	Casual partner	428	6	23
		Regular partner	122	1	3
		Sex worker	4	0	0
		Client (of sex worker case)	5	0	0
	Female	Casual partner	100	32	5
		Regular partner	34	4	1
		Client (of sex worker case)	1	1	0
		Sex worker	15	17	1
Female	All	Casual partner	26	2	1
		Regular partner	30	3	4
		Sex worker	0	0	0
		Client (of sex worker case)	2	1	0

* Excluding notifications with incomplete information.

acquired their infection from a casual sexual partner, as did 65 per cent (n = 137) of males who reported having a female sexual partner. By contrast, the majority of infections of women were attributed to a regular sexual partner.

Comment

Given the increasing number of ciprofloxacin resistant infections in Victoria among men who have sex with men, the Department changed its treatment recommendation from ciprofloxacin to ceftriaxone as was already recommended for infections acquired heterosexually or overseas and this advice is consistent with the recommendation from the Venereology Society of Victoria.

Syphilis – infectious

Summary of notifications

In 2003, the Department received 357 notifications of syphilis, of which 55 were classified as infectious syphilis, a 96 per cent increase on the 28 infectious cases notified in 2002. Of the syphilis cases classified as infectious in 2003, the median age was 36 years (range being 18–59 years), and 45 (82 per cent) were male. One case of infectious syphilis identified as an Aboriginal person. Symptomatic infection and sexually transmissible infection screening were the most common reasons for testing reported by clinicians (table 29). Nine per cent of infectious syphilis cases were detected on antenatal screening compared to 7 per cent of cases in 2002. In 2003 one of these cases was born in Australia, for one case the country of birth was unspecified, and the remaining three cases were born overseas.

Table 29: Notifications of infectious syphilis, by reason for testing, Victoria, 2003

Reason for testing	Number	Per cent
Symptomatic infection	21	38
Sexually transmissible infection screen	18	33
Antenatal screen	5	9
Sexual contact with infected partner	3	6
Other	8	15
Total	55	100

Risk factors

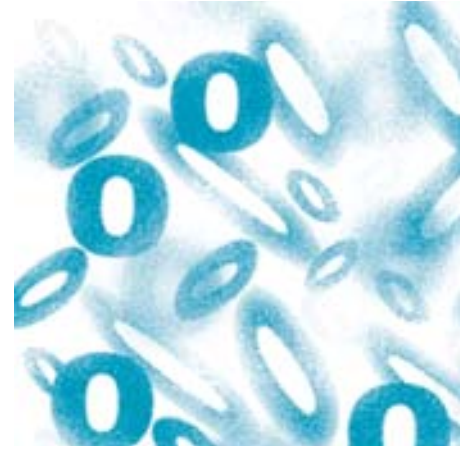
Of the 45 male cases, 39 (87 per cent) reported a male sexual partner and six (13 per cent) reported a female sexual partner. Of the ten female cases, one reported a female sexual partner, while the remaining nine reporting infection from a male partner.

Risk factor information is obtained from treating clinicians for all infectious syphilis cases. For 23 cases (42 per cent), infection was reported as acquired in Victoria, compared with 39 per cent of cases in 2002. Infection was acquired overseas for 17 (31 per cent) cases and interstate for eight cases, while for seven cases the place of acquisition was unknown.

Casual sexual partners were reported as the source of 36 infections (66 per cent), while regular partners were reported for nine infections (16 per cent), a sex worker was reported as the source for two infections (4 per cent) and the source of infection was unknown for eight cases (15 per cent).

Comment

Increasing notifications of infectious syphilis, particularly among the men who have sex with men population, indicates a resurgence of the disease in Victoria. As with other sexually transmissible infections, the increasing number of syphilis notifications reinforces the importance of promoting a safe sex message to the community, and as with other sexually transmitted infections having an untreated infection can facilitate the transmission of HIV. In 2003, the Chief Health Officer's website posted an alert about the increasing number of infectious syphilis cases being notified to the Department. This alert can be viewed at <http://www.health.vic.gov.au/chiefhealthofficer/alerts/>



8. Mycobacterial infections

Leprosy

Summary of notifications

The Department of Human Services received two notifications of leprosy cases in 2003. Both cases were migrants from a high prevalence country:

- A 33 year old Sri Lankan born woman presented with widespread skin lesions, peripheral neuritis and other nerve involvement. A skin biopsy revealed histology that was consistent with leprosy. She was commenced on rifampicin, dapsone and clofazimine, with therapy planned to continue for two years.
- A 43 year old male was a household contact of the first case. This patient was investigated during follow-up of the first case and was found to have a single skin lesion that was negative for acid-fast bacilli on split skin smears. He was diagnosed as having tuberculoid leprosy and completed a six-month course of therapy.

Tuberculosis

Summary of notifications

The Department of Human Services received 329 notifications of tuberculosis in 2003, up 18 per cent on the number in 2002. There were no outbreaks of tuberculosis. People who had migrated from a high prevalence country accounted for the majority of the notifications (84 per cent). In 2003, the crude notification rate was 7 per 100 000, one of the highest rates of the past 10 years.

Of the 329 notifications, 155 (47 per cent) were for females and 174 (53 per cent) were for males. Compared with persons aged under 65, those aged 65 years and over had higher notification rates and accounted for 26 per cent of all notifications. Eleven children aged under 15 years were diagnosed with early primary disease as a result of contact tracing. They were predominantly siblings or children of recently arrived migrants.

Most notifications were received from metropolitan Victoria (92 per cent), with the highest number of notifications from the Southern and Western Metropolitan regions (52 per cent). Among the metropolitan regions, notification rates were highest in the Northern and Western Metropolitan region and lowest in the Eastern Metropolitan region (figure 31).

The most common site of infection was pulmonary, accounting for 158 notifications (48 per cent). Thirty-five of these cases noted additional sites (other than the lungs), with lymphatic disease being the most common secondary site. Extrapulmonary disease was reported in 52 per cent of notifications, with the most common sites being lymphatic (58 per cent) and pleural (13 per cent). Bone/joint disease accounted for 8 per cent, and genitourinary and peritoneal tuberculosis each accounted for 4 per cent (table 30).

Figure 30: Notifications of tuberculosis, by age group and rate per 100 000 population, Victoria, 2003

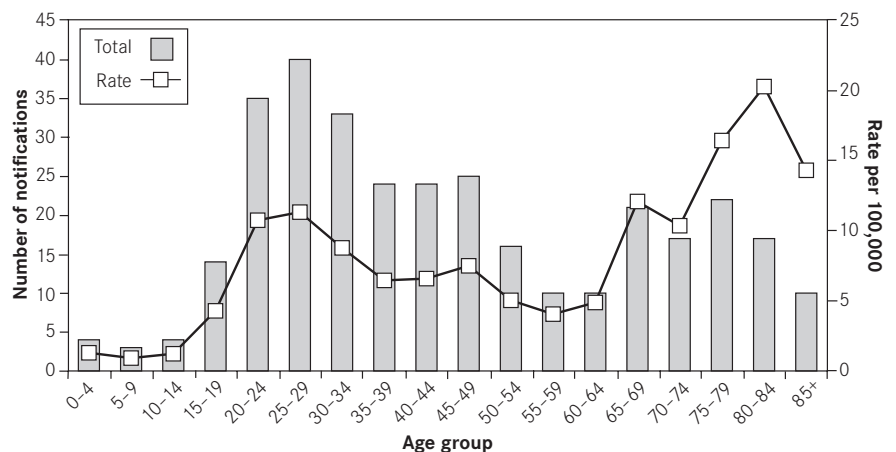
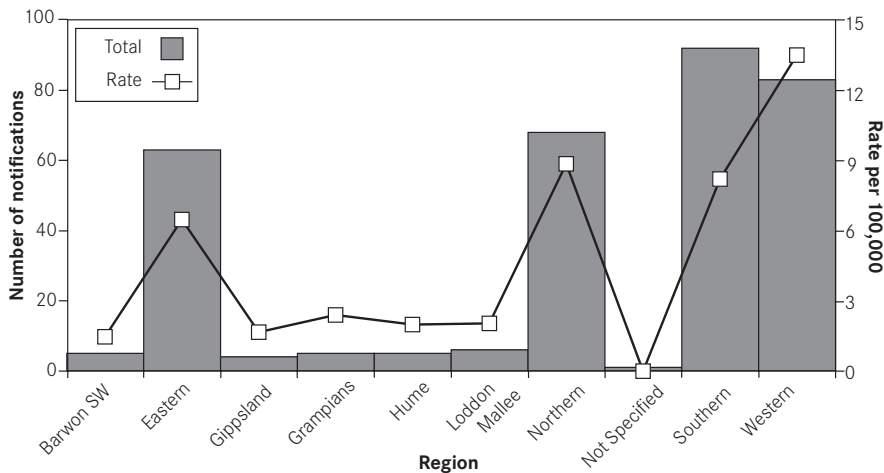


Figure 31: Notifications and rate per 100 000 population of tuberculosis, by DHS region, Victoria, 2003



Risk factors

In 2003, the most significant risk factors for tuberculosis in Victoria were being aged 65 years or over and being from a high prevalence country (defined as having a rate

of tuberculosis greater than 100 per 100 000). In 2003, 12 per cent (39 of 329) of notifications were for Australian born people, and of these, 51 per cent were aged 65 years or over. The incidence rate in Australian born people was just over 1 per 100 000, but the incidence rate in overseas born people was 27 per 100 000. Of the overseas born cases, 51 per cent were from Vietnam (57 of 290), India (49 of 290) or countries in the Horn of Africa (43 of 290).

