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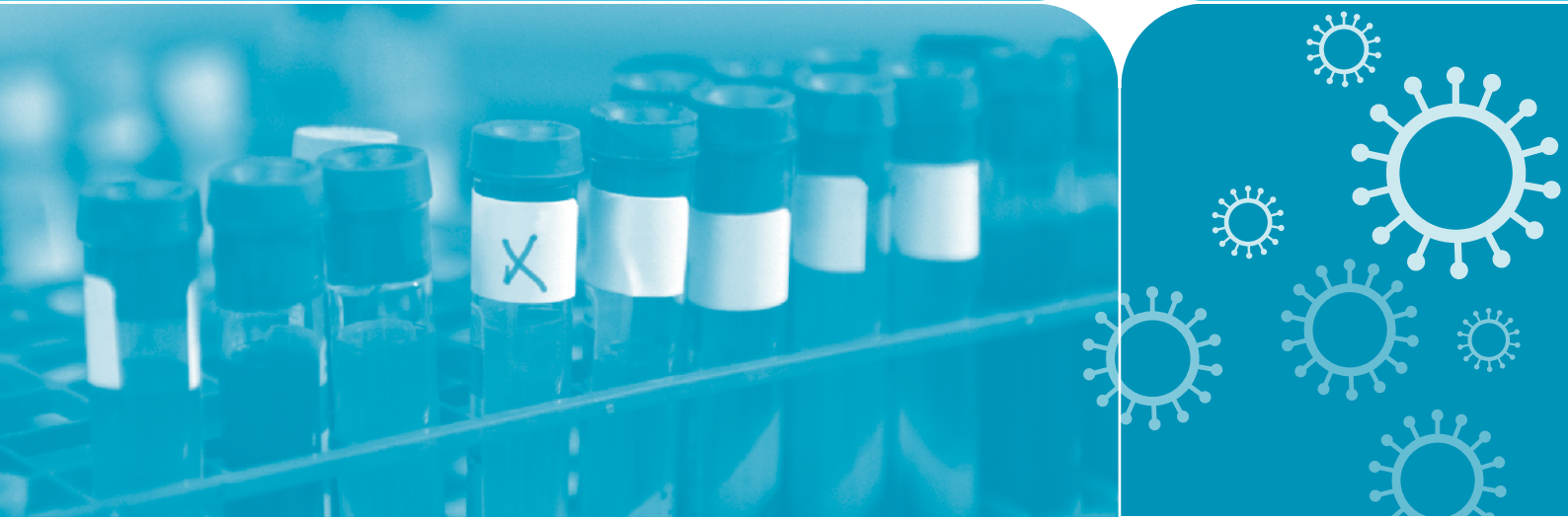

State Government Victoria

Department of Health

Elevated blood lead notifications: the first six months

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Elevated blood lead became a notifiable condition in Victoria on 1 January 2010, when the *Public Health and Wellbeing Act 2008* and *Public Health and Wellbeing Regulations 2009* came into effect. Blood lead greater than 10 µg/dL is a Group B notifiable condition, requiring medical practitioners and pathology services in Victoria to notify the department within five working days of a diagnosis. The 10 µg/dL (0.48 µmol/L) notification threshold is in line with the National Health and Medical Research Council's (NHMRC) 2009 recommendation that all Australians should have a blood lead level below 10 µg/dL. NHMRC's recommendation is consistent with the Centers for Disease Control and Prevention (CDC), Agency for Toxic Substances and Disease Registry (ATSDR) and the World Health Organization's (WHO) goal for non-occupational exposure.[1] The NHMRC stresses that this level is not intended to indicate a 'safe level' nor a 'level of concern'.[1] This article provides an overview of the department's rationale for introducing notifications and summarises some of the information gained from the first six months of implementation.

Background

What are the health ramifications of elevated blood lead levels?

The unique properties of lead have resulted in widespread use in industry, hobby activities and—in the past—petrol and household paints. Lead serves no useful purpose in the human body[1,3] and even a small quantity of the metal can be toxic when ingested or inhaled.[1] Exposure to lead can adversely affect nearly every organ and system in the body, but is particularly harmful to the nervous system.[2] Young children are more vulnerable to lead exposure than adults because they are more likely to ingest material on their hands and exhibit pica behaviour. Furthermore, lead is much more readily absorbed in a child's body than an adult's.[2] Unborn babies can be exposed to lead in the mother's blood and there is evidence of an association between high lead exposure and adverse pregnancy outcomes such as miscarriage.[2] While the association between high lead exposure and adverse neurodevelopmental effects in lead-exposed children is well established, the extent to which a child's neurodevelopment is affected by low-lead exposure is contentious.[1] A blood lead threshold for adverse health effects in children has not been identified.[2] There is evidence to suggest childhood lead poisoning can also cause health effects later in life, including renal effects, hypertension, reproductive problems, and developmental problems in offspring.[2]

Lead-exposed adults may experience many of the symptoms experienced by children, although the blood lead levels (BLLs) at which adults are affected tend to be higher.[2] Blood lead testing is an indicator of recent or ongoing lead exposure and can identify individuals who may be exposed to potentially damaging levels of lead without exhibiting clinical symptoms.[2] Lead accumulates in the body over time, with the majority of the lead body burden deposited within the bones and teeth, and the remainder stored in soft tissues or in the blood stream.[2] Physiological stress associated with pregnancy, lactation, menopause, chronic disease and advanced age, can cause lead to be released from the bone into the blood so a person can have an elevated BLL and suffer health effects in the absence of current exposures.[2]

There is evidence from international research that blood lead levels less than 10 µg/dL (the current notification threshold) are associated with a range of adverse health effects in both adults and children.[2,4] The department will continue to monitor NHMRC and international recommendations and ensure that the Victorian legislation is consistent with current evidence.

Why did elevated blood lead become a notifiable condition?

Little is known about the prevalence of non-occupational lead poisoning in Victoria. In contrast to South Australia or Queensland, where the close proximity of communities to lead smelters has provided an imperative for targeted lead programs, Victoria has no major industrial source of lead pollution. Prior to January 2010, cases of elevated blood lead were notified to the department on a voluntary and *ad hoc* basis, usually by a medical practitioner and typically where the lead exposure involved a child. The department's Environmental Health Unit (EHU) conducted several lead investigations between 2007 and 2009. Investigations involving several

young children with dangerously elevated blood lead levels generated renewed concerns about childhood lead exposure in Victoria. Ultimately, these concerns and the lack of knowledge about the prevalence of non-occupational lead poisoning in the broader Victorian community prompted the introduction of mandatory blood lead notifications.

The department uses information from the notifications for three main purposes: to provide a targeted response to non-occupationally exposed individuals identified as having elevated blood lead; to monitor non-occupational lead exposure in Victoria; and to inform any policy response or prevention activities in relation to elevated BLLs. The department can assist individuals with elevated BLLs to identify potential source/(s) of lead exposure and if any are found, provide advice on how the source/(s) can be safely managed.

Occupational lead exposure is regulated by WorkSafe Victoria under the Occupational Health and Safety Regulations 2007, and the Department of Health refers notifications associated with occupational lead exposure to WorkSafe Victoria in accordance with notification thresholds stipulated in those Regulations.

Public health action as a result of notifications

The department's response to lead notifications is:

i) entry of data into the Notifiable Infectious Diseases Surveillance System (NIDS)
ii) determination of occupational and non-occupational exposure status
iii) referral of occupational cases to WorkSafe Victoria
iv) identification of potential or obvious sources of lead exposure through consultation with the treating medical practitioner and/or a questionnaire
v) undertaking an environmental investigation where indicated by risk factors (for example an old home or a home on a former industrial site)
vi) undertaking a risk assessment
vii) advice given on abatement and management of lead sources, where these are identified

No environmental investigations were undertaken during the first six months of implementation.

Is blood lead notifiable in other states and territories?

Victoria is not the first Australian state to introduce elevated blood lead notifications. In NSW, laboratories are required to notify the relevant health authority of any blood lead level greater than 15 µg/dL (approx 0.72 µmol/L). In Qld, laboratories are required to notify any blood lead level equal to or greater than 10 µg/dL. Laboratories in Tasmania are required to notify any blood lead levels in excess of 10 µg/dL for any person not known to be occupationally exposed to lead. Elevated blood lead is not a notifiable condition in WA, NT, ACT or SA. However, a lead program was established by the South Australian government in Port Pirie (where a lead smelter has operated since the 1880s), the main focus of which remains to reduce household exposure for pregnant women and children below the age of five years.

Review of the first six months of notifications

A total of 469 laboratory confirmed cases of blood lead greater than 10 µg/dL were notified to the department in the first six months of lead notifications (1 January–30 June 2010), comprising 931 separate blood lead level test results.

Occupational lead exposure

Lead risk job

The Occupational Health & Safety Regulations 2007 stipulate employer and employee responsibilities at workplaces where a 'lead process' is undertaken. Activities defined as lead processes are listed in the Regulations. A job is deemed a 'Lead Risk Job' (LRJ) if it meets the definition of a lead process and employee BLLs exceed thresholds prescribed in the Regulations. Employers are required to notify WorkSafe Victoria of an LRJ and removal of an employee from an LRJ.

Blood lead level µg/dL (µmol/L) thresholds by gender

	Female*	Male
Lead risk job (LRJ)	10 (0.48)	30 (1.45)
Removal required	20 (0.97)	2.41)

*applicable to females of reproductive capacity

Of the 469 cases notified a majority (446, 95 per cent) were associated with occupational lead exposure. Nineteen BLL results in females (12 separate employees, aged 42–57 years) and 834 BLL results in males (434 separate employees, aged 15–77 years) were identified.

All 19 female occupational BLL results notified to the department were equal to or above the BLL threshold indicating a Lead Risk Job (LRJ) for female employees of reproductive capacity. Eight results relating to six separate employees were of a level requiring removal of a female employee of reproductive capacity from a LRJ.

Of the 834 male occupational BLL results notified to the department 140 (16.8 per cent) were equal to or above the BLL level indicating the employee worked in a LRJ; 10 (1.2 per cent)

were of a level requiring removal of a male employee from a LRJ and; 692 (81.2 per cent) were beneath the LRJ notification threshold for males.

The department and WorkSafe Victoria have been in communication regarding those employees with elevated blood lead levels that fall beneath WorkSafe Victoria's notification thresholds.

Non-occupational lead exposure

Four children and ten adults were identified as having non-occupational status. The children were males aged between two and 11 years old, with BLLs ranging from 8.91 µg/dL (0.43 µmol/L) to 63.17 µg/dL (3.05 µmol/L). Confirmed lead exposure sources included ingestion of a lead curtain weight and ingestion of old wallpaper (contaminated with lead paint), while implicated lead exposure sources included the lead-lining of a bath and a scrap metal yard (owned by the child's parents). A diagnosis of autism spectrum was noted in two of the four children.

Adult cases were in eight males and two females aged between 28 and 73 years with BLLs ranging from 10.98 µg/dL (0.53 µmol/L) to 85.75 µg/dL (3.05 µmol/L). Lead paint was implicated as the exposure source in four cases: two associated with home renovation, and two with the restoration of old painted metal structures. Hobby activities, including lead bullet casting, lead miniatures and metal work (soldering and welding) were implicated in three cases. Ayurvedic medication (purchased in India) was anecdotally confirmed by one patient as the source of exposure and suspected as a potential source of exposure in another. NSW also had a case of lead poisoning resulting from ingestion of Ayurvedic medicine, which in this case was purchased over the phone from India. The case prompted a press release from NSW Health in August 2010, warning of the risk of lead poisoning from imported Ayurvedic medicine.[3]

Conclusion

The implementation of mandatory reporting of elevated BLLs has proceeded smoothly. The change from *ad hoc* to mandatory reporting has identified a small number of non-occupational cases. In these cases the department has been able to provide assistance to medical practitioners in identifying a probable source of lead exposure. The reporting has also identified a significant number of occupational cases with BLL results beneath WorkSafe Victoria's notification thresholds, as well as cases with BLLs exceeding removal thresholds that have not been notified to WorkSafe as required. The data being collected will provide an evidence-base for future policy development aimed at preventing a disease described by ATSDR as "wholly preventable".[2]

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An influenza outbreak in a regional dementia specific residential facility: Management issues

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The management of an influenza A outbreak in a residential facility for cognitively impaired residents of a Victorian regional health service is described. Twenty-five residents of a 60 bed stand alone facility were affected with one fatality resulting. Because virological confirmation of the outbreak was received late on a Friday, the initiation of anti-viral treatment and prophylaxis occurred out of hours. The unanticipated consequences of this out of hours management are discussed. The management of an influenza outbreak in a dementia specific residential facility requires a specific infection control response that anticipates the ethical issues relating to the care of the cognitively impaired.

Introduction

Influenza is an acute illness which is highly infectious by respiratory spread. Influenza outbreaks occurring within a closed community of a residential care facility pose many management issues.[1] Such outbreaks among cohorts of potentially vulnerable people have the potential for both rapid spread and severe illness with reports of attack rates as high as 60 per cent and case-fatality rates as high as 50 per cent.[1] Moreover, outbreaks in nursing homes may occur despite high levels of influenza vaccination.[2,3] There are two possible reasons for these high rates. Firstly, in those over the age of 65 years, the infection may present with non-specific signs. Hence the recognition of an influenza outbreak in an aged care facility may be delayed, resulting in the potential for an increased risk of complications and mortality. Secondly, while influenza vaccination is recommended for the prevention of influenza in older people, the amount of protection achieved is uncertain as most of the vaccination trials were performed in younger populations.[2]

Ballarat Health Services (BHS) serves a regional population of 150,000. BHS is an amalgamated health service including an acute hospital with 220 beds and also 496 residential care beds at eight geographically separate stand alone sites throughout the city of Ballarat. The usual medical care of the residents of the facility is provided by each resident's visiting general practitioner. On the other hand, management support, including infection control advice for these stand alone residential care facilities, is provided centrally from the acute hospital site of BHS. This arrangement is somewhat unique in comparison to residential facilities elsewhere for which infection control advice and oversight may not be readily available.

Outbreak investigation

In the second week of August, 2007, several residents and staff of a 60 bed stand-alone residential facility of BHS were noted to be unwell with clinical symptoms suggestive of an influenza like illness as follows; fever (>38 ^{0}C) cough, shortness of breath, coryza, sore throat, fatigue, myalgia, rigors, headache. There were 22 affected residents displaying these symptoms. Additionally, several staff members had failed to attend for work. Influenza was suspected to be the cause of the outbreak as increased influenza activity had been reported in the Eastern Australian states through the month of July 2010.

The BHS infection control staff immediately declared an outbreak for the facility and a provisional management plan was enacted. On Thursday, August 9, nasopharyngeal swabs were taken from 17 affected residents and sent for influenza testing by PCR. The results of these swabs were received at four pm on Friday August 10: 12 of 17 swabs were positive for influenza A. In this outbreak a case was defined as a resident or member of staff at the affected facility who had clinical symptoms of an influenza like illness and/or a positive result for influenza A from a viral PCR test in the month of August. As a consequence of the time of receiving the results of the swabs, the further definitive management of the outbreak occurred after hours and over the weekend.

Outbreak management

Several provisional measures were instituted to control the outbreak pending virological confirmation. Hand hygiene was re-enforced at the facility. Signage to notify that a seasonal outbreak was current was posted at every entry across all facilities of BHS. Families and resident's next of kin were notified by phone and general practitioners were notified by fax. Efforts to reduce indirect contact included enhanced

cleaning of the environment in high traffic areas including handrails, table and, doorknobs, and the use of a sodium hypochlorite solution. Additional cleaning staff were rostered for this purpose. Personal protective equipment including gloves, masks and protective eyewear were supplied for the use of staff within the facility.

In an effort to contain droplet spread, affected residents were restricted to their rooms until five days after the onset of acute illness or until symptoms had resolved completely (whichever was shorter). However, the impaired cognition of the residents was a major obstacle toward enforcing this restriction. Transfers into and within the facility were restricted in an effort to cohort those at risk. All group activities including dining were cancelled.

Staff of the facility that were ill with a respiratory illness were excluded from work for five days from the onset of symptoms or until symptoms had resolved, whichever was the shorter and were advised to seek medical attention from their regular general practitioner. Staff members who had not had influenza vaccination were offered vaccination but there was a low uptake. Unvaccinated staff continued to work at the facility but they were advised not to work at other health care facilities. Anecdotally it was noted that staff who became ill and had been vaccinated recovered quicker than those who had not been vaccinated.

