# Victorian Infectious Diseases Bulletin

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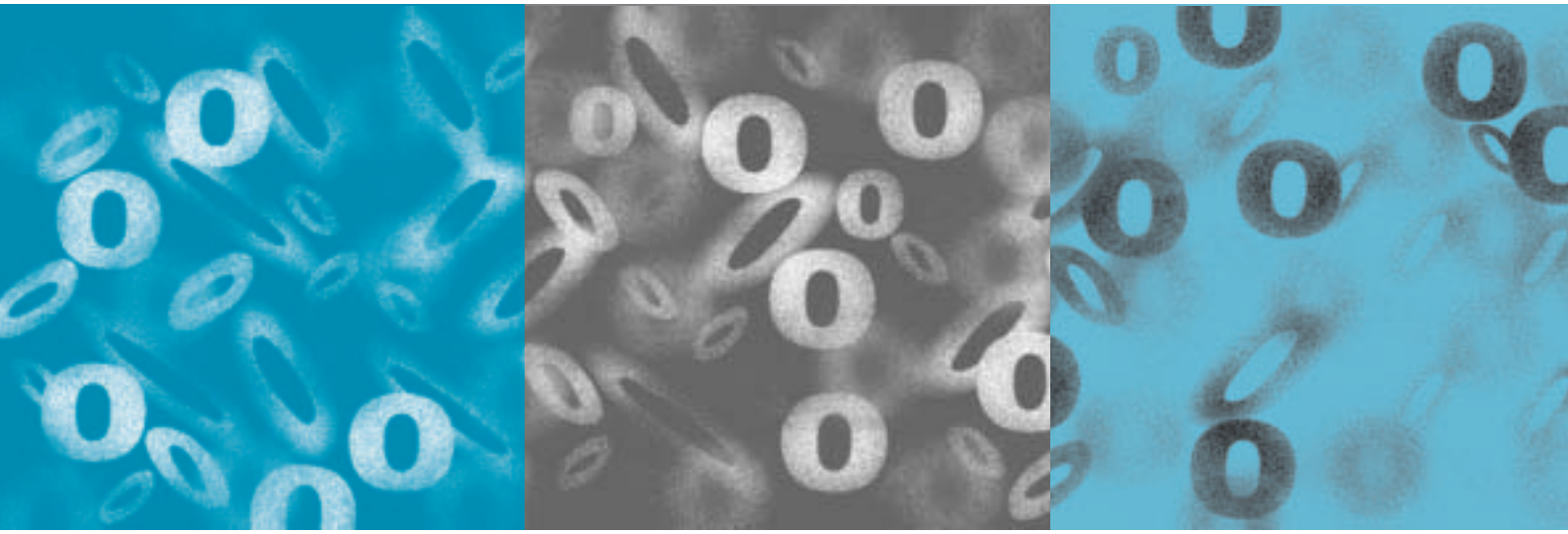
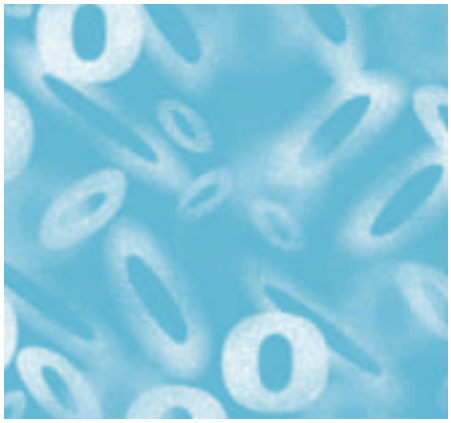


## Contents



# *Salmonella* Typhimurium 9 outbreak linked to a Melbourne pizza restaurant

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## Background

On Friday 2 January 2004, two separate groups of diners contacted the Communicable Diseases Section (CDS) of the Department of Human Services (hereafter referred to as the department) to advise that members of each group had developed diarrhoea and vomiting after dining at a pizza and pasta restaurant in inner Melbourne in late December. Prior to contact with the department, one person from each group had been diagnosed with salmonellosis that was later typed as *Salmonella* Typhimurium phage type 9 (STM 9). Discussion with the local council (hereafter referred to as the council) and a review of recent *Salmonella* notifications identified two further groups of diners with cases who had eaten at the same restaurant. STM 9 had been previously associated with four outbreaks in Victoria between Jan 2000 and Dec 2003 and there were 618 cases of STM 9 notified to the department during this period, including the initial cases associated with this outbreak (Department of Human Services, unpublished data).

Environmental and epidemiological investigations were conducted to identify possible sources and implement control measures to prevent the development of further cases.

## Methods

### Environmental investigation

The department advised environmental health officers at the council of a possible outbreak and requested that they conduct a site visit and supervise a clean up of the premises. At the site visits the council reviewed the restaurant food preparation and cleanup processes and collected food samples. Food samples collected were forwarded to the Microbiological Diagnostic Unit (MDU), at the University of Melbourne, to test for enteric bacterial organisms.

### Epidemiological investigation

A case series investigation was carried out to obtain descriptive data on the exposure and illness histories of the cases. Active case finding was initiated by contacting all groups on the restaurant's booking lists between 17 and 31 December. As the business relies predominantly on "walk-in" custom (customers without bookings) these lists were of limited value. Further case finding was therefore carried out by interviewing persons notified to the department with salmonellosis that resided in the surrounding suburbs to the premises and those persons notified with STM 9 between December 2003 and January 2004. Cases were also identified by contacting patrons who ate at the restaurant with known cases and those who self-reported their illness to the department or the council.

Ill persons identified in the case series investigation were classified as probable or confirmed cases. A probable case was defined as a person who ate food from the premises between 15 December 2003 and 10 January 2004 and who subsequently experienced gastrointestinal symptoms of diarrhoea and/or vomiting with onset within six days after consumption. A person who met the definition of a probable case and submitted a faecal specimen from which STM 9 was isolated was defined as a confirmed case.

Interviews were conducted using a structured food and illness history questionnaire that included the standard restaurant menu used throughout the outbreak period. Patrons of the premises who had dined with an ill case but had not been unwell themselves were also interviewed for the purposes of active case finding and hypothesis generation. Faecal specimens were requested from all ill persons and were forwarded for testing of bacterial enteric organisms at the MDU.

The proportion of identified ill cases that had eaten each menu item was calculated. This was also calculated for specific ingredients that tested positive for STM 9. Data from the interviews were entered into an Access 2000© database and analysed using Stata 7.0©.

## Results

### Environmental results

The council conducted site visits on 2 and 9 January 2004 with a clean up carried out by the proprietors on 2 January 2004. As early case interviews nominated having eaten pizza at the premises, the food sampling on 2 and 9 January focussed on pizza toppings. On 13 January, following identification of *Salmonella* in food samples collected after the initial clean up, a third site visit was conducted by the council as well as CDS and the Food Safety Unit of the department to further review the

food preparation procedures and to obtain additional food samples (including pizza toppings from the pizza wells, salad and salad dressings, frozen chicken pieces and chicken schnitzel) for microbiological testing.

Twenty food samples were collected between 2 January 2004 and 13 January 2004. Of these, STM 9 was detected in samples of ham, salami, cooked chicken pieces, and marinara mix collected on 2 January 2004 from pizza wells in the pizza preparation area. Further samples of marinara mix and cooked chicken pieces collected on 9 January 2004 were also positive for STM 9. When the environmental sample results from specimens collected on 9 January became available, the council supervised a second clean up of the premises on 13 January in accordance with the Guidelines for the Investigation of Gastrointestinal Illness.[1]

Food handling practices noted during the site visits highlighted the risks of cross contamination from raw foods to cooked products. These included the preparation and handling of raw chicken in the pizza preparation area (including cooking chicken in the pizza oven where chicken is placed onto pizza trays, passed along the conveyor, turned by hand and re-run along the conveyor then scraped into colanders to drain), the practice of topping up pizza ingredient containers on an ongoing basis with leftover ingredients, allowing potential pathogens in the older ingredients to be passed onto fresher ingredients each time. The food safety program for the premises did not address these processes and food safety program records were not available on the premises when requested at the first site visit. Other issues identified during the site visits included inadequate hand washing facilities, inadequate cleaning and maintenance of the food preparation areas, and inadequate staff training in food safety.

On 13 January, the premises closed voluntarily to conduct the second clean up and review food-handling practices. When the restaurant re-opened on 16 January, the council, in conjunction with the Food Safety Unit, commenced a monitoring program including sampling of foods prepared at the premises. *Salmonella* was not detected in any cooked or ready to eat foods from the premises.

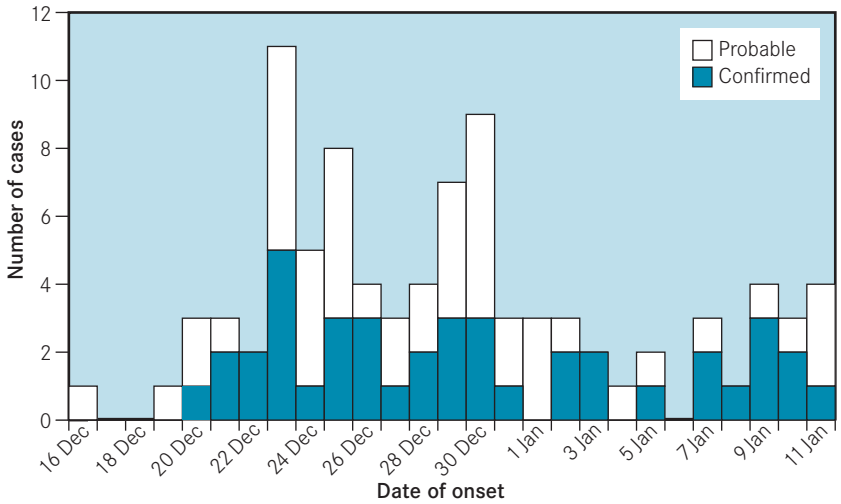
## Epidemiological analysis

The CDS conducted 270 interviews, identifying 90 ill persons: 41 (46 per cent) confirmed cases and 49 (54 per cent) probable cases (Figure 1). Two persons notified with STM 9 were believed to have eaten at the restaurant (based on information from friends or family), but could not be interviewed to confirm this information and could therefore not be counted as cases in this outbreak. The investigation also identified two secondary cases in children (household contacts of probable or confirmed cases). No food handlers at the premises reported having been ill.

Of the 90 ill cases, the median age was 21 years (range: 21 months–68 years). The sex of the ill cases was distributed almost equally (male to female ratio1:1.1). The onset of illness was from 16 December 2003 to 11 January 2004 and the median incubation period was two days (range: 0-6 days). Seven (8 per cent) cases were admitted to hospital, including two children aged 9 and 15. No deaths occurred among the probable or confirmed cases.

Analysis of the food histories of the ill cases indicated 63 (70 per cent) people

**Figure 1: Epidemic curve, by date of onset, *Salmonella* Typhimurium phage type 9 outbreak, Melbourne**



had eaten pizza (of any type) at the restaurant. Forty (44 per cent) of the ill cases had eaten a pasta or risotto dish. Some risotto or pasta dishes contained ham, salami, cooked chicken pieces, or marinara mix; ingredients stored in the pizza wells where samples taken subsequently detected STM 9.

## Discussion

The environmental findings, the isolation of STM 9 from both faecal and food samples, and the epidemiological results combine to show this outbreak was caused by the consumption of contaminated food from the restaurant premises between December 2003 and January 2004.

STM 9 was isolated from pizza toppings collected on 2 and 9 January 2004. The range of food found to contain *Salmonella* and the food history information collected from the cases suggested that the food handling problems identified during the site visits lead to cross contamination of food items in the pizza preparation kitchen at the restaurant rather than implicating one product in particular.

STM 9 is a common *Salmonella* serovar and had been isolated from 10 samples of chicken meat in Australia in 2001[2] and from six samples of chicken meat in 2002[3]. In this outbreak, although the exact origin of the *Salmonella* could not be definitively traced, it seems likely that the organism was introduced through the raw chicken and that cross contamination occurred in the pizza preparation area where the chicken was cooked. The practice of cooking chicken in the pizza oven, and the handling of raw chicken in the pizza preparation area, was identified as a serious risk for cross-contamination. The potential risk with this process is that the chicken product may be undercooked or that cross contamination could occur and previously cooked product be contaminated by dirty surfaces, utensils or hands. Food safety plans, when used correctly, should identify possible cross-contamination risks and outline the steps the premises are using to manage that risk. Findings from the outbreak investigation did lead to a change in the food preparation processes at the premises and a review of the premises' food safety plan. The restaurant now cooks chicken pieces to be used for making pizzas in a separate preparation kitchen, away from the pizza preparation area.

This outbreak demonstrates the ongoing need for food premises to ensure their food safety programs adequately reflect the risk of their business and that appropriate control steps are both documented and followed.

## Acknowledgements

We are grateful for the assistance provided by the Food Safety Unit, Department of Human Services (DHS), the Eastern Region Office of DHS, the Microbiological Diagnostic Unit and the health department at the local council. Julie Wang is a Masters of Applied Epidemiology scholar at the National Centre for Epidemiology and Population Health, and is supported by a scholarship from the Commonwealth Department of Health and Ageing.