An associated risk factor for the development of tuberculosis is the time since migration, with most cases being diagnosed within the first few years after arrival. In 2003, of the 276 cases born overseas for whom their date of arrival is known, 11 per cent were diagnosed within 12 months of arrival, 30 per cent

within two years and 44 per cent within the five years. Fifty-seven per cent of new cases had lived in Australia for 10 years or less.

There were no notifications of tuberculosis in Indigenous Australians. Two patients were known to have HIV and tuberculosis co-infection.

Comment

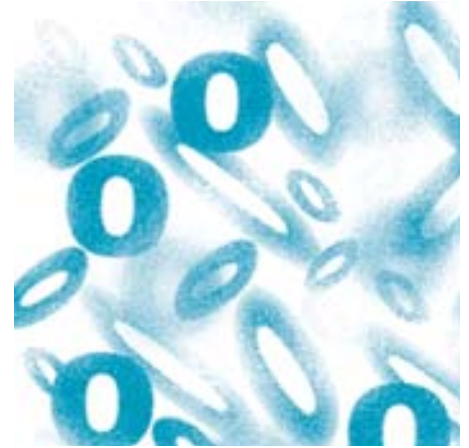
Four notifications were for child contacts of tuberculosis cases that were identified by contact tracing. All were siblings or children of recently arrived migrants. Cultural perceptions and stigmatisation of tuberculosis can create significant barriers to identifying those at risk of infection and disease. Health care providers should be aware of the increased risk of tuberculosis in newly arrived refugees and migrants, and of the cultural issues that influence their health seeking behaviours. They should also consider the possibility of tuberculosis in any patient from a high risk group who presents with symptoms and/or signs compatible with the disease. Early

Table 30: Notifications of tuberculosis, by site of disease, Victoria, 2003

Site	Number
Pulmonary	158
Lymph nodes	100
Pleural	22
Bone/joint	14
Genito/urinary	8
Peritoneal	8
Muscle	3
Pericardial	3
Disseminated	2
Pancreatic	2
Skin	2
Spinal	2
Brain	1
Breast	1
Intracerebral	1
Meningeal	1
Pharyngeal	1
Total	329

investigation of contacts is imperative to minimise the risk of progression to primary disease, particularly in young children.

The Department's *Management, control and prevention of tuberculosis: guidelines for health care providers (2002-2005)* is available from the Department's Communicable Diseases Section (telephone 03 9637 4115) or online <http://www.health.vic.gov.au/ideas>



9. Vaccine preventable diseases

Haemophilus influenzae type b infection

Summary of notifications

In 2003, the Department of Human Services received one notification of *Haemophilus influenzae* type B (Hib) infection. This case of cellulitis occurred in a one year old female. The trend of notifications of Hib for 1998–2003 is shown in table 31.

Risk factors

The family of the case were conscientious objectors to immunisation.

Outbreak and other investigations

The single case in 2003 was sporadic.

Comment

The dramatic decline in Hib notifications over the past decade can be attributed to the introduction of the conjugate vaccine. Hib is now a rare disease, and sustaining high immunisation coverage rates is critical to maintaining low levels of infection and transmission in the community. Early detection and treatment of the rare cases that occur are critical in preventing mortality.

Table 31: Notifications of *Haemophilus influenzae* type b, by type, Victoria, 1998–2003

	1998	1999	2000	2001	2002	2003
Pneumonia	0	1	0	0	1	0
Epiglottitis	2	0	1	0	0	0
Meningitis	3	3	1	0	0	0
Septicaemia	0	1	1	2	0	0
Other	0	0	0	0	1	1
Total	5	5	3	2	2	1

Influenza (laboratory confirmed)

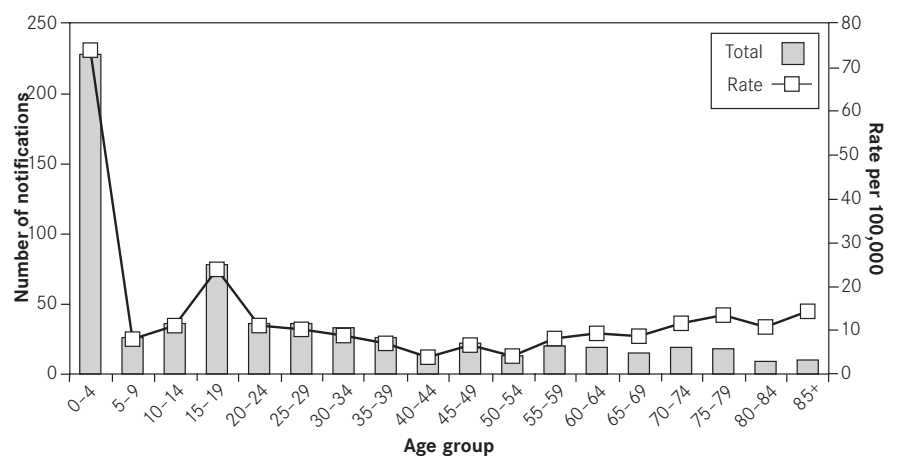
Summary of notifications

The Department of Human Services received 658 notifications of influenza in 2003, occurring in 295 females (45 per cent) and 363 males (55 per cent). The median age was 17 years (range being 0–94 years). Notification rates were highest for children aged 0–4 years, with secondary peaks in adolescents aged 15–19 years and in adults aged over 69 years (figure 32). These data may reflect

health care seeking behaviours and the diagnostic practices of clinicians.

The Department received 571 notifications (87 per cent) between 1 August and 30 September. Notifications were received from all health regions, with notification rates highest in the Western Metropolitan region (17 per 100 000) and lowest in the Loddon Mallee region (5 per 100 000). These data need to be interpreted with caution because notifications may reflect the location of laboratory facilities capable of conducting diagnostic tests. Respiratory

Figure 32: Notifications of influenza, by age group and rate per 100 000 population, Victoria, 2003



virus multiplex polymerase chain reaction conducted at the Victorian Infectious Diseases Reference Laboratory (VIDRL) was the most common laboratory method of diagnosis reported, accounting for 359 notifications (55 per cent).

Influenza virus type was reported for 658 (100 per cent) notifications. Of these, 649 (99 per cent) were influenza A and nine (1 per cent) were influenza B. Subtype information was available for 299 influenza A notifications, of which 298 (99.7 per cent) were influenza A H1N1 and one (0.3 per cent) was influenza A H3N2.

Risk factors

Other than the vaccination status of cases aged over 50 years, risk factor information is not routinely collected. There were 120 cases aged over 50 years notified with influenza. The immunisation status was known for 89 (76 per cent) of these and 41 cases had a validated immunisation history.

Outbreak and other investigations

Six outbreaks were identified in 2003, including two in military facilities (discussed at <http://www.health.vic.gov.au/ideas/downloads/bulletin/vidbv6i4.pdf>) that resulted in 187 cases in the first facility and 68 in the second. The remaining four outbreaks were all in aged care facilities.

Comment

Influenza is a major cause of morbidity and mortality, particularly for high-risk groups such as infants, the elderly and those with pre-existing medical conditions. Influenza vaccination is recommended for other population groups too, such as health care workers and other essential services workers, staff of institutions, travellers in large tourist groups and HIV infected persons. The investigation of outbreaks in the aged care facilities in 2003 indicated that many healthcare workers in those facilities were not immunised.

Invasive pneumococcal disease

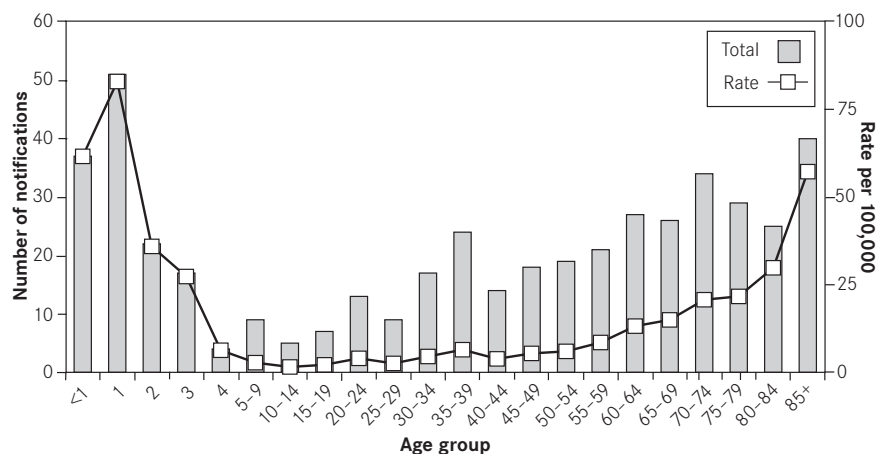
Summary of notifications

The Department of Human Services received 468 notifications of invasive pneumococcal disease in 2003 for 274 males (58 per cent) and 194 females (42 per cent). Notification rates were highest among children aged under 2 years and the elderly (figure 33). Seven notifications (2 per cent) were for persons identified as Aboriginal or Torres Strait Islander (six males and one female).