Treatment and outcome

Prophylactic Oseltamivir at a dose of 75 mg twice daily for five days was given to residents of the facility who had no symptoms and as a specific therapy for residents who had displayed the symptoms described above for less than 48 hours, regardless of influenza vaccination status.[3] As a result of the outbreak there was one fatality; two patients who required transfer to hospital; and six staff members were absent from work for one week. There was complete recovery for all other affected residents and there were no new or secondary cases in the unaffected residents despite ongoing influenza cases in the wider community. The staff of the facility were not given prophylaxis but instructed to seek a course of treatment if they developed symptoms of influenza.

Discussion

The outbreak described here occurred in August 2007, in the context of the annual southern hemisphere influenza season. In the preceding two months, the rate of influenza-like illness in Victoria had been increasing at twice the seasonally expected rate to peak in mid-August.[4,5] The most common influenza strains identified in Victoria in the 2007 influenza season were A/Brisbane/10/2007-like followed by A/Solomon Islands/3/2006-like. While neither virus strain was specifically included in the 2007 Australian influenza vaccine that had

Outbreak time line

Date (2007)	Event
July–August	Increased influenza activity in Eastern Australian states.
August 9 (Thursday AM)	22 residents of a 60 bed Ballarat Health Services residential facility noted to be unwell and several staff members absent from work.
August 9 (Thursday PM)	An outbreak is declared and provisional management plan enacted by Ballarat Health Services infection control staff pending results of nasopharyngeal swabs.
August 10 (Friday)	4 pm, Results of swabs received:12 of 17 swabs tested positive for influenza A. 6 pm, Infection control staff visit the facility & arrange for delivery of Oseltamivir. 11 pm, Medication dispensed to all residents at risk (those without symptoms or symptoms of < 48 hours) but not staff.
August 11–13 (Saturday – Monday)	A further three residents become symptomatic. Over the weekend, two are transferred out of the facility – one each to two hospitals in Ballarat.
August 14 (Tuesday)	Local media interest with front page headline “Deadly flu virus hits”
August 14–24	Further media interest (local, state and national) with a further five articles in the local newspaper including two front page items.
August 24	No new cases for > 7 days, outbreak at the facility declared over by BHS Infection Control
September	Outbreak strain later identified as A/Solomon Islands/3/2006-like

been received by the residents in the vaccination program in April 2007, some cross protection was thought to be afforded by the strains in the vaccine.[5]

Our experience from the initial out of hours management of this outbreak provided the BHS Infection Control Service several invaluable lessons as follows:

1. Infection control measures

The standard BHS infection control surveillance was for nursing staff of the facility to contact the infection control service in the event of any unusual clusters of infections, as was the case for this instance. Once this outbreak became apparent to the staff of the facility, infection control advice was sought. Provisional infection control measures were initiated prior to receiving virological confirmation that influenza was the cause of the outbreak. Compliance with the infection control measures was difficult given the cognitive impairment of the residents. The relative contribution of the contact precaution measures toward the overall containment of this outbreak was difficult to assess.

2. Role of prophylaxis.

Antiviral prophylaxis is increasingly used for controlling outbreaks of seasonal influenza type A in residential facilities.[6] The contribution of antiviral prophylaxis toward containing an outbreak within an affected closed population, such as a nursing home, usually depends on the rapidity and extent of anti-viral prophylaxis.[3,7] Prophylaxis and treatment needs to be given to all of those at risk in the cohort to minimise the occurrence of breakthrough cases.[6] Oseltamivir, an orally administered anti-viral, has advantages for use in this type of outbreak although gastro-intestinal side effects may be a limiting side effect in older people.[7–10] The alternative agents have limiting issues; for example, zanamivir requires administration by inhalation and amantadine has an increased incidence of neurological side effects in older people. In the wider community, the development of resistance to anti-viral drugs when used for prophylaxis limits the use of these drugs in general but particularly oseltamivir as the emergence of resistance to this anti-viral is an increasing concern.[11,12]

3. Media interest

Over the two weeks following the outbreak, there was local, state and national media interest in the Ballarat outbreak with items in print media, television and radio. This media attention was likely attributable to this being the first reported outbreak of the season. In the local newspaper, six items appeared over the next two weeks. The front page headline on August 14 read “Deadly flu virus hits”.[13] The assistance of the BHS media liaison officer was invaluable in assisting with media statements and interviews with BHS representatives.

There was only one unfavourable media item headed “Member of staff claims inaction” in which inaction was alleged by an unnamed staff member—this appeared on August 15.14 We speculate that more adverse publicity would have appeared if there had been more deaths from the outbreak or if there had been significant illnesses in staff. Either of these possible outcomes would likely have occurred if the initial management of the outbreak had been delayed until after the weekend.

4. Consent issues.

This outbreak raised three unanticipated ethical issues as a consequence of the urgent out of hours administration of anti-virals: consent to treatment, consent to non-treatment and involvement of the patient’s usual medical practitioner.[10] Consent to treatment with anti-viral prophylaxis could not be obtained from most of the residents given their poor cognitive state. Consent to treatment from next of kin was not possible in the short time frame given the numbers requiring treatment and the urgency in the initial out of hours response. There were at least three residents for whom the next of kin were later to express the view that potential life saving treatment of any kind was against their wishes. There were two residents for whom the next of kin were later to seek further active treatment and requested transfer to hospital. Several general practitioners complained of not being consulted before their patients were treated.

5. Patient transfers

Two influenza positive patients were transferred out of the facility over the first weekend of the outbreak, one to each of the two hospitals in Ballarat. One of the patients transferred received appropriate isolation precautions, but the patient transferred to the other hospital did not. In the later case, the admission diagnosis was noted as a transient ischaemic attack presumably as a consequence of the non-specific nature of the patient’s symptoms. This delayed the consideration of the more likely diagnosis of influenza at the receiving hospital. Isolation precautions were not initially followed and as a consequence this patient posed a potential cross-infection risk. However, no secondary cases followed from the transfers.

6. Importance of influenza vaccination.

Eighty-nine per cent of the residents had received the Influenza vaccination on the annual vaccination program, which is delivered in April and May each year. Some of the unvaccinated

residents had been admitted to the unit after May. Contraindications or refusal for vaccination by the resident or their family occurred for less than five of the sixty residents. An immunisation register would have facilitated recognition of unvaccinated and potentially susceptible residents. However, of the staff, only 33 per cent had been vaccinated despite an active influenza vaccination awareness campaign at BHS that year with the vaccine freely available to all staff. Low vaccination uptake by healthcare workers is a world-wide problem.[3] Vaccination of the staff of long-term care facilities reduces the impact of influenza among the residents, particularly when done in conjunction with vaccination of residents.[15] Vaccination of the staff reduces the levels of flu-like illness, severity of disease, admission to hospital, and possibly also mortality [16] among the residents.

On the other hand, the value of influenza vaccination has been questioned in older people given the paucity of evidence.[2] Even with high vaccination rates and better than average infection control programs, the risk of an influenza outbreak in a long-term care facility for an older population has been estimated to be as high as 50 per cent each year, with attack rates among residents of up to 40 per cent.[7] Moreover, in the setting of an influenza pandemic, it would be anticipated that the efficacy of the extant influenza vaccine against the new pandemic strain would be poor.[16,17]

Conclusion

An influenza outbreak in a residential facility required the administration of anti-viral prophylaxis out of hours as part of an overall outbreak management plan. Prior influenza vaccination together with early intervention of contact precautions and anti-viral prophylaxis initiated out of hours to all residents was important in the successful management of this outbreak. The intensity of the media interest was not anticipated. The ethical issues resulting from urgent decisions to manage and contain an outbreak in a dementia specific residential facility are not simple.[18]

Acknowledgements

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Reports of blood stream infections and meningitis to the Victorian Hospital Pathogen Surveillance Scheme, July to December 2010

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This account describes reports of blood stream infections and meningitis to the Victorian Hospital Pathogen Surveillance Scheme (VHPSS) for the second half of 2010, and provides a brief summary of 2010 data and comparison with recent years. The VHPSS provides voluntary, laboratory-based surveillance of bacterial and fungal agents of blood stream infections and meningitis in Victoria. Although not all laboratories participate, we estimate VHPSS captures approximately 60 per cent of Victorian bloodstream and cerebrospinal fluid (CSF) isolates. Contributors are stable. The data are broadly representative and readily interpretable to provide insights into the wider population.

Surveillance case definitions

Data presented in this report are based on a case definition in which a case of bacteraemia or meningitis is defined as the first isolation of a clinically significant bacterium or fungus from the blood or CSF of a person in a 14-day period. Episodes with more than one species of bacteria/fungi isolated are counted as separate cases. The reporting period is defined by specimen collection dates. Recent historical counts are included for comparison. An organism may sometimes be identified and reported by the diagnostic laboratory only to the level of genus 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. Variable reporting of suspected contaminants may also affect counts.

Table 1: Twenty most common isolates reported to VHPSS, July–December 2010

Organism name	Total Jul–Dec 2010	Mean Jul–Dec (2005–2009)	Total 2010	Annual mean (2005–2009)
Escherichia coli	787	655	1581	1321
Staphylococcus aureus	424	447	845	890
Streptococcus pneumoniae	235	184	383	313
Klebsiella pneumoniae	175	111	355	245
Coagulase negative *Staphylococcus*	117	165	239	328
Enterococcus faecalis	113	96	227	186
Pseudomonas aeruginosa	101	77	223	162
Enterococcus faecium	85	54	156	100
Staphylococcus epidermidis	76	69	144	137
Enterobacter cloacae	75	42	135	105
Group B *Streptococcus*	56	44	102	84
Group A *Streptococcus*	50	46	89	85
Klebsiella oxytoca	44	47	98	93
Proteus mirabilis	44	40	87	81
Haemophilus influenzae	41	24	62	39
Candida albicans	31	37	69	68
Serratia marcescens	31	20	65	47
Bacteroides fragilis	21	21	46	41
Staphylococcus capitis	21	14	36	26
Group G *Streptococcus*	20	26	54	53
Total of top 20 isolate types	**2547**	**–**	**4996**	**–**
Total of other isolate types	**600**	**–**	**1279**	**–**
Total of all isolates	**3147**	**2750**	**6275**	**5501**
Total isolate types	**209**	**–**	**306**	**–**

Summary of the important agents of bloodstream infection and meningitis, July to December 2010

Cases reported to the VHPSS for this six month period were diagnosed by 20 laboratories and were associated with 104 Victorian hospitals. There were 3,147 reports (3,121 bloodstream isolates, 26 from CSF) of 209 species/types of bacteria and fungi. The twenty most common organisms accounted for 81 per cent of reports (table 1).

The number of reports to VHPSS this period was higher than the average of the July to December periods for the previous five years. Reports of *E. coli* accounted for 25 per cent of all reports (same for the comparable period in 2009) and *S. aureus* reports comprised 13 per cent of reports (16 percent of the July to December reports in 2009).The ranking of the 20 most common isolate types remained relatively stable.

Reported antimicrobial resistance of some invasive bacterial pathogens, July–December 2010

During the period July to December 2010 the proportion of *S. aureus* isolates that were methicillin-resistant was slightly higher than for the same period in 2009 (16 per cent). *S. aureus* isolates from specimens collected before the third day of hospitalisation were slightly less likely to be methicillin-resistant, compared with isolates from specimens collected from day three of hospitalisation or more than seven days into hospitalisation (20 and 24 per cent respectively). There were no *S. aureus* isolates with reduced susceptibility to vancomycin reported to VPHSS for this period.

Seventeen penicillin non-susceptible *S. pneumoniae* isolates (PNSP) were reported. Sixteen PNSP reports included minimum inhibitory concentration (MIC) data for penicillin: MIC values ranging between 0.094µg/ml and 1.5µg/ml. Two PNSP cases were in children aged less than five years (nine and ten months of age: both serotype 19A which is not included in the age appropriate 7-valent conjugate vaccine). Of the older cases with PNSP, nine were in persons aged over 64 years. Of these, eight isolates were serotypes included in the 23-valent polysaccharide vaccine (five serotype 19A, two serotype 4 and one serotype 9V) and the other isolate was a non-vaccine strain (15A). Most *S. pneumoniae* reports (97 per cent) included susceptibilities for either cefotaxime or ceftriaxone. One PNSP isolate had reduced sensitivity to ceftriaxone.

Invasive infections due to *E. faecalis* are more common than those due to *E. faecium*. In the second half of 2010 one isolate of *E. faecalis* was reported to be vancomycin-resistant (*van*B gene positive). Reports of *E. faecium* are less common but have increased annually since 2006. The prevalence of vancomycin resistance also continues to increase. Forty-three of the 48 reports of vancomycin-resistant *E. faecium* included results of *van* gene PCR testing: all isolates were *van*B.

Reports of the susceptibility of *E. coli* to amoxicillin, ceftazidime, gentamicin and ciprofloxacin were available for 99 per cent, 68 per cent, 99 per cent and 97 per cent of isolates respectively. Among *E. coli* isolates with susceptibility data, 47 per cent were resistant to amoxicillin, five per cent to ceftazidime, four per cent to gentamicin and four per cent to ciprofloxacin. Twenty-nine isolates were resistant to both amoxicillin and gentamicin and seven were resistant to all four of these antimicrobial agents.

Summary of the important agents of bloodstream infection and meningitis in 2010

Cases reported to the VHPSS during 2010 were diagnosed by 20 laboratories and were associated with 123 Victorian hospitals. In 2010 there were 6,275 reports (6,224 bloodstream isolates, 51 from CSF) of 306 species/types of bacteria and fungi.

The 20 most common organisms reported for 2010 were the same as those reported in the second half of the year (see table 1 above), with the

Table 2: Prevalence of key antimicrobial resistances of *S. aureus*, *S. pneumoniae* and enterococci, July–December 2010

	Staphylococcus aureus		*Streptococcus pneumoniae*		*Enterococcus faecalis*		*Enterococcus faecium*	
Period	Methicillin resistant (%)	Isolates tested (n)	Penicillin non-susceptible (%)	Isolates tested (n)	Vancomycin resistant (%)	Isolates tested (n)	Vancomycin resistant (%)	Isolates tested (n)
Jul–Dec 2010	21%	423	7%	234	1%	113	56%	85
Mean Jul–Dec (2005–2009)	21%	445	11%	182	1%	96	37%	54

exception of *Staphylococcus capitis* which was the twenty-second most common in 2010 while *Enterobacter aerogenes* was the twentieth most common with 43 isolates reported in 2010. The ranking of some of the other most common organisms was also slightly different. The 20 most common organisms accounted for 80 per cent of all reports to VHPSS in 2010. The contribution that most major pathogens made to the overall burden of blood stream infections and meningitis remained relatively stable: *E. coli* has increased slightly from 23 percent of all reports in 2005 to 26 per cent in 2010 and *S. aureus* has decreased from 18 percent of all reports in 2005 to 13 per cent in 2010. Counts of some of the moderately common, typically healthcare-associated, Gram-negative isolates fluctuated: this may reflect clusters of cases in particular settings.

The number of reports of *S. pneumoniae* to VHPSS in 2010 was similar to that of 2009 (357 isolates). The number of isolates that were serotypes in the 7-valent conjugate vaccine declined further: from 188 in 2005 to 46 in 2010. Reports of non 7-valent serotypes (including serotypes in the 23-valent vaccine and serotypes not in either vaccine) continued to increase: 103 in 2005 and 331 in 2010. This increase occurred within all age groups. The number of serotype 19A isolates (which is included in the 23-valent vaccine), having steadily increased from 17 in 2005 to 89 in 2009, was not as great this year (94 isolates). Other serotypes with notable increases in number from 2009 to 2010 are serotype 7F (included in the 23-valent vaccine: 24 to 42 isolates) and serotype 6C (non-vaccine serotype: 12 to 28 isolates).

In 2010 there were 55 reports of invasive pneumococcal disease from children aged less than five years. Fifty-one (93 per cent) of the isolates in these young children were serotypes not included in the 7-valent vaccine. Of these, serotype 19A was the predominant non-vaccine strain, increasing from five in 2005 to 31 in 2010. The four reports of isolates with 7-valent serotypes in children aged less than five years were due to serotype 19F. One hundred and twenty-four reports of invasive pneumococcal disease in 2010 were from adults aged greater than 64 years; 84 (68 percent) were serotypes included in the 23-valent vaccine. The predominant serotypes in this age group were 19A and 22F (23-valent vaccine serotypes: 24 and 18 isolates respectively) and non-vaccine serotype 6C (13 isolates).

There were 62 reports of *H. influenzae* in 2010. Forty-nine of the 60 with typing data were non-typeable. The 11 typeable isolates were four type b (from persons aged five, 23, 54 and 84 years) and seven type f.

