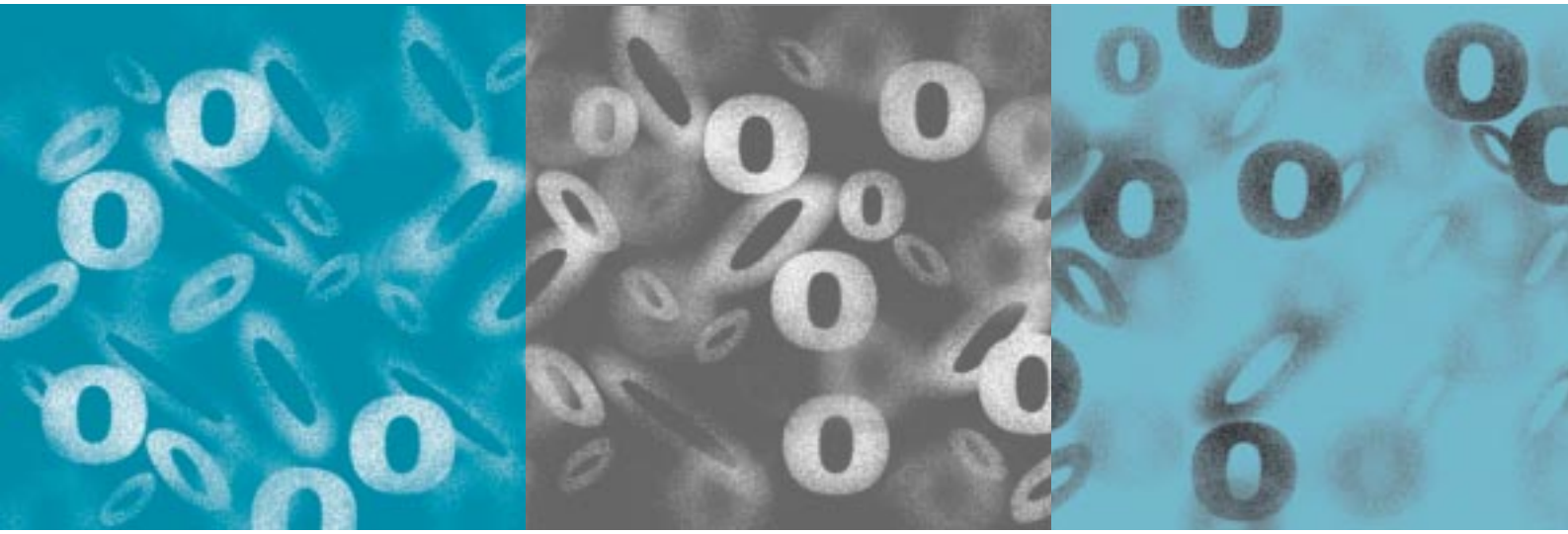
Victorian Infectious Diseases Bulletin

ISSN 1 441 0575 Volume 6 Issue 1 March 2003



Contents

Victoria
The Place To Be

West Nile virus–a potentially serious threat to Australia?

Noel McK. Bennett, Chair, Victorian Arbovirus Task Force

Introduction

Prior to 1999, most health care personnel could be forgiven for being ignorant of the existence of West Nile virus (WNv), because it posed no threat to Australia until that time. For those interested in arboviruses, WNv was known to be a flavivirus genetically related to the Japanese encephalitis and Murray Valley encephalitis viruses, but with a closer genetic resemblance to Kunjin virus. WNv was first isolated in 1937 from the blood of a Ugandan patient with a mild febrile disease.[1] Particularly interesting was the very close molecular similarity between the WNv strain isolated from brains of humans dying in New York in 1999 and the uniquely Australian Kunjin virus.[2]

WNv has been detected over a wide area extending from South Africa to the Mediterranean, and through Europe to western Asia. Studies in the 1950s defined the clinical features of WNv infection.[3] There was a high rate of inapparent infection; disease severity seemed to be age dependent; infants and young children usually had a mild nondescript illness; adolescents and young adults had a dengue-like illness often associated with a rash; and the central nervous system was affected only in adults, resulting in encephalitis that was commonly fatal.

In some countries where infection was highly endemic, such as Egypt, the disease was often not apparent, presumably as a result of the population's high immunity.[3] Later, human disease outbreaks were described in Israel, India, France, Romania, Russia and the Czech Republic.[3-4] The virus was maintained in a bird–mosquito cycle, usually involving culicine mosquito species; WNv epidemics thus commonly occurred in summer months, correlating with peak numbers of these species.

The North American experience

It is pertinent for Australia to review the WNv epidemics that occurred in the United States in 1999 and each of the following three years.[5-7] During August 1999 in the Borough of Queens, New York City, an outbreak of human encephalitis occurred which was fatal in a number of people. Concurrently, an increased mortality among birds from meningoencephalitis and myocarditis was noted, particularly in wild crows and exotic birds housed in the Bronx zoo. All human and avian infections were subsequently shown to be due to WNv. Importantly, neither this virus nor Kunjin virus had ever been described in the Americas.

The spread of WNv in the United States, with its potential to infect many mammalian and avian species, was spectacular. By late 2002, infection had been detected in most of the country's mainland States. WNv had spread from east to west of the continent, down to Mexico, up into Canada and also to the Cayman Islands in the Caribbean. In the United States from August 1999 to 17 October 2002, a total of 3253 human cases were detected, of whom 190 died–a death rate of 5.8 per cent (Centers for Disease Control and Prevention, personal communication, 2002). This death rate was similar to the 4–9 per cent from a 1996 WNv outbreak in Romania, where the estimated ratio of apparent-to-inapparent infection was 1:325.[4]

Many other mammals in the United States have been infected with WNv. Notably, thousands of infections have occurred in horses, which seem to be particularly susceptible; if unvaccinated against WNv infection, horses can develop encephalitis, which may be fatal. Infection in over 100 bird species (the natural reservoir for the virus) has been detected. Infected birds such as chickens commonly survive, but infection is more severe in species belonging to the family *Corvidae*, such as crows and jays, which may become ill and often die.

A large number of mosquito species have tested positive for WNv in the United States. The most common mosquito to be involved in the bird–mosquito transmission cycle has been *Culex pipiens* (also widely distributed in Australia). This mosquito, which seems to prefer to bite birds, breeds in standing water, particularly if the water is polluted with organic material. The spread of WNv through the United States has been attributed to the migration of infected birds and the contiguous spread from area to area by new bird–mosquito cycles.[6] One model suggested that WNv human cases could be expected if 1.5 WNv-positive dead crows occur per square mile (2.59 square kilometres).

Mammals (mainly humans and horses) become infected when bitten by an infected mosquito, but there is no evidence that they cause further spread of the virus. Mammals are

considered to be 'dead end' vectors because low virus amplification in their blood and a short viraemia provide little opportunity for a biting mosquito to become infected.[6] There was no great concern, therefore, when serological evidence of WNv infection was detected in August 2002 in a sick horse imported from Canada and quarantined in New South Wales. WNv may be transmitted to humans also by blood transfusion or organ transplantation, and the virus has been detected in breast milk.[8]

It is not clear how WNv gained access into the United States in 1999. The most popular theory is that aircraft flying from a WNv-endemic area in the Middle East carried infected mosquitos into New York. Less probable is the possible introduction of the virus by migrating birds from a WNv-endemic area or by the importation of some infected animal. More bizarre theories have implicated bioterrorism or the escape of infected mosquitos or birds from Plum Island, which is a high security research establishment in New York.

The US strain of WNv is identical to one that caused an outbreak in Israel in 1996. The comparative severity of WNv infections in the United States has been attributed to a WNv immunologically virgin population, rather than some enhanced virulence of the strain.

Prevention of WNv infection in humans depends on measures to avoid mosquito bites, such as mosquito proofing of homes, the use of effective repellents and the elimination (or regular emptying) of artificial water-collecting containers. A killed virus vaccine is available for the prevention of WNv infection in horses, but a human vaccine is still being developed. There is no specific treatment for human WNv infection.

West Nile virus in Australia

The introduction and spread of WNv in the United States are of considerable interest to Australia. There is a possibility, albeit not quantifiable, that WNv will be introduced into Australia. The necessary mosquito vectors and avian species are present to allow the establishment and spread of permanent mosquito–bird transmission cycles.

Previous Kunjin virus infection could be expected, however, to give some cross-immunity. WNv-endemic areas of Africa have a fairly high background level of immunity, contrasting with low levels of immunity that resulted after recent epidemics in Europe and the United States. There is evidence from early studies in Australia that Kunjin virus has caused widespread infection in both humans (with perhaps a total of 15 cases of encephalitis)[9] and wild and domesticated animals (cattle, sheep and horses).[10]

Like the Murray Valley encephalitis virus, Kunjin virus is endemic in northern parts of Australia but can be carried south east by infected birds after heavy rainfall. Virus activity was detected in northern Victoria in 2001.

Unfortunately, there is a paucity of information on the extent of recent human Kunjin infections, so the possible level of cross-immunity is unknown. It is feasible, therefore, that the Australian population is at some risk of recurrent epidemics of WNv infection, similar to those in the United States. This risk may be lessened in some areas, however, by a low level of cross-immunity provided by prior Kunjin virus infection.

Without an effective and extensive vaccination program, infection in horses and the resultant mortality could be devastating to the horse racing industry. Moreover, the predilection of the virus to infect and kill certain bird species could cause the death of protected species, as has occurred in the United States. As with humans, the possible protective effect for horses and birds of prior Kunjin virus infection is unknown.

Conclusion

There are no certain ways in which to prevent the introduction of WNv into Australia, but some measures can be intensified to reduce the likelihood. Diligent insecticiding of aircraft and other transport vehicles arriving from areas where the virus is endemic, including the United States and Canada, should be maintained, as should the strict quarantine of birds and animals from such areas.

It is also uncertain whether introduced WNv infection could be contained and eliminated. Success would depend on an early suspicion of introduced WNv infection, such as the observation of unexpected bird deaths in a particular locality. People potentially involved in such an occurrence must be made aware that it may indicate WNv infection and that it should be urgently notified to

a central designated authority. Dead birds would need to be placed in plastic bags, then frozen (or at least kept cool), before being rapidly transported to a high security laboratory for pathological and virological examination.

Containment and possible elimination of the presumed WNv focus should be attempted thorough the insecticiding and larviciding of a large surrounding zone, the destruction of all birds in this zone, and strict local avian quarantine. Nearby areas would require special mammalian and avian surveillance to detect other possible foci of WNv infection.