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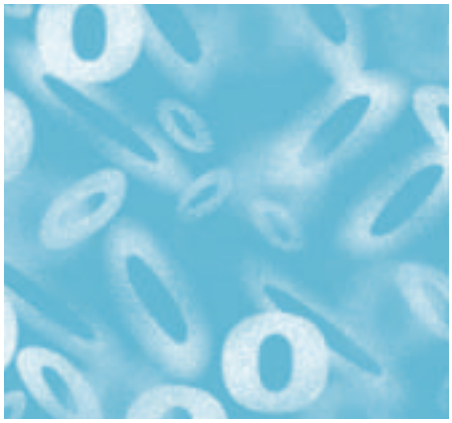

# Child and adolescent vaccine studies in Melbourne

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## Introduction

The willingness of parents to enrol their healthy children in studies of vaccines, and other pharmacologic products, is arguably one of the most important contributors to the availability of safe and effective vaccines and medicines for children. Their participation is remarkable given that the majority of these studies are for products still in development, with safety and efficacy not yet proven, and with no certainty of direct benefit to their child. The reasons why they participate commonly include altruism, a sense of duty to others, the chance for personal medical benefits including access to the new drug or vaccine and personalised care and trust in the health care provider, the institution and sponsor.[1-3]

Here we review the paediatric vaccine trials conducted in Melbourne by the Vaccine & Immunisation Research Group (VIRG) since 1991 – with a focus on recruitment. The studies were predominantly phase II – III clinical trials of new monovalent or combination vaccines either as single site or multi-centric, often international, studies.

## Recruitment and implementation

VIRG was founded in 1991 and now operates under the jurisdiction of the Murdoch Childrens Research Institute (MCRI) in collaboration with Royal Children's Hospital (RCH) and the University of Melbourne. It is located in the University's School of Population Health. The team is comprised of public health physicians, epidemiologists, nurse immunisers, phlebotomists, doctors and research assistants.

Studies are conducted according to the National Health and Medical Research Council (NHMRC) research guidelines,[4] and the International Conference on Harmonisation – Good Clinical Practice Guidelines (ICH-GCPG).[5] Ethics approvals are obtained from the RCH Ethics in Human Research Committee. The Australian Therapeutic Goods Administration (TGA) approves the majority of studies through the Clinical Trial Notification (CTN) scheme.

Participants are predominantly recruited with the assistance of maternal and child health nurses (MCHNs) at community health centres and local government immunisation clinics and registers. Study information has also been disseminated through childcare centres and schools (both primary and secondary). Commercial advertising for studies has, to date, only been conducted once.

In contrast to the predominant method for conducting clinical trials (ie. clinic or hospital based), all VIRG vaccine trials are community based. Mobile teams of doctors, nurse immunisers, research assistants and phlebotomists, equipped with portable refrigerators and emergency kits, perform all study procedures in participants' homes at a time ideally suited to their families. An initial screening visit of approximately one hour is conducted prior to enrolment in which eligibility is determined and the study is discussed in detail, including a step-by-step perusal of the plain language statements. These visits generally take approximately one hour to complete. Families are then given several days to consider their participation and to discuss the study with significant others (for example, their general practitioner, MCHN and/or other family members). If they agree, formal enrolment and informed consent takes place at the first study visit. Written informed consent is also obtained from participants aged 10 years and over.

Study subjects and their families are not paid for their participation, however on occasions offers of free, off-study, NHMRC recommended childhood vaccines have been made (for example, varicella vaccine). These offers are included in the plain language and consent statements. Of the 12 most recent studies, this has occurred three times. Most studies involve concomitant administration of Australian Standard Vaccination Schedule (ASVS) recommended vaccines.

## Recruitment statistics

To date, over 7,500 Melbourne infants, children and adolescents have participated in one or more of 25 Phase II – IV vaccine trials. Participants' ages have ranged from newborns to 15 years at the time of enrolment and the duration of study participation has ranged from 30 days–18 months. Recruitment tracking data were available for 12 of these studies.

For these 12 studies, a total of 3,981 individuals were screened and 2,229 children (56 per cent) were subsequently enrolled. It is not known how many individuals were provided with information about each of the studies. Of those screened approximately 37 per cent were

referred by MCHNs, 19 per cent via letters sent from local government immunisation registers and 11 per cent from child care centres and schools. Word of mouth accounted for two per cent of individuals screened.

Of those screened who were not enrolled (n = 1,713), 579 (33.8 per cent) were ineligible according to the study protocol, 557 (32.5 per cent) had specific objections to the particular study (generally too many blood tests or needles) and for 577 (33.6 per cent) the reason for non-participation was either not provided or other reasons were given (for example, family too busy, uncomfortable with the nature of the research). The median proportion of those screened and subsequently enrolled per study was 56 percent (range: 24–73 per cent).

The median number of study visits per protocol was four (range: 2–6), including a median of three vaccination visits (range: 1–5) and two visits in which blood samples were obtained (range: 2–4). The median recruitment period was 21 weeks (range: 11–38), with an average of 21 (range: 13–41) screening visits and 12 (range: 8–17) recruitment visits conducted per week.

With the exception of one study in adolescents that involved five study visits, the highest recruitment rates (73 and 71 per cent) were obtained for the studies with the least number of study visits (two per study). One of these studies involved the offer of an off-study vaccine (varicella). The study with the lowest recruitment rate consisted of four study visits over a period of 30 months, with vaccines given on two visits and blood tests taken at all. An off study vaccine was offered (varicella or pneumococcal conjugate vaccine). This study was abandoned early due to failure to recruit (discussed below). The study with the most number of visits and procedures, an infant study with six visits over 14 months during which time they received vaccines five times (3 separate injections per visit) and had blood taken four times, had a recruitment rate of 63 per cent.

## Influences on recruitment

The reasons for why one study recruits particularly well and another fails are not well understood and a subject requiring more systematic review. A diverse number of factors is likely to apply and will vary across geographical and socio-economic boundaries, including pragmatic reasons such as the time of year the study gets underway. Langley et al found that the most common reasons parents cite for choosing not to enrol their child was concern about painful procedures such as the blood tests and extra immunisations,[1] and our data appear to support this finding.

Infants in Melbourne are generally recruited to the studies largely as a result of the support received for the studies from MCHNs throughout Melbourne, the relationship between new parents and their MCHN, the convenience of having their child immunised at home and the type of vaccine under study. A parent's relationship with their primary health care provider is critical to the decision to immunise,[6-8] and an important influence on reducing concern about exposing their child to new or investigational products.[2] Home-based immunisation is recognised as an effective mechanism for improving immunisation acceptability and coverage.[9] This aspect of our studies reduces the inconvenience associated with attending a research facility and the need for additional health care provider visits for routine immunisations.

Older children have historically been more difficult to recruit and this may reflect the nature of busy family lives (particularly if both parents are working) and less contact with maternal and child health care services. The recruitment for these studies is often reliant on childcare centres and schools, and hence individual contact at the point information about the study is first received may be lacking. Studies in older children and adolescents are also logistically more complex and resource intensive due to the need to coordinate visits around family work and school hours.

Studies that include vaccines not publicly funded such as inactivated polio vaccine (IPV), pneumococcal and meningococcal conjugates (as a primary course) and varicella vaccines within the study protocol (for example, studies examining concomitant vaccination) are attractive to parents, possibly due to the additional personal medical benefit their child receives at no financial cost. This is however not always the case, with one study that included influenza and varicella vaccines proving difficult and requiring an extended recruitment period. Similarly slow were studies of vaccines for diseases that did not have a high

public profile (for example, hepatitis A).

Specific challenges to recruitment include anomalies between the Australian Childhood Immunisation Register (ACIR) and the Family Assistance Act, the impact of state and federal privacy legislation and concerns about the offers of off-study vaccines being perceived as inducements. Children who do not receive the NHMRC recommended vaccines according to the Australian Standard Vaccination Schedule are considered unimmunised and therefore ineligible for immunisation incentive payments. There is no facility within the ACIR to record children as participants of vaccine trials. As such, parents must choose to either be exempted from the requirements as a conscientious objector or forgo their benefits, or give their child another dose of a recommended, licensed vaccine. This is despite more being known about the immunological status of a child in a study than is known about other children in the community. This effect was a major contributor to the recruitment failure and subsequent abandonment of one toddler study.

Changes to the privacy legislation now limit the avenues through which information about studies can be disseminated and potential participants accessed.[10] This is now a significant issue for the recruitment of older children and adolescents who do not attend community health centres. A partial solution to this problem has been the establishment of an in-house register of families (identified during previous recruitment activities) who have provided written consent to be contacted when future studies arise. The database now contains over 1,100 children from approximately 550 families and is growing. Despite this, innovative recruitment strategies are required given that large numbers of individuals need to receive information to achieve a relatively small sample size. In one study, over 15,000 letters were distributed to eventually recruit 150 participants.

The perception of off study vaccines constituting an inducement is complex, and beyond the scope of this paper. Surprisingly, despite much debate in the literature,[3 11-13] there is little empirical evidence that such offers do influence the voluntariness of consent and/or alter an individual's perception of the risks of participation. In the context of our studies, they are considered an important additional health benefit and acknowledgement of a child's and his/her family's significant contribution to research.

## The future

With over 200 vaccines currently in development around the world,[14] the willingness of Australian children and their families to participate in pre-licensure trials needs to be fostered and barriers to participation reduced. The current focus on the development of adolescent vaccines translates to a requirement for innovative recruitment, implementation and retention strategies, particularly given many target socially sensitive diseases such as sexually transmitted and blood-borne infections. An increasing regulatory environment, the ever-growing costs of conducting vaccine research and the limited non-industry sources of funding are emerging threats to the viability of this work in Australia that must be addressed.

## Acknowledgements

The work of VIRG would not be possible without the invaluable support and efforts of local government, maternal and child health nurses, schools, study sponsors and, most importantly, families throughout Melbourne. Particular thanks is due to the dedicated and professional team of doctors, nurses and research assistants who make each study a success.

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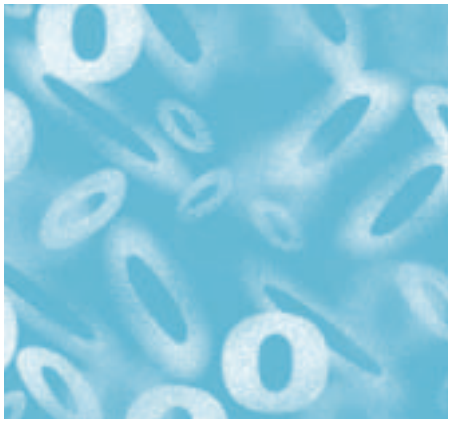


# Eulogy for Dr Kath Taylor (1929–2004)

Marion Moloney, Department of Human Services

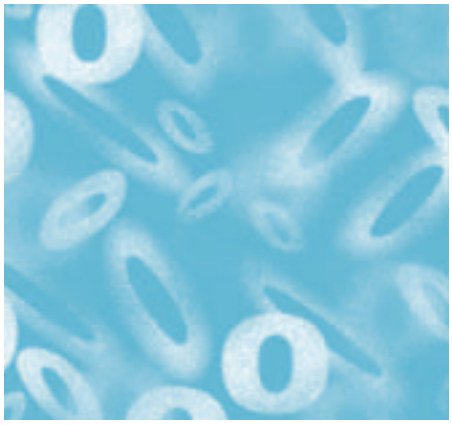
Dr Taylor worked for the department as a medical officer for 26 years. On 18 March 2004, aged 75 years, she passed away after a long battle with cancer. During the course of her career she worked in a variety of settings. Her work was tireless, constant, and focused on achieving the best outcomes for clients and the department. Her high standards did not allow for half measures and she remained on the emergency medical on-call roster for communicable diseases well into her early seventies.

Earlier in her departmental career she worked with children at Allambie, providing medical care and referral for children who were wards of the State. This work continued during her time at Schools Medical Service and Refugee Screening Program. Her move into the Department of Human Services' Communicable Diseases Section saw the continuation of excellent service delivery to clients notified to the department with infectious diseases.

Her meticulous case histories, record keeping and data collection have facilitated public health research, directed public health initiatives, policy decisions and supported the surveillance and control of infectious diseases specifically meningococcal disease, Q fever and other zoonotic diseases.

She was also involved in the assessment and investigation of medical practices reported to the Medical Practitioners Board. Her forthright honesty in these matters was directed at improving patient care and protecting the public. Of particular note is Dr Taylor's achievement in developing the Q fever vaccination program. The illness can have serious health, economic and social costs for both the workers and their employer. Dr Taylor's interest in this disease resulted in a Q fever vaccination and doctor training program more than ten years before a national initiative was introduced. The program was a cost effective, comprehensive public health action which provided protection for at risk workers, facilitated improved occupational health and safety standards, decreased disease incidence, and facilitated improved outcomes for clients with Q-Fever through the provision of information, support, counselling and opportunities for referral to specialists. Dr Taylor is recognized nationally as an expert in the field of Q fever vaccination.

Throughout her career Dr Taylor demonstrated professional integrity, responsibility, tenacity, honesty and strength. She has shaped and influenced public health, acted as a role model, and been an integral part of the Communicable Diseases Section. She will be sadly missed by us and her colleagues across Victoria.