Twenty-five cases of invasive meningococcal disease were reported to VHPSS in 2010. Isolates of *N. meningitidis* comprised 19 serogroup B (eight cases were in children aged less than five years, three aged five to 19 years, and eight adults aged 21 to 84 years), three serogroup W135 (one, 86 and 92 years of age), two serogroup Y (55 and 73 years of age) and one serogroup C (three months of age).

The proportion of isolates of *S. aureus* manifesting methicillin resistance remained lower than the previous five year average (21 per cent) but had increased slightly from 2009. One hundred and sixteen (73 per cent) reports of MRSA included data on six key antimicrobial agents (ciprofloxacin, erythromycin, fusidic acid, gentamicin, rifampicin and tetracycline). Seventy-one (61 per cent) of these isolates were non-multiresistant MRSA (nmMRSA – resistant to methicillin and agents from no more than two other antimicrobial agents). Forty six of 66 bacteraemic nmMRSA isolates with reported case admission dates were from specimens collected less than three days into hospitalisation and therefore suggestive of community-acquired MRSA.

Table 3: Prevalence of key antimicrobial resistances in *S. aureus, S. pneumoniae* and enterococci, 2006–2010

	Staphylococcus aureus		*Streptococcus pneumoniae*		*Enterococcus faecalis*		*Enterococcus faecium*	
Period	Methicillin resistant (%)	Isolates tested (n)	Penicillin non-susceptible (%)	Isolates tested (n)	Vancomycin resistant (%)	Isolates tested (n)	Vancomycin resistant (%)	Isolates tested (n)
2006	23%	876	10%	275	0%	151	19%	59
2007	23%	841	7%	280	2%	176	35%	92
2008	19%	893	12%	348	1%	207	34%	134
2009	16%	943	9%	349	2%	241	48%	152
2010	19%	844	9%	382	6%	227	55%	156

Thirty four isolates of penicillin non-susceptible *S. pneumoniae* (PNSP) were reported to VHPSS in 2010 with MIC values between 0.094µg/ml and 2.0µg/ml. Sixteen of the 34 PNSP isolates were serotype 19A (17 per cent of serotype 19A were PNSP).

In 2010 all seven PNSP from children aged less than five years were non-7 valent vaccine serotype 19A. Of the twelve PNSP isolates from adults aged greater than 64 years, ten were serotypes included in the 23-valent vaccine (five 19A, two serotype 4 and one each of 33F, 9V and 6B) and two were non-vaccine serotype 15A.

There were six reports to VHPSS of bloodstream isolates of vancomycin-resistant *E. faecalis* in 2010. Five reports included *van* gene PCR results; all five isolates were *van*B. Seventy eight of the 86 reports of vancomycin-resistant *E. faecium* included *van* gene PCR results. Seventy seven isolates were *van*B and the other isolate had neither *van*A nor *van*B gene detected.

Acknowledgments

We gratefully acknowledge the confidential contributions of Victorian laboratories to VHPSS, the support provided by the Victorian Department of Health, and data management by Wendy Siryj. Data include reports received by 8th February 2011, and are subject to revision.

Immunisation report, Victoria, March 2011

Helen Pitcher, Department of Health, Victoria

Immunisation coverage

Immunisation coverage data cited in this report are based on the Australian Childhood Immunisation Register (ACIR) coverage report. Table 1 presents immunisation coverage at 30 September 2010 for children aged 12–<15 months (cohort one), 24–<27 months (cohort two) and 60–<63 months (cohort three) of age, by Local Government Areas (LGAs) and calculated at 31 December 2010. Only vaccines administered before 12 months of age were included in the coverage calculation for cohort one; and only those vaccines administered before 24 and 63 months of age were included in the coverage calculations for the second and third age cohorts. For a copy of the ACIR report listing immunisation coverage against individual vaccines for each LGA area, contact Catherine McNamara at the Department of Health (email immunisation@health.vic.gov.au).

In cohort one, 76 per cent (60 of 79) of LGAs achieved immunisation coverage greater than or equal to 90 per cent. Victoria achieved 91.80 per cent coverage in cohort one compared to the Australian coverage of 91.35 per cent. Victoria ranked second behind ACT (93.89 per cent) in the coverage rate for children aged 12–<15 months.

In cohort two, 92 per cent (73 of 79) of LGAs achieved immunisation coverage greater than or equal to 90 per cent. State coverage for cohort two was 93.45 per cent compared to the Australian coverage of 92.45 per cent. Victoria ranked second behind Tasmania (94.29 per cent) in the coverage rate for children aged 24–<27 months.

In cohort three, 70 per cent (55 of 79) of LGAs achieved immunisation coverage greater than or equal to 90 per cent. State coverage for cohort three was 91.35 per cent compared to the Australian coverage of 89.36 per cent. Victoria ranked third behind Tasmania (92.19 per cent) and ACT (91.65 per cent) in the coverage rate for children aged 60–<63 months.

Yarriambiack LGA achieved 100 per cent immunisation coverage for all three age cohorts for this quarter.

Immunisation program updates

Pandemic alert phase update

On 1 December 2010, Australia moved from the PROTECT phase to the ALERT phase of its pandemic plan. ALERT is the phase between pandemics (disease activity at seasonal levels). The key element of the ALERT phase is heightened vigilance for a new influenza virus or an antigenic change in a current circulating influenza virus, which may be of concern. As a result, the Panvax® H1N1 Vaccine program ended nationally on 31 December 2010. The seasonal influenza vaccine for 2011 contains the H1N1(2009) swine flu strain.

Pertussis outbreak vaccination strategy continues

During the current pertussis epidemic, immunisation providers have been reminded of the following key messages when talking with parents of newborns:

- Ensure baby is vaccinated on time at two, four and six months of age. The first vaccines can be given as early as six weeks of age for parental convenience such as attending the clinic for another purpose or travel.
- Ensure baby's siblings are up to date with their pertussis vaccines. The four year old booster vaccines can be given as early as three years and six months of age for parental convenience if attending the clinic for another purpose. Another pertussis booster vaccine is recommended for adolescents in Year 10 of secondary school.

The parents of newborn babies should have the free Boostrix® vaccine as soon as possible after the birth of their baby. Anyone who cares for the infant should also be vaccinated however this is not a free vaccine for everyone. Boostrix® vaccine for parents of newborn babies will be available to order until the end of June 2011.

Table 1: Immunisation coverage rates by age cohort and Victorian local government area, July–September 2010

Age group	% Fully immunised	Local government area (LGA)	Total LGAs (% LGAs)
12<15 months	100	Buloke, Hindmarsh, Horsham, Pyrenees, Queenscliffe, West Wimmera, Yarriambiack	7 (9)
	95+	Baw Baw, Colac-Otway, Corangamite, Gannawarra, Glenelg, Indigo, Loddon, Mitchell, Moyne, South Gippsland, Southern Grampians, Warrnambool, Wodonga	13 (16)
	90–<95	Alpine, Ballarat, Banyule, Boroondara, Brimbank, Campaspe, Cardinia, Casey, Central Goldfields, Darebin, East Gippsland, Frankston, Glen Eira, Greater Bendigo, Greater Dandenong, Greater Geelong, Hobsons Bay, Hume, Kingston, Knox, Latrobe, Manningham, Mansfield, Maroondah, Melton, Moira, Monash, Moonee Valley, Moorabool, Moreland, Mornington Peninsula, Nillumbik, Northern Grampians, Strathbogie, Towong, Wangaratta, Wellington, Whitehorse, Whittlesea, Yarra	40 (51)
	85–<90	Ararat, Bayside, Benalla, Golden Plains, Greater Shepparton, Macedon Ranges, Maribyrnong, Melbourne, Mildura, Murrindindi, Port Phillip, Stonnington, Surf Coast, Swan Hill, Wyndham, Yarra Ranges	16 (20)
	80–<85	Bass Coast, Hepburn	2 (3)
	75–<80		
	70–<75	Mount Alexander	1 (1)
24<27 months	100	Alpine, Gannawarra, Horsham, Pyrenees, Queenscliffe, Strathbogie, Yarriambiack	7 (9)
	95+	Bass Coast, Campaspe, Cardinia, Darebin, East Gippsland, Golden Plains, Hindmarsh, Latrobe, Loddon, Moira, Moonee Valley, Moyne, Southern Grampians, Surf Coast, Wangaratta, Warrnambool, Whitehorse, Whittlesea, Wodonga	19 (24)
	90–<95	Ararat, Ballarat, Banyule, Baw Baw, Bayside, Benalla, Boroondara, Brimbank, Buloke, Casey, Central Goldfields, Colac-Otway, Corangamite, Frankston, Glen Eira, Glenelg, Greater Bendigo, Greater Dandenong, Greater Geelong, Greater Shepparton, Hobsons Bay, Hume, Indigo, Kingston, Knox, Manningham, Mansfield, Maribyrnong, Maroondah, Melton, Mildura, Mitchell, Monash, Moorabool, Moreland, Mornington Peninsula, Nillumbik, Port Phillip, South Gippsland, Stonnington, Swan Hill, Towong, Wellington, West Wimmera, Wyndham Yarra, Yarra Ranges	47 (59)
	85–<90	Hepburn, Macedon Ranges, Melbourne, Mount Alexander, Murrindindi, Northern Grampians	6 (8)
60<63 months	100	West Wimmera, Yarriambiack	2 (3)
	95+	Baw Baw, Glenelg, Horsham, Manningham, South Gippsland, Wangaratta, Wodonga	7 (9)
	90–<95	Ballarat, Banyule, Bass Coast, Bayside, Boroondara, Campaspe, Cardinia, Casey, Central Goldfields, Colac-Otway, Corangamite, Darebin, East Gippsland, Frankston, Glen Eira, Golden Plains, Greater Bendigo, Greater Dandenong, Hindmarsh, Hume, Kingston, Knox, Latrobe, Loddon, Macedon Ranges, Maroondah, Melton, Mitchell, Moira, Monash, Moonee Valley, Moorabool, Moreland, Mornington Peninsula, Moyne, Nillumbik, Northern Grampians, Pyrenees, Southern Grampians, Stonnington, Surf Coast, Swan Hill, Towong, Warrnambool, Whittlesea Wyndham	46 (58)
	85–<90	Alpine, Brimbank, Buloke, Greater Geelong, Greater Shepparton, Hobsons Bay, Maribyrnong, Melbourne, Mildura, Port Phillip, Queenscliffe, Strathbogie, Wellington, Whitehorse, Yarra, Yarra Ranges	16 (20)
	80–<85	Ararat, Gannawarra, Hepburn, Indigo, Murrindindi	5 (6)
	75–<80	Benalla, Mansfield, Mount Alexander	3 (4)

Chief Health Officer Alert

health

18 April 2011 Status: Active

Pneumovax23 vaccine second dose suspended

The Therapeutic Goods Administration (TGA) is advising health professionals not to readminister a second dose of Pneumovax23 vaccine.

This is pending the outcome of a review of an increased rate of injection site reactions following administration of the second dose.

Pneumovax23 vaccine is used to prevent life threatening bacterial infections. It has been funded in Victoria since 1998 and was included in the National Immunisation Program in 2005. It is recommended for:

- All people age 65 or over,
- Aboriginal and Torres Strait Islander people age 50 and over,
- Tobacco smokers,
- People age 10 and over who are predisposed to invasive pneumococcal disease.

The Immunisation Handbook currently recommends revaccination 5 years after the first dose.

Pneumovax23 vaccine is known to be associated with a high rate of local injection site reactions. There is varying evidence from published trials as to whether injection site reactions are more common following revaccination.

In March 2011, seven patients vaccinated in New South Wales were reported to have severe local site reactions including cellulitis and abscess. Since notification of this cluster, TGA has worked with the States and Territories to determine whether this event is confined to a specific vaccine batch and has collated and analysed adverse event reports from all States and Territories.

The Australian Technical Advisory Group on Immunisation (ATAGI) is currently reviewing the place of Pneumovax23 in the National Immunisation Program.

This alert is not applicable to use of the 7-valent pneumococcal conjugate vaccine Prevenar given to children.

Recommendations

Health practitioners are advised not to readminister Pneumovax23 vaccine to patients who have previously received a dose of Pneumovax23 until a review of this matter by the TGA and ATAGI is completed.

Please report all adverse events to Pneumovax23 vaccine to SAEFVIC on 1300 882 924 or at www.saefvic.org.au

Consumers are advised not to seek revaccination with Pneumovax23 if they have previously received this vaccine, until further advice is provided by the TGA and ATAGI.

Any consumer who believes they may have suffered an adverse reaction to Pneumovax23 vaccine is advised to see their health practitioner.

More information

For more information go to: http://www.tga.gov.au/alerts/medicines/pneumovax.htm or contact the Immunisation section at the Department of Health on 1300 882 008.

Dr John Carnie
Chief Health Officer

State Government Victoria

Department of Health

Communicable disease surveillance in Victoria, October–December 2010

Communicable Disease Prevention and Control Unit, Department of Health, Victoria

This report provides a summary of infectious disease notifications received until December 2010. Table 10 includes historical comparisons of selected diseases for the period 1 January–December 2010 at both the State and regional levels. Data are provisional and subject to revision as further information becomes available.

There were no notifications of Murray Valley encephalitis, diphtheria, Japanese encephalitis, Kunjin virus, plague, rabies, poliomyelitis, viral haemorrhagic fevers or yellow fever in this reporting period.

For more information: *More information about notifiable infectious diseases in Victoria, including details for medical practitioners and laboratories on how to notify, general information about disease prevention and control, and additional surveillance data, can be found on the Communicable Disease Prevention and Control Unit website at http://www.health.vic.gov.au/ideas/.*

Enteric diseases

Joy Gregory, Department of Health and OzFoodNet Victoria

Outbreaks of gastrointestinal illness

One hundred and six outbreaks of gastrointestinal illness were reported to the Communicable Disease Prevention and Control Unit (CDPCU) during the fourth quarter of 2010 (table 1). Of these, ten outbreaks were considered to be foodborne or probable foodborne and person-to-person transmission was suspected in 70 outbreaks. The mode of transmission was unknown for the remaining 26 outbreaks.

Foodborne disease outbreaks

Ten outbreaks were considered to be foodborne or probable foodborne this quarter, affecting at least 115 people. These outbreaks are summarised below:

In October, an outbreak of diarrhoea affecting residents of an aged care facility was notified to CDPCU. Onsets for cases ranged over 19 days and the outbreak affected 19 residents

Table 1: Outbreaks of gastrointestinal illness, October 2010–December 2010

Setting	Outbreaks	Persons affected	Pathogen/toxin (number of outbreaks)
Aged care	61	982	Norovirus (27) Suspected viral (15) *Salmonella* Typhimurium 170 (1) *Clostridium perfringens* (1) Rotavirus (1) Unknown (16)
Child care/play centre	15	185	Rotavirus (3) Suspected viral (12)
Commercially catered function	2	15	Unknown (2)
Hospital	19	214	Norovirus (5) Suspected viral (7) *Clostridium difficile* (1) Unknown (6)
Military facility	1	7	Norovirus (1)
***Residential facility (other)**	2	12	Norovirus (1) *Campylobacter* (1)
Restaurant	5	49	*Salmonella* Typhimurium 9 (3) *Bacillus cereus* (1) Norovirus (1)
Unknown	1	3	*Campylobacter* (1)
Total	106	1,467	Norovirus (35) Suspected Viral (34) *Salmonella* Typhimurium 9 (3) *Salmonella* Typhimurium 170 (1) *Clostridium perfringens* (1) Rotavirus (4) *Campylobacter* (2) *Bacillus cereus* (1) *Clostridium difficile* 1) Unknown (24)

* other residential facility includes: supported services accommodation (1) and a respite facility (1)

with nine experiencing a second episode of diarrhoea a median of five days after the first episode. Eight faecal specimens were collected and three were positive for *C. perfringens* entrotoxin. A food source could not be identified.

In early October, an outbreak of *Salmonella* Typhimurium 9 was detected through routine surveillance. Initially, four cases were found to be associated with the same café in the southern suburbs of Melbourne. All cases had eaten a meal of eggs benedict for breakfast on the morning of 25 September 2010. Active case finding identified an additional six cases (three confirmed STm 9) that had also eaten eggs benedict at the café on the same morning. Eggs were sampled from the restaurant but were negative for *Salmonella*. Trace back of the eggs was undertaken and the Department of Primary Industries conducted an investigation at the farm that was identified as having supplied eggs to the café. No *Salmonella* was detected in any of the environmental or egg samples taken during this investigation at the egg farm. Despite negative results, this outbreak was almost certainly caused by the use of raw eggs in a minimally cooked food (hollandaise sauce). The department recommends the use of pasteurised eggs in foods that will be eaten uncooked (such as aioli or mayonnaise) or minimally cooked.