Further, all cases of human and equine encephalitis presenting anywhere in Australia should be investigated for possible WNv infection. It is vital that we resolve current problems in distinguishing between human Kunjin and WNv infection by serology, and that we establish a reference laboratory for the study of WNv. The most urgent priority, however, is to prepare a national contingency plan to contend with the perhaps inevitable introduction of WNv into Australia and the ramifications.

References

1. Smithburn KC, Hughes TP, Burke AW, Paul JH. A neurotrophic virus isolated from the blood of a native of Uganda. Am J Trop Med 1940;20:471–92.
2. Briese T, Jia XY, Huang C, Grady LJ, Lipkin WI. Identification of a Kunjin/West Nile-like flavivirus in brains of patients with New York encephalitis. Lancet 1999;354:1261–2.
3. Horsfall FL and Tamm I, eds. West Nile Virus, in Viral and Rickettsial Infections of Man. 4th edn. 1965, West Nile Virus; Philadelphia: Lippincott: 633–4.
4. Tsai TP, Popovici P, Cernescu C, Campbell GL, Nedelcu NT, for the Investigative Team, West Nile encephalitis epidemic in south eastern Romania. Lancet 1998;352:761–71.
5. Campbell GL, Martin AA, Lanciotti RS, Gubler DJ. West Nile virus. Lancet Infect Dis 2002;2:519–29.
6. Environmental Risk Analysis Program. Cornell University, Center for Environment. What's going on with the West Nile virus. www.cfe.cornell.edu/erap/WNV/default.cfm. 11 July 2002.
7. West Nile virus in the United States–WHO Update 3. ProMed Digest. www.promed-digest@promedmail.org. 2002;262.
8. Centers for Disease Control and Prevention, Investigations of West Nile virus infections in recipients of organ transplantation and blood transfusion: update. MMWR 2002;51:833–6.
9. Russell RC, Dwyer DE. Arboviruses associated with human disease in Australia. Microbes & Infect 2000;2:1693–704.
10. Doherty R, Carley JG, Gorman BM. Studies of arthropod-borne virus infections in Queensland. Aust J Exp Biol Med Sci 1964;42:149–64.

Infectious diseases news

Twenty-five years of the Therapeutic Guidelines: Antibiotic

Known as *Antibiotic 12*, the new edition of the *Therapeutic Guidelines: Antibiotic* (version 12) will be available from March 2003. It represents the publication's 25th anniversary, and major changes to the silver anniversary edition include areas covering:

- Lower respiratory tract infections, with new algorithms for the management of community-acquired pneumonia.
- Upper respiratory tract infections.
- Genital (reproductive) tract infections.
- Intra-abdominal infections, including viral hepatitis and pancreatitis.
- Skin and soft tissue infections.
- Potential biological warfare agents.

Further major changes cover guidance on minimising antimicrobial resistance, intravenous administration of antimicrobials, outpatient intravenous therapy, adverse reactions with antimicrobials, paediatric dosing, dosing in patients with renal impairment, and blood level monitoring. The text also covers all organ systems and systemic infections, with special reference to infections found in tropical and remote communities.

Antibiotic 12 will be available only as part of the full guideline set: *eTG complete*. It will not be available as a separate title within any practice software packages.

For more information, contact Therapeutic Guidelines Ltd (free call 1800 061 260; telephone 61 3 9329 1566; fax 61 3 9326 5632; email sales@tg.com.au).

New vaccine may prevent cervical cancer

Human papillomavirus (HPV) is a common sexually transmitted disease, and persistent infection with types 16 and 18 is associated with approximately 70 per cent of cervical neoplasias. The *New England Journal of Medicine* recently published the results of a controlled trial of a HPV type 16 vaccine in over 2300 young women.[1] The vaccine demonstrated 100 per cent efficacy against persistent HPV type 16 infection, and all cases of HPV16-related cervical intraepithelial neoplasia occurred among placebo recipients.

The study provides preliminary evidence that HPV vaccines may have a significant role in the prevention of cervical cancer in the future. Multivalent vaccines that include a broader range of HPV types are being evaluated.

Reference

1. Koutsky LA, Ault KA, Wheeler CM, Brown DR, Barr E, Alvarez FB, et al. A controlled trial of a human papillomavirus type 16 vaccine. N Engl J Med 2002;347:1645–51.

More evidence to disprove link between MMR vaccine and autism

The *New England Journal of Medicine* recently published the results of a large retrospective cohort study conducted in Denmark to investigate an association between measles–mumps–rubella (MMR) vaccine and autism.[1] The study used birth, psychiatry, vaccination and hospital records to follow up all children born in Denmark between 1 January 1991 and 31 December 1998. It included over half a million children, of whom approximately 440,000 had received MMR vaccine at 15 months of age.

The authors found no association between the development of autistic disorder and the age at the time of vaccination, the time since vaccination or the date of vaccination. These data provide weight to the growing body of evidence disproving the link between MMR vaccination and autism.

Reference

1. Madsen KM, Hviid A, Vestergaard M, Schendel D, Wohlfahrt J, Thorsen P, et al. A population-based study of measles, mumps and rubella vaccination and autism. N Engl J Med 2002;347:1477–82.

Meningococcal vaccination for health care workers

The availability of conjugate meningococcal C vaccines and the announcement of the Commonwealth Government's funded vaccination program has led some health care workers in acute settings to query whether they should be vaccinated and whether they can obtain the vaccine free of charge.

The draft recommendations of the Australian Technical Advisory Group on Immunisation (ATAGI) for the National Health and Medical Research Council (NHMRC) are that the only occupational group recommended for meningococcal vaccination are laboratory staff who frequently handle *N. meningitidis*. The recommendations state that 'contrary to popular belief, a patient with meningococcal disease is not a good transmitter of the disease. It

is instead the carrier passing on the bacteria to other susceptible persons that causes further cases of meningococcal disease'.

There is no specific reason, therefore, for staff in acute health care settings to be vaccinated. Risk is predominantly age related and is high in persons aged 15–19 years and into their twenties. Given that this is a safe and effective vaccine, however, we would recommend encouraging any adult to be vaccinated on a user pays basis if they wish. The vaccine is currently free for those aged 15–19 years (and those turning 1–5 years old in 2003).

The Department of Human Services has a policy whereby the importance of vaccination of health care workers against more highly infectious diseases cannot be underestimated. Unlike meningococcal disease, diseases such as measles, pertussis, varicella and influenza are readily transmissible from patients to staff and vice versa. The consequences were shown in two recent measles outbreaks in which health care workers were identified as the key disease transmitters.

Measles–mumps–rubella (MMR) vaccine is available free of charge for persons aged 18–34 years. Varicella vaccine is recommended for all persons who have a negative history of chickenpox. Annual influenza vaccine is provided to direct care staff through the Winter Emergency Demand Strategy.

New nomenclature for Norwalk-like virus

The term norovirus was recently approved as the official genus name for the group of viruses formerly known as:

- Norwalk-like viruses (NLVs)
- caliciviruses (because they belong to the virus family *Caliciviridae*)
- small round structured viruses (because of their morphologic features).

Noroviruses are named after the original strain "Norwalk virus" which was identified as the cause of an outbreak of gastroenteritis in a school in the United States in 1968. Noroviruses are believed to be the most common cause of acute gastroenteritis in humans and are responsible for approximately 50 per cent of the gastrointestinal illness outbreaks reported in Victoria.

OzFoodNet update

OzFoodNet just completed a survey of general practitioners (GPs) throughout Victoria on the incidence of infectious gastrointestinal illness among their patients; the frequency of, and reasons for, collection of faecal specimens; and the treatment of gastroenteritis with antibiotics.

A questionnaire was distributed by mail to a random selection of 400 GPs in rural Victoria and 600 GPs in metropolitan areas. Five hundred and seventy responses were received (a response rate of 57 per cent), 23 were ineligible for inclusion in the analysis. Analysis of the remaining 547 surveys has commenced, from which OzFoodNet will compile a report to mail to all participating GPs.

Conference announcements

The 20th National Reference Laboratory conference will be held on 13–15 August 2003 at the Surfers Paradise Marriott Resort in Queensland. You can obtain further information from Debra Irvine, Workshop Secretariat, National Serology Reference Laboratory, 4th Floor, Healy Building, 41 Victoria Parade, Fitzroy, Victoria 3065 (telephone 61 3 9418 1117; fax 61 3 9418 1155; email debra@nrl.gov.au).

The Australian Society for HIV Medicine (ASHM) 2003 Conference will be held in Cairns from 22–25 October. You can obtain further information at the website http://www.ashm.org.au

Genital chlamydia–investigating the problem in Victoria

Jane Hocking, Macfarlane Burnet Institute for Medical Research and Public Health

Chlamydia trachomatis is a major public health issue in Victoria, being the most common bacterial sexually transmissible infection in the State. The number of notifications increased threefold in the eight years to 2001, up from 1287 in 1994 to 3977.[1]

Infection with chlamydia can lead to significant complications, particularly pelvic inflammatory disease, tubal infertility and ectopic pregnancy in women.[2] If left untreated, 10–40 per cent of chlamydia infection in women can lead to pelvic inflammatory disease, which may lead to infertility in up to 20 per cent of cases.[3] There is also evidence that up to 47 per cent of ectopic pregnancies are attributable to past chlamydia infection.[4,5] Further, infection can increase the risk of HIV transmission.[6]

These days, chlamydia is easily diagnosed with self-collected specimens such as urine and effectively treated with single dose treatments.[7,8] Chlamydia notification data do not provide an accurate picture of the number of people infected, however, because many people with the infection are asymptomatic. Up to 85 per cent of women and 40 per cent of men with the infection will not have symptoms.[9]

The Victorian Health Promotion Foundation (VicHealth) has funded the Macfarlane Burnet Institute to undertake, in cooperation with the Melbourne Sexual Health Centre, a chlamydia risk factor and prevalence survey of Victorian women aged 18–35 years. This Victorian Women's Health and Lifestyles Study aims to estimate the risk factors for, and prevalence of, genital chlamydia infection among the women and to assess the women's sexual health service use and needs.

The study will commence in March 2003. The researchers will recruit women through a random sample of the electronic White Pages, asking them to undergo a confidential telephone interview and to provide a urine specimen through the mail for chlamydia testing. The women will receive free treatment of any chlamydia infection. The Department of Molecular Microbiology at the Royal Women's Hospital will test all the urine specimens.

This unique study will be the first of its kind conducted in Australia and one of the few conducted internationally. This information will help inform the design of future chlamydia strategies, and it will provide valuable baseline data against which the performance of future strategies can be assessed.

The study will also provide women living in Victoria with the opportunity to be tested in the privacy of their own homes, inform them about sexually transmissible infection, and collect information about their sexual health service needs.