# Infectious diseases news

## A new vaccine for genital herpes in clinical trials

Herpes simplex viruses (HSV) usually infect mucocutaneous surfaces and are among the most common infectious agents of humans. Infection is characterised by localised lesions, latency and a tendency to reactivate.[1] HSV type 1 (HSV-1) usually involves the oro-labial region and is acquired early in life. HSV type 2 (HSV-2) is usually sexually transmitted and predominantly causes genital disease. However, the relative contribution of HSV-1 to genital disease is increasing. With the exception of neonatal herpes and herpes encephalitis, HSV infections are seldom life-threatening, nevertheless, the disease causes significant physiological and psychological distress,[2] and increases the risk of HIV infection.[3]

Data on the incidence and prevalence of HSV in Australia are limited. A seroprevalence study conducted among antenatal and STD clinic attendees in Sydney in the early 1990s found 5 and 14 per cent of women aged younger than 20 years were HSV-2 positive respectively.[4] The prevalence increased to 15.5 and 34 per cent in women aged 20–29 years. Estimates of the seroprevalence of HSV-1 in adolescents from several studies worldwide range from 37 to 95 per cent.[5] However, as in adults, HSV infections are often unrecognised and the magnitude of the problem in adolescents is likely to be underestimated.

There are no cures and the long-term control of HSV would appear to be reliant on prophylactic vaccines, early detection and treatment, screening of sexual contacts and appropriate counselling. As the prevalence of infection increases with age, control strategies would appear to be maximally effective if implemented prior to sexual initiation.

Prophylactic vaccines are now in development and current efforts focus on two HSV envelope proteins, glycoprotein B (gB) and D (gD). A gD candidate, developed by GlaxoSmithKline Biologicals, has been evaluated in two phase III efficacy studies.[6] The results suggest the vaccine may prevent approximately 74 per cent of genital herpes disease in women who are seronegative for both HSV-1 and HSV-2. While not statistically significant, a trend towards protection against infection was also observed in these women (vaccine effectiveness: 39–46 per cent). There was no evidence of vaccine efficacy in males, nor in women who were HSV-1 seropositive. Further efficacy studies are currently underway to confirm these findings.

As part of an international collaboration, the Vaccine & Immunisation Research Group of the Murdoch Children's Research Institute (located in the School of Population Health at the University of Melbourne) is evaluating the safety and immunogenicity of this vaccine in 10–17 year old females in Melbourne. Other participating centres in Australasia include Canberra, Sydney, Brisbane, Hobart and Christchurch (New Zealand). Participants are being recruited predominantly through schools and, in Melbourne, all study visits are conducted in the participants' homes. It is anticipated the study will be concluded late in 2005. For further information, contact Kerry-Ann O'Grady on (03) 8344 9331 or at k.ogrady@unimelb.edu.au.

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## The Australian Community-Acquired Pneumonia Study

A new study on community-acquired pneumonia (CAP) is starting in June 2004 and will be recruiting 1200 adult patients over a 15-month period at Austin Health, Monash Medical Centre, Alfred Hospital, West Gippsland

Hospital (Warragul), Royal Perth Hospital and Princess Alexandra Hospital (Brisbane). The Department of Human Services, the National Health and Medical Research Council and the International Conference on Chemotherapeutics Group are funding the study.

The study has three key objectives. The first is to examine the aetiology of CAP in Australia. As such, this will be the most extensive aetiology study performed to date. New diagnostic methods, such as polymerase chain reaction for respiratory viruses and for organisms causing atypical pneumonia (*Legionella*, *Mycoplasma* and *Chlamydia*) will be performed as well as urinary antigens for *Streptococcus pneumoniae* and *Legionella*. All patients will have blood and sputum cultures, and paired serology performed to look for respiratory agents. All bacterial isolates will be tested for resistance to commonly used antibiotics.

The second objective is to examine criteria for admission and systems for severity assessments such as the Pneumonia Severity Index (PSI) proposed by Fine *et al*[1] and the Confusion, Urea, Respiratory rate and Blood pressure (CURB-65) system proposed by Lim *et al*.[2] All patients would have investigations performed on admission to calculate their PSI and CURB-65 scores. These proposed severity assessment systems would be validated for Australian patients and attempts will be made to improve their accuracy and their ability to predict whether a patient requires care in a ward or an intensive care unit.

The third objective of the study is to prospectively validate the Australian Antibiotic Guidelines.[3] Patients enrolled in the study would be treated with empiric therapy according to the guidelines. Outcomes assessed are time to clinical stability and change to oral therapy, clinical deterioration requiring a change in therapy, need for admission to an intensive care unit or for mechanical ventilation, and mortality at seven and 30 days.

The CAP study will be the largest study of community-acquired pneumonia ever undertaken in Australia and its results will provide an evidence-based approach to the treatment of CAP in Australia for the next 10–20 years.

For further information about this study, contact Dr Patrick Charles, Department of Infectious Diseases, Austin Health. Telephone: (03) 9496 6676. Email: Patrick.Charles@austin.org.au

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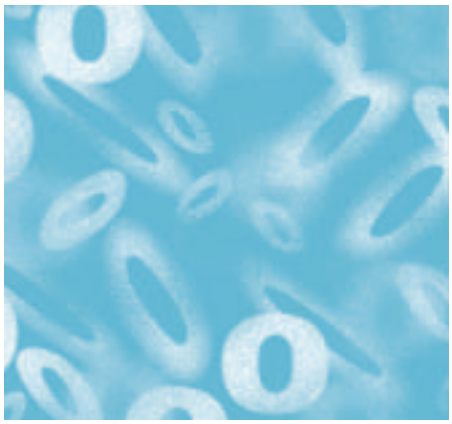


# Immunisation update

Catherine McNamara, Prevention and Perinatal Health Section,
Department of Human Services

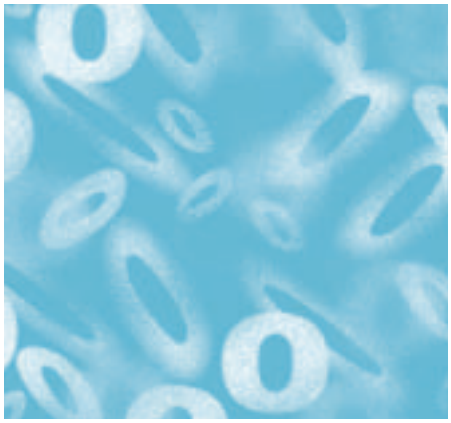
*Data cited in this report are based on the Australian Childhood Immunisation Register (ACIR) coverage report. Table 1 presents immunisation coverage at 31 March 2004 for children aged 12–<15 months, 24–<27 months and 72–<75 months at 31 December 2003. Only vaccines administered before 12 months of age were included in the coverage calculation for the first age group, and only those vaccines administered before 24 months of age and 72 months of age were included in the coverage calculation for the second and third age groups respectively.*

*Additional explanatory note for the age group 24–<27 months – Coverage assessment for this age group has changed from the December 2003 quarter to exclude the requirement for a dose of diphtheria, tetanus and pertussis antigens (DTP) at 18 months. The coverage calculation for this age group now looks for a third or fourth dose of DTP. Prior to the change, the calculation looked for the fourth dose only. The increase in coverage for this age group is due to the less restrictive assessment, requiring a child to be up-to-date for vaccines at 12 months of age, when assessed for coverage at 24–<27 months of age.*

*For a copy of the ACIR report listing immunisation coverage against individual vaccines for each local government area, contact Michele Wend at the Department of Human Services (email michele.wend@dhs.vic.gov.au).*

**Table 1: Childhood immunisation coverage, by local government area, Victoria, March 2004**

| Age group | % fully immunised | Local government area (LGA) | Total LGAs (% LGAs) |
|---|---|---|---|
| 12–<15 months | 95+ | Ararat (RC), Central Goldfields (S), Horsham (RC), Manningham (C), Mildura (RC), Mitchell (S), Moyne (S), Southern Grampians (S), Towong (S), Warrnambool (C), Whitehorse (C) | 11 (14) |
| | 90-94 | Alpine (S), Ballarat (C), Banyule (C), Boroondara (C), Brimbank (C), Buloke (S), Campaspe (S), Casey (C), Colac-Otway (S), Corangamite (S), Delatite (S), East Gippsland (S), Frankston (C), Gannawarra (S), Greater Bendigo (C), Greater Geelong (C), Greater Shepparton (C), Hindmarsh (S), Hume (C), Knox (C), Latrobe (C), Macedon Ranges (S), Maribyrong (C), Melton (S), Monash (C), Moonee Valley (C), Moorabool (S), Moreland (C), Mornington Peninsula (S), Mount Alexander (S), Nillumbik (S), Northern Grampians (S), Port Phillip (C), Pyrenees (S), Queenscliffe (B), Strathbogie (S), Swan Hill (RC), Wangaratta (RC), Wellington (S), Whittlesea (C), Wodonga (RC), Wyndham (C), Yarra (C), Yarriambiack (S) | 44 (57) |
| | 85-89 | Bass Coast (S), Baw Baw (S), Bayside (C), Cardinia (S), Darebin (C), Glen Eira (C), Glenelg (S), Golden Plains (S), Greater Dandenong (C), Hobsons Bay (C), Indigo (S), Kingston (C), Maroondah (C), Moira (S), Murrindindi (S), South Gippsland (S), Stonnington (C), Surf Coast (S), Yarra Ranges (S) | 19 (24) |
| | 80-84 | Hepburn (S), Loddon (S), Melbourne (C), West Wimmera (S) | 4 (5) |
| | <80 | Nil | 0 (0) |
| 24-<27 months | 95+ | Baw Baw (S), Buloke (S), Campaspe (S), Delatite (S), East Gippsland (S), Glenelg (S), Golden Plains (S), Hindmarsh (S), Horsham (RC), Indigo (S), Latrobe (C), Mildura (RC), Moorabool (S), Moyne (S), Northern Grampians (S), Pyrenees (S), Queenscliffe (B), South Gippsland (S), South Grampians (S), Strathbogie (S), Towong (S), Wangaratta (RC), Warrnambool (C), Wodonga (RC), Yarriambiack (S) | 25 (32) |
| | 90-94 | Alpine (S), Ararat (RC), Ballarat (C), Banyule (C), Bass Coast (S), Boroondara (C), Brimbank (C), Cardinia (S), Casey (C), Colac-Otway (S), Corangamite (S), Darebin (C), Frankston (C), Gannawarra (S), Greater Bendigo (C), Greater Geelong (C), Greater Shepparton (C), Hobsons Bay (C), Hume (C), Kingston (C), Knox (C), Loddon (S), Mecedon Ranges (S), Manningham (C), Maribyronon (C), Maroondah (C), Melton (S), Mitchell (S), Moira (S), Moonee Valley (C), Mornington Peninsula (S), Mount Alexander (S), Nillumbik (S), Stonnington (C), Surf Coast (S), Wellington (S), West Wimmera (S), Whitehorse (C), Whittlesea (C), Wyndham (C), Yarra Ranges (S) | 41 (53) |
| | 85-89 | Bayside (C), Glen Eira (C), Greater Dandenong (C), Melbourne (C), Monash (C), Moreland (C), Murrindindi (S), Port Phillip (C), Swan Hill (RC) | 9 (11) |
| | 80-84 | Central Goldfields (S), Hepburn (S), Yarra (C) | 3 (4) |
| | <80 | Nil | 0 (0) |
| 72-<75 months | 95+ | Horsham (RC), Loddon (S), Moyne (S), Queenscliffe (B) | 4 (5) |
| | 90-94 | Baw Baw (S), Central Goldfields (S), Corangamite (S), Delatite (S), Gannawarra (S), Glenelg (S), Golden Plains (S), Hindmarsh (S), Moira (S), Pyrenees (S), Wangaratta (RC), Warrnambool (C), Wyndham (C) | 13 (17) |
| | 85-89 | Ararat (RC), Ballarat (C), Boroondara (C), Brimbank (C), Campaspe (S), Cardinia (S), Darebin (C), East Gippsland (S), Frankston (C), Glen Eira (C), Greater Bendigo (C), Greater Geelong (C), Greater Shepparton (C), Hobsons Bay (C), Hume (C), Indigo (S), Knox (C), Manningham (C), Maroondah (C), Melton (S), Monash (C), Moonee Valley (C), Moorabool (S), Moreland (C), Murrindindi (S), Nillumbik (S), South Gippsland (S), Southern Grampians (S), Wellington (S), West Wimmera (S), Whitehorse (C), Whittlesea (C), Wodonga (RC), Yarriambiack (S) | 34 (44) |
| | 80-84 | Alpine (S), Banyule (C), Bayside (C), Casey (C), Greater Dandenong (C), Kingston (C), Latrobe (C), Macedon Ranges (S), Maribyrnong (C), Mildura (RC), Mitchell (S), Northern Grampians (S), Stonnington (C), Strathbogie (S), Surf Coast (S), Swan Hill (RC), Towong (S), Yarra (C), Yarra Ranges (S), | 19 (24) |
| | <80 | Bass Coast (S), Buloke (S), Colac-Otway (S), Hepburn (S), Melbourne (C), mornington Peninsula (S), Mount Alexander (S), Port Phillip (C) | 8 (10) |



# 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 March 2004. 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 20 (page 54) includes historical comparisons of selected diseases for the period January - March 2004 with 2003 data at both state and regional levels. Summary data at local government level are available at the website http://www.health.vic.gov.au/ideas/surveillance/daily.htm. There were no notifications of anthrax, Murray Valley encephalitis, botulism, diphtheria, Japanese encephalitis, Kunjin virus, plague, poliomyelitis, rabies, viral haemorrhagic fevers, yellow fever, hepatitis D, leprosy, Haemophilus influenzae type b, rubella, tetanus or Brucella in this reporting period. For comments or queries related to the data presented, 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).*

*Daily surveillance reports and weekly commentary to assist with interpreting these reports are available at the website http://www.health.vic.gov.au/ideas/surveillance/daily.htm. 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.health.vic.gov.au/ideas/bluebook/index.htm.*

## Enteric diseases

### Outbreaks of gastrointestinal illness

Joy Gregory and Trang Vu, Department of Human Services

In the first quarter of 2004, 34 outbreaks of gastrointestinal illness were reported to the department (Table 2). The outbreaks occurred in a diverse range of settings, including aged care facilities (n=16), hospitals (n=4), commercial caterers (n=3), private residences (n=2), a play centre, a childcare centre, a restaurant and on a bus trip. Three of these outbreaks were considered to be food borne or probably food borne. Of the remaining 31 outbreaks, 26 were suspected to be transmitted by person–to–person contact, with norovirus accounting for 65 per cent (n=17), rotavirus 8 per cent (n=2) and suspected viral cause accounting for 27 per cent (n=7). The mode of transmission was unknown for five outbreaks.