The age range of cases was 0–46 years, with a median age of 33 years. Three cases were children aged under 2 years. Indigenous status was unknown or not stated for 171 notifications (36 per cent).

Sixty-three per cent ($n = 295$) of persons notified were hospitalised and 22 (5 per cent) died. The case fatality rate was highest among persons aged 65 years or over (10 per cent). Notifications were more frequent in the winter months (figure 34).

Figure 33: Notifications of invasive pneumococcal disease, by age group and rate per 100 000 population, Victoria, 2003



Information on the clinical manifestation of 217 (46 per cent) of the cases was not known. Among those for whom the manifestation was known, pneumonia was the most common clinical presentation among persons aged 65 years or over, whereas bacteraemia without a focus of infection was more common among children aged under 2 years (table 32).

Serotyping was available for 395 isolates (84 per cent) two of which (0.5 per cent)

were not typable. There were 87 isolates of a known serotype from children aged under 2 years, and 66 (76 per cent) belonged to serotypes either contained in, or related to, those included in the seven valent conjugate vaccine (7vPCV). For persons aged 2 years and over, there were 352 isolates of a known serotype, with 296 (84 per cent) being serotypes contained in, or related to, those in the 23 valent polysaccharide vaccine (23vPPV).

Risk factors

Information was obtained on identified risk factors for 266 notifications (57 per cent). Of those aged over 65 years, 74 (28 per cent) were either immunocompromised or suffering from a chronic illness for which pneumococcal vaccination is recommended. Of those aged under 2 years, seven (1 per cent) had an identified risk factor such as chronic disease.

Vaccination status

There were 39 vaccine failures among persons vaccinated with the 23vPPV. Nine of these infections were serotype 14, seven were serotype 6B, four were serotype 3, four were serotype 9V, three were serotype 19 F, three were serotype 23F and serotype 4, and the remainders were serotypes 11A, 18C, 19A, 22F and 33F. Six vaccine failures occurred in persons who were immunocompromised.

Comment

In 2003, 7vPCV was included on the Australian Standard Vaccination Schedule as a recommended vaccine for all Australian children (as a three dose

Figure 34: Notifications of invasive pneumococcal disease, by month of notification, Victoria, 2001–2003

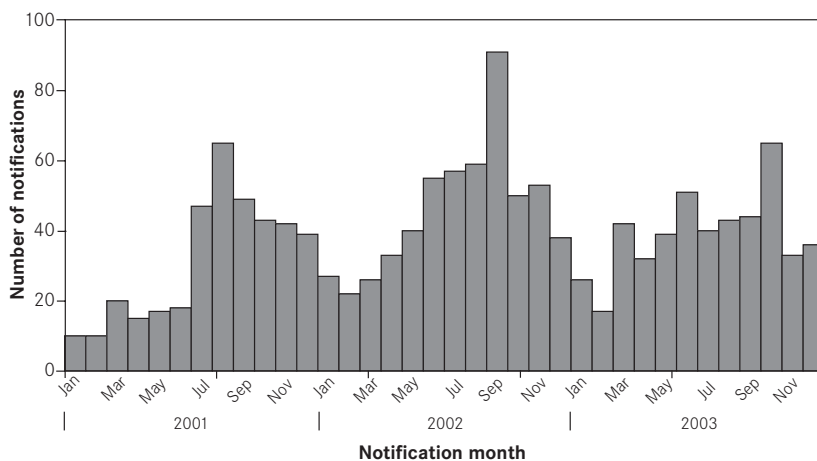


Table 32: Notifications of invasive pneumococcal disease, by age group and clinical presentation, Victoria, 2003

Clinical presentation	Age group (years)											
	<2		2–5		6–49		50–64		>65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Pneumonia	16	18.4	7	16.2	34	29.5	12	18	74	53.6	143	33
Meningitis	15	17.2	2	4.7	6	5.2	3	4.5	3	2.2	29	6.6
Bacteraemia/septicaemia	20	23	13	30.2	14	12.2	8	12	15	10.1	70	15.9
Other	1	1.2	2	4.7	0	0	0	0	2	5.1	5	2.3
Not stated/unknown	35	40.2	19	44.2	61	53	44	66	58	38.1	217	47
Total	87	100	43	100	115	100	67	100.0	152	100	464	100

series at 2, 4 and 6 months of age). The National Immunisation Program funds this vaccine for all Indigenous children up to the age of 2 years, and for children up to the age of 5 years with some specific medical conditions and anatomical abnormalities.

In Victoria, 23vPPV is available free of charge to all adults aged 65 years and over, all Indigenous persons aged 50 years and over, Indigenous persons aged 15–49 years with certain health risks, and all public hospital outpatients and inpatients at high risk of complications from influenza.

Measles

Summary of notifications

The Department received 141 notifications of measles in 2003, of which 38 were confirmed to be measles.

There were 23 males (61 per cent) and 15 females (39 per cent). The median age of cases was 23 years (range being 0–47 years). Three cases were born overseas (France, Germany, Greece) and 35 were Australian born residents of metropolitan regions.

Risk factors

Of the 38 cases, three reported a history of measles vaccination. A two-year-old child had a validated history of receiving vaccine at 12 months of age. The remaining two cases, one a 32 year old female self reported receiving a second measles containing vaccination prior to overseas travel two years previously, and the other, a 34 year old male, had a validated history of receiving one dose of measles containing vaccine as a child. One case acquired illness overseas during a trip to Bali.

Outbreak and other investigations

Two separate outbreaks of measles occurred in Victoria in February 2003. Twenty cases were geographically clustered around two towns in central northern Victoria and 13 cases in the Western Metropolitan region. Genotyping

conducted by the Victorian Infectious Diseases Reference Laboratory confirmed that these outbreaks were the result of two separate episodes of virus importation, because the strains were genotypically different (H1 and D8). As with Victoria's previous outbreaks of measles, young adults (including healthcare workers) and unvaccinated children were at highest risk

(see <http://www.health.vic.gov.au/ideas/downloads/bulletin/vidbv6i2.pdf>).

Comment

Enhanced measles surveillance in Victoria continues to facilitate the early identification and improved management of measles clusters in the community. Repeated outbreaks in recent years demonstrate that young adults remain the group at highest risk of measles infection in Victoria.

Mumps-measles-rubella vaccine is available free of charge for people aged 18–38 years and should be encouraged in high risk groups such as healthcare workers and travellers.

Mumps

Summary of notifications

The Department of Human Services received 53 notifications of mumps in 2003, of these, four were confirmed to be mumps. These were three males aged 3, 31 and 52 years and one female aged 42 years.

Risk factors

None of the persons notified had a validated history of mumps vaccination.

Outbreak and other investigations

No outbreaks of mumps were identified.

Comment

Prior to enhanced surveillance, all clinical notifications were counted in the dataset. Enhanced surveillance has shown that clinical notifications (based on parotitis) are not a good indicator of mumps activity in times of high mumps-measles-rubella coverage. Parotitis is likely to be due to causes other than mumps. Without laboratory confirmation, clinical diagnosis alone overestimates the incidence of mumps.

Pertussis

Summary of notifications

In 2003, the Department of Human Services received 610 notifications of pertussis that met the surveillance case definition, resulting in a notification rate of 13 per 100 000. Of these cases, 324 (53 per cent) were females and 58 (9.5 per cent) were aged under 5 years.

Notifications peaked in the 10–14 year

old age group with 115 (19 per cent) cases reported (figure 35), unlike in 2002 where the most notified age group was 15–19 years. Notification rates were highest in children aged under one year (70 per 100 000), and there were thirty-eight notifications for infants aged six months or less. While notifications were more frequently received from metropolitan regions, notification rates were highest for the rural regions (figure 36).