For further information about this study, contact Jane Hocking at the Macfarlane Burnet Institute (telephone 61 3 9282 2134; email hocking@burnet.edu.au) or check the institute's website at www.epi.burnet.edu.au/vwhls.html.

References

1. Division of Public Health. Surveillance of Notifiable Infectious Diseases in Victoria 2000. Melbourne: Department of Human Services, 2001.
2. Stamm WE. *Chlamydia trachomatis* infections of the adult. In: Holmes KK, Sparling PF, Mardh P-A, et al., eds. Sexually Transmitted Diseases. 3rd edn. New York: McGraw-Hill, 1999:407–22.
3. Westrom L, Eschenbach D. Pelvic inflammatory disease. In: Holmes KK, Sparling PF, Mardh P-A, et al., eds. Sexually Transmitted Infections. 3rd edn. New York: McGraw-Hill, 1999:783–809.
4. Coste J, Laumon B, Bremond A, et al. Sexually transmitted diseases as major causes of ectopic pregnancy: results from a large case-control study in France. Fertility and Sterility 1994;62:289–95.
5. Chow JM, Yonekura ML, Richwald GA, et al. The association between chlamydia trachomatis and ectopic pregnancy. A matched-pair, case control study. JAMA 1990;263(23):3164–7.
6. Anderson RM. Transmission dynamics of sexually transmitted infections. In: Holmes KK, Mardh P-A, Sparling PF, et al., eds. Sexually Transmitted Diseases. 3rd edn. New York: McGraw Hill, 1999:25–38.
7. Lau C-Y, Qureshi AK. Azithromycin versus doxycycline for genital chlamydial infections. A meta-analysis of randomised clinical trials. Sex Trans Dis 2002;29(9):497–502.
8. Morse SA. New tests for bacterial sexually transmitted diseases. Curr Opin Infect Dis 2001;14:45–51.
9. Miller WC. Screening for chlamydial infection. A model program based on prevalence. Sex Trans Dis 1998;25(4):201–10.

Immunisation update

Michele Sands, Prevention and National Health Priorities Section,
Department of Human Services
michele.sands@dhs.vic.gov.au

Data cited in this report are based on the Australian Childhood Immunisation Register (ACIR) Coverage Report. Table 1 presents immunisation coverage at 31 December 2002 for children aged 12–<15 months, 24–<27 months and 72–<75 months at 30 September 2002.

Only vaccines administered before 12 months of age were included in the coverage calculation for the first age group, and only those vaccines administered before 24 and 72 months of age were included in the coverage calculation for the second and third age groups . For a copy of the ACIR report listing immunisation coverage against individual vaccines for each Local Government Area, contact Michele Sands at michele.sands@dhs.vic.gov.au.

Table 1: Childhood Immunisation Coverage, by Local Government Area, Victoria, 31 December 2002

Age Group	% Fully Immunised	Local Government Area (LGA)	Total LGAs (% of LGAs)
12–<15 months	95+	Ararat (RC), Bass Coast (S), Buloke (S), Central Goldfields (S), Colac–Otway (S), Corangamite (S), Glenelg (S), Hindmarsh (S), Mildura (RC), Moyne (S), Northern Grampians (S), Queenscliffe (B), Southern Grampians (S), Strathbogie (S), Surf Coast (S), West Wimmera (S), Yarriambiack (S)	17 (22)
	90–94	Ballarat (RC), Banyule (C), Baw Baw (S), Bayside (C), Boroondara (C), Brimbank (C), Campaspe (S), Cardinia (S), Casey (C), Darebin (C), Delatite (S), Frankston (C), Glen Eira (C), Golden Plains (S), Greater Dandenong (C), Greater Geelong (C), Greater Shepparton (C), Hobsons Bay (C), Horsham (RC), Hume (C), Kingston (C), Knox (C), Loddon (S), Macedon Ranges (S), Manningham (C), Maribyrnong (C), Maroondah (C), Melbourne (C), Melton (S), Mitchell (S), Moira (S), Monash (C), Moonee Valley (C), Moorabool (S), Moreland (C), Mornington Peninsula (S), Nillumbik (S), Port Phillip (C), Pyrenees (S), South Gippsland (S), Stonnington (C), Wangaratta (RC), Warrnambool (C), Wellington (S), Whitehorse (C), Whittlesea (C), Wodonga (RC), Wyndham (C), Yarra (C), Yarra Ranges (S)	50 (64)
	85–89	East Gippsland (S), Gannawarra (S), Greater Bendigo (C), Hepburn (S), Indigo (S), LaTrobe (C), Mount Alexander (S), Murrindindi (S), Swan Hill (RC)	9 (12)
	80–84	Alpine (S)	1 (1)
	<80	Towong (S)	1 (1)
24–<27 months	95+	Ararat (RC), Colac–Otway (S), Corangamite (S), East Gippsland (S), Glenelg (S), Indigo (S), Moorabool (S), Moyne (S), Northern Grampians (S), Pyrenees (S), Southern Grampians (S), Warrnambool (C), West Wimmera (S), Yarriambiack (S)	14 (18)
	90–94	Ballarat (RC), Bass Coast (S), Baw Baw (S), Brimbank (C), Campaspe (S), Casey (C), Delatite (S), Greater Frankston (C), Gannawarra (S), Golden Plains (S), Greater Bendigo (C), Greater Geelong (C), Shepparton (C), Horsham (RC), Kingston (C), Knox (C), LaTrobe (C), Maribyrnong (C), Maroondah (C), Melton (S), Mildura (RC), Mitchell (S), Moira (S), Mornington Peninsula (S), Nillumbik (S), Queenscliffe (B), South Gippsland (S), Strathbogie (S), Swan Hill (RC), Wangaratta (RC), Wellington (S), Whitehorse (C), Whittlesea (C), Wodonga (RC), Wyndham (C)	35 (45)
	85–89	Banyule (C), Bayside (C), Boroondara (C), Buloke (S), Cardinia (S), Central Goldfields (S), Darebin (C), Glen Eira (C), Greater Dandenong (C), Hindmarsh (S), Hobsons Bay (C), Hume (C), Macedon Ranges (S), Manningham (C), Monash (C), Moonee Valley (C), Moreland (C), Murrindindi (S), Stonnington (C), Surf Coast (S), Towong (S), Yarra (C), Yarra Ranges (S)	23 (29)
	80–84	Alpine (S), Loddon (S), Mount Alexander (S)	3 (4)
	<80	Hepburn (S), Melbourne (C), Port Phillip (C)	3 (4)
72–<75 months	95+	Horsham (RC), Queenscliffe (B)	2 (3)
	90–94	Alpine (S), Ararat (RC), Buloke (S), Campaspe (S), Central Goldfields (S), Gannawarra (S), Indigo (S), Mitchell (S), Moyne (S), Northern Grampians (S), Swan Hill (RC), Towong (S), Wangaratta (RC), Wellington (S), Wodonga (RC)	15 (19)
	85–89	Ballarat (C), Banyule (C), Boroondara (C), Cardinia (S), Casey (C), Colac-Otway (S), Glenelg (S), Golden Plains (S), Greater Bendigo (C), Greater Geelong (C), Greater Shepparton (C), Hume (C), Knox (C), Loddon (S), Macedon Ranges (S), Maroondah (C), Melton (S), Mildura (RC), Moreland (C), Nillumbik (S), South Gippsland (S), Warrnambool (C), Whitehorse (C), Whittlesea (c), Wyndham (C), Yarriambiack (S)	26 (33)
	80–84	Bass Coast (S), Baw Baw (S), Brimbank (C), Corangamite (S), Darebin (C), East Gippsland (S), Frankston (C), Glen Eira (C), Hepburn (S), Kingston (C), LaTrobe (C), Manningham (C), Melbourne (C), Moira (S), Monash (C), Moonee Valley (C), Moorabool (S), Southern Grampians (S), West Wimmera (S), Yarra (C), Yarra Ranges (S)	21 (27)
	<80	Bayside (C), Delatite (S), Greater Dandenong (C), Hindmarsh (S), Hobsons Bay (C), Maribyrnong (C), Mornington Peninsula (S), Mount Alexander (S), Murrindindi (S), Port Phillip (S), Pyrenees (S), Stonnington (C), Strathbogie (S), Surf Coast (S)	14 (18)

Surveillance report

The Department of Human Services receives notifications of infectious diseases from medical practitioners and laboratories. These notifications prompt investigation and action to control infectious diseases in Victoria. For some diseases, investigation is initiated on the basis of clinical suspicion in the absence of laboratory confirmation. Prompt notification of infectious diseases is an integral component of prompt public health action. ***Please do not delay. To notify, call 1300 651 160 or fax 1300 651 170.***

This section includes a summary of infectious disease notifications received until 31 December 2002. The Communicable Diseases Section, Department of Human Services, produced the report in cooperation with the Victorian Infectious Diseases Reference Laboratory and the Macfarlane Burnet Institute for Medical Research and Public Health. We gratefully acknowledge the contribution of the Microbiological Diagnostic Unit of the University of Melbourne and the Melbourne Sexual Health Centre.

Table 14 includes historical comparisons of selected diseases for the period July–December 2002 with 2001 data at both the State and regional levels. Summary data at Local Government Level for the diseases listed are available from Greg Mathews, Communicable Diseases Section (telephone 61 3 9637 4108). There were no notifications of anthrax, Australian arboencephalitis, botulism, diphtheria, Japanese encephalitis, Kunjin virus, plague, poliomyelitis, rabies, tetanus, viral haemorrhagic fevers or yellow fever in this reporting period.

For comments or queries related to data on sexually transmissible diseases, contact the Communicable Diseases Section (telephone 61 3 9637 4126). For HIV/AIDS enquiries, contact Rebecca Guy or Dr Margaret Hellard, Epidemiology and Social Research Unit, Macfarlane Burnet Institute for Medical Research and Public Health (telephone 61 3 9282 2290).

Fortnightly surveillance data from the Victorian Infectious Diseases Reference Laboratory are available at http://www.dhs.vic.gov.au/vidrl/. All data in this report are provisional and subject to revision as further information becomes available. You can find general information related to the control of infectious diseases (The Blue Book) on line at http://www.dhs.vic.gov.au/phd/hprot/inf_dis/bluebook/index.htm.

Enteric diseases

Outbreaks of gastrointestinal illness

There were 160 outbreaks of gastrointestinal illness reported to the Department of Human Services between July and December 2002. Of these, 114 occurred between October and December, accounting for 51 per cent of all outbreaks in 2002. Notably, 144 of the 160 outbreaks (90 per cent) were viral in nature, with Norovirus confirmed in 91 outbreaks (Table 1).