**Table 2: Outbreaks of gastrointestinal illness, Victoria, Jul–Sep 2003**

| Setting | Outbreaks | Persons Affected | Pathogen/Toxin (Number of outbreaks) |
|---|---|---|---|
| Restaurant/reception/ other food premises/ specific food | 6 | 164 | *Salmonella* Typhimurium 9 (1)<br>Norovirus (1)<br>Unknown (4) |
| Aged/disability/ health care institution | 23 | 459 | Norovirus (14)<br>Suspected viral (7)<br>Unknown (2) |
| Recreation/holiday/camp | 2 | 21 | Norovirus (1)<br>Rotavirus (1) |
| Children's service/school | 1 | 30 | Rotavirus (1) |
| Family/social gathering | 2 | 22 | Norovirus (2) |
| TOTAL | 34 | 696 | Norovirus (18)<br>*Salmonella* Typhimurium 9(1)<br>Suspected viral (7)<br>Rotavirus (2)<br>Unknown (6) |

## An outbreak of *Salmonella* Typhimurium phage type 170 linked to a hotel in a northern suburb

On 31 December 2003, the department was notified of two cases of *Salmonella* infection with the suspected mode of transmission being food consumed at the hotel. Both cases were interviewed to obtain further information. A third case, who had shared food with one of the notified cases, was also interviewed. On 5 January 2004, the department received a notification of salmonellosis for the third case.

The department conducted an investigation through case interviews, active case finding from laboratory line lists and telephone contact with other patrons of the hotel. Initial interviews suggested a possible link between illness and the consumption of dishes containing raw egg ingredients made at the premises, for example chocolate mousse, mayonnaise and tartare sauce. The use of raw egg ingredients has been associated with several *Salmonella* outbreaks in Australia and overseas.[1,2] A cohort study was designed to test the hypothesis that patrons who had dined at the hotel on 23, 25 or 28 December 2003 and consumed food containing raw egg ingredients were more likely than those who had not consumed such food to develop gastrointestinal illness in the five days following their attendance.

The cohort study commenced on 9 January 2004 and concluded on 23 January 2004. The minimum sample size required for the study was estimated to be 100 persons. Twenty-four contactable groups were randomly selected from the hotel's booking lists to provide 141 potential study participants. Of these potential participants, 9 per cent (n=13) were subsequently determined to be ineligible to take part in the study because of booking cancellations. At the conclusion of this study 108 people were interviewed giving the study a participation rate of 84 per cent.

Of 108 people interviewed, 23 per cent (n=25) had gastrointestinal symptoms (diarrhoea and/or vomiting in the six hours to five days following consumption) and 64 per cent (n=69) dined on Christmas day. Among those experiencing illness, 96 per cent (n=24) ate on Christmas day. *Salmonella* Typhimurium phage type 170 (STM 170) was isolated in the faecal specimens of four ill persons.

The study found that patrons who had consumed food containing raw egg ingredients were seven times more likely to become ill. Furthermore, only 8 per cent (n=2) of ill cases had eaten food not containing raw egg ingredients. The results suggest a possible association between illness and the consumption of any food containing raw egg ingredients. As no food sample collected for culture was found to be positive for STM 170, this observed association could not be confirmed.

The department recommended to the hotel that they stop serving dishes or sauces containing ingredients made from raw eggs. The hotel has since changed their practices from producing their own sauces and desserts (such as tartare, mayonnaise and mousse) to purchasing pre-made mousse mixtures and commercial mayonnaise.

### References

1 OzFoodNet Working Group. Foodborne disease in Australia: incidence, notifications and outbreaks. Annual report,OzFoodNet, 2002.

2 Centre for Disease Control. Surveillance for Foodborne-Disease Outbreaks –United States, 1993–1997. CDC Surveillance Summaries. MMWR 2000;49(No. SS-1)

## An outbreak of *Clostridium perfringens* in a rural hospital

In February 2004, the department became aware of an outbreak of gastrointestinal illness affecting 14 residents in the aged care unit of a rural hospital. The residents experienced offensive diarrhoea over a two-day period, however, none reported nausea or vomiting. No staff members or patients in other wards reported any symptoms. Five faecal specimens were collected for laboratory investigation. Of these specimens, four were negative for bacterial pathogens while one had heavy growth of *Clostridium perfringens* but no enterotoxin was detected.

This outbreak was consistent with a point source outbreak of *Clostridium perfringens*, based on the tight clustering of onsets, the pattern of symptoms and the short duration of the outbreak. Investigations by the department found that the aged care unit took delivery of main meals prepared by the cook-chill method from a neighbouring hospital and re-heated in a microwave before serving. An inspection of the food safety program at this hospital revealed that the program did not cover the cook-chill

method because this method was introduced just before the outbreak. The local council supervised a clean-up at the hospital and at the cook-chill kitchen.

## Bloodborne viruses

### Hepatitis B

Megan Counahan, Department of Human Services

There were 24 cases of acute hepatitis B infection notified in the first quarter of 2004.This represents a 46 per cent decrease in the number of notifications received for the same period in 2003. The decrease returns the number of cases notified in Victoria to those reported in 2000 (n=19) prior to the sudden increase of cases seen in 2001. Fifty-eight per cent of notifications were for females (n=14). The age of cases ranged from 15 to 73 years. There were no notifications for people identified as Aboriginal and/or Torres Strait Islander.

### Hepatitis C

Luke Atkin, Department of Human Services

Between 1 January and 31 March 2004, the department received a total of 782 notifications of hepatitis C infection, compared with 979 notifications for the same period in 2003. Of the 782 notifications, 16 cases (two per cent) were classified as newly acquired. It should be noted that the number of newly acquired cases probably under-represents the burden of newly acquired hepatitis C in Victoria. Due to 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.

#### Newly Acquired Hepatitis C

Of the 16 newly acquired cases, seven were male and nine were female. The median age for both males and females was 27 years (range: 17–43 years for males, 17–36 for females). Eight cases (50 per cent) were diagnosed on the basis of seroconversion to hepatitis C virus in the previous 24 months, five (31 per cent) were diagnosed on the basis of having had clinical hepatitis in the previous 24 months and three were diagnosed on the basis of having both laboratory and clinical evidence.

Injecting drug use was the major risk factor reported (n=14 or 88 per cent). Other risk factors identified through

**Figure 2: Notifications of hepatitis C not further specified, by region and per 100,000, Victoria, January–March 2004**

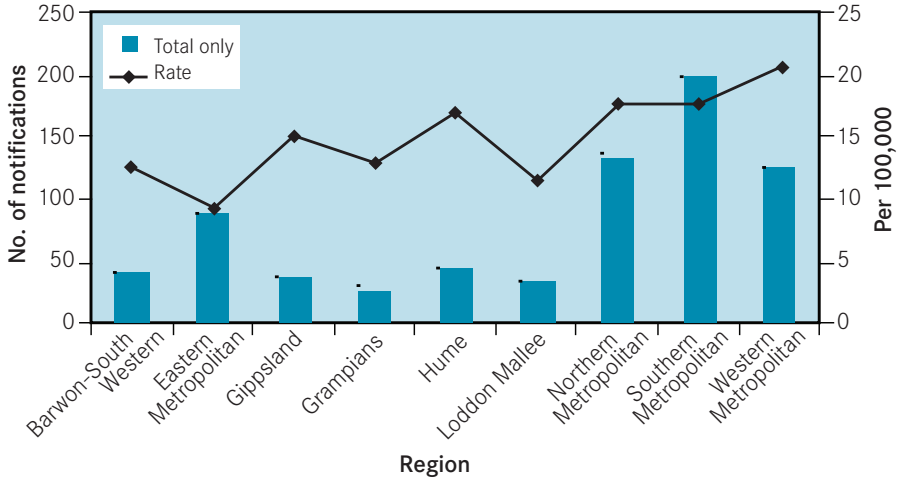
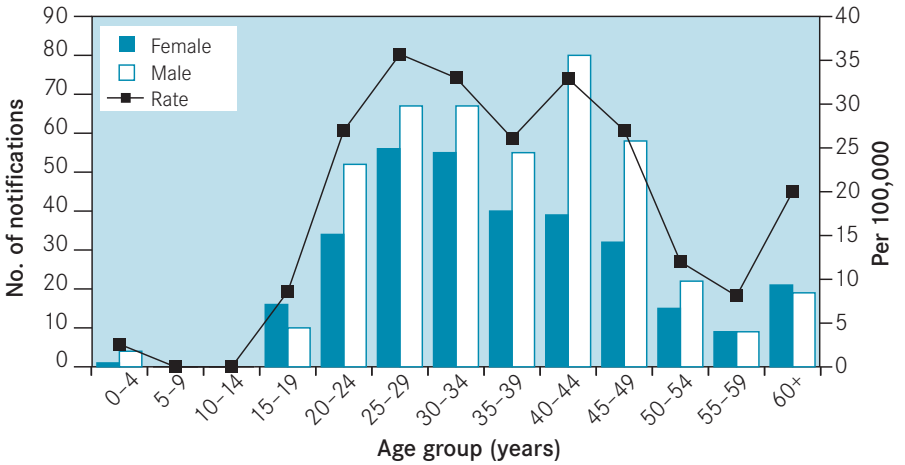



**Figure 3: Notifications of hepatitis C not further specified, by age group and sex, and per 100,000, Victoria, January–March 2004**



follow-up were imprisonment (n=1), having a hepatitis C positive sexual partner (n=2), having a household contact (n=1), surgery (n=1) and tattooing (n=1). Cases may have more than one risk factor identified. The case with surgery reported as a risk factor is currently being investigated.

### Hepatitis C (not further specified)

Of the 782 notifications of hepatitis C, 766 (98 per cent) were classified as not further specified (NFS). Of these, 444 were male, 319 were female and sex was not stated for three notifications. The highest notification rates were in the western metropolitan region (Figure 2). The number of notifications and notification rates per 100, 000 population, by age group and sex are depicted in Figure 3.

## Vaccine-preventable diseases

### Invasive pneumococcal disease

Megan Counahan, Department of Human Services

There were 71 cases of invasive pneumococcal disease (IPD) notified in the first quarter of 2004. This represents a three per cent increase on the number of cases for the same period in 2003 (n=69). The age range of those notified was 3 months to 91 years. Two persons were identified as Aboriginal and/or Torres Strait Islander. Fifty-eight per cent of notifications were for males (n=41), 42 per cent (n=30) were for females. Three deaths were reported as attributed to IPD in the quarter: two were aged over sixty five (case fatality rate = 9 per cent) and one aged under five years (case fatality rate = 5 per cent). All but one of these (73 year old male) were unvaccinated.

Serotype information was available on 89 per cent (n=63) of cases. All cases in children aged under two years and 83 per cent of those aged between two and five years were of a serotype contained in the seven valent conjugate vaccine, however, these cases were unvaccinated. Of those aged over 65 years, 86 per cent were of a serotype contained in the 23 valent vaccine. There were six cases, all in persons over 50 years of age, who had been vaccinated and their acquisition of IPD was likely to be attributed to vaccine failure.

## Other notifiable diseases

### Tuberculosis

Lynne Brown, Department of Human Services

Owing to the slow growing nature of *Mycobacterium tuberculosis*, data are preliminary and subject to change. This report relates to notifications for the first quarter of 2004, from 1 January to 31 March 2004.

### Overview

There were 83 notifications of tuberculosis to the department in the first quarter of 2004–an increase of 14 per cent on the notifications for the same period in 2003. Of the 83 notifications, 39 were for females (47 per cent) and 44 (53 per cent) were for males. Patients aged 20–24 years and 25–29 years had the highest notification rates at 4.5 and 3.9 per 100,000 respectively (Figure 4). Three children aged under 15 years were notified–all were identified by contact tracing and found to have early signs of disease on initial assessment.