Figure 35: Notifications of pertussis, by age group and rate per 100 000 population, Victoria, 2003

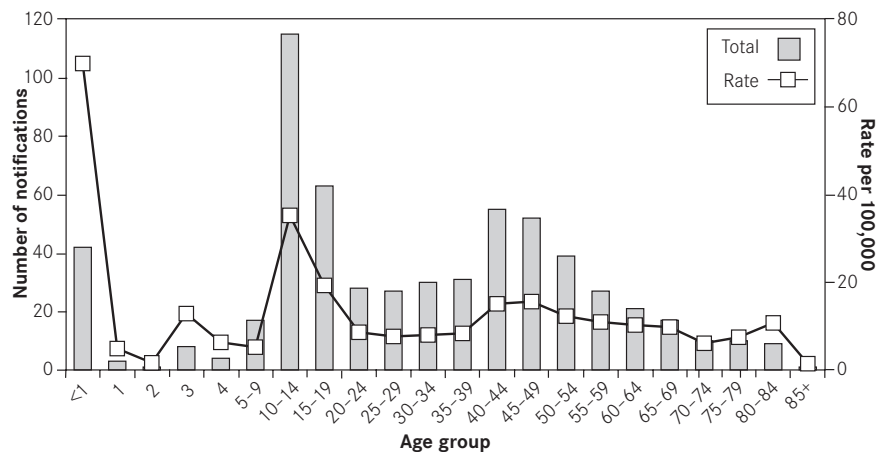
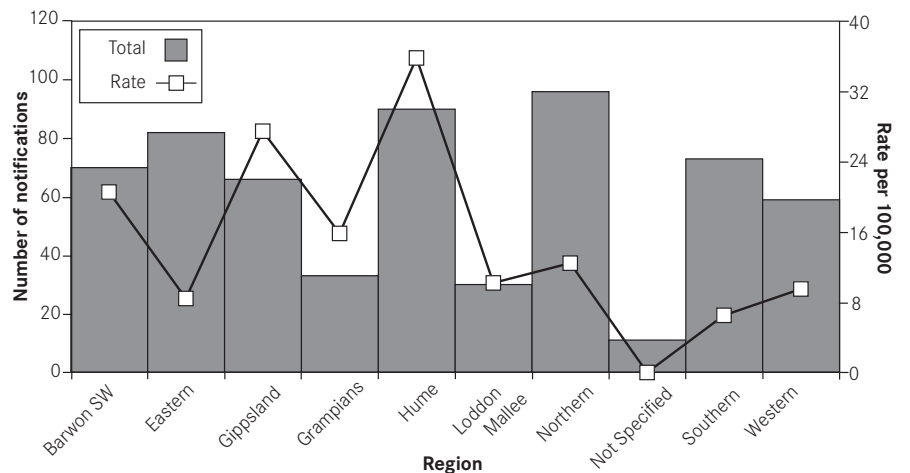


Figure 36: Notifications of pertussis, by region and rate per 100 000 population Victoria, 2003



Comment

Enhanced surveillance has shown that clinical notifications, especially in children in age groups with high mumps–measles–rubella coverage, are not a good indicator of rubella activity. The rash illness is likely to be due to other causes. Without laboratory confirmation, clinical diagnosis alone overestimates the incidence of rubella.

Tetanus

Summary of notifications

The Department of Human Services received one notification of tetanus in 2003 (a 65 year old male). The case presented with a clinically compatible illness (trismus).

Risk factors

Tetanus spores are ubiquitous in the environment, and infection can occur from the contamination of a wound or puncture. Tetanus vaccine is a part of the routine childhood immunisation schedule, and is also recommended for all adults age 50 years and older. The case notified in 2003 was unvaccinated and reported a recent contaminated cut to a finger.

Outbreak and other investigations

No outbreaks were identified.

Comment

Tetanus is a rare disease in Victoria.

Immunisation coverage in Victoria, 2003

Data cited in this report are based on the Australian Childhood Immunisation Register (ACIR) Coverage Report. The ACIR reported immunisation coverage at 31 December 2003 for children aged 12–<15 months and 24–<27 months at 30 September 2003. Only vaccines administered before 12 months of age were included in the coverage calculation for the former age group, and only those vaccines administered before 24 months of age were included in the coverage calculation for the latter age group.

The following tables (table 33 and 34) group immunisation coverage by DHS region for the two birth cohorts.

The key influences on the increase in coverage of the last year have been both the continuation of parent and provider incentives for immunisation and submission of data, data cleaning to reduce duplications and errors in the data stored on ACIR, and targeted outreach programs to offer immunisation to those identified as truly overdue for missed doses.

Regional data quality officer program

The Regional Data Quality Officers, funded by the Department, continued to work with providers at a regional level to correct any data errors, and ensure that those children who are truly overdue for dose(s) be followed up individually.

This program continued to develop strong collaborative partnerships between local government authorities and general practice divisions. This program has seen not only the correction of child records on the ACIR but the

Table 33: Immunisation coverage at 12 – <15 months of age, by region, Victoria, 2003

DHS Region	DTP* Per cent	Fully immunised Per cent
Barwon South Western	95	94
Eastern Metropolitan	93	92
Gippsland	93	92
Grampians	94	93
Hume	92	91
Loddon Mallee	93	92
Northern Metropolitan	93	91
Southern Metropolitan	92	91
Western Metropolitan	94	93
Victoria	93	92

*DTP = three doses of diphtheria-tetanus-pertussis vaccine received

Table 34: Immunisation coverage at 24 – < 27 months of age, by region, Victoria, 2003

DHS Region	DTP* Per cent	MMR* Per cent	Fully immunised Per cent
Barwon South Western	97	96	95
Eastern Metropolitan	95	92	91
Gippsland	95	94	93
Grampians	96	95	94
Hume	96	96	94
Loddon Mallee	96	94	92
Northern Metropolitan	96	94	92
Southern Metropolitan	95	92	90
Western Metropolitan	97	94	92
Victoria	96	94	92

* DTP = three doses of diphtheria-tetanus-pertussis vaccine received

* MMR = first does of measles-mumps-rubella vaccine received

education of providers both in the public and private sector in respect to data retrieval from the ACIR and the ongoing evaluation of all records for the purpose of child recall processes. Coverage levels across the state have risen steadily since the implementation of this program.

Immunisation coverage – school entry

A proxy measure of coverage at school entry has traditionally been the measurement of immunisation status as recorded on school entry immunisation certificates, as required by the Health (Immunisation) Regulations 1999. Each year, data have been collected via the routine school census on the presentation of certificates in the preparatory year at government and Catholic schools. The ACIR has been developed to a stage where levels of coverage can now be released. Coverage reports from the register for 2003 are presented in table 35.

Meningococcal C program

On 19 August 2002 the Federal Cabinet gave approval for conjugate meningococcal C vaccine to be funded for all 12 month old infants and all 15 year old adolescents. It was also announced that the vaccine would be offered free to all 16 and 17 year olds in the first full year of the program in 2003.

The Federal Government announced further funding on 24 November 2002 for an expanded National Meningococcal C vaccine program. The expanded and staged program targets children and

Tables 35: Immunisation coverage at 72–<75 months, by region, Victoria, 2003

DHS region	DTP* Per cent	MMR** Per cent	Fully immunised Per cent
Barwon South Western	88	88	87
Eastern Metropolitan	87	88	86
Gippsland	90	90	89
Grampians	89	89	88
Hume	89	89	88
Loddon Mallee	87	87	86
Northern Metropolitan	87	88	86
Southern Metropolitan	85	85	84
Western Metropolitan	88	88	87
Victoria	87	87	86

*DTP = four doses of diphtheria-tetanus-pertussis vaccine received

**MMR = two doses of measles mumps rubella vaccine received

adolescents between one to 19 years of age. The respective stages of the program include:

2002/2003

- 1–5 year old children
- 15–19 year old adolescents

2003/2004 and 2004/2005

- 6–14 year old children

2005/2006

- ‘Catch-up’ for all those above who have previously missed

This program commenced on 1 January 2003 in Victoria. Local government authorities being the major provider of school immunisation rolled out the program at the commencement of the 2003 school year. All adolescents attending Years 10, 11 and 12 were

offered the vaccination in the first six months of the 2003 school year. Vaccination was offered to students in Years 7, 8 and 9 in the second half of the 2003 school year. Due to the strong public demand for the vaccination program in Victoria, many local government also attended all their primary schools in the second half of the 2003 school year to vaccinate against meningococcal C. To date, data on vaccine coverage and disease incidence indicate that the program has been a success.

Older persons influenza program

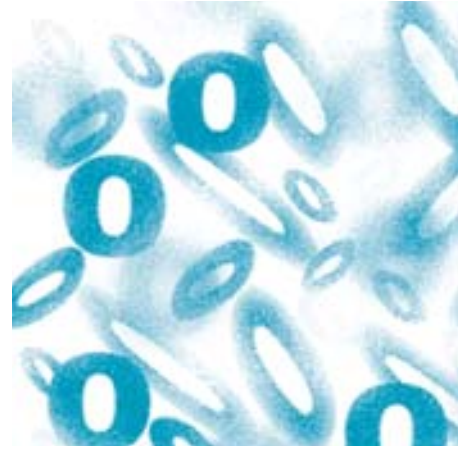
Influenza vaccine is recommended by the National Health & Medical Research Council to be given routinely every year to persons at high risk of the complications of influenza. This includes

all persons aged 65 years and over and Aboriginal & Torres Strait Islanders aged 50 years or older. Influenza immunisation has been shown to save medical and hospital admission costs, and reduce mortality.