Table 1: Outbreaks of Gastrointestinal Illness, Victoria, July–December 2002

Setting	Outbreaks	Persons Affected	Pathogen/Toxin (Number of Outbreaks)
Restaurant, reception, other food premises, specific food	13	272	Norovirus (5) *Salmonella* Typhimurium 135 (1) Suspected viral (3) Suspected butterfish (1) Unknown (2)
Aged/disability/health care institution	126	3153	Norovirus (77) *Clostridium perfringens* (2) Suspected viral (43) Unknown (4)
Recreation setting, holiday, camp	6	274	Norovirus (3) Rotavirus (1) Suspected viral (1) Unknown (1)
Children's service or school	6	139	Rotavirus (3) Suspected viral (3)
Other institution	1	60	Norovirus (1)
Family/social gathering	8	113	Norovirus (5) Suspected viral (2) Unknown (1)
Total	160	4011	Norovirus (91) Rotavirus (4) *Clostridium perfringens* (2) *Salmonella* Typhimurium 135 (1) Suspected viral (53) Suspected butterfish (1) Unknown (8)

Viral gastroenteritis in health and aged care facilities

Of the 126 outbreaks notified in health and aged care facilities across the State between July and December 2002, 120 (95 per cent) were viral in nature, with Norovirus confirmed in 77 outbreaks. The outbreaks occurred across Victoria and affected more than 3000 residents and staff, with a number of residents hospitalised.

Investigations revealed a number of the outbreaks were possibly linked, with ill residents being transferred across facilities, and permanent and agency health care staff working across multiple sites. Person-to-person transmission was suspected. Intervention measures implemented at the affected institutions included: the closure of wards, including intensive care units, nursing homes and hostels; the clean-up of premises; the isolation and transfer of patients; and the exclusion of ill staff.

The increase in outbreak notifications from these facilities may also reflect a greater awareness of notification processes. The Communicable Diseases Section has worked closely with the Department's Aged Care branch to highlight the importance of notifying outbreaks and infection control issues in these institutions.

A viral gastroenteritis alert was circulated to all health and aged care institutions in October 2002, highlighting the increased incidence of the illness and outlining the steps to appropriately manage gastroenteritis outbreaks in institutional settings.

Two outbreaks of *Clostridium perfringens* in an aged care facility

In early August 2002, a reference laboratory notified the Department of a suspected gastrointestinal outbreak in a nursing home in northern Victoria. Fifteen of the home's 69 residents were ill with diarrhoea and abdominal pains. Onset of illness was closely clustered in a one-hour period for all but one resident, who became ill six hours before the others. Cases occurred in two wards, and the duration of illness was approximately 11–12 hours.

Local Government officers visited the nursing home, inspected the kitchen, food preparation and service procedures, and supervised a clean-up. The nursing home was attached to a hospital, at which a central kitchen prepared all the food for the nursing home residents, hospital patients, hospital staff and local Meals on Wheels recipients. No cases of illness were reported in the hospital or through the Meals on Wheels service.

The investigating team obtained menus for the day before onset of illness, as well as details of the nursing home residents' choices for each meal. They could not, however, establish any links with any individual food item.

The investigation identified concerns with the preparation of gravy, which was made in large quantities from meat stock, then allowed to cool at room temperature before being placed into the fridge. One batch of gravy might have been used over lunch and dinner, and possibly stored for use the next day. It appears that gravy was added as an accompaniment to many meals, even though a nursing home resident might not have specifically requested it.

Clostridium perfringens and *Clostridium enterotoxin* were detected in one faecal specimen. This finding, together with the pattern of illness and identified food preparation deficiencies, suggested the outbreak might have been due to inadequate food handling practices. The investigating team instructed management to revise their preparation procedures and review their Food Safety Program.

A second outbreak of gastroenteritis at this premise was notified to the Department in October 2002. Again, illness was confined to the nursing home residents, with no illness reported in hospital residents or staff, or Meals on Wheels recipients. Also similar to the earlier outbreak, the onset of illness was closely clustered in time, suggesting a food-borne toxin. Twenty-three of the 85 nursing home residents reported illness.

Further site investigations identified major noncompliance with the premise's Food Safety Program and continuing inadequate food handling practices. Issues identified during the previous outbreak–including the preparation of the gravy and the inadequate recording of all food items consumed by residents– had not been satisfactorily rectified. *Clostridium* enterotoxin was detected in three faecal specimens.

Environmental health officers from Local Government and the Department's Food Safety Unit and regional office continued to investigate and monitor the premise and its compliance with its Food Safety

Program. In addition to implementing immediate changes in food safety processes, the Department and Local Government held meetings with hospital management and the Food Safety auditor and identified other issues that required immediate action. No further outbreaks at the facility have been reported.

Antibiotic-resistant *Salmonella* Typhiumurium 135

In early August 2002, the Department was notified of a case of *Salmonella* Typhimurium 135 (*S*Tm 135) with tetracycline (TET) and trimethoprim (TRI) resistance. The case had eaten at an Asian restaurant with a group of friends on the day before the onset of illness. Another person in the group was ill with the same symptoms at the same time and was later confirmed as a case with the same antibiotic-resistant *Salmonella* isolated.

In the proceeding weeks, three other groups were notified as reporting illness following their consumption of meals at the same restaurant. Twelve of 19 people from these four groups experienced illness, with seven cases confirmed as having *S*Tm 135 (TET, TRI). The first three groups all ordered the same banquet meal, while the fourth group selected dishes from the menu. Mixed spring rolls (filled with vegetables, chicken or seafood), prawn toast and fried rice were the only dishes common to all meals.

Staff from the local council, the Department and the Microbiological Diagnostic Unit visited the restaurant and collected samples of raw ingredients, including chicken, vegetables, herbs and sauces, and prepared spring rolls. They also collected a range of environmental swabs. All food samples were negative for *Salmonella*–except the raw and marinated chicken, which were positive for *Salmonella* Sofia–and all environmental swabs were negative.

The proprietors were questioned closely on food processes. The council supervised an immediate clean-up and disposal of high-risk foods, and the cleaning and sanitising of the premise before opening on the next two days. The premise was then closed for cleaning and sanitising of all areas, including storage areas, cool rooms and freezers.

The investigating team could not determine the source of the *S*Tm 135, although they identified items of concern in the spring roll preparation. The rolls were made in large batches with fillings made from raw chicken, vegetables or seafood. The rolls were then frozen until ordered, when they were fried. The prawn toast was made in the same way. It is possible that the cooking process did not always heat the spring rolls or prawn toasts to a core temperature high enough to destroy any bacteria present.

The proprietors were advised to improve the cooking process and educated on other food handling and cross-contamination issues. Further, food handlers at the restaurant were instructed to undergo council training in food hygiene.

The investigating team obtained booking lists for the restaurant for the days on which the affected groups had dined there. They did not identify other reports of illness, however, which supports the theory of intermittent rather than ongoing contamination within the premise.

Cholera

The one case of cholera notified in the third quarter was an elderly gentleman who had returned from visiting family in Vietnam. He was unwell before travelling home but did not have diarrhoea on the return journey. *Vibrio cholerae* 01 Inaba was isolated from a faecal specimen. Family and travel companions were screened but no further cases were detected.

Blood-borne viruses

Hepatitis B–acute

Of the 453 notifications of hepatitis B received between October and December 2002, 42 were classified as acute cases–down 21 per cent from the 53 acute notifications in the same period in 2001. Of these, 22 (52 per cent) were male with a median age of 31 years (range: 17 – 81); 20 were female with a median age of 22 years (range: 18 – 44).

The total number of notifications of acute hepatitis B in 2002 is provisionally 195, compared with 196 in 2001. The 2001 total demonstrated a 58 per cent increase from 2000, and the high level was maintained throughout 2002 despite some control measures being put in place.

Injecting drug use remained the main risk factor (62 per cent) in the fourth quarter of 2002 (Table 2). Notably, the number of notifications in females aged 20–24 years exceeded, for the first time, the number of notifications in males. The reasons are not readily

Table 2: Reported Risk Factors, Acute Hepatitis B Notifications, Victoria, October–December 2002

Parameter	Number (% of Total)
Risk factor	
Injecting drug use	22 (52)
Injecting drug use + heterosexual contact	4 (10)
Heterosexual contact	13 (31)
Homosexual contact	1 (2)
No risk identified	2 (5)
Total	*42 (100)*
Country of birth	
Australia	33 (79)
Overseas	4 (10)
Not stated	5 (11)
Total	*42 (100)*

Table 3: Reported Risk Factors, Newly Acquired Hepatitis C Notifications, Victoria, October–December 2002

Parameters	Number (% of Total)
Risk factors*	
Injecting drug use	33 (92)
In prison in previous two years	5 (14)
Sexual partner (hepatitis C positive)	5 (14)
Tattoo	2 (6)
Piercing	1 (3)
Country of birth	
Australia	19 (53)
Overseas	6 (17)
Not stated	11 (31)
Total	*36 (100)*

* More than one risk factor may be reported.

apparent and may reflect changes in screening practices.

Free hepatitis B vaccinations for injecting drug users via methadone providers and needle syringe programs were available for most of 2002. In late December, the free vaccine was further promoted–via a letter, laminated poster and flyers mailed to all needle syringe programs, methadone providers, and drug and alcohol services–in an attempt to increase the uptake. The agencies of the juvenile justice system have been provided with funding for hepatitis B vaccine.

Newly acquired hepatitis C

Enhanced surveillance for newly acquired hepatitis C was implemented early in 2001. Until mid-August 2002, a 10 per cent random sample of notifications were selected to follow up with diagnosing doctors, so as to identify unreported newly acquired cases within the sample. This was in addition to the follow-up of notifications of routinely notified newly acquired hepatitis C. The proportion of notifications found to be newly acquired was then extrapolated to estimate the total number of newly acquired cases notified that would be expected if underreporting did not occur. By this method it was estimated that between 4 – 5 per cent of hepatitis C notifications represent newly acquired infection.

This method of enhanced surveillance was replaced in September 2002. The Department is currently following up all cases falling into certain risk groups: namely, cases aged 20 years and under, prisoners and military personnel. It is important to recognise however that the proportion of cases notified as newly acquired infection under-represents the burden of newly acquired hepatitis C in Victoria.

Of the 970 notifications of hepatitis C in the fourth quarter of 2002, 36 (4 per cent) were classified as newly acquired. Twenty-one (58 per cent) of the newly acquired cases were males, with a median age of 30 years (range: 16–62 years). For the 15 females, the median age was 20 years (range: 16–39 years).