Eighty-four percent (n=70) of notifications were for overseas born persons. Of these notifications, a total of 32 were born in India (14), Vietnam (10) or China (8). There were no notifications for persons identified as Aboriginal and/or Torres Strait Islander. Thirteen (19 per cent) of the 70 overseas born persons had previously

**Figure 4: Notifications of tuberculosis, by age group and per 100,000, Victoria, January–March 2004**

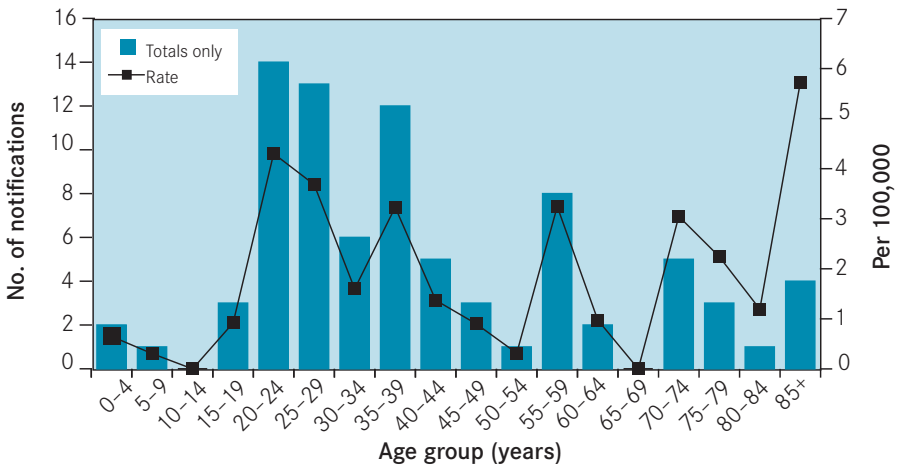


**Table 3: Notifications of tuberculosis, by site of disease, Victoria, January–March 2004**

| Site | Number |
|---|---|
| Pulmonary | 32 |
| Pulmonary and other sites | 5 |
| Lymph nodes | 29 |
| Pleural | 7 |
| Bone/joint | 6 |
| Genito/urinary | 1 |
| Meningeal | 1 |
| Other | 7 |
| Total | 88 |

Note: Total is greater than number of notifications due to multiple sites in some patients.

**Table 4 : Additional sites of infection associated with notifications of pulmonary tuberculosis, Victoria, January–March 2004**

| Site | Number |
|---|---|
| Pleural | 2 |
| Bone/joint | 1 |
| Lymph nodes | 1 |
| Other | 1 |
| Total | 5 |

been placed on a Tuberculosis Undertaking (TBU) that requires a new migrant to undergo further screening and assessment for possible tuberculosis on arrival in Australia. Six of these cases (46 per cent) were diagnosed on the basis of the health assessment required as a condition of their TBU. One patient was known to have HIV and TB co-infection.

Pulmonary disease accounted for forty-five per cent of all notifications (n=37) (Table 3). Five of these notifications noted additional sites, other than the lungs (Table 4). Pleural disease was the most common additional site, however, one case had pharyngeal tuberculosis and a second had disseminated disease. Extra pulmonary disease was reported in 55 per cent of notifications– the most common sites being lymphatic (57 per cent), bone/joint (12 per cent) and pleural (14 per cent). Of the 29 lymph node notifications, six were mediastinal nodes and three were hilar lymphadenopathy. The latter were identified in children and is usually indicative of recent infection and/or primary disease.

**Table 5: Laboratory confirmation of tuberculosis notifications, by diagnostic method, Victoria, January–March 2004**

| Diagnostic Method | Extra pulmonary tuberculosis only | Pulmonary tuberculosis only | Pulmonary tuberculosis plus other sites | Total |
|---|---|---|---|---|
| Clinical signs | 1 | | | 1 |
| Radiology | 4 | 6 | 1 | 11 |
| Microscopy | 3 | 2 | | 5 |
| Culture | 33 | 23 | 4 | 60 |
| Histology | 4 | 1 | | 5 |
| PCR/NAT* | 1 | | | 1 |
| Total | 46 | 32 | 5 | 83 |

*PCR/NAT: polymerase chain reaction/nucleic acid testing

Laboratory confirmation (smear, culture or antigen detection) was obtained in 86 per cent of notifications (Table 5). Seventy per cent were confirmed by culture. Specimens for laboratory confirmation were submitted for 89 per cent of pulmonary notifications and the diagnosis was bacteriologically confirmed in 73 per cent of these notifications. Less than half (15 of 37) of the pulmonary notifications were smear positive for acid-fast bacilli whereas 73 per cent (27 of 37) were positive on culture. Five patients with culture negative results remained on anti-tuberculosis treatment on the basis of radiological changes.

For seventy-nine cases, no past history of tuberculosis treatment was reported. Four had a past history of either full or partial treatment in Australia or overseas. However, two cases who reportedly had been fully treated were culture negative and therefore did not meet the case definition for a relapse of tuberculosis.

## Legionellosis

Megan Counahan, Department of Human Services

Twenty-four cases of confirmed or probable legionellosis were notified in the first quarter of 2004 compared with 29 in the same period in 2003. Twelve (50 per cent) were for *Legionella pneumophila* species with eight of these (67 per cent) being *L. pneumophila* serogroup 1. Ten cases (42 per cent) were caused by *Legionella longbeachae* and the remaining two cases (8 per cent) were *L. micdadei*. Fourteen (58 per cent) notifications were for males and 10 (42 per cent) were for females.

The age range of cases was 25–89 years. There were two deaths attributed to the disease during the reporting period–an 89-year-old male with *L. pneumophila* serogroup 1 and a 53-year-old female with *L. longbeachae*.

The department investigated two outbreaks in the first quarter. One occurred in a south-eastern suburb and involved three cases, however, no source was identified. The other outbreak in inner Melbourne involved two cases and no confirmed source was identified.

## Invasive Meningococcal Disease

Megan Counahan, Department of Human Services

There were 21 confirmed or probable cases of invasive meningococcal disease notified in the first quarter of 2004 compared with 28 for the same period in 2003. Of the 21 cases, 10 (48 per cent) were female and 11 (52 per cent) were male. Forty-three per cent (n=9) were Group B disease, 19 per cent (n=4), were Group C disease, 9 per cent (n=2) Group Y, and the remaining cases were people with either a clinically compatible illness (n=4) or an isolate which was not further typed (n=2).

There was one death attributed to Group C disease in a 71 year-old woman. There were no cases of Group C disease notified among the age groups eligible for free vaccine under the National Meningococcal C Immunisation Programme (refer to shading area in Table 6 above).

**Table 6: Notifications of invasive meningococcal disease serogroups B and C, by vaccination program age group, Victoria, 1997–2004**

| Meningococcal disease | Age group (years) | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|
| **Group B** | <1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| | 1–5 | 3 | 2 | 1 | 1 | 5 | 1 | 2 | 0 |
| | 6–14 | 1 | 0 | 1 | 3 | 1 | 0 | 1 | 1 |
| | 15–19 | 2 | 1 | 1 | 3 | 4 | 2 | 1 | 2 |
| | 20–30 | 1 | 1 | 1 | 1 | 2 | 4 | 1 | 2 |
| | 30+ | 1 | 0 | 1 | 2 | 0 | 1 | 1 | 3 |
| | Subtotal | 8 | 4 | 5 | 10 | 12 | 8 | 7 | 9 |
| **Group C** | <1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 1–5 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 |
| | 6–14 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 |
| | 15–19 | 1 | 0 | 0 | 4 | 1 | 5 | 4 | 0 |
| | 20–30 | 1 | 2 | 1 | 4 | 3 | 3 | 2 | 0 |
| | 30+ | 0 | 0 | 1 | 2 | 6 | 2 | 5 | 3 |
| | Subtotal | 2 | 2 | 2 | 13 | 14 | 11 | 13 | 4 |
| **Total** | **Total** | **10** | **6** | **7** | **23** | **26** | **19** | **20** | **13** |

# Sexually transmissible infections

## Human Immunodeficiency Virus (HIV) Infection

Rebecca Guy, Macfarlane Burnet Institute for Medical Research and Public Health

There were 55 new HIV diagnoses in Victoria during the first quarter of 2004. This is identical to the number reported in the previous quarter, but a five per cent increase on the 52 in the same quarter in 2003 (Figure 5). The median age of cases for this quarter was 36 years (range: 3–63 years).

Of the 55 new HIV diagnoses this quarter, 50 were in males, four were in females and one was in a transgender individual (Table 7). Of the 50 males, 40 (80 per cent) reported male-to-male sexual contact as their exposure category (Table 8)–a seven per cent decrease on the 43 reported in the previous quarter. Of these 40 males, 33 (83 per cent) reported having acquiring their infection in Victoria (Table 9). Also in this group, HIV infection was reportedly acquired from an anonymous partner for 23 per cent, a casual partner for 28 per cent and a regular partner for 15 per cent. Table 10 shows a breakdown of other options reported for source partner type.

### Heterosexual Contact

Of the 55 new HIV diagnoses this quarter, five (three males, two females) reported heterosexual contact as their exposure category (Table 11). Of these five, four (80 per cent) were born in a high prevalence country or reported

Figure 5: HIV diagnoses by year and quarter, Victoria, 1999–2004

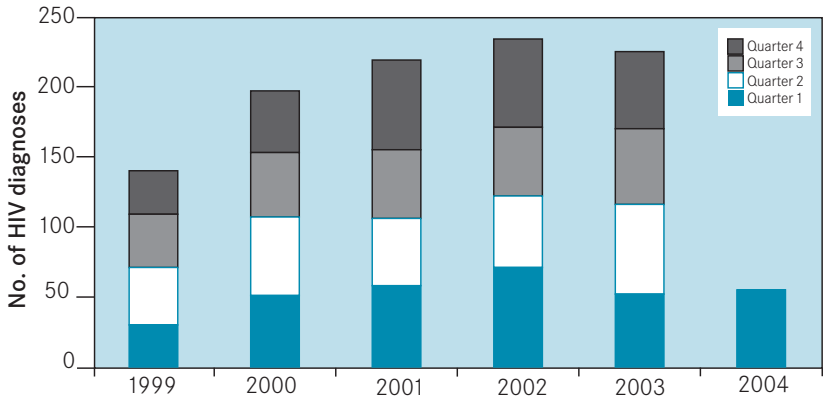



Table 7: New HIV diagnoses by age group, Victoria, January–March 2004 and January–December 2003

| Age group | Jan–March 2004 | | | | Jan –Dec 2003 | | |
|---|---|---|---|---|---|---|---|
| (years) | Male | Female | Transgender | Total | Male | Female | Total |
| 0–12 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 13–19 | 0 | 0 | 0 | 0 | 3 | 1 | 4 |
| 20–29 | 11 | 3 | 0 | 14 | 47 | 4 | 51 |
| 30–39 | 21 | 0 | 1 | 22 | 88 | 10 | 98 |
| 40–49 | 13 | 0 | 0 | 13 | 40 | 3 | 43 |
| 50-59 | 3 | 0 | 0 | 3 | 21 | 1 | 22 |
| 60+ | 2 | 0 | 0 | 2 | 7 | 0 | 7 |
| Total | 50 | 4 | 1 | 55 | 206 | 19 | 225 |

heterosexual contact with a person from a high prevalence country.

### Injecting Drug Use (IDU)

In the first quarter of 2004, eight notified cases had a history of injecting drug use and six of these also reported male-to-male sexual contact (Table 8).

### Sex Workers

Two cases (one male, one transgender) were identified as sex workers with both reported a history of male sex work.

### Other Exposure Categories

One female aged three years had her HIV status confirmed in 2004. This child acquired her infection in the first few months of life through being breastfed but at the time her HIV test results did not meet the HIV case definition. The mother of this child acquired HIV through heterosexual contact post-delivery.

### Incident Infections

Those with newly acquired HIV or incident infection provide a picture of

Table 8: New HIV diagnoses, by exposure category, Victoria, January–March 2004 and January–December 2003

| Exposure Category | Jan–March 2004 | | | | | | Jan–Dec 2003 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | Transgender | | Male | | Female | |
| | n | % | n | % | n | % | n | % | n | % |
| Male homosexual/bisexual | 40 | 80 | – | – | 0 | 0 | 163 | 79 | – | – |
| Male homosexual/bisexual and injecting drug user | 5 | 10 | – | – | 1 | 100 | 10 | 5 | – | – |
| Injecting drug user | 2 | 4 | 0 | 0 | 0 | 0 | 8 | 4 | 2 | 11 |
| Heterosexual | 3 | 6 | 0 | 0 | 0 | 0 | 16 | 8 | 10 | 53 |
| Person from a HPC* | 0 | 0 | 2 | 50 | 0 | 0 | 6 | 3 | 7 | 37 |
| Haemophilia/related disorder | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transfusion recipient | 0 | 0 | 1# | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other/unknown | 0 | 0 | 1 | 25 | 0 | 0 | 3 | 2 | 0 | 0 |
| Total | 50 | 100 | 4 | 100 | 1 | 100 | 206 | 100 | 19 | 100 |

* HPC: high prevalence country (greater than one per cent of population infected with HIV).
# Overseas acquisition.