Active case finding amongst cases of *S. Typhimurium* 9 was conducted in October to determine if they were associated with the point source outbreak at the café mentioned above. Two cases were subsequently linked to a Vietnamese restaurant. Cases ate at the restaurant on consecutive days with their onsets one day apart and both cases had eaten the same dish – 'broken rice'. The premises received eggs through the same distributor as the café in the outbreak above.

Through active case finding in October, a second cluster of four cases of *S.* Typhimurium 9 was linked to another Asian restaurant in the same geographical area as the Vietnamese restaurant reported above. Three cases ate on the same day, with the fourth case unsure of the exact date, however, onsets of illness were within five days of each other. Cases ate a variety of foods indicating there may have been sporadic contamination of several foods.

In October, an outbreak of diarrhoea affecting 10 residents of an aged care facility was notified to CDPCU. Onsets ranged over a 12 day period with the majority clustered over a three day period. Of four faecal specimens collected, one was positive for *C. perfringens* enterotoxin. Investigation revealed inadequate temperature recording and temporary staffing at the time of the outbreak. A food source could not be identified in this outbreak.

In October, CDPCU was notified of an outbreak of gastroenteritis amongst a group of people who attended a work function at a hotel restaurant. Of 92 attendees, 47 were interviewed and 24 reported illness consisting of diarrhoea (96 per cent) and abdominal pain (88 per cent). Only 13 per cent reported vomiting. The median incubation period was 11.5 hours and two faecal specimens were culture positive for *Bacillus cereus*. A cohort study was conducted and analysis of the foods consumed by the 47 guests who were interviewed revealed an association with several foods and illness. The strongest associations were with beef curry (RR 4.0; 95% CI 1.6–9.8) and steamed rice (RR 3.0; 95% CI 1.4–6.7). These foods accounted for 83 per cent and 79 per cent of cases respectively. Rice is often associated with *B. cereus* food poisoning and consumption of the beef curry was likely to have been confounded by rice consumption. Investigation of the food preparation processes for beef curry and rice was undertaken but no deficiencies were revealed.

An outbreak of diarrhoea, affecting 10 residents and one staff member of an aged care facility, was notified to CDPCU in late October. Onsets ranged over a four day period and two faecal specimens had *C. perfringens* enterotoxin detected. A source for the outbreak could not be determined.

In November, a local council notified CDPCU of an outbreak of gastroenteritis amongst a group of 12 people who had eaten together at a restaurant. Three of the group reported symptoms of predominantly diarrhoea and abdominal pain with a median duration of five days. Two of these cases reported blood in their stools and both had *Campylobacter jejuni* cultured from a faecal specimen. Interviews with the cases revealed that the restaurant was unlikely to have been the source of their illness due to an incubation period of only seven hours between consumption of food at the restaurant and illness. As the cases worked together and the two confirmed cases had shared other food together during their incubation period, it was suspected that there was another unidentified source for their illness.

An outbreak of gastroenteritis amongst residents of an aged care facility was notified to CDPCU in early December. Eighteen residents became ill with onsets over a six day period and six were subsequently confirmed with *Salmonella* Typhimurium 170. Although illness appeared to be mild in the majority of residents (median duration of two days), three residents died during

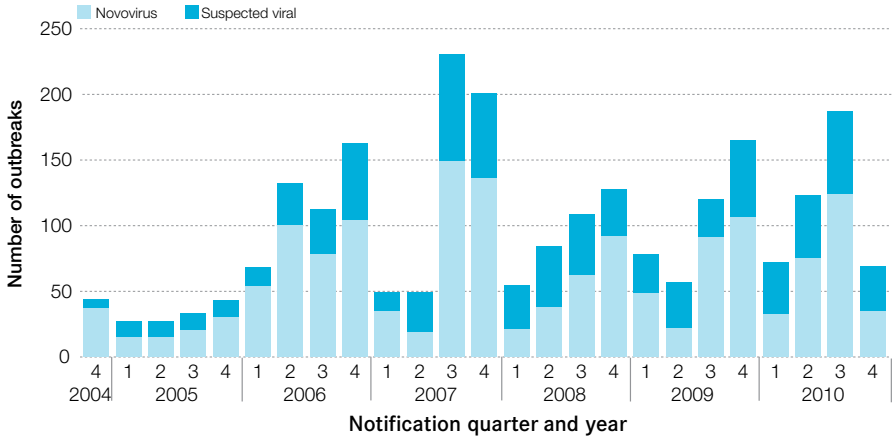
the outbreak period. A source for this outbreak could not be determined despite a thorough investigation.

In December an outbreak of diarrhoea affecting five out of six residents of a supported services accommodation, was notified to CDPCU. Two faecal specimens were collected and both were culture positive for *Campylobacter jejuni*. A review of foods served to residents during their incubation period revealed that chicken meals were served on the two consecutive days prior to the onset of illness in the index case. It is possible that undercooking or cross contamination of chicken was the cause of this outbreak. Council provided advice and education to the food handlers at the facility regarding food preparation, cleaning and sanitising of food surfaces and equipment and personal hygiene.

Norovirus activity

Norovirus and suspected viral activity this quarter (69 outbreaks) was the lowest fourth quarter activity since 2005 (43 outbreaks) (figure 1). Ninety four per cent of the norovirus outbreaks and all of the suspected viral outbreaks were in aged care and healthcare settings.

Figure 1: Norovirus outbreak activity by quarter, Victoria, October 2004–December 2010



Blood borne viruses

Ellen Donnan, Department of Health, Victoria

Hepatitis B—newly acquired infections

In the fourth quarter of 2010, the department received notifications for 492 cases of hepatitis B, of which 17 (three per cent) were newly acquired infections. This was an increase of three cases compared to the previous quarter (n=14), and a 26 per cent reduction compared to the same time in 2009 (n=23) (figure 2).

Of the 17 newly acquired cases, 71 per cent (n=12) were in males and 29 per cent (n=5) were in females. Cases were aged between seven months and 75 years with a median age of 41 years. Eighty-eight per cent of the cases were in adults aged 30 years or older (n=15).

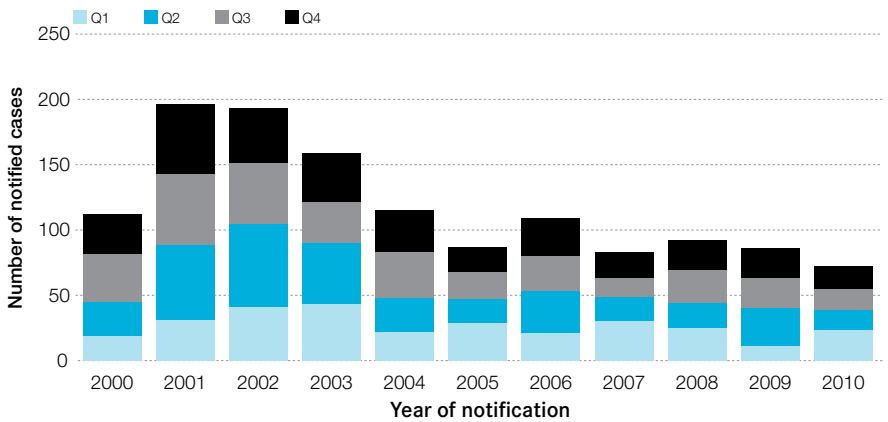
Fifty-nine per cent of the newly acquired cases were Australian born (n=10), 29 per cent were overseas born (n=5) and for the remaining two cases, country of birth was unknown or not reported. Indigenous status was reported for 94 per cent of the cases (n=16) and none identified as being Aboriginal and/or Torres Strait Islander.

Sixty-five per cent of the cases (n=11) were from metropolitan Melbourne and 35 per cent were from regional Victoria (n=6).

Among the 17 newly acquired cases, eight reported having elevated LFTs as the reason for testing for hepatitis B. Other reasons reported included having symptomatic hepatitis (n=11), having a medical condition (n=2), being an asymptomatic sexual contact of a hepatitis B case (n=1) blood donor screening (n=1), and visa medical screening (n=1). Note that cases may have reported multiple reasons for testing.

Injecting drug use was the main risk factor reported (seven cases, 41 per cent): other reasons reported included having a hepatitis B positive sexual partner (n=2) and perinatal

Figure 2: Notified cases of newly acquired hepatitis B, by quarter, Victoria, 2001–2010



transmission (n=1). For the remaining seven cases, a definitive risk factor was not identified. Four of the 17 cases also had an existing hepatitis C diagnosis.

Hepatitis C – newly acquired infections

A total of 624 cases of hepatitis C were notified during the fourth quarter of 2010, of which 36 cases (six per cent) were newly acquired infections. This was a 24 per cent reduction on the 29 cases notified in the previous quarter and a 23 per cent reduction on the 47 cases notified in the fourth quarter of 2009 (figure 3).

Of the 36 newly acquired hepatitis C cases reported this quarter, 47 per cent (n=17) had a previous negative hepatitis C antibody testing history within the past 24 months.

Seventy-five per cent of the cases (n=27) were in males and 25 per cent (n=9) were in females. The age range of males was one to 57 years with a median age of 27 years and of females, 18 to 42 years with a median age of 28 years.

Eighty-six per cent of the cases (n=31) were Australian born, one was reported as overseas born and for the remaining four cases country of birth was unknown or not reported. Indigenous status was reported for 33 cases (92 per cent) with two identifying as Aboriginal and/or Torres Strait Islander.

Fifty-eight per cent (n=21) of the cases were from metropolitan Melbourne, 36 per cent (n=13) were from regional Victoria and for two cases postcode of residence was unknown or not reported.

Of the 36 newly acquired cases, presenting with signs and symptoms

Figure 3: Notified cases of newly acquired hepatitis C infections, by quarter, Victoria, 2001–2010

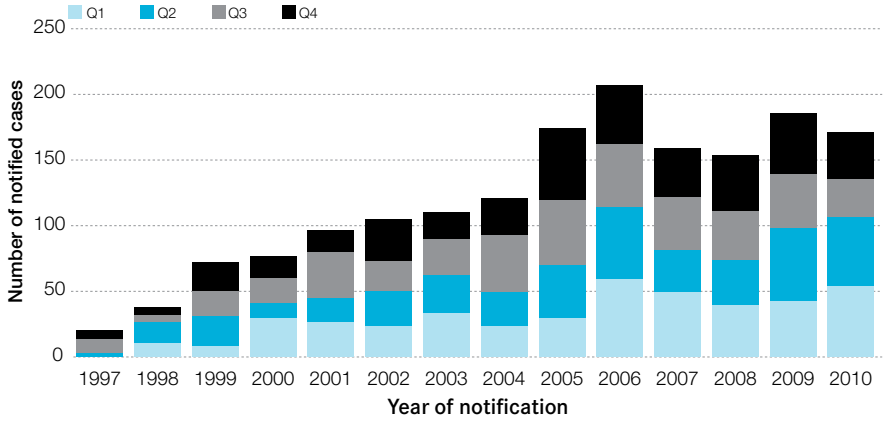
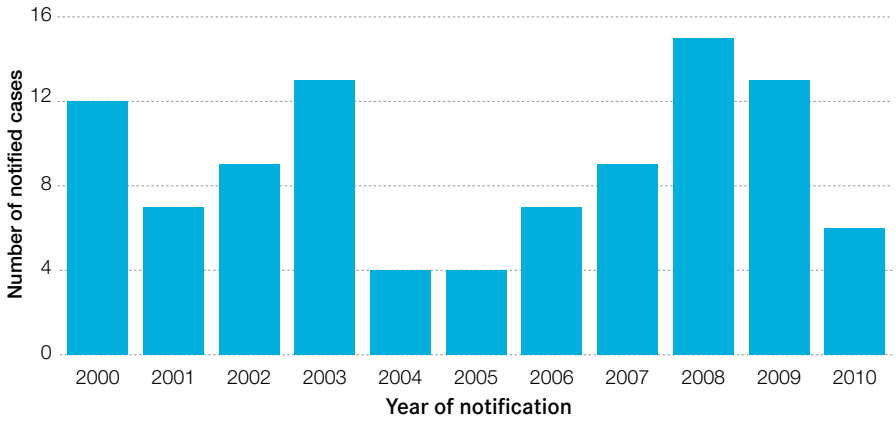


Figure 4: Notified cases of hepatitis D infections, Victoria, 2000–2010



(n=14) and having elevated liver function tests (n=14) were the most common reasons for testing reported. Other reasons for testing included drug and alcohol screening (n=7), screening on patient request (n=6), screening for sexually transmissible infection (n=3), prisoner screening (n=2), screening as a result of medical illness (n=1), routine antenatal screening (n=1) and post natal screening (n=1). Cases may have reported multiple reasons for testing.

Injecting drug use (IDU) was the main risk factor reported (28 cases, 78 per cent). Risk factors reported for the remaining cases included tattooing (n=1), imprisonment (n=1), having a hepatitis C positive sexual partner (n=1), having a hepatitis C positive household contact (n=1), needle-stick injury in a non healthcare worker (n=1), perinatal transmission (n=1) and other risk factors (n=1). Multiple risk factors may be reported for cases with no risk of IDU.

Hepatitis D

Two cases of hepatitis D were notified during the fourth quarter of 2010, both in males, aged 42 and 53 years. This brought the total number of notified cases of hepatitis D in 2010 to six (figure 4); a 54 per cent reduction on the number of notified cases in 2009.

Vaccine-preventable diseases

Lucinda Franklin, Department of Health, Victoria

Influenza

There were 472 confirmed cases of influenza notified in the fourth quarter of 2010, compared to 1,297 cases in the previous quarter, and 69 during the same period in 2009. In 2010 a total of 1,958 cases were notified to the department, which was significantly lower than the total for the previous year when a total of 6,986 cases were notified as a result of the swine flu pandemic. Cases reported in the fourth quarter were in persons aged from one month to 95 years, of which 44 (nine per cent) were aged less than five years (21 were aged less than two years) and 59 (13 per cent) were aged 65 years or older. A majority (93 per cent) of notified cases in the fourth quarter were reported to be due to influenza type A infection, of which 54 per cent were further subtyped as pandemic strain (pH1N1) (figure 5). No cases were reported to have died due to their influenza infection in this period. Three institutional outbreaks of respiratory illness were notified during the quarter, two in aged care facilities, and one in a military facility. All three outbreaks were due to influenza type A virus.

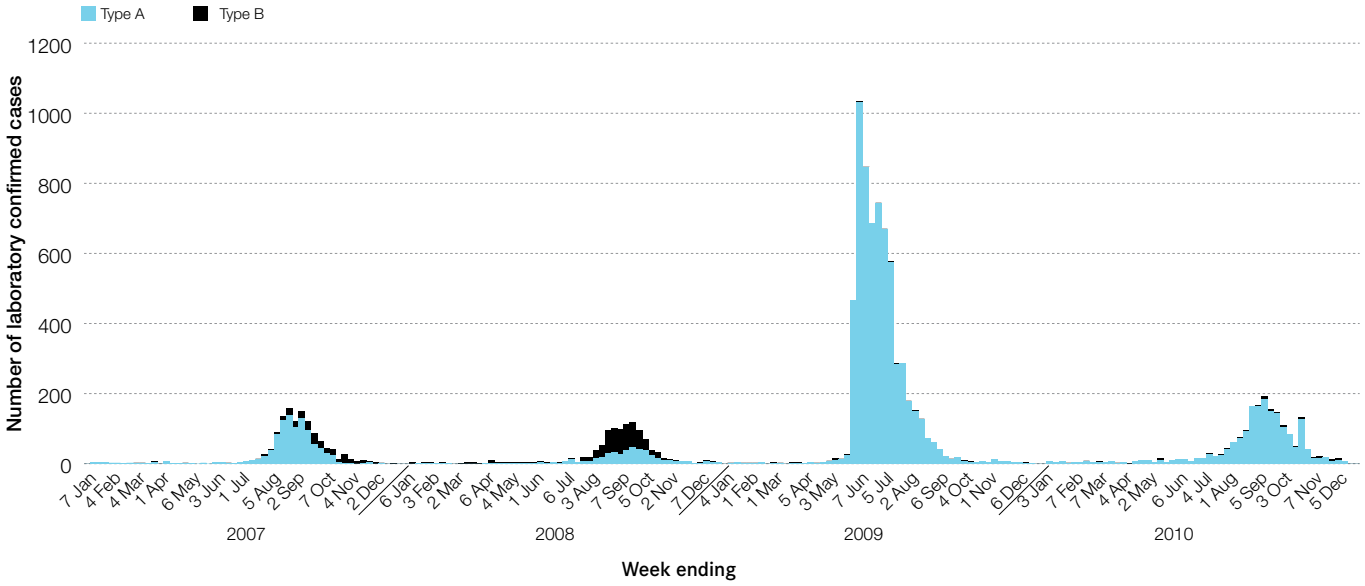
Haemophilus influenzae type b (Hib) infection

Three cases of Hib infection were notified in the fourth quarter of 2010 bringing the annual total to five cases. In the three years between 2008 and 2010, the average number of cases has risen to five cases, compared to an average of two cases in the previous three year period (2005 to 2007). All three cases notified this quarter were in females, with a median age of 47 years (age range 23 to 65 years). The infection in the 23-year-old case manifested as epiglottitis and the 54 year-old presented with septicaemia. The manifestation in the 65-year-old case was reported as 'other'. None of the cases were vaccinated; they were not eligible for vaccination under the National Immunisation Program. No deaths were reported in the quarter.