Injecting drug use was reported as a risk factor for 92 per cent of cases in the fourth quarter of 2002 (Table 3). Twenty cases (56 per cent) were diagnosed on the basis of seroconversion to hepatitis C virus in the previous 24 months.

Vaccine-preventable diseases

Invasive pneumococcal disease

The Department received 290 notifications of invasive pneumococcal disease (IPD) between 1 July and 31 December 2002: 170 males (58 per cent) and 120 females (42 per cent). This total represented a 24 per cent increase on the 233 cases for the same period in 2001.

Of the cases in 2002, 70 (24 per cent) were children aged less than 5 years and 133 (46 per cent) were adults aged 50 years and over. There were 12 reported deaths attributed to IPD, equating to a case fatality rate (CFR) of 4.1 per cent. No deaths were reported in children younger than 5 years; six occurred in persons aged 33 to 48 years and six occurred in persons aged 50 years and over (CFR = 4.5 per cent).

Only one of the persons who died had been vaccinated.

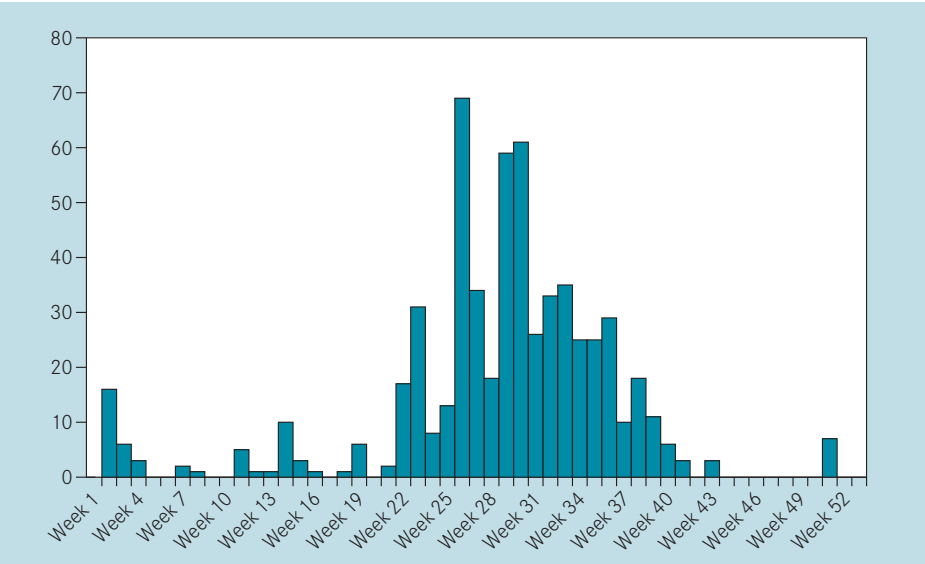
Serotype information was available for 241 cases (83 per cent), of which 95 per cent were types in, or related to, the 23-valent vaccine. Of those cases aged less than five years for which serotype information was known (n = 53), 90 per cent were due to types contained in, or related to, in the seven-valent vaccine. Fifteen cases were considered to be vaccine failures–all in persons aged over 50 years who had received the polysaccharide vaccine.

Laboratory-confirmed influenza

The Department received 403 notifications of laboratory-confirmed influenza between 1 July and 31 December 2002, compared with 175 notifications for the same period in 2001. Influenza A accounted for 358 cases (89 per cent), of which 80 per cent were type H3N2; the subtype was not specified for the remaining cases.

The 596 influenza cases notified in 2002 comprised 305 males (51 per cent) and 291 females (49 per cent). Of the total, 145 (24 per cent) were children aged 0–4 years and 81 (14 per cent) were adults aged 65 years and over. As expected, notifications were more frequent between June and September (Figure 1).

Figure 1: Laboratory-confirmed Influenza Notifications, by Surveillance Week, Victoria, January–December 2002



Measles

Six cases of measles were notified between July and December 2002, with two outbreaks detected between July and September. The index case for the first outbreak was a 22-year-old female who had no history of travel or known exposure to measles, but who had regularly visited a popular tourist location in the preceding weeks. Her 19-year-old sister later became ill. Both were born in England and had no history of measles vaccination.

The second outbreak involved three cases. The index case was a 23-year-old health care professional for whom the source of infection could not be determined. She transmitted infection to her 28-year-old boyfriend and 21-year-old sister. No cases had a history of measles vaccination and the source of infection was unknown.

The sixth case was an overseas-born child who arrived in Australia from an orphanage in southern Africa on the day of his rash onset. He had been unwell for three days before arrival and his vaccination status was unknown. He was negative for measles IgG (indicating no previous immunity) and wild virus was isolated on culture.

Other notifiable diseases

Legionellosis

Forty-seven cases of legionellosis were reported between July and December 2002, compared with 44 cases in the same period in 2001. Of the 2002 cases, 20 were *Legionella pneumophila*, 15 were *L. pneumophila* serogroup 1, eight were *L. longbeachae*, three were not specified and one was *L. micdadei.* Annual notifications of legionellosis continued to decline, with a total of 107 cases in 2002 compared with 121 in 2001.

Three cases of *L. pneumophila* with a link to the Brunswick area were reported over a two-week period in late August and early September 2002. Clinical presentations for the cases were similar, with a particularly severe course. There were two fatalities (one death was unrelated to the pneumonia) and the third patient required a prolonged stay in an intensive care unit. Two cases worked in the area and one was a local resident. Extensive environmental investigations did not reveal the source of infection.

A case of *L. longbeachae* was notified in a 51-year-old woman from northern Victoria. She recalled potting plants in the week before the onset of her illness. Samples of potting mix were positive for L. longbeachae, but confirmation of the potting mix as the source of infection was not obtained because there was no human isolate for comparison.

Three cases of Legionnaires' disease were notified in late October 2002 after having been confirmed by *Legionella* urinary antigen testing. All three cases were adult males who had been in the Clayton area during their incubation periods: two were workers in the area while one was a local resident. The investigating team conducted an extensive environmental investigation of cooling towers in the area to disinfect these sources and test for *Legionella* bacteria. Six cooling towers tested positive for *Legionella*, with five showing the same serogroup as that of the cases (*L. pneumophila* serogroup1). No further cases were reported.

Invasive meningococcal disease

The Department received notification of 207 cases (4.3 per 100,000 population) of invasive meningococcal disease in 2002–a 27 per cent increase on the 163 cases notified in 2001. Serogroup C continued to be an important and more frequent cause of disease, accounting for 42 per cent of all cases in 2002 compared with 34 per cent in 2001. The proportion of serogroup C cases was greater in older teenagers and adults than in younger children (Table 4).

While there was the expected rise in cases in mid and late winter, there was no particular seasonal serogroup pattern.

An outbreak of meningococcal disease occurred in southern Victoria in mid-December 2002, with five cases of meningococcal disease reported within one week. Four cases were confirmed as serogroup C disease and were associated with attendance at a local nightclub on the same evening. The fifth case was diagnosed with serogroup B disease. In response to the outbreak, a mass vaccination program was undertaken of all residents aged 1–5 years and 15–30 years over a two-day period

Table 4: Invasive Meningococcal Disease Notifications, by Serogroup and Age Group, Victoria, January–December 2002

Serogroup	Aged 0–4 Years	Aged 5–14 Years (%)	Aged 15–29 Years (%)	Aged 30 Years and over (%)	Total (%)
Serogroup B	22 (39)	6 (11)	22 (39)	6 (11)	56 (27)
Serogroup C	10 (11)	10 (11)	41 (47)	27 (31)	88 (42)
Other serogroup	2 (20)	0	3 (30)	5 (50)	10 (5)
Untypable	4 (29)	2 (14)	4 (29)	4(29)	14 (7)
Clinical diagnosis	10 (26)	10 (26)	10 (26)	9 (23)	39 (19)
Total	*48 (23)*	*28 (14)*	*80 (39)*	*51 (25)*	*207 (100)*
Deaths (CFR %)	2 (4.1)	0	5 (6.3)	6 (11.8)	13 (6.3)

Mycobacterial infections

Leprosy

One case of leprosy was notified: a 55-year-old woman born in the Philippines who arrived in Australia in 1986 and lives in regional Victoria. She presented to her general practitioner with painless burns to her hands in March and May 2002. She described a history of 'arthritic-like' symptoms in her hands since 1999. She was referred to neurologists at St Vincent's Hospital, where she was found to have advanced neuropathy and distal motor loss. A skin biopsy showed changes consistent with leprosy. She was commenced on anti-microbial therapy with a minimum expected duration of treatment of six months. Contact tracing was not indicated in this case.

Vector-borne diseases

Malaria

Three linked cases of malaria due to infection with *Plasmodium vivax* were notified in November 2002. The three cases were aged 51–59 years and had recently returned from volunteer work building water tanks in a remote area of Papua New Guinea (New Britain). All three were hospitalised. Each case had received travel medicine advice from a different clinic, which in each case advised doxycycline as malaria prophylaxis.

World Health Organisation guidelines recommend mefloquine as the appropriate drug for this region. Interestingly, the cases' five travelling companions were not infected. They had been prescribed combination therapy, and all had slept under nets in screened huts and regularly used mosquito repellent.

In the last six months of 2002, the Department was notified of 11 cases of vivax malaria in travellers to Papua New Guinea. Nine cases had taken doxycycline alone as chemoprophylaxis. Noncompliance was an issue with some cases, but not all.

The Department has no information on resistance to doxycycline in Papua New Guinea, but it is opportune to remind prescribers that the World Health Organisation still recommends mefloquine as the first-line chemoprophylaxis for travellers to that country. Where mefloquine is contraindicated or not tolerated, doxycycline is considered a reasonable alternative, but patients should be advised to continue use for the full four weeks after their return to Australia.

Up-to-date information on recommended anti-malarial chemoprophylaxis for Papua New Guinea and other countries can be obtained from specialist travel medicine clinics or the World Health Organisation publication, *International Travel and Health 2002* (available at the website http://www.who.int/ith/).

Sexually transmissible infections

Human immunodeficiency virus (HIV) infection

There were 63 new HIV notifications (60 males and three females) in Victoria during the fourth quarter of 2002, representing a 31 per cent increase on the 48 notifications in the previous quarter. The median age of those notified was 36 years (range: 24–76 years). Of the 57 males in a known exposure category, 44 (77 per cent) reported male-to-male sexual contact (Table 6).

In total in 2002, there were 234 HIV notifications in Victoria: 209 males (89 per cent), 23 females (10 per cent) and two transgender individuals (1 per cent). This total was a seven per cent increase on the 218 notifications in 2001, and it is the highest annual total of HIV notifications since 1994.