There are four separate influenza vaccination programs in Victoria:

- Persons aged 65 and over (funded by the Commonwealth through the Public Health Outcomes Funding Agreement);
- Indigenous persons aged 50 and over, and aged 15–49 with risk factors (funded by the Commonwealth Office of Aboriginal and Torres Strait Islander Health);
- Victorian hospital program for patients under 65 with risk factors (funded through the Winter Emergency Demand Management Strategy);
- Victorian hospital program for direct care staff (funded through the Winter Emergency Demand Management Strategy).

In 2003 the influenza vaccine coverage for older persons in Victoria was 78 per cent in comparison to the Australian average of 77 per cent. The State Government provide free influenza vaccine to all public hospital direct-care staff, and also free influenza and pneumococcal vaccine to patients in public hospitals who are defined as high risk for the complications of influenza. In 2003, approximately 50 per cent of direct care staff were reported as immunised through this program.



10. Vector-borne diseases

Arbovirus infections

The most commonly reported arbovirus infections in Victoria are the alphaviruses: the Ross River virus disease and the Barmah Forest virus disease (table 36). Both diseases are endemic throughout much of the state, and are important as a result of their frequency and the disabling rheumatic symptoms they can cause.

Flavivirus infections include Murray Valley encephalitis, Kunjin virus encephalitis, Dengue fever and Japanese encephalitis. The last case of Murray Valley encephalitis reported as acquired in Victoria was in 1974. Three cases of Kunjin virus encephalitis have been reported since 1991. No cases of Dengue fever or Japanese encephalitis have ever been reported as acquired in Victoria, although imported cases of Dengue fever are occasionally notified.

Barmah Forest virus disease

Summary of notifications

The Department of Human Services received nine notifications of Barmah Forest virus disease in 2003, which is a continuation of the low numbers in 2002. Two females and seven males were notified, and the median age of cases was 46 years (range being 17–56 years). Five notifications (56 per cent) were for Gippsland residents.

Risk factors

Risk factor information was not routinely collected.

Outbreak and other investigations

No outbreaks were detected.

Comment

Minimising exposure to mosquito bites is the best prevention method. Wearing long, loose fitting clothing, preferably light in colour, and using a suitable mosquito repellent on any exposed skin will decrease the chance of being infected with a mosquito-borne disease. Mosquitoes are most active at dusk and dawn, although some species are present throughout the day.

Table 36: Notifications of arbovirus, by type, Victoria, 1998–2003

	1998	1999	2000	2001	2002	2003
Ross River virus	131	227	313	357	33	14
Barmah Forest virus	18	13	18	19	59	9
Flavivirus–Dengue	9	0	2	6	11	15
Flavivirus–not further specified	11	1	11	10	2	3
Flavivirus–Kunjin	0	0	0	1	0	0
Arbovirus–not further specified	21	45	16	5	0	0
Sindbis	0	1	0	0	0	0
Total	190	287	360	398	105	41

Malaria

Summary of notifications

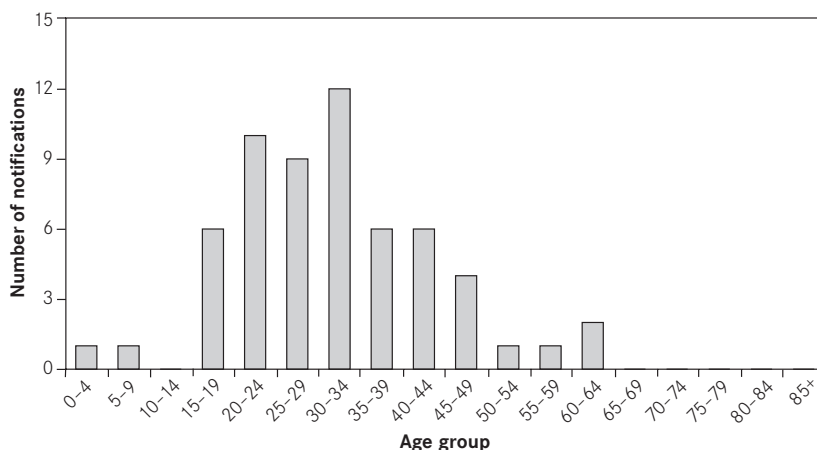
The Department of Human Services received 59 notifications of malaria in 2003, similar to the number in 2002. Sixteen notified cases were females and 43 (73 per cent) were males, and the median age was 31 years (range being 4–62 years) (figure 40). *Plasmodium vivax* was the most common type of malaria notified, accounting for 40 cases (table 40). Forty-seven cases (80 per cent) were hospitalised.

The most common countries in which malaria was acquired were Papua New Guinea (22 of the 59 cases), East Timor (4), India (4) and the Solomon Islands (4). The country of acquisition was not known for three cases (table 38).

Risk factors

Malaria prophylaxis of some form was taken by 24 of the persons notified (41 per cent). Thirteen (54 per cent) of these had taken the prophylaxis regularly, while 11 had taken it intermittently. Information regarding prophylaxis was not available for 14 cases.

Figure 39: Notifications of malaria, by age group, Victoria, 2003



Outbreak and other investigations

No outbreaks were investigated.

Comment

The best prevention is not to be bitten by mosquitoes. All travellers to tropical and malarious areas should cover exposed skin with long sleeves and long pants. They should treat exposed areas of skin with insect repellents that contain diethyl toluamide (DEET) or picaridin. Impregnated bed nets and screening of accommodation are also recommended.

Before travelling, people should seek reliable advice on malaria prophylaxis. No prophylaxis is 100 per cent effective;

Table 37: Notifications of malaria, by species, Victoria, 2003

Type	Number	Per cent
<i>Pl. vivax</i>	40	67.8
<i>Pl. falciparum</i>	17	28.8
Mixed <i>Pl. vivax</i> and <i>Pl. falciparum</i>	1	1.7
<i>Pl. ovale</i>	1	1.7
Total	59	100

malaria may still occur and prompt medical care should be sought if a fever develops.

Up-to-date information on recommended anti-malarial chemoprophylaxis can be obtained from specialist travel medicine clinics or the World Health Organization publication *International travel and health 2002* (available at www.who.int/ith/).

Table 38: Notifications of malaria, by place of acquisition, Victoria, 2003

Country or region	Number
Papua New Guinea	22
East Timor	4
India	4
Solomon Islands	4
Indonesia	3
Kenya	2
Tanzania	2
Vanuatu	2
Ghana	1
Guatemala	1
Malawi	1
Nambia	1
Nigeria	1
Pakistan	1
Sao Tome and Principe	1
Somalia	1
South East Asia	1
Southern Asia	1
Sudan	1
Thailand	1
Vietnam	1
Unknown	3
Total	59

11. Zoonoses

Brucellosis

Summary of notifications

The Department of Human Services received four notifications of brucellosis in 2003, being one case of untyped *Brucella* (a female aged 34 years), two cases of *B. abortus* (males aged 71 years and 74 years) and a case of *B. melitensis* biotype 3 (a female aged 64 years).

Risk factors

Brucellosis is predominantly an occupational disease of farm and abattoir workers, and veterinarians. Infection can also occur through the consumption of unpasteurised soft cheeses and other dairy products. The 34-year old female had contact with dairy cattle and reported consuming imported unpasteurised cheese before the onset of illness. The 71-year old and 74-year old males were retired livestock farmers with chronic brucellosis, having reported contact with sick or aborted livestock in preceding years but not having been previously diagnosed or notified. The 64-year old female had recently travelled to southern Italy where she reported consuming goat's cheese before the onset of illness.

Outbreak and other investigations

No outbreaks were detected in 2003.

Comment

People can avoid becoming infected with brucellosis by not consuming unpasteurised dairy products. Those in high-risk occupations should be educated about the disease and the appropriate protective measures required when exposed to infected animals and/or carcasses.

Leptospirosis

Risk factors

Leptospirosis is predominantly a disease associated with rural areas (table 39). Eight cases were farmers or meat workers, and two reported recent travel to South East Asia before becoming ill.

Outbreak and other investigations

No outbreaks were identified.

Discussion and comment

Farmers can minimise infection by ensuring they appropriately vaccinate stock. Vaccines are available for dairy cows, sheep, goats and deer. Calves over 3 months of age and adult cattle should receive two doses four to six weeks apart, with annual boosters thereafter.

Leptospirosis can be difficult to diagnose and should be considered in persons from high-risk populations presenting with meningitis, encephalitis or influenza-like illness.

Psittacosis

Summary of notifications

The Department of Human Services received 89 notifications of psittacosis in 2003—an increase of 162 per cent on the number in 2002. The median age of cases notified was 54 years (range being 16–84 years), and 57 (64 per cent) were male (figure 40). Notification rates were highest for the Eastern Metropolitan region (2.9 per 100 000) (figure 41) and increased during spring months (figure 42).

Fifty-seven cases (64 per cent) were hospitalised, with one death reported as directly attributable to psittacosis.

Risk factors

All cases notified reported an exposure to birds (either domestic or wild). Three of the cases acquired their infections during the course of their employment, one as a factory cleaner, one as a vet and one as a pet shop owner.