**Table 9: New HIV diagnoses in males reporting homosexual contact, by place where infection was acquired, Victoria, January–March 2004 and January–December 2003**

| Place Infection | Jan–March 2004 | | Jan–Dec 2003 | |
|---|---|---|---|---|
| **Acquired** | **n** | **%** | **n** | **%** |
| Victoria | 33 | 82.5 | 117 | 71.8 |
| Interstate | 2 | 5.0 | 14 | 8.6 |
| Overseas | 1 | 2.5 | 21 | 12.9 |
| Unknown | 4 | 10.0 | 11 | 6.7 |
| Total | 40 | 100 | 163 | 100 |

**Table 10: New HIV diagnoses in males reporting homosexual contact, by source partner type, Victoria, January–March 2004 and January–December 2003**

| Source Partner type | Jan–March 2004 | | Jan–Dec 2003 | |
|---|---|---|---|---|
| | **n** | **%** | **n** | **%** |
| Regular partner | 6 | 15.0 | 26 | 16.0 |
| Casual partner | 11 | 27.5 | 50 | 30.7 |
| Anonymous Partner | 9 | 22.5 | 45 | 27.6 |
| Any combination of above | 8 | 20.0 | 17 | 10.4 |
| Unknown | 6 | 15.0 | 25 | 15.3 |
| Total | 40 | 100 | 163 | 100 |

**Table 11: New HIV diagnoses reporting heterosexual exposure, Victoria, January–March 2004 and January–December 2003.**

| Exposure Category | Jan–March 2004 | | | | Jan–Dec 2003 | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | Male | | Female | |
| | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| Person from a HPC* | 0 | 0.0 | 2 | 100.0 | 6 | 27.3 | 7 | 41.1 |
| Heterosexual contact with person from a HPC* | 2 | 66.7 | 0 | 0.0 | 6 | 27.3 | 2 | 11.8 |
| Heterosexual contact with bisexual man | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 11.8 |
| Heterosexual contact with IDU | 0 | 0.0 | 0 | 0.0 | 1 | 4.5 | 1 | 5.9 |
| Heterosexual contact with person with HIV | 0 | 0.0 | 0 | 0.0 | 1 | 4.5 | 3 | 17.6 |
| Heterosexual contact with person with other risk | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Heterosexual contact (not otherwise specified) | 1 | 33.3 | 0 | 0.0 | 8 | 36.4 | 2 | 11.8 |
| Total | 3 | 100 | 2 | 100 | 22 | 100 | 17 | 100 |

* HPC: high prevalence country (greater than one per cent of population infected with HIV).

who is presently affected by the HIV epidemic. Such individuals are identified on the basis of a previous negative HIV test and/or a seroconversion illness within the 12 months preceding HIV diagnosis.

Fifteen individuals (14 males, one transgender) were classified as incident HIV infections during the first quarter of 2004 (Table 12)–a 12 per cent decrease on the 17 incident infections identified in the previous quarter.

### Acquired Immune Deficiency Syndrome

There were ten notifications of AIDS during the first quarter of 2004 (nine males, one female) and six individuals had been diagnosed with AIDS within this time frame. Of the nine males, eight (89 per cent) reported a history of male-to-male sexual contact.

### Deaths

There were three deaths following HIV or AIDS diagnosis notified during the first quarter of 2004, compared to seven deaths in the previous quarter. All deaths were among males.

## Chlamydia Infections

Luke Atkin, Department of Human Services

### Summary of total notifications

The department received 1997 notifications of *Chlamydia trachomatis* in the first quarter of 2004, representing a 31 per cent increase on the number of notifications for the same period in 2003 (n=1529) (Figure 6). The age and sex distributions remain unchanged with the greatest burden of disease in the age group 20 –24 years. The

**Table 12: New HIV diagnoses, by time since last negative test or seroconversion illness, January–March 2004 and January–Dec 2003.**

| Time between HIV diagnosis and negative test and/or seroconversion illness | Jan–March 2004 | | | Jan–Dec 2003 | |
|---|---|---|---|---|---|
| | Male | Female | Transgender | Male | Female |
| Less than one year | 14 | 0 | 1 | 70 | 4 |
| One year to less than three years | 9 | 0 | 0 | 28 | 2 |
| Three or more years | 10 | 0 | 0 | 28 | 3 |
| No previous negative test or seroconversion illness | 13 | 4 | 0 | 80 | 10 |
| Unknown | 4 | 0 | 0 | 0 | 0 |
| Total | 50 | 4 | 1 | 206 | 19 |

**Figure 6: Notifications of *Chlamydia*, by quarter, Victoria, 1999–2004**

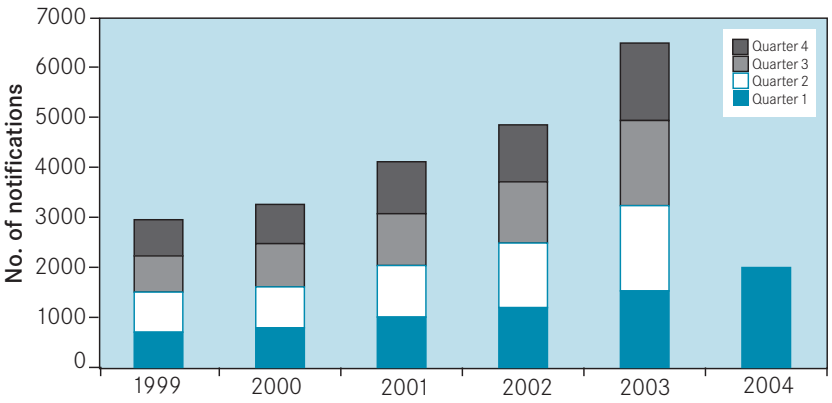
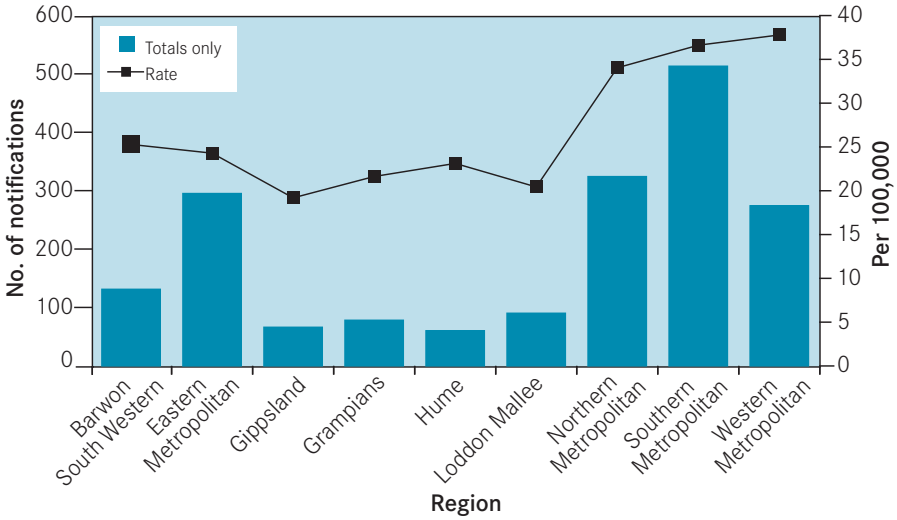



**Figure 7: Notifications of *Chlamydia*, by department region and per 100,000, Victoria, January–March 2004**




highest number of notifications was from the southern metropolitan region, while the highest notification rate was from the western metropolitan region (Figure 7).

Data on the type of specimen and laboratory testing methods were available for 1709 (86 percent) notifications (Table 13). Nucleic acid tests were the most common method reported. No laboratory confirmation was received for 287 (14 percent) notifications compared with 99 (5 percent) of notifications in the previous quarter. The Medicare Benefits Schedule does not fund testing for more than one site per episode, so the surveillance system is likely to underestimate the true number of extragenital infections.

The passive notification system is enhanced by the collection of risk factor information from clinicians. There were 717 (36 per cent) questionnaires returned for the first quarter 2004 (although not all questionnaires were complete), compared with 620 (40 per cent) for the same period in 2003. Table 14 outlines case characteristics of the population for whom enhanced surveillance information was available.

According to enhanced data, the most common reason reported for *Chlamydia* testing was clinical evidence of a sexually transmissible infection (n = 240) (Table 15). Patient initiated screening was the next most common reason for testing (n = 228), followed by doctor initiated screening (n = 117). Cases diagnosed as a result of antenatal screening comprised a small proportion of notified cases (n = 2).

Table 13: Specimen type and laboratory testing method for *C. trachomatis*, Victoria, January–March 2004

| Specimen type | Specimen site | Laboratory testing method | | | Total |
|---|---|---|---|---|---|
| | | Culture | NAT/PCR* | Not Stated | |
| Swab | Cervix | 2 | 510 | 1 | 513 |
| | Eye | 0 | 14 | 0 | 14 |
| | Pharynx | 0 | 2 | 0 | 2 |
| | Rectum | 1 | 39 | 0 | 40 |
| | Urethra | 0 | 136 | 0 | 136 |
| | Vagina | 1 | 96 | 0 | 97 |
| | Not specified | 1 | 36 | 0 | 37 |
| Urine | Not applicable | 6 | 934 | 1 | 941 |
| Other | | 0 | 3 | 0 | 3 |
| Not stated | | 0 | 43 | 0 | 43 |

* NAT/PCR: nucleic acid testing/polymerase chain reaction.
May include multiple testing on a single individual

Table 14: Enhanced epidemiological data on *Chlamydia* notifications, Victoria, January–March 2004

| | Male | Female | Not Stated | Total |
|---|---|---|---|---|
| **Gender of reported sexual partner** | | | | |
| Male | 79 | 336 | 0 | 415 |
| Female | 230 | 9 | 0 | 239 |
| Unknown/ not stated | 30 | 32 | 1 | 63 |
| Total | 339 | 377 | 1 | 717 |
| **Partner type** | | | | |
| Regular partner | 114 | 202 | 0 | 316 |
| Casual partner | 172 | 112 | 0 | 284 |
| Client | 0 | 0 | 0 | 0 |
| Sex worker | 1 | 2 | 0 | 3 |
| Unknown/ not stated | 52 | 61 | 1 | 114 |
| Total | 339 | 377 | 1 | 717 |
| **Where infection acquired** | | | | |
| Victoria | 253 | 311 | 0 | 564 |
| Interstate | 16 | 6 | 0 | 22 |
| Overseas | 26 | 17 | 0 | 43 |
| Unknown/ not stated | 44 | 43 | 1 | 88 |
| Total | 339 | 377 | 1 | 717 |

Table 15: Enhanced data on reported reasons for testing for *Chlamydia*, Victoria, January–March 2004

| Reason for testing | Female | Male | Gender not stated | Total |
|---|---|---|---|---|
| Clinical evidence of STI | 96 | 144 | 0 | 240 |
| Patient initiated STI screen | 120 | 107 | 1 | 228 |
| Doctor initiated STI screen | 77 | 40 | 0 | 117 |
| Asymptomatic contact* | 42 | 38 | 0 | 80 |
| Abnormal examination | 7 | | 0 | 7 |
| Pre-termination screen | 4 | 0 | 0 | 4 |
| Antenatal screen | 2 | Not applicable | 0 | 2 |
| Other | 24 | 5 | 0 | 29 |
| Not stated | 5 | 5 | 0 | 10 |
| Total | 377 | 339 | 1 | 717 |

*Contact with a known infected partner

## Gonorrhoea

Luke Atkin, Department of Human Services

There were 315 notifications of *Neisseria gonorrhoeae* in the first quarter of 2004, compared with 294 notifications for the same period in 2003 (Figure 8). Of the notifications in the first quarter, 285 (90 per cent) were for males and 30 (10 per cent) were for females. The median age was 33 years for males (range: 0–70 years) and 36 years for females (range: 16–62 years). Table 16 details the age and sex distributions of the notifications for which gender was reported.

The region of residence was known for 77 per cent (n=242) of the gonorrhoea cases. Notification rates were highest in the metropolitan regions with the highest notification rates in the western metropolitan region (Figure 9).

The notifying clinician provides the department with risk factor information on the case. Enhanced surveillance information was obtained for 79 per cent (n =248) of notifications, although not all questionnaires were complete.

Figure 8: Notifications of gonorrhoea, by year and quarter, Victoria, 1999–2004

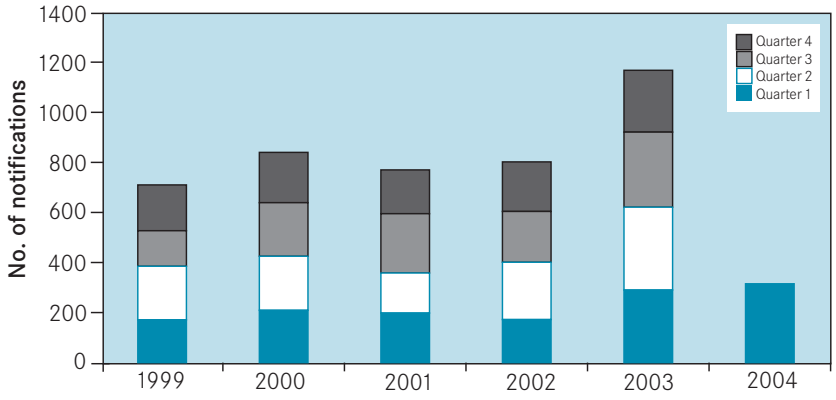



Table 16: Notifications of gonorrhoea, by age group and sex, Victoria, January–March 2004, January–December 2003 and January–December 2002

| | Jan–Mar 2004 | | | Jan–Dec 2003 | | | Jan–Dec 2002 | | |
|---|---|---|---|---|---|---|---|---|---|
| **Age group** | **Male** | **Female** | **Total** | **Male** | **Female** | **Total** | **Male** | **Female** | **Total** |
| 0-4 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5-9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10–14 | 0 | 0 | 0 | 2 | 2 | 4 | 2 | 1 | 3 |
| 15–19 | 18 | 2 | 20 | 37 | 16 | 53 | 18 | 10 | 28 |
| 20–24 | 49 | 5 | 54 | 147 | 23 | 170 | 101 | 16 | 117 |
| 25–29 | 52 | 5 | 57 | 221 | 13 | 234 | 137 | 14 | 151 |
| 30–34 | 44 | 3 | 47 | 213 | 12 | 225 | 158 | 12 | 170 |
| 35–39 | 49 | 5 | 54 | 176 | 5 | 181 | 132 | 6 | 138 |
| 40–44 | 30 | 1 | 31 | 129 | 9 | 138 | 82 | 5 | 87 |
| 45–49 | 17 | 1 | 18 | 50 | 4 | 54 | 44 | 2 | 46 |
| 50–54 | 10 | 4 | 14 | 35 | 6 | 41 | 24 | 2 | 26 |
| 55–59 | 11 | 3 | 14 | 36 | 5 | 41 | 21 | 1 | 22 |
| 60 + | 4 | 1 | 5 | 13 | 0 | 13 | 12 | 2 | 14 |
| Total | 285 | 30 | 315 | 1059 | 95 | 1154 | 731 | 71 | 802 |

### Males

Of the 285 notifications for males, information on the sexual partner was collected for 222 cases (78 per cent). For 70 per cent (n=156), a male partner was reported; for 22 per cent (n=48), a female partner was reported, and 8 per cent (n=18) the information was either unknown or not stated.