Invasive pneumococcal disease (IPD)

A total of 102 cases of IPD were notified in the fourth quarter, a 31 per cent increase from the 78 cases notified during the same period in 2009. This brought the total number of notified IPD cases for 2010 to 398, which was an increase from the 364 cases notified in 2009. Cases in the fourth quarter were in persons aged between two months and 94 years. Thirty-one cases (30 per cent) were in persons aged 64 years or older, of which 14 were aged 85 years or older. Nineteen cases were in the modal zero to four year age group, of which seven were aged less than 12 months. Of the infants aged less than 12 months, three were aged less than six months. Indigenous status was available for 92 of 102 cases (90 per cent) of which two cases (two per cent) identified as Aboriginal and/or Torres Strait Islander. The case fatality rate during the quarter was nine per cent; one identified as Aboriginal and/or Torres Strait Islander, none were children.

Figure 5: Notified cases of influenza by week, month and influenza type, Victoria, 1 January 2007–31 December 2010



Specimens from all but five cases were submitted for serotyping resulting in serotype being established for 95 cases (93 per cent). Of the remaining seven cases, five were diagnosed by PCR alone, and two specimens were not viable.

Twenty-four cases were in children aged between six weeks and nine years and therefore eligible for free conjugate vaccine under the National Immunisation Program. Eighteen were fully vaccinated, three were not vaccinated, and two cases were of unknown vaccination status. Only one of the vaccinated children was infected with a vaccine serotype, more than half (67 per cent) were infected with serotype 19A and for three cases serotype could not be determined.

Of the 20 cases in persons aged 65 years or older, 18 were infected with a serotype contained in the polysaccharide vaccine. Of these, five cases were reported as fully vaccinated, ten were not vaccinated and three cases were of unknown vaccination status. Of the nine deaths that occurred in the fourth quarter, four were due to IPD in persons aged 65 years or older; three were not vaccinated and one was of unknown vaccination status. Three of these four cases had other risk factors and the other case had no risk factor reported.

Measles

Two cases of measles were notified in the fourth quarter of 2010, compared with five cases in the previous quarter. This brought the total number of notified cases in 2010 to 14 compared to a total of 34 cases in 2009. The cases in the fourth quarter were in one male and one female aged 17 and 19 years respectively. Neither were vaccinated for measles. No links between the cases were identified. Both had travelled to South East Asia, and both cases were genotyped by VIDRL as D9. There were no outbreaks of measles reported in the fourth quarter.

Mumps

Two cases of mumps were notified in the fourth quarter of 2010, compared with four cases in the previous quarter. The total number of cases in 2010 was nine, compared with 43 cases in 2009. The two cases reported in the fourth quarter were females, aged 41 and 61 years. Neither was vaccinated for mumps. No links between cases were identified.

Rubella

One case of rubella was notified in the fourth quarter of 2010, compared to nine in the previous quarter. The total for 2010 was 21 cases, compared with six cases in 2009. The fourth quarter case was in a 26 year old male who was not vaccinated for the disease.

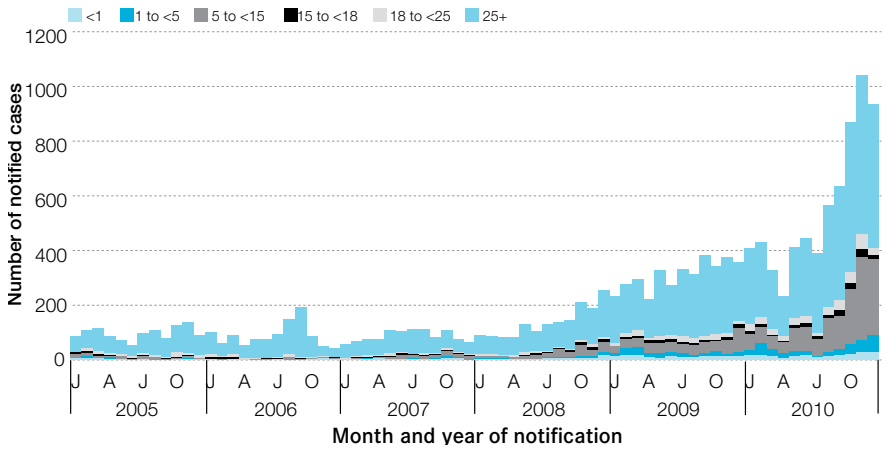
Pertussis

There were 2,878 confirmed and probable cases of pertussis notified in the fourth quarter, compared with 1,592 cases in the previous quarter of 2010, and 1,055 cases at the same time in 2009. This brought the total for 2010 to 6,726 cases, compared with a total of 3,735 notified cases in 2009 and 1,644 notified cases in 2008 (figure 6). This represented a 300 per cent increase in notifications between 2008 and 2010.

Cases notified in the fourth quarter were in persons aged from four weeks to 96 years. Two hundred and twenty-two cases were in children aged less than five years, of which 79 cases were aged less than 12 months. Fifty-eight per cent of cases notified in the fourth quarter were in females.

Of the 79 cases aged less than 12 months, 24 were too young to be vaccinated, 25 were fully vaccinated for age, 19 were not vaccinated, and there was no vaccination information available for three cases. No deaths were reported in 2010.

Figure 6: Notified cases of pertussis by month and age group, Victoria, January 2005–December 2010



Other notifiable diseases

Invasive meningococcal disease

Lucinda Franklin, Department of Health

Eleven cases of invasive meningococcal disease were notified in the fourth quarter compared to 15 during the same period in 2009. The 2010 total was 43 cases, the same as the 2009 total and a 34 per cent reduction in the number of cases for the same time in 2008. Cases notified in the fourth quarter were in persons aged from three months to 55 years, of which two (18 per cent) were aged 12 months or less and five (45 per cent) were aged between seven and 21 years (inclusive). Six of the cases (54 per cent) were in males. All cases were laboratory confirmed: nine were serogroup B infections; one was serogroup Y; and one was serogroup C. One death was reported in a 21-year-old male infected with serogroup B. No epidemiological links between cases were identified.

Legionellosis

Lucinda Franklin, Department of Health, Victoria

Nine cases of legionellosis were notified in the fourth quarter, three fewer than the 12 cases notified in the previous quarter, and five fewer than for the same period in 2009. The median age of notified cases was 71 years, with a range of 55 to 91 years. Five cases were in males. No deaths were reported in the quarter. Two cases were due to infection with *Legionella longbeachae*. The remainder of the cases were due to *Legionella pneumophila* serogroup 1 infection. Three cases of *Legionella pneumophila* serogroup 1 infection had a history of overseas travel during their incubation period, however no epidemiological links between cases were identified.

Environmental testing was undertaken for one case, however no links with cooling towers were identified.

Creutzfeldt-Jakob disease (CJD)

Genevieve Klug, Australian National CJD Registry

Due to the nature of the disease, months or years may elapse between the notification date of suspected CJD cases and their subsequent confirmation (or rejection) by the Australian National Creutzfeldt-Jakob disease Registry (ANCJDR). Thus the figures reported here will differ from those in table 10, which counts confirmed and probable cases by their notification date.

The ANCJDR was notified of four new suspect cases of CJD during the last quarter of 2010. All of these cases remain under investigation. Within the same period, two previously notified cases were reclassified after neuropathological examination from suspect to confirmed CJD. The notification and confirmed case numbers are in keeping with the findings from previous quarters (figure 7, table 2).

In 2010, a total of 18 notifications were made to the ANCJDR which aligns with the long-term average of annual totals for 2005 to 2009 (18.2 notifications per year) (figure 7). Of the

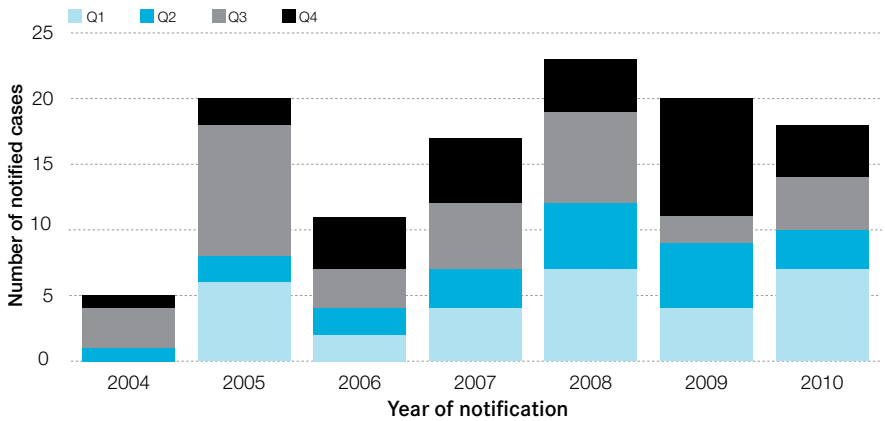
Table 2: Notification of suspect and confirmed, definite and probable CJD cases by quarter, June 2004–December 2010

	Suspect	**Confirmed	
Qtr	*notified	CJD	Not CJD
Jun–04	1	1	
Sep–04	3		
Dec–04	1	1	
Mar–05	6	1	
Jun–05	2	1	
Sep–05	10	4	
Dec–05	2	4	2
Mar–06	2	3	2
Jun–06	2	2	
Sep–06	3		
Dec–06	4	5	3
Mar–07	4		2
Jun–07	3	1	1
Sep–07	5		
Dec–07	5	1	2
Mar–08	7	6	2
Jun–08	5	2	2
Sep–08	7	2	
Dec–08	4	3	2
Mar–09	4	3	1
Jun–09	5		2
Sep–09	2		1
Dec–09	9	1	1
Mar–10	7	3	1
Jun–10	3	6	
Sep–10	4	1	1
Dec–10	4	2	
Total	**114**	**53**	**25**

* notified = suspect cases notified within the quarter

** confirmed = cases confirmed as definite or probable reclassified within the quarter

Figure 7: CJD notifications by quarter, Victoria, 2004–2010



18 notifications in 2010, 40 per cent have been resolved as either CJD or not CJD and the remaining cases are still under investigation.

Since CJD became notifiable in June 2004 in Victoria 114 cases of suspect CJD have been notified to the ANCJDR, 68 per cent of these cases have been resolved with 25 excluded from a CJD diagnosis and 53 confirmed with CJD on the basis of either neuropathological examination or clinical features. Table two shows the total number of CJD cases confirmed by quarter and demonstrates the fluctuations observed in CJD case confirmations. On average, eight cases per year are confirmed with CJD, and four are excluded from a CJD diagnosis.

Mycobacterial infections

Lynne Brown, Department of Health

Tuberculosis

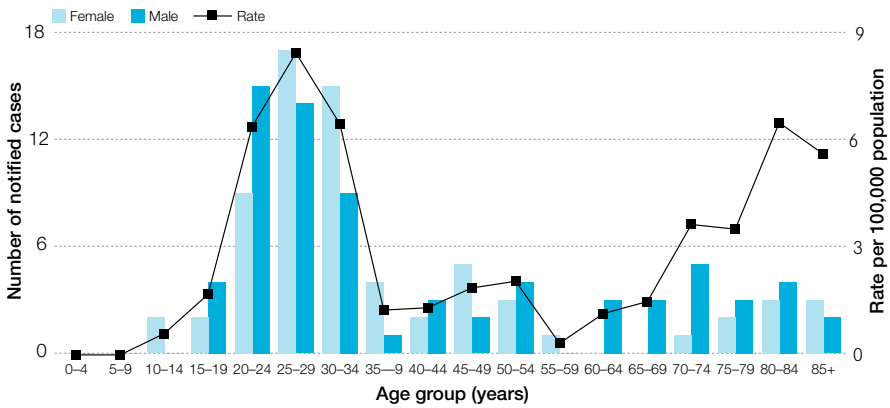
Owing to the slow growing nature of Mycobacterium tuberculosis, data are preliminary and subject to change.

There were 140 notifications of tuberculosis to the department in the fourth quarter of 2010. This was a thirty per cent increase from the previous quarter but an eight per cent decrease on the same quarter in 2009 (n=152). The total number of notified cases in 2010 was 439, which was a six per cent increase on the 2009 total (n=414) (figure 8). The annual incidence rate has now reached eight /100,000 population, based on the 2009 estimated resident population (ERP) by the Australian Bureau of Statistics; compared with an incidence rate of 7.8 per 100,000 population in 2009.

The male to female ratio in this fourth quarter was 1:1 with 71 males and 69 females. Patients aged 25 to 29 years comprised twenty-two per cent of the total notifications (n=31), and over half were aged between 20 and 34 years. No children aged younger than 10 years were notified with primary disease and only two children were aged between 10 and 14 years. Both of these children were born overseas and presented with symptoms of TB.

In the fourth quarter of 2010, 96 per cent (n=135) of notifications were for overseas born patients. Of these, 37 per cent were born in India. Patients from other countries in Central Asia (n=9), Vietnam (n=14) or countries in West or Horn of Africa (n=12) accounted for an additional twenty five per cent. Information about date of arrival was known for 132 of the 135 overseas born persons. Of these, eight per cent were diagnosed with TB after arriving in Australia in 2010 and 23 per cent were diagnosed within two years of arrival. There were no notifications in Aboriginal and Torres Strait Islander people for this reporting period. Six patients were known to have HIV/TB co-morbidity. Nine persons were notified with active tuberculosis as a result of investigation of a Tuberculosis Undertaking, and one was notified following a referral from a refugee screening clinic. There were no cases diagnosed with TB disease as a result of contact investigations.

Figure 8: Notifications of tuberculosis, by age group, sex and per 100,000 population, Victoria, October 2010–December 2010



Site of disease

Table 3: Notifications of tuberculosis, by site of disease, Victoria, October 2010–December 2010

Site	Number
Pulmonary	54
Pulmonary and other sites	16
Lymph nodes	40
Bone / Joint	5
Pleural	11
Genitourinary	1
Meningeal	4
Peritoneal	2
Other	7
Total	**140**

Pulmonary disease accounted for 50 per cent of all notifications (n=70) (table 3). Additional sites, other than the lungs, were noted in sixteen notifications with pulmonary TB. The most common additional sites were lymph nodes (n=8) and meningeal TB (n=4). Extra pulmonary disease was reported in 50 per cent of notifications—the most common sites being lymphatic (57 per cent), with bone/joint TB accounting for seven per cent (n=5), and pleural TB for 16 per cent of notifications (n=11). Other sites made up 10 per cent of extra pulmonary notifications and included pericardial, soft tissue, retropharyngeal, liver and gastrointestinal.

Table 4: Treatment outcomes for TB cases notified in 2008, Victoria

Treatment outcome	Total
Completed treatment	331
Defaulted	6
Died of other cause	10
Died of TB	4
Interrupted treatment (two months or more)	2
Not followed up – outcome unknown	1
Transferred out of Australia	17
Grand total	**371**

Laboratory confirmation of diagnosis in some form (smear, culture, antigen detection or histology) was obtained for 90 per cent of notifications. Seventy-four per cent of all notifications were confirmed by culture, which was six per cent less than the same period in 2009. Diagnosis was confirmed by culture in 76 per cent of pulmonary notifications; a five per cent decrease on 2009. In a year where resistance to TB drugs was detected in 25 isolates (including five cases of multi-drug resistant TB), the decrease in culture confirmation was concerning. Information about HIV testing was available for 133 of 140 patients, of which 108 (77 per cent) were reported to have been tested for HIV infection; a similar figure to 2009.

Information about treatment outcomes for patients notified in 2008 is included in the table above (table 4). The department acknowledges the assistance of treating physicians in providing this important information. Collection of these data is usually reported with a time delay of two years to take into account the long-term treatment of TB patients; average length of treatment for patients in Victoria where the treatment outcome for 2008 is recorded as 'completed', is nine months.