Table 39: Notifications of leptospirosis, by region and rate per 100 000 population, Victoria, 2003

Region	<i>L. hardjo</i>	Other species	Total (per 100 000)
Barwon south West	3	1	4 (1.2)
Eastern Metropolitan	0	1	1 (0.1)
Hume	1	0	1 (0.4)
Gippsland	1	1	2 (0.8)
Southern Metropolitan	0	1	1 (0.1)
Western Metropolitan	1	0	1 (0.2)
Total	6	4	10 (0.3)

Outbreak and other investigations

No outbreaks of psittacosis were detected.

Comment

People can contract psittacosis via contact with wild or domestic birds. Medical practitioners should remind their patients about the risk of feeding and handling wild birds. Birds kept domestically should have their cages and feeding bowls regularly cleaned. When cages are being cleaned, a facemask and gloves should be used. Wetting down the area before cleaning will prevent dust formation. If a bird has been ill, then its cage, bowl and so on should be cleaned with a 1:100 diluted solution of household bleach. People are also advised to use a mask or lawn catcher when mowing the lawn.

Figure 40: Notifications of psittacosis, by age group and sex, and rate per 100 000 population, Victoria, 2003

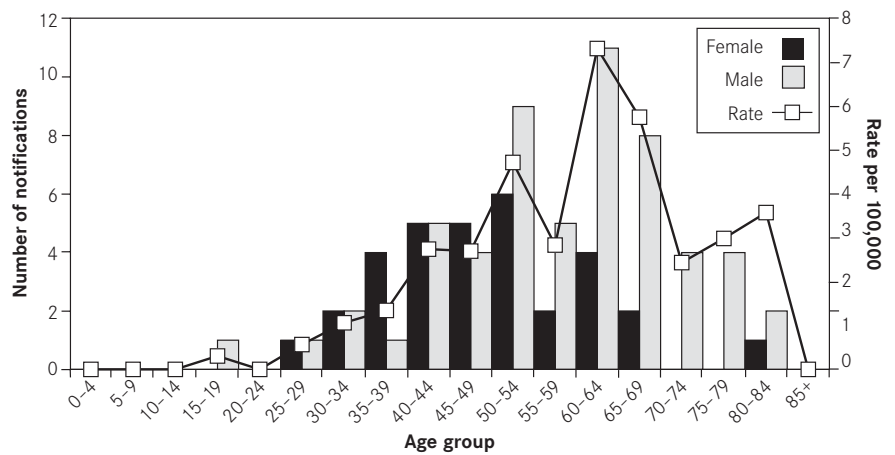


Figure 41: Notifications of psittacosis, by region and rate per 100 000 population, Victoria, 2003

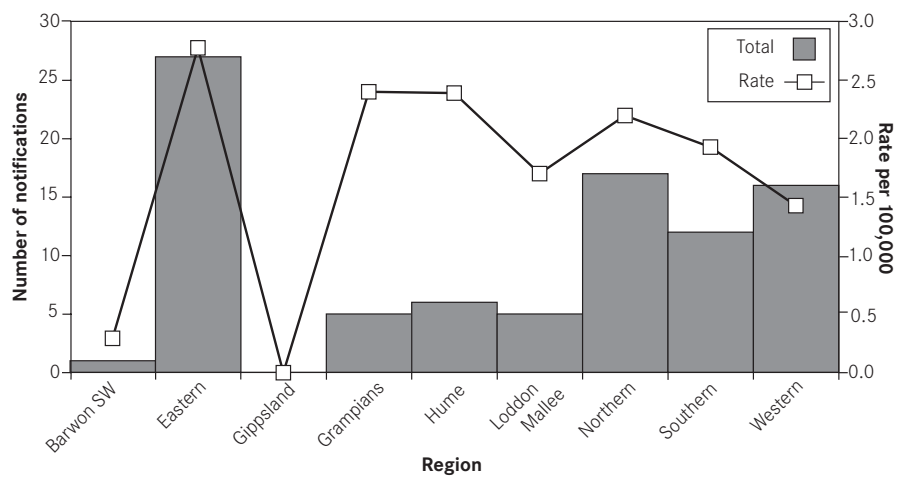


Figure 42: Notifications of psittacosis, by month, Victoria, 1998–2003

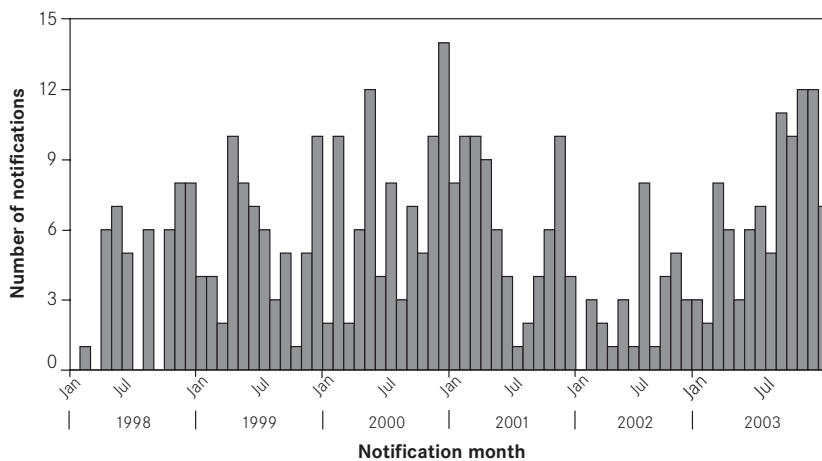


Figure 43: Notifications of Q fever, by region and rate per 100 000 population, Victoria, 2003

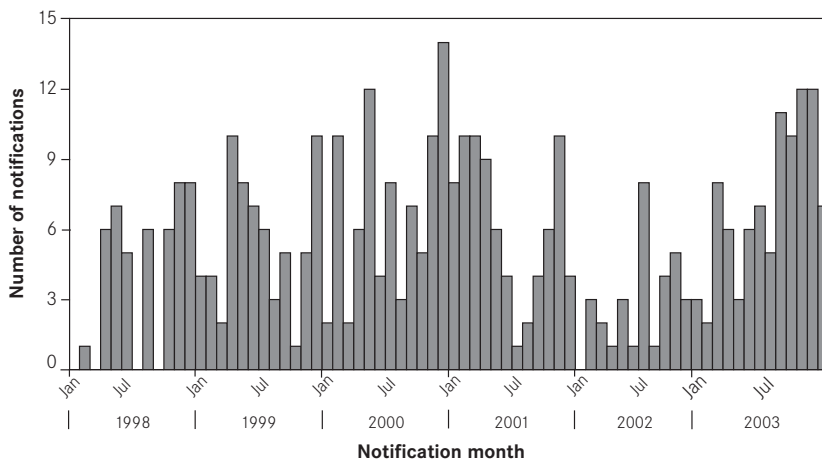


Table 40: Notifications of Q fever, by occupation, Victoria, 2003

Primary occupation	Female	Male	Total
Meat tradesperson, labourer, related worker	2	4	6
Shearer	0	5	5
Farmer, farm manager, farm hand	1	2	3
Truck driver	0	2	2
Food tradesperson	0	1	1
Primary school teacher	0	1	1
Total	3	15	18

Q fever

Summary of notifications

The Department of Human Services received 18 notifications of Q fever in 2003, down 78 per cent on the number in 2002. The median age of persons notified was 43 years (range being 18–61 years), and 15 (83 per cent) were males. Three persons were admitted to hospital for their illness, but no deaths were reported.

Risk factors

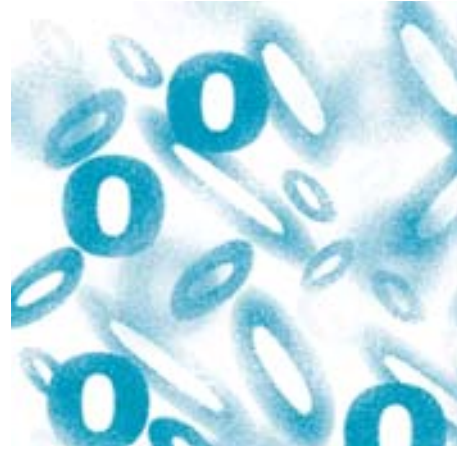
Q fever is predominantly a disease associated with abattoirs and farming, and this link is reflected in the areas where those notified lived (figure 43), and in their occupations (table 40). Although vaccine failures are known to occur, no cases of Q fever were reported in vaccinated individuals.

Outbreak and other investigations

No outbreaks were reported.

Comment

Q fever is not endemic in Victoria, but many of the cattle, sheep and feral goats handled in abattoirs or on farms are from interstate. Q fever vaccination is recommended, therefore, for all abattoir workers, maintenance workers (such as engineers and plumbers) and truck drivers who work or visit abattoirs. About 20 per cent of people who acquire acute Q fever will develop a post Q fever fatigue syndrome or suffer long-term consequences of their disease, which may produce recurring symptoms for years.