Of the 209 males notified during 2002, 162 (76 per cent) reported a history of male-to-male sexual contact (Table 6)– an 11 per cent increase on 146 in 2001. The number of males reporting heterosexual contact alone was steady at 15, compared with 14 in 2001.

The number of new notifications among females again increased in 2002, with 23 females notified compared with 21 in 2001, 20 in 2000 and 12 in 1999. Twelve females (52 per cent) reported heterosexual contact as their only exposure. Ten females (43 per cent) were born in a high prevalence country and the remaining individual reported injecting drug use (4 per cent) (Table 6).

Those with newly acquired HIV or incident infection provide a picture of who is presently affected by the HIV epidemic. Such individuals are identified on the basis of a previous negative HIV test and/or a

Table 5: Notifications of HIV, by Age Group, Victoria

Age Group	October–December 2002		January–December 2002		Cumulative Total 1983–2002		
	Males	Females	Males	Females	Males	Females	Total*
0–12	1	0	1	0	35	12	47
13–19	0	0	1	1	112	13	126
20–29	11	0	45	6	1584	112	1711
30–39	26	1	96	11	1643	82	1735
40–49	15	1	40	2	711	32	745
50–59	5	1	20	1	270	15	286
60+	2	0	6	2	86	12	98
Unavailable	0	0	0	0	101	1	117
Total	*60*	*3*	*209*	*23*	*4542*	*279*	*4865*

* Includes 19 persons for whom sex was reported as transgender and 25 persons for whom sex was not specified.

Table 6: Notifications of HIV, by Exposure Category, Victoria

Exposure Category	October–December 2002		January–December 2002		Cumulative Total 1983–2002		
	Males	Females	Males	Females	Males	Females	Total*
Male homosexual/bisexual	44	–	162	–	3674	–	3692
Male homosexual/bisexual and injecting drug user	2	–	8	–	216	–	219
Injecting drug user	1	0	4	1	136	57	195
Heterosexual	3	2	15	12	188	142	330
Person from specified country#	6	1	15	10	89	53	142
Haemophilia/related disorder	0	0	0	0	101	1	102
Transfusion recipient	0	0	0	0	20	15	35
Other	1	0	2	0	10	9	19
Unavailable	3	0	3	0	108	2	132
Total	*60*	*3*	*209*	*23*	*4542*	*279*	*4865*

* Includes 19 persons for whom sex was reported as transgender and 25 persons for whom sex was not specified.
# Persons from countries with a high prevalence (greater than 1 per cent) of HIV.
Note: January–December 2002 notifications include two persons for whom sex was reported as transgender.

Table 7: Notifications of HIV, by Time since Last Negative Test or Seroconversion Illness, Victoria

Time between HIV Diagnosis and Negative Test and/or Seroconversion Illness	October–December 2002			January–December 2002		
	Males	Females	Total*	Males	Females	Total*
Less than one year	18	0	18	74	2	77
One year to less than three years	3	0	3	19	0	20
Three or more years	10	1	11	18	2	20
No previous negative test or seroconversion illness	22	2	24	91	20	111
Unavailable	7	0	7	7	0	7
Total	*60*	*3*	*63*	*209*	*23*	*234*

* Includes two persons for whom sex was reported as transgender.

seroconversion illness within the 12 months preceding HIV diagnosis. Eighteen individuals (all males) were notified with incident HIV infection during the fourth quarter of 2002. In total in 2002, 77 individuals fulfilled the criteria of incident infection–an increase of 20 per cent from the 64 incident infections in 2001.

Chlamydia infections

The Department received 1136 notifications of *Chlamydia trachomatis* in the fourth quarter of 2002, representing a nine per cent increase on the 1039 notifications in the same period in 2001. The age and sex distributions remained unchanged, with the greatest burden of disease in the age group of 20–24 years (Table 8).

The collection of risk factor information from clinicians enhances the passive notification system. In the fourth quarter of 2002, 532 (47 per cent) questionnaires were returned. Table 9 outlines case characteristics of the population for whom enhanced surveillance information is known. These data should be interpreted with caution as they are derived from the notifying clinician, not the patient directly. Patients may not always disclose information about sexual contact accurately.

Gonorrhoea

The Department received 200 notifications of *Neisseria gonorrhoeae* in the fourth quarter of 2002, compared with 175 notifications in the same period in 2001. Of these, 182 (91 per cent) were males and 18 (9 per cent) were females. Table 10 outlines

Table 8: Notifications of *C. trachomatis* in Victoria, by Age Group and Sex, Victoria

Age group	October–December 2002			January–December 2002		
	Male	Female	Total	Male	Female	Total
0–4 years	0	0	0	2	1	3
5–9 years	0	0	0	1	0	1
10–14 years	1	5	6	1	12	13
15–19 years	30	167	197	121	591	712
20–24 years	170	239	409	604	1111	1715
25–29 years	119	111	230	487	555	1042
30–34 years	86	65	151	375	279	654
35–39 years	44	21	65	178	118	296
40–44 years	21	14	35	120	68	188
45–49 years	15	4	19	77	32	109
50–54 years	9	0	9	43	11	54
55–59 years	7	1	8	19	4	23
60–64 years	5	1	6	11	2	13
65–69 years	0	1	1	4	1	5
70–74 years	0	0	0	3	0	3
75–79 years	0	0	0	0	0	0
80-84	0	0	0	1	2	0
85+	0	0	0	0	0	0
Total	*507*	*629*	*1136*	*2049*	*2787*	*4840*

Table 9: Enhanced Epidemiological Data Received for Chlamydia Notifications, Victoria, October–December 2002

Data	Male	Female	Total
Reported sexual partner			
Male	62	247	309
Female	166	7	173
Unknown/not stated	27	23	50
Total	*255*	*277*	*532*
Reported Partner type			
Regular partner	103	165	268
Casual partner	115	58	173
Sex worker	6	6	12
Unknown/not stated	31	41	72
Total	*255*	*277*	*532*
Where infection acquired			
Victoria	200	235	435
Interstate	9	7	16
Overseas	23	10	33
Unknown/not stated	23	25	48
Total	*255*	*277*	*532*

the age and sex distributions. Of the third quarter notifications in 2002, the median age of males was 34 years (range: 17–72 years) and the median age of females was 30 years (range: 14–59 years).

The notifying clinician provides the Department with risk factor information on the case. Enhanced surveillance information was obtained for 88 per cent (n =176) of notifications in the fourth quarter of 2002.

For males, information on the sexual partner was known for 132 cases (73 per cent), of whom 71 per cent (n = 94) reported a male partner and 29 per cent (n = 38) reported a female partner. Of the143 male cases who knew how they acquired their infection, 69 per cent (n = 99) reported a casual partner as the source, 25 per cent (n = 36) reported a regular partner and 6 per cent (n = 8) reported a sex worker or client (where the case was a sex worker).

For the 144 cases who knew where they acquired their infection, the breakdown was 85 per cent (n = 122) in Victoria, 10 per cent (n = 15) overseas and 5 per cent (n = 7) interstate.

For the 18 female cases, 17 reported having acquired their infection from a male partner. The sex of the partner was unknown for one case. Eight of the female cases reported acquiring their infection from a casual partner, four from a regular partner and four from a client (where the case was a sex

Table 10: Gonorrhoea Notifications, by Age Group and Sex, Victoria

Age Group	October–December 2002			January–December 2002		
	Male	Female	Total	Male	Female	Total
0–4	0	0	0	0	0	0
5–9	0	0	0	0	0	0
10–14	0	1	1	2	2	4
15–19	3	2	5	19	9	28
20–24	34	3	37	100	16	116
25–29	26	3	29	137	15	152
30–34	37	1	38	158	12	170
35–39	31	3	34	131	6	137
40–44	15	1	16	81	5	86
45–49	22	0	22	45	2	47
50–54	4	2	6	23	2	25
55–59	5	2	7	19	2	21
60–64	2	0	2	6	1	7
65–69	2	0	2	3	1	4
70–74	1	0	1	2	0	2
75–79	0	0	0	0	0	0
80–84	0	0	0	0	0	0
85+	0	0	0	1	0	1
Unknown	0	0	0	0	0	0
Total	*182*	*18*	*200*	*727*	*73*	*800*

worker). This source information was unknown for two of the cases. Information about the place of acquisition of infection was known for 17 cases, of which 13 (76 per cent) acquired infection in Victoria.

Testing for antibiotic susceptibility is currently only possible if *N. gonorrhoeae* is isolated by culture. In the fourth quarter of 2002, sensitivity-testing results were received on 159 isolates (Table 11). Resistance to ciprofloxacin was identified in 26 notifications (23 males and three females).

Infectious syphilis

There were 27 cases of infectious syphilis in 2002, compared with 16 cases in 2001. In the fourth quarter of 2002, eight cases were reported–seven males and one female–compared with two cases in the same period in 2001.

Of the eight cases in the fourth quarter of 2002, four were primary infections, two were secondary infections and two were early latent infections. Five of the cases were from metropolitan regions, two were from rural regions and the region of residence of the eighth case was unknown. The median age was 37 years (range: 26–57 years).

Of the seven cases who knew where they acquired syphilis, four (57 per cent) acquired their infection in Victoria and three (43 per cent) acquired their infection overseas.

Three of the seven male cases had male partners and four had female partners. The female case had a male sexual partner. Six male cases reported acquiring their infection from a casual partner; the partner of the seventh male case was unknown. The female case reported having acquired her infection from a regular partner.

Comment

These data summaries indicate increasing levels of sexually transmissible infections such as HIV/AIDS, gonorrhoea, syphilis and chlamydia in the Victorian community.

With respect to HIV, there are many possible reasons for these increases including "safe sex fatigue", optimism about HIV resulting from the availability of antiretroviral drugs, and optimism relating to efforts to develop vaccines against HIV. The increase may indicate a reduction in safe sex practices both in the general community and the gay community.

The Department of Human Services has implemented a number of initiatives, in consultation with the community and with the Ministerial

Table 11: Sex, Sex of Partner and Place of Acquisition of Ciprofloxacin- and Ceftriaxone-resistant Isolates of *N. gonorrhoeae*, Victoria, October–December 2002

Sex	Sexual Partner	Where Acquired	Ciprofloxacin-resistant	Less sensitive to Ciprofloxacin	Ciprofloxacin-sensitive	Total*
Female	Male partner	Overseas	0	0	2	2
		Victoria	3	0	5	8
		Interstate	0	0	0	0
		Unknown	0	0	0	0
	Unknown	Overseas	0	0	0	0
		Victoria	0	0	0	0
		Interstate	0	0	0	0
		Unknown	0	0	0	0
Total female			3	0	7	10
Male	Female partner	Overseas	11	1	1	13
		Victoria	2	1	16	19
		Interstate	0	0	1	1
		Unknown	1	0	0	1
	Male partner	Overseas	0	0	1	1
		Victoria	0	0	68	68
		Interstate	0	0	2	2
		Unknown	0	0	6	6
	Unknown	Overseas	0	0	2	2
		Victoria	4	1	12	17
		Interstate	1	0	0	1
		Unknown	4	0	13	17
Total male			23	3	122	148
Total			26	3	129	158

*Excludes one isolate that was not viable.