Vector borne diseases

Nasra Higgins, Department of Health, Victoria

Alphavirus infection

Ross River virus infections

A 63 per cent increase in the number of notified cases of Ross River virus was noted in the fourth quarter of 2010, with 54 cases notified compared to 33 cases in the third quarter of 2010. The total number of cases notified in 2010 was 403, accounting for 62 per cent of the total mosquito-borne disease notifications (figure 9). The number of cases notified in 2010 was more than a four-fold increase on the total number of cases notified in 2009 and the highest number notified since at least 1997 (table 5).

Of the 54 cases reported in the fourth quarter, 63 per cent were in females. The median age was 42 years (range 13–80 years). Seventy-four per cent (n=40) were from rural regions of Victoria with the highest number of cases being residents of Loddon Mallee region (n=21). The remaining rural cases reported were from Hume region (n=9), Gippsland region (n=5), Grampians region (n=4) and Barwon South Western region (n=1). Ten cases (19 per cent) were residents of metropolitan regions, of which two reported interstate travel during their incubation period and one reported travel to Malaysia. The remaining seven cases had no travel history.

Table 5: Notified cases of Ross River virus and Barmah Forest virus infection, Victoria, 1991–2010

Year of notification	Ross River	Barmah Forest
1991	443	0
1992	195	20
1993	1230	68
1994	59	10
1995	29	6
1996	139	41
1997	1060	41
1998	131	17
1999	227	13
2000	313	18
2001	358	20
2002	33	58
2003	13	9
2004	90	14
2005	57	17
2006	251	31
2007	85	26
2008	245	31
2009	88	17
2010	403	52

Barmah Forest virus infection

Twenty-five cases of Barmah Forest virus disease were notified in the fourth quarter of 2010 compared with five cases notified during the

Figure 9: Notified cases of Barmah Forest virus disease and Ross River virus disease by month, Victoria, 2002–2010

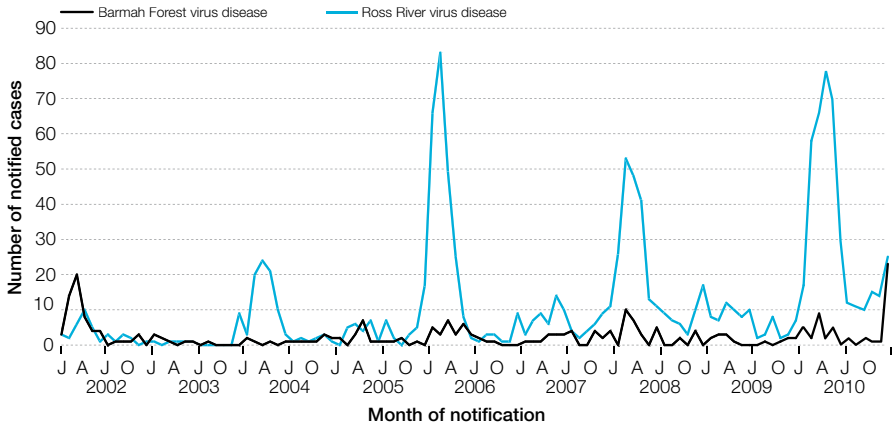
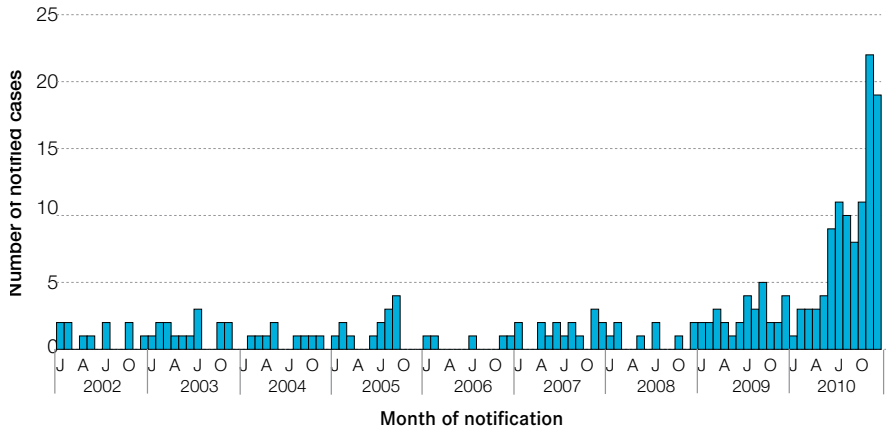


Figure 10: Notified cases of dengue fever by month, Victoria, 2002–2010



same reporting period in 2009. This brought the 2010 total to 52 cases, the highest yearly total notified since at least 2002 (table 5).

Ages ranged from 20 to 71 years. Twenty-one of the 25 cases were from rural Victoria. The remaining four cases were residents of metropolitan regions and travel history was unknown or not reported for these cases.

Flavivirus infection

Fifty-seven cases of flavivirus infection were notified to the department in the fourth quarter of 2010, of which 52 were due to dengue fever virus. This brought the 2010 total to 104, nearly three times as many as the 37 cases notified in 2009 (figure 10).

A majority (31 cases, 60 per cent) of the dengue cases reported were in females. The median age was 39 years (range five–74 years). All dengue fever virus cases acquired their illness overseas; Indonesia (25 cases), Thailand (eight cases), South East Asia (five cases), India (four cases), Vietnam (four cases), Philippines (three cases), Malaysia (one case) and East Timor (one case).

No further testing information was available for the remaining five flavivirus infections. All five reported overseas travel; India (two cases), Thailand (one case), Sri Lanka (one case) and Indonesia (one case).

Malaria

Seven cases of malaria were notified in the fourth quarter of 2010. This brought the 2010 total to 67; a 42 per cent reduction on the number of cases notified in 2009 (n=115).

Of the seven cases reported in this period, four were in males and three in females with ages ranging from 12 to 61 years.

Infection with *Plasmodium vivax* accounted for five cases (71 per cent); all five acquired their illness in India. The remaining two cases were due to infection with *P. falciparum*; one acquired the illness in Guinea and the remaining case reported travel to Sub Saharan Africa.

Chikungunya

Chikungunya became notifiable in its own right in Victoria on 1 January 2010. During the fourth quarter five cases were notified. There were 17 cases notified in 2010, compared to four cases in 2009. All five cases notified in this quarter acquired their illness in India.

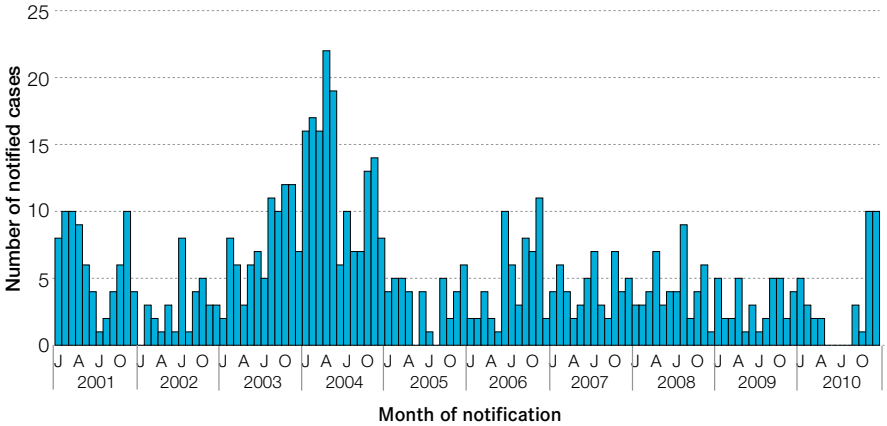
Zoonoses

Ellen Donnan, Department of Health, Victoria

Psittacosis

Two confirmed and 19 probable cases of psittacosis were notified in the fourth quarter of 2010. This was a considerable increase in the number of cases compared to two confirmed and one probable case in the previous quarter, and seven confirmed and four probable cases in the same period in 2009 (figure 11). The two confirmed cases reported this quarter were in males aged 51 and 57 years; one resided in Hume region and one in North West Metropolitan region. Of the 19 probable cases, 11 were in males and eight were in females, with an age range of 35 to 85 years. Cases were spread across six Victorian regions. All the probable cases identified contact with birds: ten owned pet birds; six had contact with wild birds; two cases indicated a high risk occupation which

Figure 11: Confirmed and probable cases of psittacosis, Victoria, 2003–2010



included lawn-mowing in addition to having wild bird feeders and one case had contact with a cockatiel while on holiday during her incubation period.

Q fever

Three confirmed cases of Q fever were notified in the fourth quarter, a fifty per cent decrease on the six cases from the previous quarter and seven cases in the fourth quarter of 2009. Two cases were in males aged 46 and 61 years respectively. Both males were dairy farmers residing in rural Victorian regions (Hume region and Gippsland region) and neither were vaccinated for Q fever. For the remaining case, a 60 year old female resident in the Eastern Metropolitan region, no risk factor could be identified.

Leptospirosis

Four cases of confirmed leptospirosis were notified in the fourth quarter of 2010, the same number as reported for the previous quarter and two fewer than for the same period in the previous year. This brought the total of confirmed cases for 2010 to 12.

Three cases were in males and one case was in a female. Ages ranged from 22 to 61 years. Subtyping revealed that three cases had *leptospira* hardjo infections and the remaining case had an arborea infection. Two cases were residents of the Barwon South-Western region and one case each were residents of Hume and North West Metropolitan regions. Three cases had a high-risk occupation (a dairy farmer, a livestock farmer and a farm hand) and the two cases residing in North West Metropolitan region had travelled to northern Queensland and had been white-water rafting. None of the cases were epidemiologically linked.

Sexually transmissible infections (STIs)

Ellen Donnan, Department of Health, Victoria

Chlamydia

A total of 3,950 cases of chlamydia were notified to the department during the fourth quarter of 2010. This was a decrease of six per cent compared to the previous quarter (n=4,204), however a 17 per cent increase on the 3,380 cases notified in the fourth quarter of 2010 (figure 12).

Fifty-six per cent of the cases (n=2,223) were in females and 43 per cent (n=1,694) were in males. Sex was not reported for 33 cases. The age range of females was two months to 70 years with a median age of 23 years. The age range of males was two months to 77 years with a median age of 23 years. Infections were most commonly reported in the 20 to 24 year age group for both females and males (40 per cent and 35 per cent respectively). Seventy-eight per cent of the total cases were in the age group 15 to 29 years.

Indigenous status was reported for 52 per cent of the total cases, of which 28 identified as being Aboriginal and/or Torres Strait Islander.

A majority of the cases (n=2,836, 72 per cent) reported had a metropolitan postcode of residence. Postcode of residence was not reported for 130 cases and the remaining cases were from regional Victoria.

Enhanced data were available for 681 cases (21 per cent). Of these cases, 44 (six per cent) were reported as being HIV positive; 43 of these were in males, of which 42 were MSM. For one male the gender of their partner was not stated. The remaining HIV positive case was a female.

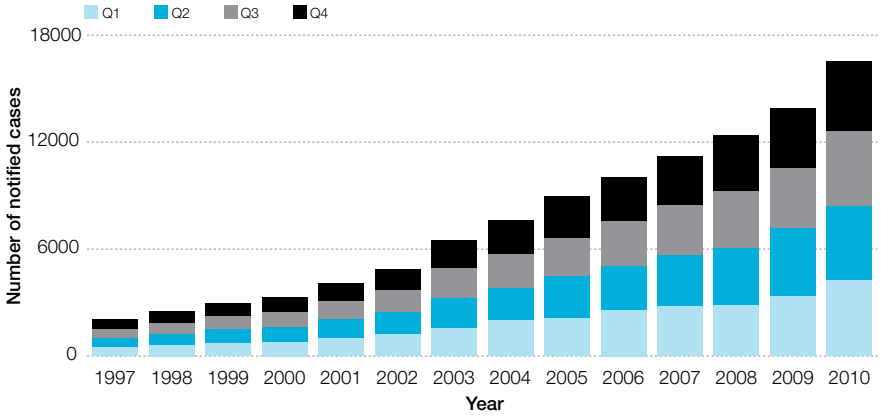
Among the 681 cases, screening was reported as the main reason for testing for 53 per cent of the cases followed by clinical presentation and contact tracing (29 per cent and 11 per cent respectively). Four per cent reported other reasons while for 18 cases this information was unknown or not reported.

Males

Of the 365 cases in males for which enhanced surveillance data were available, 48 per cent (n=175) reported a female sexual partner, 46 per cent (n=169) reported a male sexual partner and one per cent reported both male and female partners (n=3). Source of infection was unknown or not reported for five per cent (n=19).

Among the males reporting a female sexual partner, 64 per cent (n=111) reported having a casual sexual

Figure 12: Notified cases of chlamydia by quarter, Victoria, 1997–2010



partner, 32 per cent (n=56) reported having a regular sexual partner, one case reported a sex worker as the source of infection, and sexual partner type was unknown or not reported for the remaining six cases. For those cases reporting a male sexual partner, 85 per cent (n=143) reported having a casual sexual partner, eight per cent (n=14) reported a regular sexual partner, two cases reported a sex worker as the source of infection and two cases identified as sex workers. For the remaining eight cases this information was unknown or not reported.

Eighty-one per cent (n=295) of cases had Victoria reported as the place of infection; 11 per cent (n=41) reported overseas and three cases reported interstate. This information was unknown or not reported for seven per cent (n=26).

Females

Of the 313 cases in females for which enhanced surveillance data were available, 92 per cent (n=287) reported a male sexual partner and one case reported a female sexual partner. Source of infection was unknown or not reported for the remaining eight per cent of cases (n=24).

Forty-nine per cent of the cases in females (n=152) reported having a regular sexual partner and a further 31 per cent (n=96) reported a casual sexual partner as the source of the infection. Seventeen cases identified as sex workers and one case reported a sex worker as the source of infection. For the remaining 47 cases (15 per cent) this information was unknown or not reported.

A majority of cases (n=266, 85 per cent) reported that infection was acquired in Victoria. The remainder reported overseas acquisition (n=26, eight per cent), interstate (n=3, one per cent) and unknown or not reported (n=18, six per cent).

Gonorrhoea

There were 406 cases of gonorrhoea notified in the fourth quarter of 2010; a 16 per cent reduction on the 484 cases notified in the previous quarter, however a 21 per cent increase compared to the same time in 2009 (n=336) (figure 13).

Eighty-four per cent of the cases (n=342) were in males (age range: 16 to 79 years) and 15 per cent (n=62) were in females (age range: six to 69 years). Sex was not reported for two cases. The median age for both males and females was 30 years. Infections continued to be most commonly reported for the 20 to 29 year age group.

Eighty-one per cent of the cases (n=327) reported had a metropolitan postcode of residence. Postcode of residence was not reported for 49 cases (12 per cent) and the remainder were from regional Victoria.

Indigenous status was reported for 65 per cent (n=263) of which two cases identified as being Aboriginal and/or Torres Strait Islander.

Enhanced surveillance data were received for 39 per cent (n=157). Of these 157 cases, 31 (20 per cent) were reported as being HIV positive; all were males and 29 of the 31 reported having a male sexual partner. Partner type was unknown or not reported for the remaining two cases.

Among the 157 cases, 52 per cent (n=81) were tested due to having clinical signs and symptoms of STIs, followed by screening (33 per cent, n=52) and contact tracing (11 per cent, n=17). Five cases reported other reasons and reason for testing was unknown or not reported for the remaining two cases.

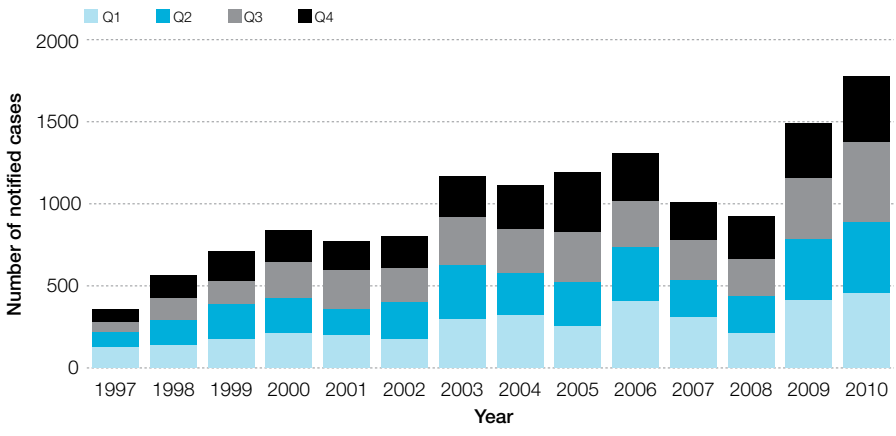
Males

Among the 138 males for whom enhanced surveillance data were available, 84 per cent (n=116) reported a male sexual partner and nine per cent (n=13) reported a female sexual partner. For the remaining six per cent (n=9) this information was unknown or not reported.