12. Public health project funding 2002–03

The Public Health Group of the Department of Human Services funded a number of projects in communicable diseases in 2003. The projects are listed below:

Topic Typing of *Chlamydia trachomatis* and *Neisseria gonorrhoea* isolated from gay men

Investigators Dr Sepehr Tabrizi, Professor Christopher Fairley, A/Professor Anthony Smith, A/Professor Suzanne Garland

Organisation Murdoch Children's Research Institute

Funding \$23 500

Topic Psychological and social factors associated with uptake and maintenance of clinical treatment for hepatitis C

Investigators Professor Marian Pitts, Dr Mary O'Brien, Dr Meredith Temple-Smith, Dr William Sievert

Organisation Australian Research Centre in Sex, Health & Society, La Trobe University

Funding \$73 292

Topic Asplenic patient education for the prevention of sepsis

Investigators A/Professor Denis Spelman, A/Professor Alison Street, Dr Merrole Cole-Sinclair, Dr Ian Wooley

Organisation Alfred Hospital

Funding \$66 500

Topic The development of a sensitive and rapid Reverse Transcription Polymerase Chain Reaction test, using 'Real Time' PCR, for the detection of Murray Valley Encephalitis virus from infected mosquitoes and from animal blood

Investigators Ms Elwyn Wishart, Dr Simone Warner

Organisation Victorian Institute of Animal Science

Funding \$19 498

Topic Determination of acute phase hepatitis C virus infection

Investigators Professor Eric Gowans

Organisation Macfarlane Burnet Institute for Medical Research & Public Health

Funding \$74 243

Topic An evaluation of a new test for the detection of latent TB infection in Victoria

Investigators Dr Beverley-Ann Biggs, Dr Paul Vinton, A/Professor Paul Johnson, Dr James Black

Organisation Victorian Infectious Disease Service, Melbourne Health

Funding \$69 020

Topic Improving primary health care for settlers from the Middle East and Afghanistan

Investigators Dr Beverley-Ann Biggs, Dr James Black

Organisation International Health, Royal Melbourne Hospital, The University of Melbourne

Funding \$75 469

Topic Hepatitis C and initiation into injecting drug use in a rural setting

Investigators Dr John Fitzgerald, Dr Kevin McDonald

Organisation Department of Criminology, Sociology Program, The University of Melbourne

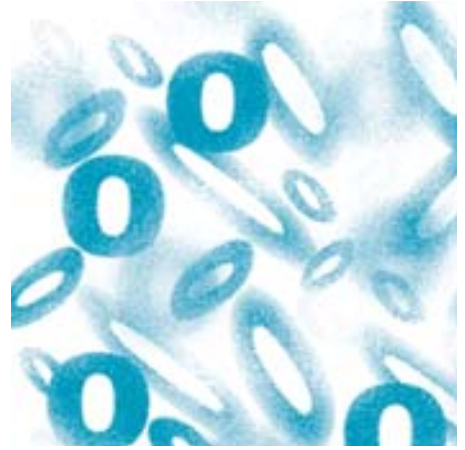
Funding \$37 101

Topic The epidemiology and impact of childhood respiratory viral infections

Investigators Professor Terry Nolan, Dr Jonathan Carapetis, Dr John Carlin, Dr Christopher Birch

Organisation Murdoch Children's Research Institute

Funding \$70 711



13. Reports and publications

Peer review journals

Hocking J, Fairley C, Counahan M and Crofts N. The pattern of notification and testing for genital Chlamydia trachomatis infection in Victoria 1998–2000: an ecological analysis. *Australian New Zealand Journal of Public Health* 2003;27(4):405–409.

Counahan M, Hocking J and Fairley C, *Enhanced chlamydia surveillance indicates more screening needed*. *Med J Aust*. 2003 May 19;178(10):523.

Roche P, Krause K, Andrews R, Carter L, Coleman D, Cook H, Counahan M, Giele C, Gilmore R, Hart S, Pugh R with laboratory data supplied by Hogg G, Murphy D, and Watson M for the Pneumococcal Working party of the Communicable Diseases Network Australia: Invasive pneumococcal disease in Australia, 2002. *Communicable Diseases Intelligence*, 2003 Vol 27 (4):466–477.

Public health bulletins

Wang J, Counahan M, Flu in the barracks. *Victorian Infectious Diseases Bulletin*. December 2003; 6(4).

Conference presentations

Moran R, O'Donnell H, Australian Institute of Environmental Health, Victorian Division; State Conference, Cape Schanck August 2003; Update – health guidelines for the personal care and body art industry.

Birbilis E, Australian Institute of Environmental Health, Victorian Division; State Conference, Cape Schanck August 2003; SARS and Influenza Pandemic Planning

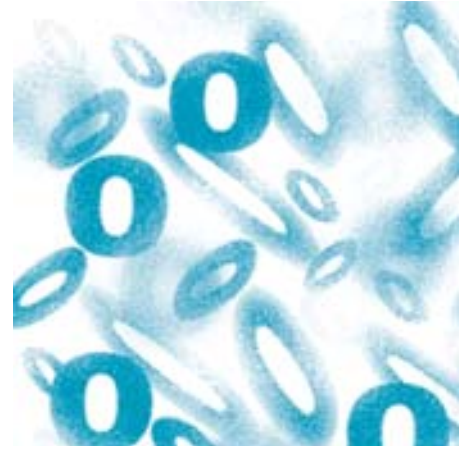
Brown L, Victorian Infection Control Practitioners Association; State Conference, WTC May 2003; Mantoux Testing for Health Care Workers – The new (2002) TB Guidelines

Communicable diseases training program/workshop

Mosquito identification & control training course

The Department undertook its annual training program for Mosquito Identification and Control in Swan Hill in November 2003. The Department has been running these training courses since 1974. The course is open to any employee of council who may deal with issues relating to mosquitoes so that the necessary skills and expertise to investigate and control local problems can be gained. Other groups, such as the Australian Army also regularly send participants.

Eighteen participants attended the 2003 course including five officers from South Australia and two from New South Wales. The course addressed the following key areas: public health and mosquitoes, monitoring of breeding sites, species identification (vector or nuisance), biological & chemical control, control equipment, environmental management/modification, occupational health and safety and education strategies.



Appendices

Appendix 1: DHS region by
Local Government area,
Victoria.

Appendix 2: Supplementary
data – Sexually transmissible
infections, Victoria, 2003

Appendix 1: DHS region by Local Government area, Victoria.

Region area	Local Government area	Region area	Local Government area	Region area	Local Government area
Barwon-South Western	Colac-Otway (S)	Hume	Alpine (S)	Western Metropolitan	Brimbank (C)
	Corangamite (S)		Delatite (S)		Hobsons Bay (C)
	Glenelg (S)		Greater Shepparton (C)		Maribyrnong (C)
	Greater Geelong (C)		Indigo (S)		Melbourne (C)
	Moyne (S)		Mitchell (S)		Melton (S)
	Queenscliff (B)		Moira (S)		Moonee Valley (C)
	Southern Grampians (S)		Murrindindi (S)		Wyndham (C)
	Surf Coast (S)		Strathbogie (S)		
	Unincorporated Vic		Towong (S)		
	Warrnambool (C)		Wangaratta (RC)		
			Wodonga (RC)		
Eastern Metropolitan	Boroondara (C)	Loddon Mallee	Buloke (S)		
	Knox (C)		Campaspe (S)		
	Manningham (C)		Central Goldfields (S)		
	Maroondah (C)		Gannawarra (S)		
	Monash (C)		Greater Bendigo (C)		
	Whitehorse (C)		Loddon (S)		
	Yarra Ranges (S)		Macedon Ranges (S)		
	Mildura (RC)				
	Mount Alexander (S)				
	Swan Hill (RC)				
Gippsland	Bass Coast (S)	Northern Metropolitan	Banyule (C)		
	Baw Baw (S)		Darebin (C)		
	East Gippsland (S)		Hume (C)		
	Latrobe (C)		Moreland (C)		
	South Gippsland (S)		Nillumbik (S)		
	Wellington (S)		Whittlesea (C)		
	Yarra (C)				
Grampians	Ararat (RC)	Southern Metropolitan	Bayside (C)		
	Ballarat (C)		Cardinia (S)		
	Golden Plains (S)		Casey (C)		
	Hepburn (S)		Frankston (C)		
	Hindmarsh (S)		Glen Eira (C)		
	Horsham (RC)		Greater Dandenong (C)		
	Moorabool (S)		Kingston (C)		
	Northern Grampians (S)		Mornington Peninsula (S)		
	Pyrenees (S)		Port Phillip (C)		
	West Wimmera (S)		Stonnington (C)		
	Yarriambiack (S)				

Appendix 2: Supplementary data – Sexually transmissible infections, Victoria, 2003

Table 41: Diagnosed males reporting homosexual contact, by reported partner type, Victoria*

Partner type	Year of diagnosis													
	1997		1998		1999		2000		2001		2002		2003	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Regular	26	19.0	22	22.2	34	42.5	32	25.4	36	24.0	56	34.6	26	15.9
Casual	33	24.1	23	23.2	16	20.0	28	22.2	58	38.7	50	30.9	50	30.7
Anonymous	65	47.4	38	38.4	20	25.0	59	46.8	38	25.3	42	25.9	45	27.6
Casual or anonymous	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	3.1
Regular or casual or anonymous	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	12	7.4
Unknown	13	9.5	16	16.2	10	12.5	7	5.6	18	12.0	14	8.6	25	15.3
Total	137	100	99	100	80	100	126	100	150	100	162	100	163	100

* Data collected since 1997. Partner type reported as source of infection.