Advisory Committee on AIDS, Hepatitis C and Related Diseases, in an effort to reduce the rates of sexually transmissible infections.

In February 2001 a range of new initiatives were announced. These initiatives were called the HIV Action Plan and included projects in the fields of Education and Prevention, Research and Surveillance, and Sexual Health Testing. More recently, three state strategies addressing HIV/AIDS, hepatitis C and chlamydia, have been developed and are currently being implemented in an effort to reduce disease transmission rates. In addition, other new initiatives include expanded testing and treatment at gay venues, establishment of a new multicultural HIV/AIDS service and the Victorian Community Chlamydia Awareness Campaign. A key activity of the Department in 2003 will be oversight of the implementation of these strategies, which will require input from the whole of government and the community sector if they are to be successful.

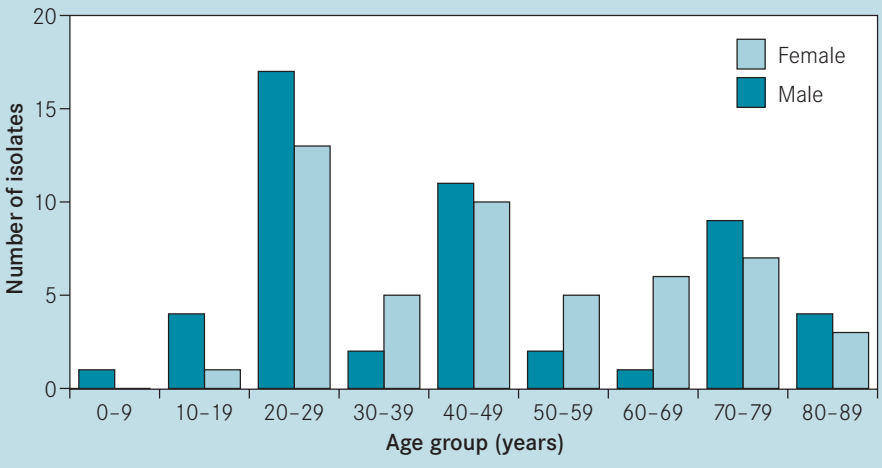
Mycobacterium Reference Laboratory report for April–September 2002

Because no data were published in December 2002, this report covers the period 1 April to 30 September 2002. Most specimens (both primary and referred) and isolates are from Victorian patients. The majority of non-Victorian specimens originated in the Northern Territory and the Solomon Islands.

Table 12: *Mycobacterium* spp. Isolates received at the Mycobacterium Reference Laboratory, 1 April – 30 September 2002

	Total *M. tb* Isolates	New Victorian *M. tb* Isolates	Non-*M. tb* Isolates	Negatives	Total
Primary specimens					
April	10	3	17	397	424
May	16	9	25	555	596
June	28	6	17	470	515
July	20	8	18	550	588
August	13	2	19	477	509
September	20	5	13	487	520
Referred specimens					
April	23	9	54		77
May	26	16	50		76
June	19	8	49		68
July	54	15	50		104
August	19	11	53		72
September	22	9	39		61
Total	270	101	404	2936	3610

Figure 3: New *M. tuberculosis* Isolates from Victorian Residents, by Age Group and Gender, Victoria, 1 April – 30 September 2002



Comments

- *M. kansasii* was isolated from pulmonary specimens of five elderly patients between April and June 2002: one male and four females. Three patients had multiple isolations and one patient was from the Philippines but seen in a Victorian hospital. Between July and September, *M. kansasii* was isolated for the second time from the right index finger of a 26-year-old male. It was first isolated in December 2001. *M. kansasii* was also isolated from sputum specimens of three males: two elderly and one in his thirties. One of the elderly males had multiple isolations over a three-week period. An elderly female who had mixed cultures of *M. kansasii* and *M. avium* complex isolated from sputa in May had the same organisms re-isolated from a sputum specimen.
- *M. fortuitum* was isolated from a leg wound of a 22-year-old male with osteomyelitis of the left tibia.
- *M. marinum* was recovered from four patients: a 62-year-old male with an infected index finger; a 24-year-old male with a chronic subcutaneous lesion on one hand; an 11-year-old girl with nodules on one leg following trauma during a holiday in Queensland; and a 10-year-old child still with a knee wound two months after injury on a wooden pier.
- *M. ulcerans* polymerase chain reaction was requested for 47 specimens between April and June 2002. The 11 positive results were from five patients, of whom all were new cases. The results were all confirmed by culture.

Table 13: Extrapulmonary *M. tuberculosis* Isolates and Resistant Isolates, Victoria, April–September 2002

	April	May	June	July	August	September
Pulmonary	4 (1 also urine)	11	9 (1 also urine)	14	10	4
Extrapulmonary	8	14	5	9	3	10
Extrapulmonary site details	Lymph node (x4) Pleural tissue (x1) Pleural biopsy (x1) Neck swab (x2)	Lymph node (x8) Pericardium (x1) Hand tissue (x1) Bone (x1) Back lesion (x1) Disc (x1) Tibial cortex (x1)	Lymph node (x3) Pleural fluid (x1) Omentum (x1)	Lymph node (x4) Pleural fluid (x1) Paravertebral mass (x1) Neck biopsy (X1) Neck aspirate (x1) Urine (x1)	Lymph node (x 2) Neck tissue (x1)	Lymph node (x5) Foot wound (x2) Foot tissue (x1) Back lesion (x1) Neck lump (x1)
Resistance		1 x resistance to Isoniazid 1 x resistance to Pyrazinamide	2 x resistance to Isoniazid, Rifampicin and Streptomycin		3 x resistance to Isoniazid	1 x resistance to Isoniazid and Streptomycin

Between July and September, polymerase chain reaction was requested from 59 specimens, including 11 specimens from four different wildlife sources (a possum and potoroos). In this period, there were 20 positive results, with 15 being from 12 patients, of whom seven were new cases. The remaining five positive results were from wildlife, including the liver and spleen of one potoroo. The results from all new cases were confirmed by culture, except for one positive result, which was obtained from paraffin-embedded tissue.

- *M. chelonae* was isolated from the hand lesion of a 63-year-old female.

Between April and June 2002, molecular identifying techniques were used to identify or confirm identification of 41 isolates, including one of *M. shimodei* from three different patients, *M. heckeshorneuse* from two patients and *Tsukamurella tyrosinosolvens*. Mycobacterium-generic polymerase chain reaction was performed on 23 specimens, including 17 paraffin-embedded tissues, three swabs, three cerebrospinal fluid specimens and six fresh tissues. *M. avium* was identified from a paraffin-embedded tissue and swab from the same patient, and *M. marinum* was identified from a fresh tissue specimen.

Between July and September 2002, the same techniques were used to identify or confirm identification of 46 isolates, including *M. lentiflavium* from two patients and one each of *M. heckeshorneuse*, *M. asiaticum* and *M. simiae*. Five isolates were nonmycobacterial, including *Nocardia nova*, *Streptomyces* sp. and *Tsukamurella* sp. Mycobacterium-generic polymerase chain reaction was performed on 25 specimens, including 15 paraffin-embedded tissues, five swabs, three sputa and two fresh skin biopsies. *M. tuberculosis* complex and *M. gilvium* were detected in two paraffin-embedded specimens, *M. intracellulare* and *M. kansasii* were detected in two sputa, and *M. chelonae* was detected in one swab specimen.

Errata

The editors apologise for the following errors in issues 2 and 3 of volume 5 of the *Victorian Infectious Diseases Bulletin:*

1. In the article 'Rising HIV Notifications in Victoria 2001' in volume 5, issue 2, see table 1, column 7: the percentage of males should have read 88.5, not 93.5, and the percentage of females should have read 10.5, not 5.6. Also see table 3, column 2: the 1993 HIV testing figures for 1993 should have read 61,580 for males, 55,808 for females, 63,370 unavailable and 119,831 in total.
2. In the HIV report (page 54) in volume 5, issue 3, see table 8: the first row is extraneous and the correct data are in the second row.

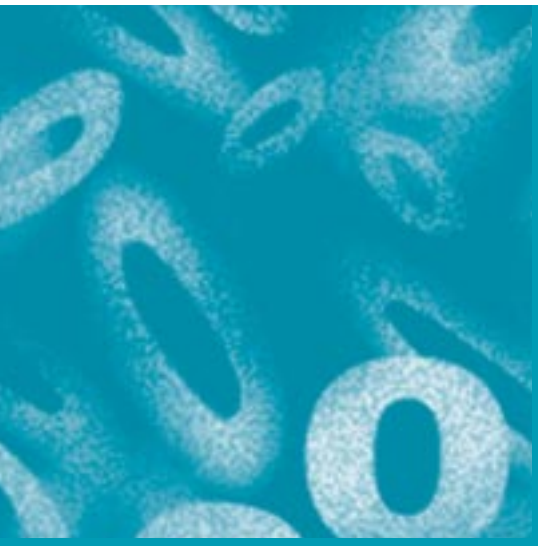
Table 14: Notifications of Notifiable Infectious Diseases, by DHS Region, 1 January – 31 December