Of the 116 males reporting a male sexual partner, 86 per cent (n=100) reported acquiring their infection from a casual sexual partner and 12 per cent (n=14) reported acquiring it from a regular partner. For the remaining two cases, source of infection was unknown or not reported.

For those cases reporting a female sexual partner, 69 per cent (n=9) reported acquiring the infection from a casual partner and 15 per cent

Figure 13: Notified cases of gonorrhoea by quarter, Victoria, 1997–2010



(n=3) from a regular partner. This information was unknown for the one remaining case.

Eighty-four per cent (n=116) reported that they acquired their infection in Victoria, nine per cent reported overseas (n=12) and one per cent reported interstate (n=2). This information was unknown or not reported for eight cases.

Females

Of the 19 females for whom enhanced surveillance data were available, 16 reported acquiring their infection from a male sexual partner, one reported acquiring their infection from a female sexual partner and this information was unknown or not reported for the remaining two cases.

Fifty-eight per cent of cases (n=11) reported acquiring their infection from a regular partner, 11 per cent (n=2) reported a casual partner and three cases identified as sex workers. For the remaining three cases this information was unknown or not reported.

Sixty-three per cent of the cases (n=12) reported acquiring the infection in Victoria, 21 per cent (n=4) reported overseas and five per cent (n=1) reported interstate. For the remaining two cases this information was unknown or not reported.

Antibiotic resistance

Testing for susceptibility to ceftriaxone and ciprofloxacin was conducted for 208 isolates. Of the 208 isolates tested for ceftriaxone, 82 per cent (n=171) were sensitive and the remaining 37 isolates were 'less sensitive' or 'non-susceptible'. Of the isolates tested for ciprofloxacin, 60 per cent (n=125) were sensitive, three per cent (n=6) were less sensitive, and 37 per cent (n=77) were resistant.

Syphilis—infectious (less than two years duration)

During the fourth quarter of 2010 the department received notifications for 203 cases of syphilis of which 64 were infectious syphilis (note that there are still cases pending follow-up, so the number of cases reported here may be subject to change). The total number of infectious syphilis cases for 2010 was 267, which was a 32 per cent decrease on the number of notified cases in 2009 (n=391) (table 14); a decrease which was also reflected nationally as per the National Notifiable Disease Surveillance System.

Of the notified cases of infectious syphilis, 92 per cent (n=59) were in males aged from 17 to 80 years, with a median age of 35 years. There were five cases in females notified in this quarter, which was similar to the same period in 2009. The age of these females ranged from 22 to 47 years, with a median of 34 years.

Of the 64 cases, 22 were primary infections, 18 were secondary infections, 23 were early latent infections and one was classified as 'other'.

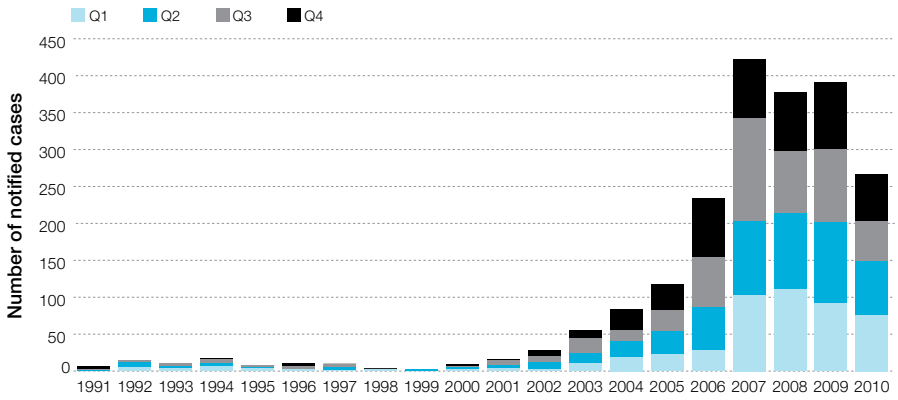
Eighty per cent of the cases were in residents of metropolitan regions (n=51), four were from regional Victoria and postcode of residence was unknown or not reported for nine cases. Seventy-two per cent (n=46) were Australian born, 20 per cent (n=13) were overseas born and for the remaining cases (n=5, eight per cent), country of birth was unknown or not reported. Indigenous status was reported for 57 cases, with no cases reported identifying as Aboriginal and/or Torres Strait Islander.

Enhanced data were completed for 61 cases (95 per cent). Of these 61 cases, 19 were HIV positive (31 per cent); all were males. Eighteen reported a male sexual partner; for one case the partner gender was not reported.

Previous episodes of syphilis infection were reported in nine cases, two of whom were HIV positive. These re-infections were all in males, with six being MSM and one heterosexual; for two cases partner gender was unknown or not reported.

The most commonly reported reason for testing was screening (n=33)

Figure 14: Notified cases of infectious syphilis, by quarter, Victoria, 1991–2010



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Qtr4	3	0	1	1	0	4	0	1	0	2	2	8	11	28	34	80	81	80	90	64
Qtr3	2	3	3	5	3	4	5	0	0	1	6	8	20	16	29	67	140	83	100	54
Qtr2	1	7	3	5	2	1	4	1	2	4	5	10	14	21	31	59	99	103	109	73
Qtr1	0	5	4	6	3	2	1	2	0	2	3	2	10	19	23	28	103	111	92	76

Year (and quarter) of notification

followed by presenting with signs and symptoms (n=22). Two cases were reported as having abnormalities on examination, one case was an asymptomatic contact of an infected individual, two cases reported other reasons for testing and no reason was reported for the remaining case.

Males

Of the 48 males for whom enhanced surveillance data were available, 44 (79 per cent) indicated a male sexual partner, and eight (14 per cent) indicated a female sexual partner; for the remaining four cases this information was unknown or not reported.

Among the males reporting a male sexual partner, 75 per cent (n=33) reported acquiring their infection from a casual sexual partner, and 13 per cent (n=6) reported a regular sexual partner; for the remaining five cases sexual partner type was unknown or not reported.

Of the eight male cases reporting a female sexual partner, five reported acquiring the infection from a casual sexual partner (63 per cent), one reported a regular sexual partner and one reported a sex worker as the source of the infection. This information was unknown or not reported for the remaining case.

Eighty-eight per cent of the cases in males (n=49) reported that infection was acquired in Victoria and four cases reported overseas acquisition. For the remaining three cases this information was unknown or not reported.

Females

Five cases in females were reported in this quarter, of which three acquired the infection from a male sexual partner; partner gender was unknown for the remaining two cases. Three of the females reported being sex workers themselves and one reported a regular sexual partner as the source of infection. For three of the five cases Victoria was reported as the place of acquisition of infection and for the remaining two cases this information was unknown or not reported.

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS)

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Please note that numbers are subject to change as a result of ongoing case investigations and annual audit of retrospective records.

There were 56 new HIV diagnoses[1] during the fourth quarter of 2010, which brought the 2010 total to 228, compared to 262 in 2009 (figure 15). The 2010 total was the lowest number of new HIV diagnoses in a calendar

Figure 15: Number of new HIV diagnoses by quarter, Victoria, 2001–2010

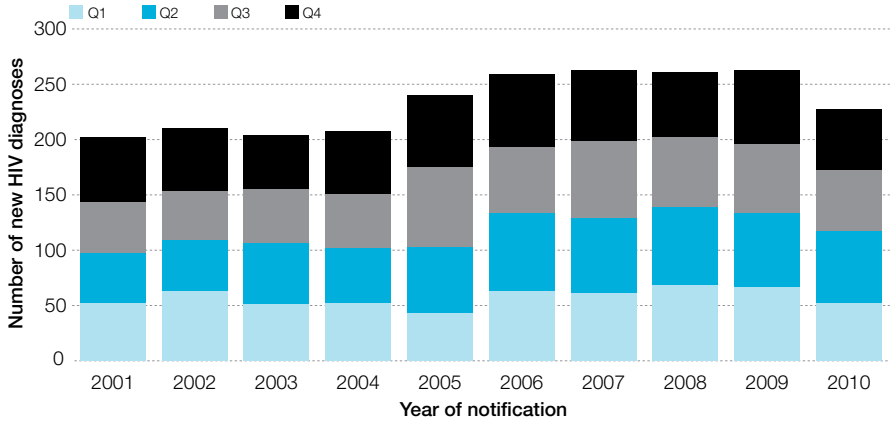
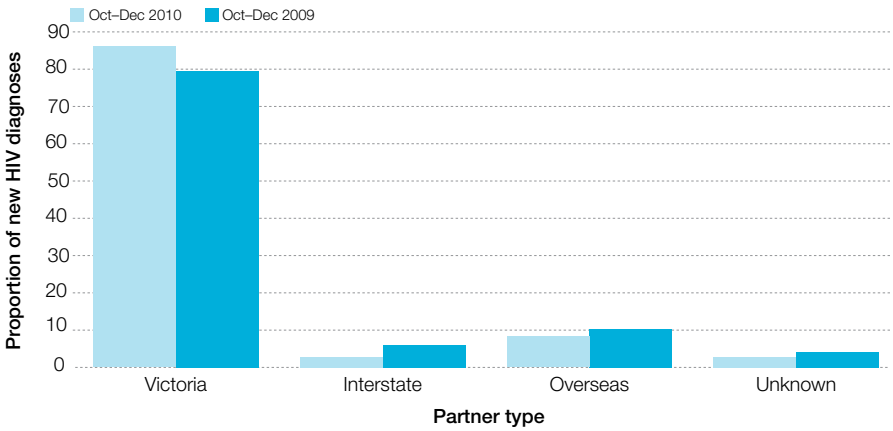


Figure 16: New HIV diagnoses among MSM by probable place infection acquired, October–December 2010 and October–December 2009



1 "New HIV diagnoses" refers to cases whose first ever HIV diagnosis was in Victoria.

year since 2004 and 13 per cent less than the 2009 total.

Age, sex and exposure categories

Of the 56 new HIV diagnoses in the fourth quarter of 2010, 84 per cent (n=47) were male. Overall for 2010, 91 per cent of diagnoses were among males compared to 92 per cent in 2009. There were nine new HIV diagnoses in females this quarter bringing the annual total for 2010 to 20 (table 6).

Thirty-two per cent of male diagnoses in the fourth quarter of 2010 were in the 20 to 29 year age group, with the remaining 68 per cent aged 30 years or over. The median age of males diagnosed this quarter was 38.9 years; overall in 2010 the median age of males diagnosed with HIV was 38.0 years compared to 36.4 years in 2009. The median age of women diagnosed with HIV in 2010 was 34.4 years, compared to 32.2 years in 2009.

Male-to-male sexual contact

Between October and December 2010, 79 per cent (n=37) of men newly diagnosed with HIV were men who have sex with men (MSM). In 2010, 84 per cent of total new diagnoses were among MSM (n=174) compared to 80 per cent in 2009 (n=193) (table 7).

The median age at HIV diagnosis among MSM this quarter was 36.2 years; for 2010 overall the median age among MSM at HIV diagnoses was 36.1 years, similar to the median age reported in 2009 (35.9 years).

Consistent with previous reports, in the fourth quarter of 2010, the majority of MSM diagnosed with HIV reported acquiring their HIV infection in Victoria (86 per cent, n=31) (figure 16) and 67 per cent (n=24) reported acquiring their HIV infection from a casual or anonymous partner (figure 17).

Table 6: New HIV diagnoses by age group, October–December 2010, 2010 and 2009

Age group (years)	Current quarter October–December 2010						Annual total 2010						Annual total 2009					
	Males		Females		Total		Males		Females		Total		Males		Females		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
0–12	0	0.0	1	11.1	1	1.8	1	0.5	1	5.0	2	0.9	0	0.0	1	4.8	1	0.4
13–19	0	0.0	0	0.0	0	0.0	2	1.0	0	0.0	2	0.9	4	1.7	1	4.8	5	1.9
20–29	15	31.9	1	11.1	16	28.6	51	24.5	6	30.0	57	25.0	71	29.5	6	28.6	77	29.4
30–39	10	21.3	5	55.6	15	26.8	64	30.8	8	40.0	72	31.6	81	33.6	9	42.9	90	34.4
40–49	10	21.3	0	0.0	10	17.9	52	25.0	2	10.0	54	23.7	52	21.6	2	9.5	54	20.6
50–59	9	19.1	2	22.2	11	19.6	27	13.0	3	15.0	30	13.2	25	10.4	1	4.8	26	9.9
60+	3	6.4	0	0.0	3	5.4	11	5.3	0	0.0	11	4.8	8	3.3	1	4.8	9	3.4
Total	**47**	**100**	**9**	**100**	**56**	**100**	**208**	**100**	**20**	**100**	**228**	**100**	**241**	**100**	**21**	**100**	**262**	**100**

Table 7: New HIV diagnoses by exposure category, October–December 2010, Jan–Dec 2010 and Jan–Dec 2009

Exposure category	Current quarter October–December 2010						Annual total 2010						Annual total 2009					
	Males		Females		Total		Males		Females		Total		Males		Females		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Male-to-male sex	37	78.7	0	0.0	37	66.1	174	83.7	0	0.0	174	76.3	193	80.1	0	0.0	193	73.7
Male-to-male sex and IDU	1	2.1	0	0.0	1	1.8	6	2.9	0	0.0	6	2.6	6	2.5	0	0.0	6	2.3
IDU	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.8	0	0.0	2	0.8
Heterosexual contact	7	14.9	8	88.9	15	26.8	22	10.6	19	95.0	41	18.0	37	15.3	20	95.2	57	21.8
Other / unknown	2	4.3	1	11.1	3	5.3	6	2.9	1	5.0	7	3.1	3	1.2	1	4.8	4	1.5
Total	**47**	**100**	**9**	**100**	**56**	**100**	**208**	**100**	**20**	**100**	**228**	**100**	**241**	**100**	**21**	**100**	**262**	**100**

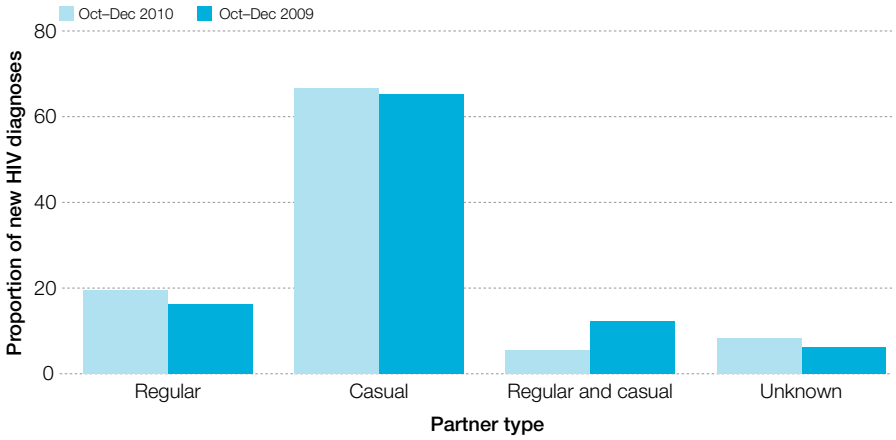
Table 8: New HIV diagnoses associated with heterosexual contact, October–December 2010, 2010 and 2009

	Current quarter October–December 2010						Annual total 2010						Annual total 2009					
	Males		Females		Total		Males		Females		Total		Males		Females		Total	
Exposure category	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Person from an HPC[2]	1	14.3	4	50.0	5	33.3	3	13.6	8	42.1	11	26.8	8	21.6	6	30.0	14	24.6
Hetero contact with person from an HPC[2]	3	42.9	0	0.0	3	20.0	3	13.6	1	5.3	4	9.8	5	13.5	1	5.0	6	10.5
Hetero contact with bisexual male	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Hetero contact with an IDU	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.7	1	5.0	2	3.5
Hetero contact with person with HIV	1	14.3	1	12.5	2	13.3	1	4.6	3	15.8	4	9.8	2	5.4	4	20.0	6	10.5
Hetero contact, not further specified	2	28.6	3	37.5	5	33.3	15	68.2	7	36.8	22	53.7	21	56.8	8	40.0	29	50.9
Total	**7**	**100**	**8**	**100**	**15**	**100**	**22**	**100**	**19**	**100**	**41**	**100**	**37**	**100**	**20**	**100**	**57**	**100**

Table 9: New HIV diagnoses in Victoria, by time since last negative test and/or seroconversion illness, October–December 2010, 2010 and 2009

Time between HIV diagnosis and negative test and/or seroconversion illness	Current quarter October–December 2010						Annual total 2010						Annual total 2009					
	Males		Females		Total		Males		Females		Total		Males		Females		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Less than 1 year (newly acquired)	18	38.3	2	22.2	20	35.7	97	46.6	6	30.0	103	45.2	101	41.9	3	14.3	104	39.7
1 year to less than 3 years	8	17.0	0	0.0	8	14.3	27	13.0	1	5.0	28	12.3	30	12.5	2	9.5	32	12.2
3 or more years	3	6.4	0	0.0	3	5.4	23	11.1	1	5.0	24	10.5	30	12.5	1	4.8	31	11.8
No previous negative test or seroconversion illness	13	27.7	2	22.2	15	26.8	42	20.2	5	25.0	47	20.6	47	19.5	12	57.1	59	22.5
History unknown	5	10.6	5	55.6	10	17.9	19	9.1	7	35.0	26	11.4	33	13.7	3	14.3	36	13.7
Total	**47**	**100**	**9**	**100**	**56**	**100**	**208**	**100**	**20**	**100**	**228**	**100**	**241**	**100**	**21**	**100**	**262**	**100**

Figure 17: New HIV diagnoses among MSM by source partner type, October–December 2010 and October–December 2009



2 High prevalence country (HPC): defined as a country where the adult HIV prevalence is greater than one per cent and HIV is transmitted predominantly by heterosexual contact. This includes countries in sub-Saharan Africa, Cambodia, Thailand, Myanmar, and some Caribbean countries.