For the 222 male cases of whom the information was collected on partner type, 69 percent (n=153) reported having acquired their infection from a casual partner, while 19 per cent (n=42) reported acquisition from a regular partner, 2 per cent (n=5) reported acquisition from a sex worker and 1 per cent (n=2) reported acquisition from a client. For 9 per cent (n=20) the information was either unknown or not stated.

Of the 222 male cases for whom information was collected on the place of acquisition of infection, 81 per cent (n=179) reported having acquired their infection in Victoria. The place of acquisition was reported as being overseas for 8 per cent (n=18), and interstate for 4 per cent (n=9) and unknown for seven per cent.

### Females

For the 30 female cases, the gender of the sexual partner was collected for 90 per cent (n=27). Of these, 96 per cent (n=26) reported having acquired their infection from a male partner. The gender of the partner was unknown for one case.

For the 27 female cases of whom information was collected on partner type, 56 per cent (n=15) reported having acquired their infection from a regular partner, while 30 per cent (n=8) reported acquisition from a casual partner. One case reported having acquired the infection from a client. For three notifications the partner type was reported as unknown or not stated.

Information about the place of acquisition of infection was collected from 27 of the female cases. The majority of infections were acquired in Victoria (74 per cent, n=20) while two infections were reported as being acquired overseas. The place of acquisition was unknown or not stated in five cases.

**Figure 9: Notifications of gonorrhoea, by department region and per 100,000, January–March 2004**

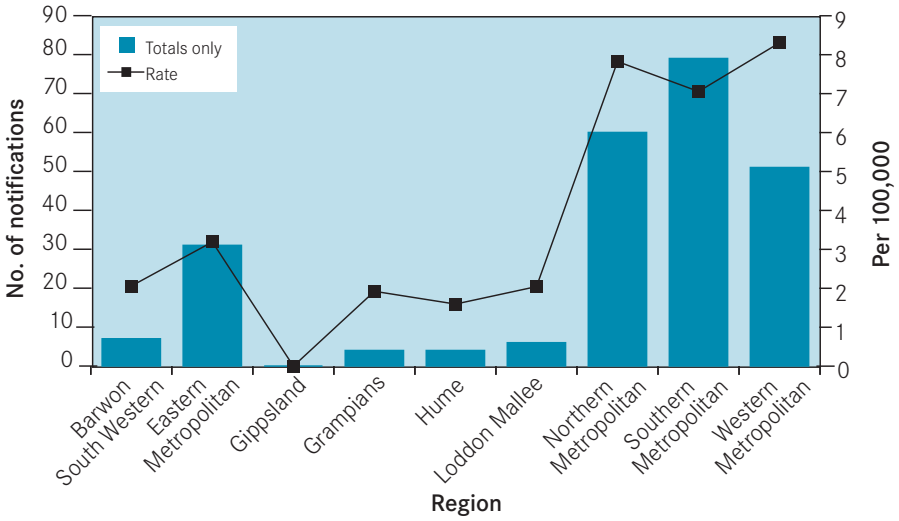



**Table 17: Positive *N. gonorrhoeae* tests, by site of infection, Victoria, January–March 2004**

| Specimen type | Specimen site | Number |
|---|---|---|
| Blood | Not applicable | 1 |
| Swab | Cervix | 6 |
| | Eye | 0 |
| | Pharynx | 26 |
| | Rectum | 39 |
| | Urethral | 143 |
| | Vagina | 8 |
| | Not specified | 8 |
| Urine | Not applicable | 48 |
| Not stated | Not stated | 41 |
| Total | | 320 |

The most common site of a positive test was the urethra (Table 17). Testing for antibiotic susceptibility is currently only possible if *N. gonorrhoeae* is isolated by culture. Of the 315 notifications, 250 isolates (79 per cent) were tested for antibiotic susceptibility by the Microbiological Diagnostic Unit. Of these, 227 were from males and 23 from females. Multiple isolates can be tested from each individual.

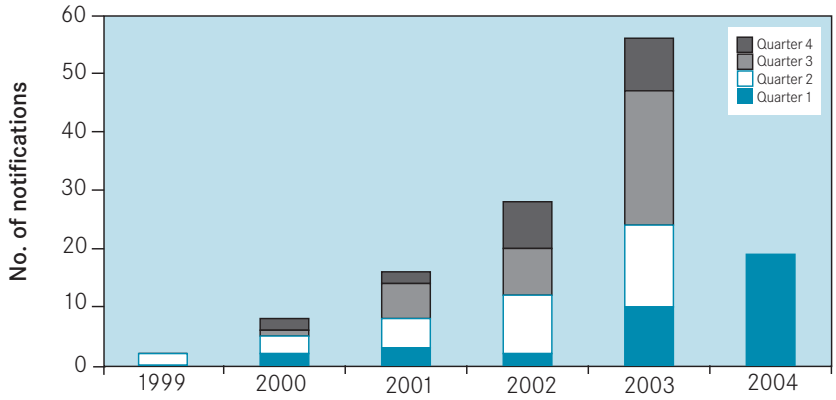
Resistance to ciprofloxacin was identified in 85 (34 per cent) of 250 isolates. Of the 116 isolates collected from male cases that reported a male sexual partner and having acquired their infection in Victoria, 28 per cent (n=32) were ciprofloxacin resistant, compared with thirty four per cent from the last quarter of 2003. The department recently updated the gonorrhoea fact-sheet recommending treatment of all gonorrhoea infections with ceftriaxone and placed alerts with the Victorian Divisions of General Practice

## Infectious Syphilis

Luke Atkin, Department of Human Services

In the first quarter of 2004, there were 19 cases of infectious syphilis, sixteen being male and three female. This represents a 111 per cent increase on the nine cases notified in the fourth quarter of 2003 (six males, three females) and a 90 per cent increase on the ten cases notified in the first quarter of 2003 (all male) (Figure 10).

**Figure 10: Infectious syphilis notifications, by year and quarter, Victoria, 1999–2004**



Of the 19 cases, seven were primary infections, five were secondary infections, six were early latent infections, and one was a case of neurosyphilis. The median age was 36 years (range: 20–53 years).

### Males

Of the sixteen male cases, thirteen reported male sexual partners, one reported a female sexual partner, one reported a transgender partner and for one case the information was not stated. Twelve male cases reported acquiring their infection from a casual partner, two cases reported acquiring their infection from a regular partner, one case reported acquiring their infection from a sex worker and for one case the information was unknown. Of the sixteen males, nine reported acquiring their infection in Victoria, three overseas, three interstate and for one case the information was unknown.

### Females

Of the three female cases, one reported a male sexual partner, for one case the information was unknown and for one case the information was not stated. One of the female cases reported acquiring her infection from a regular partner and for the remaining two cases the information was unknown. Of the three females, two reported acquiring their infection overseas, and for one the information was unknown.

## Bloodstream infections and meningitis

Sally Bodenham and Mark Veitch, Microbiological Diagnostic Unit, the University of Melbourne.

### Surveillance case definitions

An episode of bacteraemia or meningitis is defined as the first isolation of a clinically significant bacterium or fungus from the blood or cerebrospinal fluid (CSF) of a person in a 14-day period. Persons having more than one species of bacteria or fungi isolated are counted as different episodes. We include recent historical averages and counts for comparison. These are based on slightly different case definitions and so serve only as a general guide to trends. An organism may sometimes be reported by the diagnostic laboratory only to the genus level or may be incompletely speciated (where definitive identification is unnecessary for patient care). Therefore, some organism categories, such as coagulase-negative *Staphylococcus* and *Staphylococcus epidermidis*, overlap.

### Summary of important causes of bloodstream infection (BSI) and meningitis in the first quarter of 2004

There were 1212 reports of BSI and meningitis caused by 117 species/types bacteria and fungi for the first quarter of 2004. Of these reports, 1200 were from BSI and 12 were from meningitis. Twenty organisms accounted for 82 per cent of reports (Table 18).

The increase in reports of *Acinetobacter calcoaceticus–baumanii* complex and *Serratia marsescens* was mostly attributable to localised clusters of cases. Cases of *Streptococcus bovis* were not clustered and may represent random variation in counts.

Trends in antimicrobial resistance of some invasive bacterial pathogens

The patterns of resistance to key antimicrobials in invasive isolates of Gram positive pathogens and *E. coli* during the first quarter of 2004 were similar to those seen in the previous four years.[1] The proportion of *S. aureus* isolates reported to be resistant to methicillin for the first quarter of 2004 was 29 per cent (Table 19). The proportion of isolates demonstrating methicillin resistance was 19 per cent among specimens collected before the third day of hospitalisation, rising to 55 per cent among specimens collected after the seventh day of hospitalisation. Five per cent (three isolates) of invasive *S. pneumoniae* were reported as intermediate or resistant to penicillin. None were reported as non-susceptible to cefotaxime/ceftriaxone.

Invasive infections caused by *E. faecalis* were more common than those due to *E. faecium*, but were less likely to be due to vancomycin resistant isolates. Vancomycin resistance was reported in 22 per cent (two isolates) of *E. faecium*, and three per cent (one isolate) of *E. faecalis*. All three isolates had the *vanB* gene detected by polymerase chain reaction.

**Table 18: The twenty most common isolate types reported to VHPSS, Victoria, January–March 2004.**

| Isolate type | Jan–Mar 2004 | Three year mean (2001–03) | 2004 ytd | 2003 ytd | 2003 total |
|---|---|---|---|---|---|
| *Escherichia coli* | 272 | 246 | 272 | 229 | 939 |
| *Staphylococcus aureus* | 257 | 240 | 257 | 232 | 938 |
| *Klebsiella pneumoniae* | 69 | 54 | 69 | 56 | 212 |
| *Streptococcus pneumoniae* | 64 | 71 | 64 | 76 | 446 |
| Coagulase negative *Staphylococcus* | 57 | 50 | 57 | 51 | 214 |
| *Pseudomonas aeruginosa* | 36 | 45 | 36 | 38 | 136 |
| *Enterococcus faecalis* | 32 | 32 | 32 | 37 | 147 |
| *Staphylococcus epidermidis* | 22 | 47 | 22 | 29 | 143 |
| Group B *Streptococcus* | 22 | 19 | 22 | 25 | 68 |
| *Enterobacter cloacae* | 20 | 22 | 20 | 18 | 80 |
| Group A *Streptococcus* | 19 | 17 | 19 | 27 | 78 |
| *Proteus mirabilis* | 16 | 18 | 16 | 14 | 55 |
| *Candida albicans* | 15 | 14 | 15 | 18 | 60 |
| *Serratia marcescens* | 15 | 9 | 15 | 9 | 37 |
| *Streptococcus mitis* | 14 | 12 | 14 | 13 | 43 |
| Group G *Streptococcus* | 14 | 14 | 14 | 16 | 50 |
| *Acinetobacter calcoaceticus –baumanii* complex | 12 | 5 | 12 | 11 | 36 |
| *Klebsiella oxytoca* | 12 | 21 | 12 | 17 | 71 |
| *Streptococcus bovis* | 12 | 6 | 12 | 5 | 22 |
| *Enterococcus faecium* | 9 | 8 | 9 | 9 | 51 |
| Subtotal | 989 | 950 | 989 | 930 | 3826 |
| Other isolate types | 223 | 260 | 223 | 229 | 972 |
| Total | 1212 | 1210 | 1212 | 1159 | 4798 |

**Table 19: Trends in resistance patterns to key antimicrobials in *S. aureus*, *S. pneumoniae* and enterococci, Victoria, January–March 2004**

| Period | *Staphylococcus aureus* | | *Streptococcus pneumoniae* | | *Enterococcus faecalis* | | *Enterococcus faecium* | |
|---|---|---|---|---|---|---|---|---|
| | Methicillin resistant (%) | Isolates tested (n) | Penicillin non-susceptible (%) | Isolates tested (n) | Vancomycin resistant (%) | Isolates tested (n) | Vancomycin resistant (%) | Isolates tested (n) |
| Jan–Mar 2004 | 29% | 257 | 5% | 63 | 3% | 32 | 22% | 9 |

Reports of the susceptibility of *Escherichia coli* isolates to aminopenicillins, ceftazidime, gentamicin and ciprofloxacin were available for 97 per cent, 66 per cent, 98 per cent and 83 per cent of isolates respectively. The proportion of *E. coli* isolates resistant to aminopenicillins was 40 per cent, while the proportion resistant to ciprofloxacin, ceftazidime or gentamicin was low (each less than or around 3 per cent).