Table 42: Clinical presentation at HIV diagnosis, Victoria*

Clinical presentation	Sex	Year of diagnosis											Total
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003		
HIV symptoms	M	10	5	11	19	9	14	20	16	35	34	173	
	F	0	0	1	1	0	3	3	1	1	1	11	
Asymptomatic	M	121	103	109	92	74	82	90	122	122	131	1046	
	F	14	7	8	10	7	8	13	13	15	16	111	
Lymphadenopathy	M	6	5	5	3	3	6	4	3	12	5	52	
	F	1	1	0	0	0	0	0	2	1	0	5	
Other HIV related symptoms	M	23	18	23	25	21	5	33	21	17	12	198	
	F	0	0	4	0	1	1	2	4	6	1	19	
AIDS	M	32	31	26	32	29	11	20	24	15	20	240	
	F	2	3	1	3	0	0	2	3	1	1	16	
Other	M	0	1	0	1	0	8	7	4	5	2	28	
	F	0	0	0	0	0	0	0	0	0	0	0	
Unknown	M	13	5	5	1	6	2	2	3	1	2	40	
	F	2	1	1	0	0	0	0	0	0	0	4	
Total		224	180	194	188[#]	150	140	197[#]	218[#]	233[#]	225	1949[#]	

* Data collected since 1994.

Includes five people whose sex was reported as transgender and one person whose sex was unknown.

Table 43: HIV diagnoses, by sex and reason for testing, Victoria, 1994–2003*

Reason for testing	Sex	Year of diagnosis										Total	
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003		
Antenatal screen	M	–	–	–	–	–	–	–	–	–	–	–	–
	F	1	0	0	0	1	2	6	2	1	3	16	
Earlier diagnosis	M	5	11	13	9	13	3	6	13	20	6	99	
	F	2	1	2	1	2	3	1	4	1	1	18	
Transfusion	M	0	0	0	0	0	2	0	0	0	0	2	
	F	0	0	0	0	0	1	0	0	0	0	1	
Donation screen	M	2	0	1	1	0	1	0	0	2	0	7	
	F	1	0	0	0	0	1	0	0	0	0	2	
Immigration	M	2	5	4	3	3	7	4	4	4	5	41	
	F	1	1	1	0	0	1	1	0	2	4	11	
Insurance	M	3	2	0	0	0	0	3	1	2	0	11	
	F	0	0	0	0	0	0	0	0	0	0	0	
IVF	M	–	–	–	–	–	–	–	–	–	–	–	
	F	0	0	0	0	0	0	0	1	0	0	1	
Occupational	M	1	1	1	1	1	2	0	1	1	1	10	
	F	0	0	0	0	0	0	0	0	0	0	0	
Other	M	6	13	11	5	12	27	13	20	22	31	160	
	F	0	3	1	0	1	2	3	4	5	2	21	
Prison	M	1	2	3	2	2	2	3	2	1	2	20	
	F	0	0	1	0	0	0	0	0	0	0	1	
Pre-surgical	M	1	1	0	0	0	0	1	0	1	2	6	
	F	0	0	0	0	0	0	0	0	0	0	0	
Sex / injecting drug use	M	115	89	101	99	79	66	100	110	102	109	970	
	F	7	2	6	9	4	2	8	7	9	7	61	
HIV symptoms	M	57	38	43	52	30	18	45	42	50	50	425	
	F	6	4	4	4	0	0	1	4	6	2	31	
Unknown	M	12	6	2	1	2	0	1	0	2	0	26	
	F	1	1	0	0	0	0	0	1	0	0	3	
Total		224	180	194	188[#]	150	140	197[#]	218[#]	233[#]	225	1949[#]	

* Data collected since 1994.

[#] Includes five people whose sex was reported as transgender and one person whose sex was unknown.

Table 44: HIV diagnoses, by exposure category and probable place infection acquired, Victoria, 2003

HIV exposure category	Probable place infection acquired								Total
	Victoria		Interstate		Overseas		Unknown		
	M	F	M	F	M	F	M	F	
Male homosexual	117	-	14	-	21	-	11	-	163
Male homosexual and injecting drug use	8	-	2	-	0	-	0	-	10
Injecting drug use	1	2	1	0	4	0	2	0	10
Heterosexual contact	4	7	0	1	8	2	4	0	26
Person from high prevalence country	0	0	0	0	6	6	0	1	13
Other	1	0	0	0	0	0	2	0	3
Total	131	9	17	1	39	8	19	1	225

Table 45: HIV diagnoses in injecting drug users, by region of birth and sex#, Victoria, 1994 to 2003

Clinical presentation	Sex	Year of diagnosis										Total n
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Asia	M	0	0	2	1	1	3	4	5	3	5	24
	F	0	0	0	0	0	0	0	1	0	0	1
Australia	M	5	4	0	2	2	1	4	3	0	2	23
	F	2	1	2	2	1	0	1	1	0	2	12
Europe	M	0	2	0	2	2	0	1	0	0	1	8
	F	0	0	0	0	0	0	0	0	0	0	0
United Kingdom/Ireland	M	0	0	0	0	0	0	0	0	1	0	1
	F	0	0	0	0	0	0	0	0	0	0	0
Unavailable	M	1	1	0	0	0	1	2	0	0	0	5
	F	0	0	0	0	0	0	0	0	0	0	0
Total		8	8	4	7	6	5	12	10	4	10	74

Collected since 1994

Table 46: Diagnoses of newly acquired HIV infection by year, HIV exposure category and sex, Victoria, 1983 to 2003

HIV exposure category	Sex	Year of diagnosis										Total n
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
Male homosexual	M	271	29	39	29	26	28	50	59	66	62	6601
	F	-	-	-	-	-	-	-	-	-	-	
Male homosexual and injecting drug use	M	16	1	1	2	3	4	2	0	5	4	38
	F	-	-	-	-	-	-	-	-	-	-	
Injecting drug use only	M	8	0	1	0	1	0	5	2	1	1	19
	F	6	1	1	0	0	0	1	1	0	1	
Heterosexual contact	M	4	1	2	1	1	1	3	1	2	3	19
	F	11	1	0	3	0	1	2	2	0	1	
Person from high prevalence county	M	2	0	0	0	0	2	0	2	1	0	7
	F	1	1	0	0	0	3	0	0	2	2	
Receipt of blood/tissue	M	1	0	0	0	0	0	0	0	0	0	1
	F	0	0	0	0	0	1	0	0	0	0	
Other	M	1	0	0	0	0	0	0	0	0	0	1
	F	0	0	0	0	0	0	0	0	0	0	
Unavailable	M	3	1	0	0	0	0	1	0	0	0	5
	F	0	0	0	0	0	0	0	0	0	0	
Total incident cases		324	35	44	35	31	40	64	67	791	74	793¹
Total HIV diagnoses		33601	180	194	188	150	140	197	218	233	225	5085¹
% of total HIV diagnoses		9.6	19.4	22.7	18.6	20.7	28.6	32.5	30.7	33.9	32.9	

¹ Total includes one individual whose sex was reported as transgender

Table 47: Diagnoses of HIV by time since last negative test or seroconversion illness and exposure category, Victoria, 2003

Time between HIV diagnosis and negative and/or seroconversion illness	HIV exposure category												Total
	Male homosexual		Male homosexual and IDU		Injecting drug use		Heterosexual contact		Person from specified country		Other		
	M	F	M	F	M	F	M	F	M	F	M	F	
Less than 1 year	62	-	4	-	1	1	3	1	0	2	0	0	74
1 to less than 3 years	23	-	2	-	2	0	1	2	0	0	0	0	30
3 or greater years	23	-	1	-	1	1	2	2	0	0	1	0	31
No previous negative test	55	-	3	-	4	0	10	5	6	5	2	0	90
Total	163	-	10	-	8	2	16	10	6	7	3	0	225

Table 48: Total HIV tests performed and HIV rate per 100 000 tests by year, Victoria, 1994 to 2003

	Year of HIV diagnosis									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HIV diagnoses	224	180	196	188	150	140	197	218	233	225
Total HIV tests ^{1,2}	132 100	108 230	119 360	94 846	113 342	161 600	160 611	177 949	202 682	204 561
Rate per 100 000 tests	169.6	166.3	164.2	198.2	132.3	86.6	122.7	122.5	114.95	110.00

1 1994 to 2002 data source: National Reference Laboratory – published in National Centre in HIV Epidemiology and Clinical Research. *HIV/AIDS, Hepatitis C and Sexually Transmissible Infections in Australia Annual Surveillance Report 2002*

2 2003 Data Source: National Reference Laboratory: unpublished data