Heterosexual contact

In the fourth quarter of 2010, there were 15 HIV diagnoses associated with heterosexual contact, seven among males and eight among females. This brings the total number of notified cases reporting heterosexual exposure in 2010 to 41 (54 per cent male) (table 8). Among the seven males diagnosed between October and December 2010, three reported heterosexual contact with a person from a high HIV prevalence country[1], and two did not specify their type of heterosexual exposure. Among the eight female cases diagnosed this quarter, four reported being from a high prevalence country and three did not specify their type of heterosexual exposure.

Overall in 2010, 27 per cent of heterosexual cases were from a high HIV prevalence country (three males and eight females) and for 54 per cent of cases no further information on the type of heterosexual exposure could be ascertained (15 males and seven females).

The median age at diagnosis in people with heterosexually acquired HIV infection in the fourth quarter of 2010 was 42.2 years. Overall in 2010 the median age at diagnosis in people with heterosexually acquired HIV infection was 42.2 years, higher than the median age in 2009 (36.4 years).

Newly acquired infections[3]

In the fourth quarter of 2010, 36 per cent of all new HIV diagnoses (n=20) were classified as newly acquired infections. Overall in 2010, 47 per cent of all diagnoses were classified as newly acquired compared to 40 per cent in 2009. Twenty-one per cent reported never having had a previous HIV test compared to 23 per cent in 2009 (table 9). Ninety-one per cent of the newly acquired infections in 2010 were among MSM (n=94).

Acquired immunodeficiency syndrome (AIDS)

There were 14 AIDS notifications between October and December 2010 (13 males and one female). Of these cases, 62 per cent were among MSM (n=8) and 36 per cent among heterosexuals (n=5). This brings the total number of AIDS diagnoses in 2010 to 45 compared to 49 in 2009. Ninety-three per cent of the total AIDS cases in 2010 were among men (n=42) and 60 per cent of the total were among MSM (n=27).

Deaths

Eight deaths following HIV diagnosis occurred in the fourth quarter of 2010, seven in males and one female. Overall in 2010 there were 27 deaths (24 males, two females and one individual whose gender was not reported) compared to 14 in 2009. Fifty per cent of HIV infected individuals who died in 2010 had been diagnosed with AIDS (n=13).

Comments

In 2010 the number of new HIV diagnoses in Victoria declined after a four year plateau. Between 2006 and 2009 the average annual number of new HIV diagnoses was 261 compared to 228 in 2010; a decline of 14 per cent. Newly acquired infections appear to have increased in 2010 compared to previous years, however, if high risk groups such as MSM are testing more frequently it is possible this could be leading to early detection. These changes have been observed in a limited time and will continue to be monitored. Male-to-male sex continues to be the most common exposure to HIV infection in Victoria, with 76 per cent of all new HIV diagnoses in 2010 being among MSM.

3 Newly acquired infections defined as having a previous negative HIV test and/or a seroconversion illness within the 12 months preceding HIV diagnosis

Table 10: Notifications of infectious diseases, by Department of Health region, 1 January to 31 December 2010 and historical

Note—data are preliminary figures only and may be subject to revision (daily surveillance reports are available online at http://www.health.vic.gov.au/ideas)

	Barwon South Western		Grampians		Loddon Mallee		Hume	
Notifiable disease	2010	*2009*	2010	*2009*	2010	*2009*	2010	*2009*
Blood borne diseases								
Hepatitis B – newly acquired	**8**	*4*	**9**	*8*	**4**	*4*	**2**	*2*
Hepatitis B – unspecified	**30**	*38*	**20**	*12*	**32**	*32*	**40**	*17*
Hepatitis C – newly acquired	**22**	*21*	**11**	*12*	**4**	*4*	**14**	*8*
Hepatitis C – unspecified	**154**	*129*	**94**	*95*	**126**	*135*	**120**	*108*
Hepatitis D	**1**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Enteric diseases								
Campylobacter infection	**568**	*514*	**297**	*230*	**380**	*344*	**307**	*307*
Cholera	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Cryptosporidiosis	**29**	*70*	**6**	*11*	**20**	*27*	**28**	*51*
Food/Water/Environmental – other	**9**	*31*	**7**	*6*	**15**	*11*	**14**	*17*
Haemolytic uraemic syndrome	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*1*
Hepatitis A	**1**	*11*	**11**	*12*	**2**	*39*	**6**	*12*
Hepatitis E	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Listeriosis	**1**	*1*	**0**	*1*	**2**	*2*	**1**	*3*
Paratyphoid	**0**	*0*	**1**	*1*	**0**	*1*	**0**	*1*
Salmonellosis	**156**	*113*	**113**	*64*	**166**	*93*	**163**	*80*
Shigellosis	**1**	*4*	**2**	*0*	**3**	*2*	**1**	*0*
Typhoid	**0**	*0*	**0**	*0*	**0**	*0*	**1**	*0*
Vero toxin producing *E.coli*	**6**	*9*	**2**	*0*	**2**	*4*	**0**	*0*
Non-notifiable diseases								
Giardiasis	**0**	*104*	**0**	*43*	**0**	*63*	**0**	*58*
Other notifiable conditions								
Blood lead greater than 10µg/dL	**70**	*0*	**13**	*0*	**16**	*0*	**7**	*0*
Creutzfeldt-Jakob disease	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Invasive meningococcal disease – group B	**2**	*3*	**5**	*0*	**2**	*3*	**2**	*2*
Invasive meningococcal disease – group C	**0**	*0*	**0**	*0*	**1**	*0*	**0**	*0*
Invasive meningococcal disease – other	**1**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Legionella – other	**0**	*0*	**0**	*0*	**0**	*0*	**1**	*1*
Legionella longbeachae	**0**	*1*	**0**	*0*	**2**	*0*	**0**	*0*
Legionella pneumophila – indeterminate serotype	**0**	*0*	**0**	*0*	**0**	*1*	**0**	*0*
Legionella pneumophila 1	**3**	*0*	**1**	*0*	**3**	*1*	**2**	*0*
Leprosy	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Mycobacterium africanum	**0**	*0*	**0**	*0*	**1**	*0*	**0**	*0*
Mycobacterium infection (non-TB)	**1**	*0*	**0**	*0*	**2**	*1*	**2**	*1*
Mycobacterium tuberculosis	**8**	*2*	**3**	*1*	**5**	*5*	**4**	*6*
Mycobacterium ulcerans	**17**	*14*	**0**	*3*	**1**	*0*	**1**	*0*
Sexually transmissible infections								
Chlamydia	**1142**	*901*	**612**	*548*	**860**	*737*	**776**	*638*
Gonococcal infection	**44**	*33*	**21**	*28*	**24**	*33*	**33**	*29*
Syphilis – infectious (less than two years duration)	**2**	*8*	**1**	*3*	**7**	*12*	**3**	*6*
Syphilis – greater than two years (or unspecified) duration	**15**	*18*	**9**	*4*	**9**	*12*	**15**	*13*
Vaccine preventable diseases								
Haemophilus influenzae type b	**0**	*0*	**0**	*0*	**1**	*0*	**0**	*1*
Influenza	**101**	*388*	**68**	*149*	**65**	*223*	**85**	*200*
Invasive pneumococcal disease	**34**	*26*	**13**	*15*	**31**	*29*	**25**	*15*
Measles	**2**	*0*	**0**	*0*	**0**	*1*	**1**	*0*
Mumps	**1**	*1*	**1**	*0*	**0**	*7*	**0**	*5*
Pertussis	**750**	*358*	**407**	*269*	**514**	*220*	**328**	*252*
Rubella	**0**	*0*	**0**	*1*	**0**	*0*	**0**	*0*
Tetanus	**1**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Varicella-zoster virus – Chickenpox	**22**	*38*	**28**	*31*	**14**	*14*	**10**	*24*
Varicella-zoster virus – Shingles	**27**	*35*	**25**	*28*	**12**	*28*	**32**	*29*
Varicella-zoster virus – unspecified	**131**	*115*	**62**	*48*	**48**	*56*	**61**	*52*
Vector borne diseases								
Barmah Forest	**2**	*2*	**2**	*0*	**14**	*4*	**13**	*0*
Chikungunya	**1**	*0*	**0**	*0*	**0**	*0*	**1**	*0*
Dengue	**5**	*0*	**2**	*0*	**4**	*4*	**4**	*0*
Flavivirus	**0**	*1*	**0**	*0*	**1**	*0*	**0**	*0*
Malaria	**3**	*6*	**1**	*3*	**2**	*1*	**3**	*2*
Ross River	**15**	*2*	**23**	*4*	**135**	*18*	**77**	*15*
Zoonoses								
Brucellosis	**0**	*0*	**0**	*0*	**0**	*0*	**0**	*0*
Leptospirosis	**4**	*3*	**0**	*0*	**0**	*0*	**1**	*0*
Psittacosis	**0**	*0*	**4**	*6*	**5**	*1*	**7**	*5*
Q Fever	**0**	*2*	**0**	*0*	**3**	*5*	**7**	*2*
2007 ABS est. resident population	**359,560**		**216,779**		**307,450**		**263,674**	

Gippsland		North and West Metropolitan		Eastern Metropolitan		Southern Metropolitan		Unknown		Victoria	
2010	*2009*	2010	*2009*	2010	*2009*	2010	*2009*	2010	*2009*	2010	*2009*
0	*6*	31	*32*	5	*12*	10	*19*	1	*1*	70	*88*
29	*26*	859	*914*	420	*432*	439	*425*	65	*44*	1934	*1940*
7	*13*	52	*65*	25	*20*	32	*42*	7	*1*	174	*186*
144	*119*	881	*853*	284	*263*	532	*551*	139	*82*	2474	*2335*
0	*0*	4	*10*	0	*2*	1	*1*	0	*0*	6	*13*
407	*330*	1731	*1501*	1373	*1136*	1529	*1411*	49	*31*	6641	*5804*
0	*0*	0	*0*	0	*0*	0	*1*	0	*0*	0	*1*
48	*55*	129	*342*	81	*221*	100	*243*	4	*9*	445	*1029*
25	*26*	480	*374*	84	*64*	151	*71*	604	*915*	1389	*1515*
0	*0*	1	*1*	0	*0*	2	*0*	0	*0*	3	*2*
1	*4*	21	*86*	5	*71*	44	*63*	3	*3*	94	*301*
0	*0*	6	*4*	0	*3*	4	*2*	1	*0*	11	*9*
0	*0*	15	*8*	6	*5*	3	*7*	0	*0*	28	*27*
0	*0*	9	*8*	8	*2*	9	*5*	0	*0*	27	*18*
107	*82*	676	*493*	341	*299*	528	*361*	20	*10*	2270	*1595*
0	*0*	28	*34*	10	*14*	42	*32*	0	*1*	87	*87*
0	*0*	14	*24*	5	*3*	5	*13*	1	*1*	26	*41*
0	*0*	0	*2*	0	*1*	1	*0*	0	*0*	11	*16*
0	*71*	0	*470*	0	*253*	0	*357*	0	*14*	0	*1433*
7	*0*	201	*0*	41	*0*	386	*0*	10	*0*	751	*0*
0	*0*	1	*2*	1	*1*	4	*0*	1	*1*	7	*4*
3	*3*	9	*8*	7	*9*	3	*5*	0	*3*	33	*36*
0	*0*	0	*0*	0	*1*	0	*0*	0	*0*	1	*1*
1	*0*	3	*0*	2	*3*	2	*3*	0	*0*	9	*6*
0	*0*	4	*5*	1	*2*	0	*0*	0	*0*	6	*8*
1	*1*	2	*5*	2	*1*	2	*2*	0	*0*	9	*10*
0	*0*	0	*1*	1	*1*	0	*1*	0	*0*	1	*4*
1	*0*	16	*15*	14	*4*	11	*6*	0	*0*	51	*26*
1	*0*	1	*0*	0	*0*	2	*1*	0	*0*	4	*1*
0	*0*	0	*2*	0	*0*	0	*0*	0	*0*	1	*2*
0	*1*	12	*7*	9	*9*	4	*9*	0	*1*	30	*29*
1	*8*	230	*185*	68	*71*	113	*126*	2	*2*	434	*406*
2	*1*	4	*2*	3	*3*	6	*5*	0	*0*	34	*28*
710	*608*	5245	*4426*	2434	*2072*	4158	*3488*	652	*483*	16590	*13902*
33	*22*	711	*610*	217	*177*	507	*449*	187	*99*	1777	*1480*
7	*1*	114	*172*	25	*35*	88	*121*	34	*29*	281	*387*
9	*4*	257	*189*	58	*49*	129	*139*	46	*44*	547	*472*
1	*0*	2	*0*	0	*0*	0	*1*	1	*0*	5	*2*
37	*267*	575	*2824*	322	*1102*	665	*1680*	40	*153*	1958	*6986*
21	*11*	108	*95*	69	*56*	82	*85*	16	*30*	399	*362*
0	*1*	3	*3*	2	*3*	6	*28*	0	*0*	14	*36*
0	*0*	1	*16*	0	*3*	6	*10*	0	*3*	9	*45*
685	*460*	1544	*884*	983	*516*	1457	*741*	70	*41*	6738	*3741*
0	*0*	9	*3*	5	*1*	6	*0*	1	*1*	21	*6*
0	*0*	0	*0*	0	*1*	0	*0*	0	*0*	1	*1*
18	*25*	115	*151*	96	*133*	94	*153*	3	*3*	400	*572*
47	*52*	173	*162*	166	*137*	121	*144*	6	*5*	609	*620*
83	*70*	575	*458*	432	*426*	593	*554*	50	*52*	2035	*1832*
9	*8*	4	*1*	3	*0*	6	*1*	0	*1*	53	*17*
1	*0*	6	*3*	3	*0*	5	*1*	0	*0*	17	*4*
12	*1*	25	*13*	15	*9*	34	*9*	3	*1*	104	*37*
0	*0*	3	*0*	0	*0*	5	*1*	0	*0*	9	*2*
1	*2*	25	*51*	14	*24*	16	*23*	2	*3*	67	*115*
53	*22*	35	*6*	25	*7*	25	*13*	16	*1*	404	*88*
0	*0*	2	*0*	0	*0*	0	*1*	0	*0*	2	*1*
4	*6*	2	*1*	0	*0*	1	*0*	0	*0*	12	*10*
5	*1*	6	*5*	7	*12*	2	*9*	0	*1*	36	*40*
4	*9*	3	*4*	2	*0*	0	*2*	0	*0*	19	*24*
250,907		1,561,798		1,001,907		1,242,657				5,204,826	

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

Contributions are invited on any topic dealing with the control of infectious diseases. These may be in the form of articles, short reports or letters. Lead articles will be subject to peer review. As a guide, lead articles should be no more than 2500 words with a 200 word abstract, non-peer reviewed articles 2000 words and short reports and letters 800 words. Submissions should be in Microsoft Word IBM-compatible format with Vancouver-style references. We encourage submissions in electronic format. Original data from which graphs and figures have been prepared should be included. Submissions will be edited to conform with the style of the bulletin.

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