	Barwon South Western		Grampians		Loddon Mallee		Hume		Gippsland	
Notifiable Disease	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*
Blood Borne Diseases										
Hepatitis B - Acute	**0**	*4*	**7**	*3*	**5**	*8*	**3**	*6*	**14**	*17*
Hepatitis B - Chronic/Unknown	**7**	*9*	**9**	*9*	**37**	*30*	**22**	*19*	**12**	*19*
Hepatitis C - Newly acquired	**10**	*4*	**5**	*0*	**6**	*3*	**5**	*2*	**6**	*9*
Hepatitis C - Prevalent/Unknown	**166**	*234*	**123**	*106*	**230**	*229*	**166**	*176*	**188**	*193*
Hepatitis D	**0**	*0*	**0**	*0*	**0**	*1*	**0**	*0*	**0**	*0*
Enteric Diseases										
Botulism	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Campylobacter infection	**436**	*345*	**154**	*169*	**251**	*227*	**289**	*319*	**392**	*428*
Cholera	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Cryptosporidiosis	**35**	*41*	**11**	*6*	**17**	*10*	**22**	*24*	**50**	*51*
Haemolytic Uraemic Syndrome	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*1*	**0**	*0*
Hepatitis A	**14**	*3*	**0**	*3*	**1**	*2*	**1**	*3*	**0**	*2*
Hepatitis E	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*1*	**0**	*0*
Listeriosis	**2**	*2*	**0**	*0*	**0**	*0*	**0**	*0*	**1**	*0*
Paratyphoid	**0**	*0*	**0**	*1*	**0**	*0*	**0**	*0*	**0**	*1*
Salmonellosis	**103**	*107*	**48**	*45*	**91**	*70*	**77**	*61*	**52**	*72*
Shigellosis	**3**	*4*	**0**	*2*	**1**	*5*	**1**	*3*	**0**	*2*
Typhoid	**0**	*1*	**0**	*0*	**0**	*0*	**0**	*1*	**0**	*0*
Vero Toxin producing E.coli	**2**	*1*	**0**	*0*	**0**	*0*	**1**	*0*	**0**	*0*
Other Infectious Notifiable Diseases										
Invasive Meningococcal Disease	**28**	*19*	**6**	*7*	**11**	*2*	**9**	*9*	**11**	*11*
Legionellosis	**5**	*2*	**5**	*1*	**2**	*2*	**6**	*2*	**4**	*4*
Leprosy	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**1**	*0*
Tuberculosis	**6**	*4*	**1**	*0*	**3**	*6*	**5**	*1*	**6**	*2*
Sexually Transmitted Infections										
Chlamydia	**291**	*258*	**145**	*93*	**216**	*148*	**156**	*153*	**143**	*115*
Gonococcal Infection	**7**	*11*	**11**	*5*	**7**	*9*	**7**	*5*	**11**	*8*
Syphilis	**6**	*17*	**1**	*4*	**15**	*8*	**5**	*10*	**3**	*5*
Vaccine Preventable Diseases										
Haemophilus influenzae type b	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*1*	**0**	*0*
Influenza	**15**	*7*	**9**	*3*	**29**	*6*	**7**	*2*	**14**	*7*
Invasive Pneumococcal Disease	**39**	*30*	**13**	*7*	**29**	*26*	**15**	*14*	**35**	*18*
Measles	**2**	*0*	**0**	*4*	**0**	*3*	**0**	*1*	**0**	*0*
Mumps	**0**	*3*	**0**	*2*	**0**	*0*	**0**	*1*	**0**	*0*
Pertussis	**40**	*40*	**50**	*20*	**83**	*157*	**58**	*38*	**114**	*69*
Rubella	**1**	*0*	**0**	*0*	**0**	*2*	**0**	*8*	**0**	*1*
Tetanus	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Vector Borne Diseases										
Arbovirus – Not Further Specified	**0**	*1*	**0**	*0*	**0**	*2*	**0**	*2*	**0**	*0*
Arbovirus - Alphavirus	**1**	*10*	**0**	*16*	**10**	*132*	**4**	*64*	**62**	*58*
Arbovirus - Flavivirus	**0**	*0*	**0**	*0*	**0**	*1*	**1**	*1*	**0**	*0*
Malaria	**3**	*0*	**0**	*4*	**0**	*1*	**5**	*1*	**4**	*3*
Zoonoses										
Brucellosis	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Leptospirosis	**7**	*18*	**1**	*0*	**1**	*5*	**2**	*2*	**5**	*11*
Psittacosis	**1**	*2*	**1**	*5*	**3**	*7*	**1**	*8*	**2**	*5*
Q Fever	**30**	*6*	**0**	*1*	**12**	*9*	**8**	*23*	**12**	*9*
Est. 2001 resident population	**340,496**		**208,226**		**293,516**		**250,878**		**240,114**	

Notes
1. The data are preliminary figures only and may be subject to revision
2. ABS estimated resident population data, June 2001 –Victorian total includes 99 unincorporated (French Island).

Western Metropolitan		Northern Metropolitan		Eastern Metropolitan		Southern Metropolitan		Unknown		Victoria		
2002 ytd	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	**2002 ytd**	*2001 ytd*	2001 total
35	*47*	**36**	*27*	**26**	*28*	**65**	*56*	**4**	*1*	**195**	*197*	197
465	*509*	**374**	*357*	**396**	*402*	**427**	*445*	**139**	*112*	**1888**	*1911*	1911
17	*15*	**17**	*21*	**10**	*12*	**29**	*21*	**5**	*6*	**110**	*93*	93
821	*815*	**705**	*835*	**509**	*628*	**965**	*1115*	**368**	*584*	**4241**	*4915*	4915
2	*1*	**3**	*3*	**0**	*0*	**4**	*2*	**0**	*0*	**9**	*7*	7
0	*0*	**0**	*1*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*1*	1
496	*629*	**711**	*762*	**997**	*1094*	**1101**	*1353*	**187**	*129*	**5014**	*5455*	5455
1	*0*	**0**	*1*	**0**	*0*	**0**	*0*	**0**	*0*	**1**	*1*	1
21	*59*	**31**	*53*	**38**	*93*	**46**	*97*	**10**	*11*	**281**	*445*	445
1	*0*	**0**	*0*	**0**	*0*	**1**	*0*	**0**	*0*	**2**	*1*	1
8	*16*	**7**	*20*	**17**	*18*	**20**	*33*	**1**	*2*	**69**	*102*	102
0	*0*	**1**	*0*	**0**	*0*	**0**	*2*	**1**	*0*	**2**	*3*	3
2	*2*	**3**	*0*	**3**	*0*	**4**	*4*	**0**	*1*	**15**	*9*	9
6	*2*	**3**	*2*	**1**	*1*	**4**	*2*	**0**	*0*	**14**	*9*	9
149	*99*	**168**	*169*	**218**	*191*	**264**	*247*	**43**	*30*	**1213**	*1091*	1091
15	*14*	**14**	*29*	**13**	*12*	**18**	*22*	**1**	*5*	**66**	*98*	98
1	*2*	**3**	*3*	**6**	*4*	**11**	*2*	**0**	*1*	**21**	*14*	14
1	*0*	**1**	*2*	**1**	*1*	**0**	*0*	**0**	*0*	**6**	*4*	4
40	*17*	**30**	*23*	**29**	*40*	**44**	*35*	**0**	*0*	**208**	*163*	163
25	*26*	**24**	*22*	**18**	*27*	**16**	*34*	**2**	*1*	**107**	*121*	121
0	*0*	**0**	*0*	**0**	*0*	**1**	*0*	**0**	*0*	**2**	*0*	0
76	*80*	**55**	*55*	**70**	*63*	**65**	*87*	**6**	*5*	**293**	*303*	303
729	*612*	**789**	*715*	**756**	*559*	**1141**	*1053*	**475**	*405*	**4841**	*4111*	4111
151	*135*	**123**	*135*	**70**	*94*	**226**	*210*	**189**	*159*	**802**	*771*	771
78	*65*	**60**	*54*	**38**	*49*	**98**	*95*	**78**	*16*	**382**	*323*	323
0	*0*	**1**	*1*	**1**	*0*	**0**	*0*	**0**	*0*	**2**	*2*	2
110	*11*	**93**	*25*	**136**	*44*	**165**	*69*	**18**	*2*	**596**	*176*	176
25	*8*	**69**	*33*	**80**	*43*	**112**	*49*	**37**	*93*	**454**	*321*	321
0	*12*	**0**	*15*	**8**	*23*	**4**	*23*	**0**	*1*	**14**	*82*	82
3	*9*	**2**	*4*	**2**	*10*	**3**	*11*	**0**	*0*	**10**	*40*	40
101	*56*	**99**	*104*	**176**	*179*	**145**	*164*	**23**	*17*	**889**	*844*	844
3	*5*	**1**	*13*	**5**	*11*	**5**	*20*	**0**	*0*	**15**	*60*	60
0	*0*	**0**	*1*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*1*	1
0	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*5*	5
0	*11*	**3**	*15*	**5**	*20*	**9**	*28*	**2**	*22*	**96**	*376*	376
2	*3*	**2**	*2*	**2**	*1*	**5**	*9*	**1**	*0*	**13**	*17*	17
9	*14*	**8**	*7*	**15**	*19*	**16**	*33*	**7**	*7*	**67**	*89*	89
1	*1*	**0**	*0*	**1**	*0*	**0**	*1*	**0**	*0*	**2**	*2*	2
0	*1*	**1**	*0*	**0**	*1*	**0**	*0*	**0**	*0*	**17**	*38*	38
3	*9*	**8**	*12*	**14**	*14*	**8**	*11*	**0**	*1*	**41**	*74*	74
1	*3*	**2**	*1*	**4**	*2*	**1**	*2*	**4**	*6*	**74**	*62*	62
619,377		**769,360**		**974,374**		**1,126,223**				**4,822,663**		

Victorian Infectious Diseases Bulletin



Editorial correspondence and subscription enquiries should be directed to:

The Editor
Victorian Infectious Diseases Bulletin
Communicable Diseases Section
Department of Human Services
Level 17, 120 Spencer Street
Melbourne Victoria 3000

Phone: 03 9637 4102
Fax: 03 9637 4477
Email vidb@dhs.vic.gov.au

The Victorian Infectious Diseases Bulletin is published quarterly and provides summaries of infectious diseases surveillance data, local news, outbreak investigations, infection control procedures, clinical cases of general interest and brief reports on original clinical or laboratory based research. The bulletin is distributed free of charge to persons with an interest in the control and treatment of infectious diseases in Victoria.

Contributions are invited on any topic dealing with the control of infectious diseases. These may be in the form of articles, short reports or letters. Submissions should be in Microsoft Word IBM-compatible format with Vancouver-style references. We encourage submissions in electronic format. Original data from which graphs and figures have been prepared should be included. Submissions will be edited to conform with the style of the bulletin.

The editors recognise and thank the individuals and organisations who contribute to the surveillance and management of infectious diseases. We remind authors of their responsibility to cite appropriate persons as authors and to acknowledge separately those whose work contributed significantly but did not justify authorship.

This publication can be found online at: http://www.dhs.vic.gov.au/phd/vidb/

Published by the Disease Control and Research Branch, Rural & Regional Health and Aged Care Services, Victorian Government Department of Human Services

Editorial Group: Kerry-Ann O'Grady, Heath Kelly and Graham Tallis
Production editors: Rachael Dullahide, Judy Bennett
Planning editor: Kerry-Ann O'Grady

Authorised by the State Government of Victoria, 555 Collins Street, Melbourne.
Printed by Print Bound Pty Ltd, 8 Apollo Court, Blackburn Victoria 3130
April 2003

State Government Victoria Department of Human Services