## Reference

1 Bodenham S & Veitch M. Surveillance of bloodstream infections and meningitis in 2003 by the Victorian Hospital Pathogens Surveillance Scheme. Victorian Infectious Diseases Bulletin 2004;7(1):7-9.

## Acknowledgments

We gratefully acknowledge the confidential contributions of Victorian laboratories and the support provided by the Department of Human Services. Data are subject to revision.

Table 20. Notifications of infectious diseases, by Department of Human Services Region, 1 January to 31 March 2004 and hi

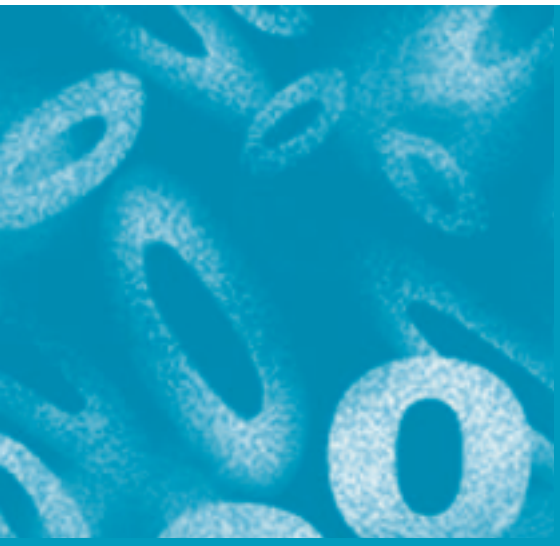
| | Barwon South Western | | Grampians | | Loddon Mallee | | Hume | | Gippsland | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Notifiable Disease** | **2004 ytd** | *2003 ytd* | **2004 ytd** | *2003 ytd* | **2004 ytd** | *2003 ytd* | **2004 ytd** | *2003 ytd* | **2004 ytd** | *2003 ytd* |
| **Blood Borne Diseases** | | | | | | | | | | |
| Hepatitis B - Acute | **0** | *4* | **0** | *1* | **0** | *1* | **0** | *0* | **2** | *4* |
| Hepatitis B - Chronic/Unknown | **4** | *24* | **3** | *1* | **2** | *4* | **1** | *5* | **1** | *5* |
| Hepatitis C - Newly acquired | **4** | *3* | **1** | *0* | **2** | *3* | **1** | *2* | **2** | *2* |
| Hepatitis C - Not further specified | **38** | *59* | **25** | *31* | **30** | *33* | **43** | *40* | **35** | *37* |
| Hepatitis D | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| **Enteric Diseases** | | | | | | | | | | |
| Campylobacter infection | **157** | *165* | **52** | *50* | **68** | *84* | **102** | *78* | **126** | *100* |
| Cholera | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Cryptosporidiosis | **0** | *1* | **7** | *0* | **2** | *1* | **12** | *8* | **13** | *17* |
| Food/Water/Environmental - Other | **0** | *3* | **1** | *5* | **2** | *7* | **0** | *5* | **1** | *6* |
| Giardiasis | **16** | *21* | **4** | *9* | **12** | *15* | **4** | *9* | **10** | *11* |
| Haemolytic Uraemic Syndrome | **0** | *0* | **0** | *0* | **0** | *1* | **1** | *0* | **0** | *0* |
| Hepatitis A | **2** | *1* | **0** | *0* | **0** | *2* | **0** | *2* | **0** | *1* |
| Hepatitis E | **0** | *0* | **1** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Listeriosis | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *1* | **0** | *1* |
| Paratyphoid | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Salmonellosis | **26** | *24* | **18** | *12* | **16** | *28* | **20** | *28* | **18** | *24* |
| Shigellosis | **0** | *0* | **1** | *0* | **0** | *0* | **1** | *0* | **0** | *0* |
| Typhoid | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *1* |
| Vero Toxin producing E.coli | **2** | *0* | **1** | *0* | **0** | *1* | **0** | *0* | **0** | *0* |
| **Other Infectious Notifiable Diseases** | | | | | | | | | | |
| Invasive Meningococcal Disease – Group B | **1** | *1* | **1** | *0* | **0** | *1* | **0** | *0* | **1** | *1* |
| Invasive Meningococcal Disease – Group C | **1** | *2* | **0** | *0* | **0** | *0* | **0** | *1* | **1** | *0* |
| Invasive Meningococcal Disease – Other | **3** | *1* | **0** | *0* | **0** | *0* | **1** | *0* | **0** | *0* |
| Legionella – Other | **1** | *0* | **0** | *1* | **1** | *1* | **0** | *0* | **1** | *2* |
| Legionella pneumophila 1 | **1** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Leprosy | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Mycobacterium infection (non-TB) | **1** | *0* | **0** | *0* | **0** | *1* | **0** | *0* | **0** | *2* |
| Mycobacterium tuberculosis | **0** | *1* | **0** | *2* | **0** | *2* | **1** | *0* | **0** | *2* |
| Mycobacterium ulcerans | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *4* |
| Syndromes | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| **Sexually Transmitted Infections** | | | | | | | | | | |
| Chlamydia | **131** | *105* | **76** | *45* | **91** | *56* | **60** | *47* | **66** | *42* |
| Gonococcal Infection | **7** | *2* | **4** | *1* | **6** | *2* | **4** | *4* | **0** | *3* |
| Syphilis - infectious | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *1* | **0** | *0* |
| Syphilis - other | **3** | *2* | **0** | *2* | **2** | *1* | **2** | *2* | **0** | *1* |
| **Vaccine Preventable Diseases** | | | | | | | | | | |
| Haemophilus influenzae type b | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Influenza | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **1** | *1* |
| Invasive Pneumococcal Disease | **10** | *10* | **4** | *6* | **2** | *3* | **5** | *2* | **4** | *5* |
| Measles | **1** | *0* | **0** | *0* | **0** | *10* | **0** | *3* | **0** | *0* |
| Mumps | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Pertussis | **25** | *9* | **3** | *12* | **26** | *5* | **21** | *14* | **13** | *25* |
| Rubella | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Tetanus | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| **Vector Borne Diseases** | | | | | | | | | | |
| Arbovirus - Alphavirus | **1** | *0* | **4** | *0* | **15** | *3* | **6** | *0* | **6** | *3* |
| Arbovirus - Flavivirus | **0** | *0* | **0** | *1* | **0** | *0* | **1** | *0* | **0** | *0* |
| Malaria | **0** | *0* | **0** | *0* | **1** | *1* | **0** | *1* | **1** | *0* |
| **Zoonoses** | | | | | | | | | | |
| Brucellosis | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *0* |
| Leptospirosis | **0** | *2* | **0** | *0* | **0** | *0* | **0** | *0* | **0** | *1* |
| Psittacosis | **0** | *0* | **10** | *2* | **3** | *0* | **5** | *1* | **0** | *0* |
| Q Fever | **0** | *2* | **0** | *3* | **1** | *0* | **1** | *3* | **1** | *3* |
| **Est. 2002 resident population** | **343,999** | | **209,243** | | **296,067** | | **253,250** | | **240,948** | |

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).

istorical comparisons*

| Western Metropolitan | | Northern Metropolitan | | Eastern Metropolitan | | Southern Metropolitan | | Unknown | | Victoria | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2004 ytd | *2003 ytd* | 2004 ytd | *2003 ytd* | 2004 ytd | *2003 ytd* | 2004 ytd | *2003 ytd* | 2004 ytd | *2003 ytd* | 2004 ytd | *2003 ytd* | 2003 total |
| 6 | *9* | 3 | *6* | 5 | *6* | 7 | *11* | 1 | *1* | 24 | *43* | 157 |
| 92 | *105* | 72 | *69* | 88 | *80* | 86 | *106* | 41 | *37* | 390 | *436* | 1613 |
| 0 | *5* | 4 | *6* | 3 | *4* | 0 | *5* | 2 | *5* | 19 | *35* | 115 |
| 124 | *182* | 134 | *149* | 85 | *128* | 201 | *226* | 48 | *58* | 763 | *943* | 3702 |
| 0 | *1* | 0 | *1* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *2* | 13 |
| 184 | *205* | 241 | *237* | 409 | *285* | 402 | *311* | 58 | *48* | 1799 | *1563* | 5644 |
| 0 | *0* | 0 | *0* | 1 | *0* | 0 | *0* | 0 | *0* | 1 | *0* | 0 |
| 6 | *4* | 6 | *6* | 5 | *11* | 9 | *11* | 2 | *1* | 62 | *60* | 214 |
| 19 | *119* | 6 | *50* | 9 | *72* | 15 | *41* | 136 | *95* | 189 | *403* | 847 |
| 32 | *28* | 28 | *24* | 35 | *37* | 58 | *62* | 5 | *7* | 204 | *223* | 772 |
| 0 | *0* | 0 | *0* | 0 | *1* | 0 | *0* | 0 | *0* | 1 | *2* | 4 |
| 2 | *2* | 5 | *5* | 1 | *7* | 6 | *8* | 1 | *0* | 17 | *28* | 92 |
| 1 | *0* | 1 | *0* | 2 | *0* | 0 | *0* | 0 | *0* | 5 | *0* | 2 |
| 0 | *0* | 0 | *1* | 0 | *5* | 3 | *0* | 0 | *0* | 3 | *8* | 21 |
| 1 | *2* | 2 | *0* | 1 | *1* | 1 | *2* | 0 | *0* | 5 | *5* | 10 |
| 32 | *148* | 49 | *59* | 81 | *93* | 76 | *99* | 13 | *19* | 349 | *534* | 1264 |
| 3 | *3* | 4 | *4* | 2 | *6* | 3 | *1* | 1 | *1* | 15 | *15* | 50 |
| 2 | *3* | 1 | *0* | 1 | *6* | 1 | *2* | 0 | *0* | 5 | *12* | 19 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *1* | 0 | *0* | 3 | *2* | 3 |
| 1 | *1* | 1 | *1* | 0 | *0* | 4 | *2* | 1 | *0* | 10 | *7* | 55 |
| 0 | *2* | 0 | *3* | 1 | *1* | 1 | *4* | 0 | *0* | 4 | *13* | 47 |
| 0 | *1* | 2 | *2* | 0 | *3* | 1 | *1* | 0 | *0* | 7 | *8* | 27 |
| 3 | *5* | 3 | *5* | 3 | *1* | 4 | *0* | 0 | *0* | 16 | *15* | 57 |
| 1 | *0* | 0 | *8* | 4 | *2* | 2 | *4* | 0 | *0* | 8 | *14* | 33 |
| 0 | *0* | 0 | *1* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *1* | 2 |
| 0 | *2* | 2 | *0* | 2 | *1* | 0 | *3* | 0 | *0* | 5 | *9* | 33 |
| 28 | *17* | 14 | *12* | 22 | *10* | 16 | *25* | 0 | *0* | 81 | *71* | 329 |
| 0 | *0* | 0 | *0* | 1 | *0* | 0 | *2* | 0 | *0* | 1 | *6* | 11 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 3 |
| 273 | *240* | 326 | *254* | 297 | *234* | 515 | *368* | 159 | *136* | 1994 | *1527* | 6484 |
| 51 | *41* | 60 | *60* | 31 | *33* | 79 | *85* | 74 | *64* | 316 | *295* | 1166 |
| 4 | *0* | 3 | *1* | 0 | *4* | 6 | *3* | 6 | *1* | 19 | *10* | 55 |
| 16 | *14* | 6 | *11* | 9 | *9* | 17 | *23* | 11 | *17* | 66 | *82* | 302 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 1 |
| 2 | *0* | 2 | *0* | 4 | *0* | 7 | *0* | 2 | *1* | 18 | *2* | 658 |
| 6 | *3* | 8 | *10* | 12 | *17* | 16 | *13* | 4 | *0* | 71 | *69* | 441 |
| 0 | *0* | 0 | *0* | 0 | *0* | 3 | *0* | 0 | *0* | 4 | *13* | 38 |
| 1 | *0* | 0 | *0* | 1 | *0* | 0 | *0* | 0 | *0* | 2 | *0* | 4 |
| 27 | *10* | 25 | *19* | 34 | *22* | 42 | *17* | 21 | *1* | 237 | *134* | 610 |
| 0 | *0* | 0 | *0* | 0 | *2* | 0 | *1* | 0 | *0* | 0 | *3* | 3 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 1 |
| 3 | *0* | 6 | *0* | 6 | *1* | 4 | *1* | 0 | *0* | 51 | *8* | 23 |
| 0 | *0* | 0 | *1* | 3 | *1* | 0 | *4* | 0 | *0* | 4 | *7* | 18 |
| 4 | *4* | 1 | *1* | 3 | *9* | 1 | *5* | 3 | *1* | 14 | *22* | 60 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 4 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 1 | *0* | 1 | *3* | 10 |
| 7 | *4* | 7 | *5* | 10 | *3* | 7 | *3* | 1 | *0* | 50 | *18* | 103 |
| 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 0 | *0* | 3 | *11* | 18 |
| 630,838 | | 772,295 | | 973,307 | | 1,137,188 | | | | 4,857,228 | | |

# Victorian Infectious Diseases Bulletin



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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.

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